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PROPOSED AUSTRALIAN ANIMAL WELFARE STANDARDS AND GUIDELINES

CATTLE

Decision Regulation Impact Statement

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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 proposed *Australian Animal Welfare Standards and Guidelines for Cattle* are an important component of the Australian Animal Welfare Strategy (AAWS) — a previous Australian Government initiative that guides the development of new, nationally consistent policies to enhance animal welfare arrangements in all Australian states and territories. The development process began in 2009 and has been supported and funded by all Governments, Australian Diary Farmers, Australian Lot Feeders Association and Cattle Council of Australia.

This Regulatory Impact Statement assesses the proposed standards, incorporates public consultation feedback and changes agreed by the majority of the Reference Group. This independently chaired committee comprised government representatives, industry council representatives from all relevant sectors, researchers and animal welfare organisations.

The proposed standards are intended to replace *the Model Codes of Practice for the Welfare of Animals: Cattle*, 2nd edition, PISC Report 85, CSIRO Publishing, 2004. The standards are intended to be used as the basis for developing consistent legislation and enforcement across Australia which is the responsibility of jurisdictional (state) governments. They are based on scientific knowledge, recommended industry practice and community expectations.

The standards will apply to all people responsible for the care and management of cattle in Australia. 'Cattle' includes a single bovine animal.

Extensive consultations and collaborations have been conducted during development under the guidance of the Reference Group. A five month period of public consultation has also been conducted which has served to highlight ethical and practical issues and contributed to the development of a better document.

Animal Health Australia has considered all stakeholder responses in developing the final standards and guidelines for recommendation by the Reference Group to the government Animal Welfare Task Group (formerly Animal Welfare Committee) and cattle industry councils. 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.

Kathleen Plowman
CEO Animal Health Australia.

Summary

Introduction

This Regulation Impact Statement (RIS) assesses the proposed *Australian Animal Welfare Standards and Guidelines - Cattle* ('the proposed standards'). These proposed standards have been prepared under a system endorsed by all state and territory governments.

The proposed standards are intended to provide direction for all people responsible for the care and management of cattle and to provide the basis for developing and implementing consistent legislation and enforcement across Australia. They reflect available scientific knowledge, current practice and community expectations. It is intended that the proposed standards will replace the existing *Model Code of Practice for the Welfare of Animals – Cattle* (MCOP - 'the existing code') and other relevant existing standards, if and when endorsed by the Agriculture Ministers Forum (AMF).

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 as listed in Appendix 4 of this RIS.

The Australian Government is responsible for export policy and government-to-government trade facilitation including treaties; the regulation of the livestock export industry, including licensing livestock exporters, and issuing export permits and health certificates certifying that livestock meet importing country requirements.

Problems and policy objective

The proposed national standards are not starting from a zero base. There are already some nationally inconsistent regulations in place for cattle. However, there are also inadequate, confusing and inconsistent existing statements in the existing MCOP (refer to Part 1.2.3.3 of this RIS).

The main problems underlying the development of the proposed national standards are those relating to:

- *Risks to the welfare of cattle* due to deficiencies in the existing MCOP for the welfare of cattle; and to a lesser extent
- *Uncertainty for industry* due to a lack of clear and verifiable standards; and
- *Excess regulatory burden* arising from a lack of national consistency and unnecessary standards.

The following overarching policy objective is identified:

To minimise risks to cattle welfare and unnecessary regulatory burden in a way that is practical for implementation and industry compliance.

Policy development process

Extensive consultation has taken place over the last three years with government agencies, researchers, industry and animal welfare organisations in the development of the proposed standards. The proposed standards were developed under the auspices of the former Animal Welfare Committee (AWC), which previously reported to the former Standing Council on Primary Industries. Membership of AWC comprised representatives from each of the State and Territory departments with responsibility for animal welfare, CSIRO, and the Australian Government Department of Agriculture.

Development of the proposed standards and guidelines was initially undertaken by a small writing group comprising research, government and industry representatives; supported by a widely representative Standards Reference Group (SRG). The SRG comprises representatives of national organisations representing the livestock transport industry, the production, saleyard, feedlot and processing sectors of the cattle industry, animal welfare organisations, state and federal regulators, policy specialists and technical experts. These industry organisations are the key connection with livestock owners and managers at the enterprise level. The professional industry networks are vital to the standards development consultation and communication efforts.

At the SRG meetings in 2009 and 2010, alternative positions and views were expressed by governments, and national industry and animal welfare organisations regarding the need to consider various practicable alternatives, resulting in a provisional list of variations to the proposed standards. This list was prioritised to seven variations by the Animal Welfare Committee and the cattle industry, on the basis of controversial issues that might provide further improvements in animal welfare, but before the costs of such improvements had been estimated.

An extended public consultation was held prior to development of this Decision RIS. The SRG contributed extensively to the development of this RIS.

Options considered

After consideration of public submissions and advice from the SRG, the options now evaluated in this Decision RIS are:

- **Option A:** Converting the proposed national standards into national voluntary guidelines (the minimum intervention option);
- **Option B:** The proposed national standards as currently drafted;
- **Option C:** One or more variations of the proposed national standards as follows:
    - *Option C1*: pain relief for all spaying
    - *Option C2*: banning flank spaying/flank webbing
    - *Option C3*: banning permanent tethering

- *Option C4*: banning the use of dogs on calves
- *Option C5*: banning caustic dehorning
- *Option C6*: banning induction of early calving except for veterinary requirements
- *Option C7*: banning electro-immobilisation.

Option A would be likely to lead to improved animal welfare outcomes, depending on the level of voluntary adherence to the national guidelines, through a better management of risks to animal welfare in both beef and dairy cattle farms. However, any resulting improvement over the base case is likely to be significantly less than that which would occur under a situation of mandatory compliance with enforceable, risk-based and clearly understood standards.

Option B would involve the issuing and promotion of agreed national risk-based standards once every 5 years post-endorsement by the AMF. Unlike Option A, these standards would become regulations and would be mandatory (i.e. compliance would be mandatory). The mandatory national standards would replace the existing model codes of practice (MCOP) and other state or territory standards under the 'base case'. Option B would lead to much improved animal welfare outcomes, through better management of risks to animal welfare in cattle farms due to mandatory compliance with enforceable risk-based standards.

Options C1 to C7 would each involve the issuing and promotion of national standards, essentially the same as Option B but with selected higher standards of animal welfare. Like Option B, any such variations of the proposed mandatory national standards would also replace the MCOP and other relevant state or territory codes of practice that currently exist under the 'base case'.

Public consultation process and feedback

The public consultation objective was to seek the views and advice of interested parties in further formulating a preferred national regulatory framework for cattle welfare.

Specifically, views from interested parties were sought about how the:

- Draft cattle welfare standards would ensure the welfare of cattle, and the
- Associated Consultation RIS demonstrates the need for the standards, and identifies the key costs and benefits for cattle producers, government and the wider community.

After some delays in 2011 and 2012, an open public consultation period ran from 7 March – 5 August 2013. Government ministers directed that consultation be extended from the agreed 60 days for a further 90 days just before the initial closure.

Public input of information and opinion was specifically encouraged via a series of public consultation questions interspersed at appropriate points within the text of the RIS. Information was made available via a well-designed website with associated documents including discussion papers on major issues, 'frequently asked questions' and a comprehensive pre-formed survey.

Three categories of submission were received - 66 substantial written documents, and 20,250 email letters, many of the latter in a similar format. (Animal Health Australia preferred respondents to forward written comments electronically). There were 1566 responses (in part or whole) to the online survey, with or without additional comments. The substantial submissions are publicly available at the following web site:

www.animalwelfarestandards.net.au

In general terms 17 animal welfare groups supported Option C (Variations C1-C7) as presented in the RIS; in addition several suggested further variations.

Of the 26 Cattle industry organisations (notably CCA, Northern Pastoral Company Group, AgForce and ALRTA) and many individual producer submissions generally supported Option B (the proposed standards as drafted) and opposed or had concerns about the application of some of the variations under Option C.

The five government submissions received generally supported Option B (the proposed standards as drafted), with some variations as discussed below. Governments have otherwise indicated support for Option B throughout the development process.

The Queensland Government (DAFF) submission took issue with some aspects of the Consultation RIS, and implied support of all variations, as discussed in Part 1.3 of this Decision RIS.

The Victorian DEPI supported Option C1 on the basis that it is a vet only procedure in Victoria, Option C4, on the basis of a claimed inconsistency with LTS and Option C7 because electro-immobilisation is banned under POCTA. In relation to Option C6, Victorian DEPI support adoption of alternative practices and phasing out of calving induction.

The Northern Territory Department of Primary Industry and Fisheries (NT DPIF) supported Option B and the variations except for the C2 ban on flank spaying and C7, the ban on electro-immobilisation. Some of these variations are of low relevance to the NT DPIF as there is no dairy industry there.

The Tasmanian Department of Primary Industries, Parks, Water and Environment did not indicate a preference for an option whilst supporting the standards with some qualifications relating to existing law in Tasmania (vet only pain relief over 6 months, vet only electro immobilisation) and revisions to other standards.

Most of the shorter submissions (letters) expressed a preference for higher welfare standards consistent with the major animal welfare organisations. The overall outcome of the survey is that it added little to the overall process with views expressed being consistent with other submissions and no new facts emerging.

The post consultation reference group meeting deliberated on the submissions and the resulting minor amendments to the proposed national standards prior to the preparation of this Decision RIS. In summary, the public consultation process

resulted in one new standard (S7.1a), revision to 15 standards and 20 guideline revisions or inclusions. These decisions are recorded in the Public Consultation – Response Action Plan, available at animalwelfarestandards.net.au

Impact analysis

All impacts were measured against the 'base case' which means the relevant status quo, or the situation that would exist if the proposed standards were not adopted i.e. existing standards plus market forces and the relevant federal, state and territory legislation. The base case provided the benchmark for measuring the incremental costs and benefits of the proposed standards and other options. It is important to note that the market forces component of the base case applies to the benefits as well as the costs.

The cost-benefit analysis in this Decision RIS has been revised in the light of some additional information provided during the public consultation phase. Nevertheless, comparing the costs and benefits against the 'base case' continues to be hindered by an inherent and unresolvable inability to quantify the benefits to animal welfare. This is particularly important for castration, spaying, dehorning, and tail docking procedures, which may affect a large number of cattle as illustrated in Table 21 below.

Table 21 –Summary of number of cattle affected annually by welfare standards under Option B as compared to the base case

Welfare issue under Option B	Number of cattle affected
Inspection of cattle at intervals	% of 27,536,177
Better handling of cattle	% of 16,746,366
Reduced exhaustion of cattle	% of 23,529,937
Reduced misuse of electric prodders	% of 27,536,177
Reduced biting of cattle from dogs not under effective control	unknown
Reduced biting of calves from unmuzzled dogs	unknown
Exercise of permanently tethered cattle	150
Electro-immobilisation performed by competent persons	% of 179,548
Electro-immobilisation not be used as pain relief	% of 241,503
Improved less painful cattle identification techniques	% of 27,536,177
Banning of painful head branding procedure for cattle	% of 2,817,749
Requirement of pain relief for castration	66,012
Requirement of pain relief for dehorning	174,733
Conditional use of caustic disbudding	% of 24,346
Accreditation and competency required for spaying	% of 730,621
Requirement of pain relief for spaying	244,417
Banning the use of vaginal spreaders	10,174
Inspection of calving cattle	% of 14,568,089
Humane killing or receipt of colostrum for induced calves less than 12hrs old	% of 84,139
Prevention of accumulation of faeces and urine in calf rearing indoor systems	548
Improved heat stress management for dairy cattle	% of 1,600,000
Tail docking only to occur under veterinary advice and for welfare reasons	61,800
Improved heat stress management and dietary outcomes for cattle in unaccredited feedlots	unknown
Humane killing of calves over 24hrs of age	unknown

While the number of cattle affected by risks to animal welfare from various practices may seem an obvious measure – such a measure fails to take into consideration a)

whether or not a practice is ongoing and b) the impact of the procedure or practice. That is to say, simply providing for the number of animals affected does not provide any information regarding the duration of the effect nor the impact of the effect on the animal. For example, castration, spaying, dehorning, and tail docking are more serious welfare issues than tethering, although the latter practice may occur over the lifetime of the animal, as opposed to just a one-off occurrence. Therefore, the combination of factors that determine the *severity of the consequence* include the:

- number of animals affected (small or large);
- duration of practice (one-off or ongoing); and
- impact of animal husbandry procedure (primarily invasive or less-invasive).

Notwithstanding this caveat, the number of cattle affected by each practice or procedure is discussed *only* where there is certainty or where there are robust assumptions based on experience in the industry. There is in many cases a degree of uncertainty surrounding the number of cattle affected, due to lack of data or history of experience. In these cases, the number of cattle affected is not provided in this Decision RIS.

On this basis, the impact analysis presented in this Decision RIS should be considered with caution, especially given the existing unknowns in relation to cattle welfare and the number/impact and duration of various procedures or practices. In this respect, a complete analysis and 'matching' of costs and benefits for each option is not possible.

Notwithstanding the constraints, both qualitative and quantitative impacts have been considered and the following evaluation criteria have been used to assess the impacts:

- Animal welfare benefits;
- Reduction in regulatory burden; and
- Net compliance costs to industry and government.

The main criterion for evaluating the proposed standards and the feasible alternatives is net benefit for the community, in terms of achieving the policy objective. The incremental costs and benefits of options relative to the base case are summarised in Table 36 below. The Table summarises the qualitative and quantitative impacts for each of the options presented in the Decision RIS.

Table 36: Incremental 10-year costs and benefits of Options A and B and Options C1 to C7 relative to the base case – 2012-13 dollars ($m)

Option	I. Incremental Animal welfare benefits (unquantifiable)	Number of cattle affected under Criterion I	II. Reduction in regulatory burden (unquantifiable)	III. Incremental compliance costs to cattle farmers (quantifiable)
Option A (guidelines)	< B/C	A small undetermined % of 27.54m	< B/C	$0.00
Option B (Proposed national standards)	> A	A larger undetermined % of 27.54m	> A	$52.45
Option C1	> B	As with Option	= B	$89.94

Option	I. Incremental Animal welfare benefits (unquantifiable)	Number of cattle affected under Criterion I	II. Reduction in regulatory burden (unquantifiable)	III. Incremental compliance costs to cattle farmers (quantifiable)
(pain relief for all spaying)		B + 486,204		
Option C2 (banning flank spaying/flank webbing)	> B	As with Option B + 244,417	= B	$257.05
Option C3 (banning permanent tethering)	> B	As with Option B	= B	$50.84
Option C4 (banning the use of dogs on calves)	> B	As with Option B +1.58m	= B	$52.87
Option C5 (banning caustic dehorning)	= B	As with Option B	= B	$52.93
Option C6 (banning induction of early calving except for veterinary requirements)	> B	As with Option B + 84,139	= B	$525.70
Option C7 (banning electro-immobilisation)	> B	As with Option B + 241,503	=B	$59.85

The welfare impact, as well as costs or cost savings per animal affected in going from the base case to Options A or Option B to Options C1 to C7 under Option C is summarised as follows:

- The likely animal welfare benefits of Option B and Options C1 to C7, whilst unquantifiable, are all likely to produce minor to significant welfare improvements over the base case and Option A (voluntary guidelines in lieu of mandatory standards).

- All variations under Option C, except Option C5 (banning caustic dehorning), would be likely to result in greater welfare benefits than Option B. However, all variations under Option C, except Option C3 (banning permanent tethering), would be likely to result in higher quantifiable costs than Option B; with Options C2 (banning flank spaying/flank webbing) and C6 (banning induction of early calving except for veterinary requirements) being substantially higher in quantifiable costs.

- Option C1, which requires pain relief for all spaying, would provide the highest welfare impact for the greatest number of animals. However, as discussed above, it is difficult to assess and match the relative welfare benefits and costs for each option/variation so that policy makers have a clear picture of the expected net benefits of the proposed reforms. In the case of Option C1, it would be misleading to focus on the quantifiable costs only, without better appreciation of the unquantifiable welfare benefits.

- There is no significant interdependency between the individual options. There is a small relationship between Options C1 and C2, where adoption of C2 simultaneously with C1 would make C1 adoption slightly cheaper, because with the absence of the flank approach not all cattle are able to be DOT or passage spayed and therefore would not require pain relief. However, this cost saving

would be small in comparison to the overall cost of adopting C1 and C2. (Adoption of C2 without adoption of C1 is possible but not likely to be recommended).

Finally, Table 39 estimates the incremental average net cost impact per cow of Options A and B and Options C1 to C7. Option C6 would result in the highest cost per cow (i.e. $19.09) and the lowest would be Option C3 at $1.85 per cow.

Table 39: Estimated incremental average net cost per cow of Options A and B and Options C1 to C7 2012-13 dollars

Option/Variation	Incremental net cost per cow (Australia)
Option A	$0
Option B	$1.90
Option C1	$3.27
Option C2	$9.34
Option C3	$1.85
Option C4	$1.92
Option C5	$1.92
Option C6	$19.09
Option C7	$2.17

Note: Care should be taken in using the average cost per cow in a jurisdiction to interpret the impact of standards or variations on a particular industry sector or an individual farmer's herd.

The basis of the selection of the preferred option under the COAG guidelines is the one that generates the greatest net benefit for the community.

Option C1, which is variation of the proposed standards under Option B (but which requires pain relief for all spaying), would provide the highest welfare impact however, it would cost an additional $37.49m more than Option B over 10 years in 2012-13 dollars. According to experts in cattle management and welfare at the SRG meeting on the 11th of December 2013 and in the context of the difficulty in measuring animal welfare benefits – it was considered that such a high incremental cost of Option C1 over Option B could not be justified on welfare grounds. Furthermore, it was advised by the SRG that none of the additional costs of Options C2 and C4 to C7 over Option B ranging from $0.41m to $473.25m over 10 years in 2012-13 dollars (see Table 38) could be justified in terms of the additional animal welfare benefits over Option B and therefore were not supported on net benefit grounds.

Option C3 (banning permanent tethering), would eliminate the need for daily exercise of tethered cattle. This has been estimated at about $1.61m over 10 years in 2012-13 dollars as a result of the costs saved from not having to exercise tethered cattle. In addition, while banning permanent tethering would affect a small number of cattle, it would be expected to provide slightly more welfare benefits compared to Option B.

As indicated in Table 36, Option C3 is expected to have greater animal welfare (unquantifiable) benefits than Option B and incremental (quantifiable) compliance costs to cattle farmers less than Option B. However, under Option C3 there would be an unquantifiable impact on the choice of individuals to keep cows in a house paddock as pets (which a small percentage of farm families do). Banning tethering may make it difficult for individuals to enjoy the benefits of cows as pets. As judged

by members of the SRG at its meeting on the 11th of December 2013, the quantifiable cost savings does not outweigh the potential unquantifiable costs under Option C3 including loss of choice in having cattle as pets.

However, overall, based on the analysis undertaken in this RIS and feedback through consultation, Option C3 appears to generate the greatest net benefit for the community. On this basis, Option C3 is the preferred option, which is effectively Option B with the ban on tethering.

Recommendation

The proposed standards and guidelines, including the variations under Option C, have been developed over a period of five years with broad inputs from a wide range of stakeholders including by the cattle industries and associated industries at all levels, moderated by the SRG. The standards are expected to achieve regulatory certainty for industry and reassurance to the community at low to moderate national cost (with some variability between jurisdictions).

While it is up to Ministers to decide on the options presented in this RIS (or any other option), the analysis presented in this RIS suggests that Option C3 is the preferred option that generates the greatest net benefit for the community. It should be also noted that the SRG considered Option B as a preferred option, without adopting any of the variations offered under Option C.

The estimated jurisdictional impacts of the preferred option (Option C3) are shown below in Table 26. They are presented in present value terms while the average costs per cow in each state and territory are shown in Table 27. All other proposed standards have been assessed as imposing negligible incremental costs relative to the base case.

Table 26 – Quantifiable 10-year incremental cost of Option C3 by state and territory – 2012-13 dollars (7% discount rate) ($m)

Proposed Standard	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	TOTAL
5.4 (dog control)	$0.66	$0.39	$0.47	$0.11	$0.11	$0.06	$0.01	$0.00	$1.81
5.5 (dog muzzling)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
5.6 (tethering ban)	$1.01	$0.10	$0.10	$0.10	$0.10	$0.10	$0.00	$0.00	$1.51
5.7 (Electro-immobilisation training)	-$0.20	$0.02	$0.07	$0.01	$0.01	-$0.02	$0.01	$0.00	-$0.11
6.2 (Castration with pain relief)	$0.00	$0.43	$2.20	$0.00	$0.55	$0.00	$0.61	$0.00	$3.79
6.4 (Dehorning with pain relief)	$1.76	$1.41	$4.48	$0.00	$1.15	$0.00	$1.22	$0.00	$10.03
6.7 (Spaying training)	$0.00	$0.00	$6.49	$0.00	$0.70	$0.00	$1.37	$0.00	$8.57[1]
6.8 (Spaying with pain relief)	$0.00	$0.00	$14.78	$0.00	$1.08	$0.00	$2.20	$0.00	$18.06

[1] This estimate includes a one-off cost for a competency unit for the establishment of a syllabus and materials estimated to be $10,481 in present value dollars. It is not captured for any particular jurisdiction (by columns) as it is unknown where the Registered Training Organisation will be based. This explains the discrepancy between the horizontal sum of the totals by jurisdiction and the vertical sum of the totals by proposed standard.

Proposed Standard	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	TOTAL
6.9 (Banning use of spreaders)	$0.00	$0.00	$0.50	$0.00	$0.02	$0.00	$0.04	$0.00	$0.56
7.2 (Inspection of calving cows)	$0.63	$0.63	$0.71	$0.25	$0.12	$0.14	$0.08	$0.00	$2.56
8.4 (calf feeding requirements)	$0.13	$0.00	$0.06	$0.06	$0.04	$0.12	$0.00	$0.00	$0.41
9.2 (Heat stress management in dairy cattle)	$0.13	$0.72	$0.09	$0.04	$0.03	$0.00	$0.00	$0.00	$1.01
9.3 (Banning tail docking unless for welfare reasons)	$0.00	$0.02	$0.00	$0.00	$0.00	$0.01	$0.00	$0.00	$0.03
10.2 (Keeping records of feed quality)	$0.01	$0.00	$0.02	$0.00	$0.00	$0.00	$0.00	$0.00	$0.04
10.4 (Heat emergency requirements)	$0.09	$0.05	$0.21	$0.02	$0.04	$0.01	$0.02	$0.00	$0.43
11.5 (Banning of blunt force trauma killing of calves >24hrs of age)	$0.23	$1.42	$0.17	$0.08	$0.06	$0.16	$0.00	$0.00	$2.12
Total PV	***$5.46***	***$5.32***	***$30.45***	***$0.77***	***$4.13***	***$0.74***	***$5.57***	***$0.01***	***$50.84***

Care should be taken in using the average cost per cow in a jurisdiction to interpret the impact of standards (or variations) on a particular industry sector or an individual farmer's herd.

Table 27 – Range of average 10-year cost *per cow* as a result of Variation C3 by state and territory – 2012-13 dollars

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	TOTAL
Total ($m)	$5.46	$5.32	$30.45	$0.77	$4.13	$0.74	$5.57	$0.01	$50.84
Total beef and dairy herd (m)	5.58	3.39	12.54	1.20	2.01	0.61	2.20	0.01	27.54
Cost per cow	**$0.98**	**$1.57**	**$2.43**	**$0.64**	**$2.05**	**$1.21**	**$2.53**	**$0.86**	**$1.85**

The method of implementation of the preferred option is a matter for each jurisdiction according to the provisions of their own enabling legislation (refer to Appendix 4).

To the extent that the majority of cattle farms and approximately 50% of feedlots are defined as small businesses (i.e. have less than 20 FTE staff) - the proposed national standards and variations (Options C1 to C7) would be unlikely to disproportionately impact on small business. For example, the additional cost per beef cow under Option C3 is likely to be approximately $1.85 (based on a total herd of 27.54 million cattle and a total 10-year cost of this option of $50.84m in 2012-13 dollars). Assuming an average supermarket retail yield of 180kg meat per cow, this additional cost would be about 1.03 cents per kilo of meat. This additional cost is relatively minor compared to seasonal and other fluctuations in meat prices that consumers face. At $1.85 per cow, this would represent only about 0.25% of the average replacement cost of a beef cow, which is estimated to be $750. [2]

In conclusion, based on the analysis undertaken in this RIS and feedback through consultation, Option C3 appears to generate the greatest net benefit for the community. On this basis, Option C3 is the preferred option, which is effectively Option B with the ban on tethering.

2 A contemporary estimate from public sources

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1.0 Background

1.1. Introduction

This Regulation Impact Statement (RIS) assesses the proposed Australian Animal Welfare Standards and Guidelines - Cattle ('the proposed standards') and should be read in conjunction with that document.[3] The proposed standards have been prepared under a system endorsed by all state and territory governments. The development of nationally consistent animal welfare arrangements for various industry sectors was identified as a major priority under the Australian Animal Welfare Strategy (AAWS).

The appointment of Animal Health Australia (AHA) as the project manager for the conversion of the existing livestock model codes into standards that can be regulated, was agreed by state and territory ministers for primary industries. 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.

The purpose of the proposed standards is to set standards for regulating the welfare of all cattle, including both beef and dairy cattle, in all types of farming enterprises in Australia. They will apply to all those with responsibilities for the care and management of cattle. It is intended that the proposed standards will replace the existing *Model Code of Practice for the Welfare of Animals – Cattle* ('the existing code'). The proposed standards and guidelines should be read in conjunction with other requirements for cattle farming, and with related Commonwealth, state and territory legislation (refer to Appendix 1 of this RIS).

The proposed standards are complemented by guidelines providing advice and/or recommendations to achieve desirable animal welfare outcomes. It is not intended that compliance with the guidelines will be made mandatory by law.

On the other hand, the proposed standards, if endorsed by the Agriculture Ministers Forum (AMF), are intended to be adopted or incorporated into regulations by the various jurisdictions, after which compliance with the standards will become mandatory. For evaluation purposes, this RIS treats the proposed standards as if they are mandatory;[4] and uses relevant existing Australian legislation, standards[5] and industry practices as the base case for measurement of incremental costs and benefits (see Part 4.2 of this RIS).

The RIS is required to comply[6] with the *'Best Practice Regulation - A Guide for Ministerial Councils and National Standard Setting Bodies'* as endorsed by the Council of Australian Governments (COAG) in October 2007. COAG has agreed that all governments will ensure that regulatory processes in their jurisdiction are consistent with the following principles:

1. Establishing a case for action before addressing a problem;

[3]The RIS evaluates the standards only – not the guidelines
[4]No costs are imposed if compliance with standards is voluntary
[5]'Must' statements or practices specified as unacceptable in government codes of practice
[6]As independently assessed by the Commonwealth Office of Best Practice Regulation (OBPR)

2. A range of feasible policy options must be considered, including self-regulatory, co-regulatory and non-regulatory approaches, and their benefits and costs assessed;

3. Adopting the option that generates the greatest net benefit for the community;

4. In accordance with the Competition Principles Agreement, legislation should not restrict competition unless it can be demonstrated that:-

a. the benefits of the restrictions to the community as a whole outweigh the costs, and

b. the objectives of the regulation can only be achieved by restricting competition;

5. Providing effective guidance to relevant regulators and regulated parties in order to ensure that the policy intent and expected compliance requirements of the regulation are clear;

6. Ensuring that regulation remains relevant and effective over time;

7. Consulting effectively with affected key stakeholders at all stages of the regulatory cycle; and

8. Government action should be effective and proportional to the issue being addressed.

The RIS process has been divided into two phases. **Phase 1** was to prepare a Consultation RIS for public consultation. **Phase 2** was to prepare this Decision RIS for AMF, taking into account public submissions.

It should be emphasised that this RIS is limited to evaluating the proposed national standards and feasible alternatives, rather than Commonwealth, state or territory legislation or other standards or codes of practice. However, the following relevant background information may be helpful to interested parties in understanding the proposed standards within their legislative, economic, national and international contexts.

1.2. Setting the scene

1.2.1 Overview of the Australian cattle industries

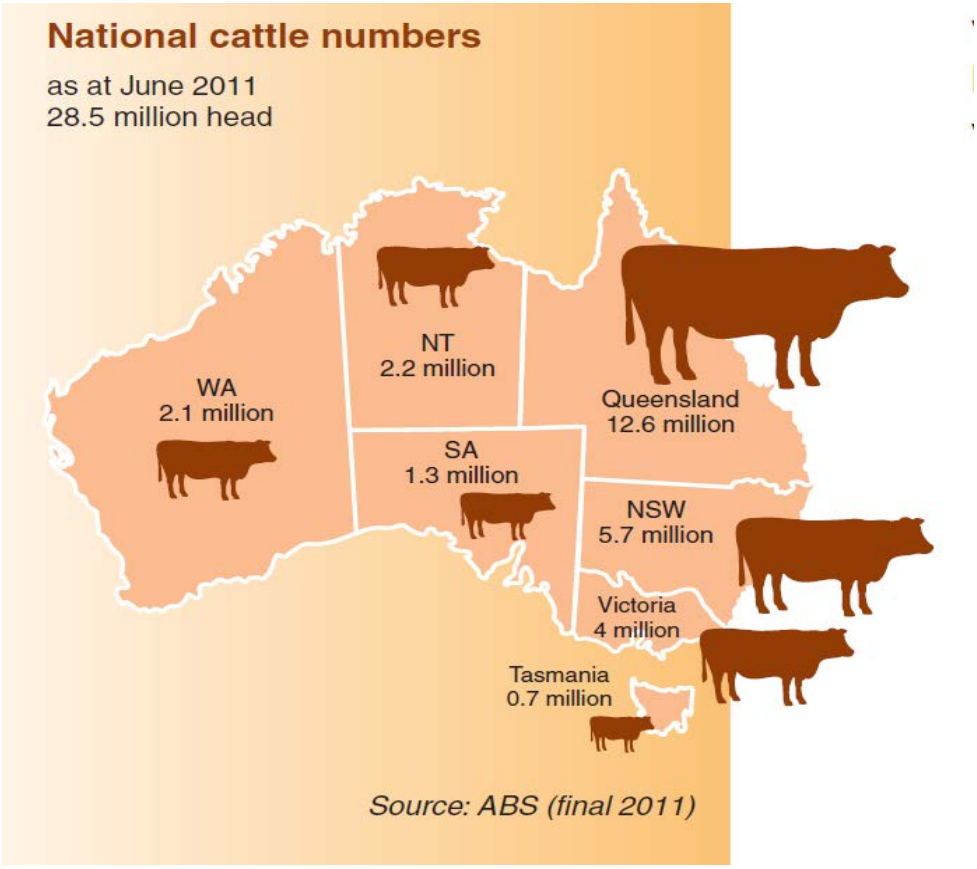
To set the scene for this RIS, the following overview of the Australian beef and dairy industries has been obtained via Meat and Livestock Australia and Dairy Australia. The various facts and figures are based on MLA/DA/ABS/ABARE[7] 2010-11 data unless otherwise stated.

Beef industry

The Australian beef industry (grass fed and feedlots) accounts for 58% of all farms with agricultural activity; that is, 79,322 properties with beef cattle. There are 28.5 million beef cattle including 12.8 million cows and heifers, as shown in Figure 1. The total annual value of Australian cattle and calf production is approximately $7.9 billion. Cattle contributed 16% of the total farm value of $48.7 billion in 2011-12.

[7] Refer to glossary

Figure 1 – National cattle numbers



Graphic courtesy of Meat and Livestock Australia.

The red meat industry employs approximately 200,000 workers across the farm, processing and retail sectors.[8] The direct contribution of beef and live cattle to gross domestic product is approximately 1%. Queensland is the biggest producer of beef and veal.[9]

Australia is the world's sixth largest beef producer; and the second largest exporter of beef after Brazil, producing 4% of the world's beef supply. 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. The beef industry contributes 12% to total Australian farm exports (the most valuable in 2010-11). Australia's largest export market is Japan (38.9%) followed by the USA and South Korea.[10]

Dairy industry

The dairy industry is Australia's third largest rural industry, with an annual $3.9 billion value at farmgate. There are 6,956 dairy farms and 1.6 million cows, with an average herd size of 230 cows. Direct employment in the industry is approximately 40,000.[11]

[8] MLA website
[9] *Ibid*
[10] *Ibid*
[11] Dairy Australia website

The main dairy products are cheese (34%), drinking milk (25%) and milk powders/butter (28%). There is also a well-established market for young dairy and dairy cross non-replacement (mainly male) calves.

Thirty eight per cent of Australian milk production is exported, at an annual value of $2.77 billion constituting 7 per cent of world dairy trade. The major export markets are Japan and Greater China, followed by Singapore, Indonesia and the Philippines in that order.[12]

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.

'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.[13]

Under the Australian Animal Welfare Strategy (AAWS), Australia accepts the agreed international definition of animal welfare from the World Organisation for Animal Health (OIE):

> Animal welfare means how an animal is coping with the conditions in which it lives. An animal is in a good state of welfare if (as indicated by scientific evidence) it is healthy, comfortable, well nourished, safe, able to express innate behaviour, and if it is not suffering from unpleasant states such as pain, fear, and distress. Good animal welfare requires disease prevention and veterinary treatment, appropriate shelter, management, nutrition, humane handling and humane slaughter/killing. Animal welfare refers to the state of the animal; the treatment that an animal receives is covered by other terms such as animal care, animal husbandry, and humane treatment.[14]

In accordance with this definition, and with long-established animal welfare science principles, it is important when dealing with animal welfare to separate factual considerations of welfare from attitudes and moral judgments about what is appropriate (ethics).[15] Two leading UK researchers note:

> If people feel that it is important to try to change the laws about the treatment of animals, they must have more to go on than just their intuition. 'Suffering' must be recognisable in some objective way. Otherwise the laws which emerge are almost bound to be arbitrary and might even fail to improve the lot of animals much, if at all. (Dawkins, 1980, p. 2)[16]

> We should use the word 'welfare' in a scientific way so that it is useful when considering animal management or when phrasing legislation. Welfare is a characteristic of an animal, not something given to it, and can be measured using an array of indicators. (Broom 1991, p. 4174)[17]

[12] *Ibid.*
[13] Productivity Commission, 1998
[14] Article 7.1.1. World Organisation for Animal Health 2010, code. Viewed 10 June 2012
[15] Productivity Commission, 1998
[16] Dawkins, M.S., 1980 cited in Productivity Commission, (1998), p.22
[17] Broom, D., 1991 cited in Productivity Commission, (1998), p.22

Animal welfare science seeks to determine the real needs of the animal. Welfare can be measured using an array of objective indicators, such as the level of cortisol in the blood as an indicator of stress. Animal psychology can also be used to determine actual animal preferences, rather than human preferences on behalf of the animal.

Accordingly, this RIS does not deal with perceived benefits of the options; but rather looks strictly at factual considerations, based on scientific evidence where available.

1.2.3 Relevant legislation, standards and guidelines

1.2.3.1 Responsibilities of governments

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.

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 as listed in Appendix 4 of this RIS.

Animal welfare concerns arising in particular industries are often addressed in codes of practice or standards developed jointly by government and the industry. All states and territories have codes of practice under their legislation setting standards and/or guidelines for the welfare of animals. They all have the power to make compliance with animal welfare standards mandatory. They can either make regulations to require compliance with specified standards or they can incorporate the requirements of standards into the regulations themselves. The existing *Model Code of Practice for the Welfare of Animals – Cattle* has been adopted by all jurisdictions except Victoria, which has its own code of practice for cattle (based on the MCOP).

The Australian Government has specific powers in relation to external trade and treaties. The Australian Government is responsible for export policy and government-to-government trade facilitation, the regulation of the livestock export industry, including licensing livestock exporters, and issuing export permits and health certificates certifying that livestock meet importing country requirements. These responsibilities directly affect the cattle industries.

The main method of dealing with animal welfare issues at the national level to date has been through the development of model codes of practice (now standards) in consultation with industry and other stakeholders, for endorsement by the former Primary Industries Ministerial Council (PIMC), and the former Standing Council on Primary Industries (SCoPI). The 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 or standards are developed primarily in recognition of government purposes, they are separate to the various wholly voluntary codes of practice and quality assurance programs that may be developed from time to time by industry associations.

Local governments have responsibility for some areas of animal control (e.g. cattle at large) and for public health which can have a significant effect on animal welfare.

This includes the provision of feedback to state/territory governments in order to change legislation and for the promotion and maintenance of responsible animal ownership.[18]

1.2.3.2 Australian Animal Welfare Strategy

In 2006, the former PIMC asked the former Primary Industries Standing Committee (PISC) to develop a nationally consistent approach to the development, implementation and enforcement of Australian animal welfare standards.

The Australian Animal Welfare Strategy (AAWS) endorsed in May 2004 by PIMC outlined directions for future improvements in the welfare of animals and to provide national and international communities with an appreciation of animal welfare arrangements in Australia. As part of the AAWS, enhanced national consistency in regulation and sustainable improvements in animal welfare based on science, national and international benchmarks and changing community standards were identified as areas of priority effort. Work is now underway to update the Model Codes of Practice and convert them into Australian Animal Welfare Standards and Guidelines. The new documents will incorporate both national welfare standards and industry guidelines for each species or enterprise.

The aim of the AAWS was to assist in the creation of a more consistent and effective animal welfare system in Australia. The AAWS, through its participants and projects, helped to clarify the roles and responsibilities of key community, industry and government organisations. The animal welfare system in Australia aims to ensure all animals receive a standard level of care and treatment. The level of care requires that all animals be provided with adequate habitat, handling, sanitation, nutrition, water, veterinary care, and protection from extreme weather conditions and other forms of natural disasters.

1.2.3.3 The Model Codes of Practice (MCOP) Review

For the past 30 years, the welfare of livestock in Australia has been supported by a series of Model Codes of Practice for the Welfare of Animals. As community values and expectations have changed, and our international trading partners have placed greater emphasis on livestock welfare, the usefulness and relevance of these model codes has been called into question; as has the process by which these model codes have been revised and developed.

The purpose of the original model codes was to increase uniformity in the existing state and territory codes of practice and their use of animal welfare legislation. The process used to develop or review a model code was conducted by one of the states or territories in consultation with the others. As there was no official system for developing or reviewing a code there was substantial variation in the quality, consultation (the membership of standards writing groups and the consultation process varied widely), timeliness and content of the codes. The lack of consistency between and within individual codes meant that farmers and workers that operated between jurisdictions were uncertain about their responsibilities in relation to animal welfare.

[18]Primary Industries Standing Committee, 2011

Livestock industries, service providers and animal welfare groups consistently rated this lack of consistency as a major problem and one that need to be given a very high priority for attention. In addition the reviews of codes did not routinely consider contemporary animal welfare science as a basis for a standard or involve the preparation of a rigorous economic impact assessment. Another problem was that the development and review process was unfunded and relied on the in-kind contribution of stakeholders including representatives of state and territory governments and the Federal Government.

To address these issues, the former Primary Industries Standing Committee (PISC) asked the Australian Government Department of Agriculture to consider arrangements for reviewing and developing the model codes as a basis for Australia's future livestock welfare regulation. These arrangements were reviewed in 2005[19], and a new approach was recommended that would ensure consistency, scientific soundness, appropriate consultation and legal enforceability. The responsibility was handed to AHA to progress the recommendations and to facilitate the development of a preferred approach with government and livestock industry members. This collaborative process resulted in the development of the Australian Animal Welfare Standards and Guidelines Business Plan,[20] which was endorsed by the former Primary industries Ministerial Council (PIMC) 10 in May 2006. Livestock industries and governments agreed to a recommendation to develop standards to be underpinned by legislation and best practice guidelines clearly separated but contextually linked in the same document.

Livestock industries have not found the existing model codes useful as communication vehicles because of their inconsistent, complex and often confusing mixture of standards and guidelines (refer to Part 2.1.2 of this RIS). The new standards will provide greater certainty for all stakeholders, and in particular livestock industries, than the model codes by regulating standards in legislation and by achieving nationally consistent outcomes. Nationally consistent standards and guidelines will promote the development and efficient operation of national Quality Assurance (QA) programs. This means that QA schemes will not require different rules for different jurisdictions and that auditing the schemes will be much simpler.

The overall situation within agriculture departments and livestock industry bodies was and is:

> There is general agreement about the desirability of having national standards of livestock welfare that are consistently mandated and enforced in all states and territories. The need for improved processes, broader consultation and linkages to industry quality assurance programs also is generally acknowledged. There is broad consensus amongst all governments and peak industry bodies regarding a preferred process for revising and developing new welfare standards and guidelines.[21]

The first endorsed Australian animal welfare standards and guidelines development has been the for the land transport of livestock.[22] The plan has been revised and

[19] Neumann, 2005
[20] Animal Welfare Standards and Guidelines Development Business Plan, Animal Welfare Standards website
[21] Animal Welfare Standards and Guidelines Development Business Plan, Animal Welfare Standards website
[22] Ibid

continues to be the basis for the development process for the cattle and sheep welfare standards and guidelines.

1.2.3.4 Role of standards and guidelines

For the purposes of this RIS, and especially the cost/benefit assessment in Part 4.0 of the RIS, it is important to clearly distinguish between standards and guidelines. These terms are defined in the proposed national standards document as follows:

> The standards provide the basis for developing and implementing consistent legislation and enforcement across Australia, and direction for all those responsible for cattle. They reflect available scientific knowledge, current practice and community expectations.
>
> The standards and guidelines may be reflected in the industry-based quality-assurance programs that may include cattle welfare provisions.
>
> The position taken by PIMC 15, in May 2009, is that guidelines, regardless of their purpose in existing Codes and the new Standards and Guidelines documents, will not be regulated.
>
> In particular agreement was reached that:
>
> "All future revisions of Model Codes and 'Australian Standards and Guidelines' documents must provide a number of:
>
> a. clear essential requirements ('standards') for animal welfare that can be verified and are transferable into legislation for effective regulation, and
>
> b. guidelines, to be produced concurrently with the standards but not enforced in legislation, to be considered by industry for incorporation into national industry QA along with the standards."

It is important to note that the standards and guidelines is a dual purpose document serving as the basis for development of regulations (the standards); and also to communicate to the Australian community the acceptable welfare practice and recommendations (guidelines) for better welfare practice. The non-enforcement of the recommendations (guidelines) is a fundamental premise on which industry engagement and support for this process is based. The need for regulatory certainty and stability is important for those that own and invest in livestock.

However, the terms 'best practice' or 'better practice' are not used in the proposed standards document. These are concept used by industry for business benchmarking purposes, rather than as aspects of an enforceable standard or a recommended guideline. 'Best practice' is defined in Oxford Dictionaries Online as 'commercial or professional procedures that are accepted or prescribed as being correct or most effective'.

1.2.3.5 Relevant international standards

Animal welfare considerations during cattle farming are the subject of increasing international focus. The following policies and position statements are included to provide a brief international context, while acknowledging that Australia's cattle

production systems may vary significantly from production systems, cattle breeds and climatic conditions in other countries.

There are no equivalent World Organisation for Animal Health (OIE) standards relating to cattle welfare. However, there are some advisory guidelines for cattle farming, as outlined below.

In general terms, the 178 countries of OIE endorsed animal welfare guiding principles for livestock at its General Assembly in 2012. These are published in the *OIE International Animal Health Code. Article 7.1.4* [23] and are as follows:

Eleven general principles for the welfare of animals in livestock production systems:

1. Genetic selection should always take into account the health and welfare of animals.

2. Animals chosen for introduction into new environments should be suited to the local climate and able to adapt to local diseases, parasites and nutrition.

3. The physical environment, including the substrate (walking surface, resting surface, etc.), should be suited to the species so as to minimise risk of injury and transmission of diseases or parasites to animals.

4. The physical environment should allow comfortable resting, safe and comfortable movement including normal postural changes, and the opportunity to perform types of natural behaviour that animals are motivated to perform.

5. Social grouping of animals should be managed to allow positive social behaviour and minimise injury, distress and chronic fear.

6. For housed animals, air quality, temperature and humidity should support good animal health and not be aversive. Where extreme conditions occur, animals should not be prevented from using their natural methods of thermo-regulation.

7. Animals should have access to sufficient feed and water, suited to the animals' age and needs, to maintain normal health and productivity and to prevent prolonged hunger, thirst, malnutrition or dehydration.

8. Diseases and parasites should be prevented and controlled as much as possible through good management practices. Animals with serious health problems should be isolated and treated promptly or killed humanely if treatment is not feasible or recovery is unlikely.

9. Where painful procedures cannot be avoided, the resulting pain should be managed to the extent that available methods allow.

10. The handling of animals should foster a positive relationship between humans and animals and should not cause injury, panic, lasting fear or avoidable stress.

[23] Access online, OiE World Organisation for Animal Health website

11. Owners and handlers should have sufficient skill and knowledge to ensure that animals are treated in accordance with these principles.

Professor David Fraser and other world experts on animal welfare science have written a scientific paper that informed these OIE general principles. The paper was published in the Veterinary Journal in June 2013.[24] The proposed Australian Animal Welfare Standards and Guidelines for Cattle are consistent with these principles.

More specifically, the OIE has recently adopted some advisory guidelines on beef cattle welfare. The '*Animal Welfare and Beef Cattle Production Systems'* code was adopted in May 2012.[25] The chapter covers beef cattle production systems defined as all commercial cattle production systems where the purpose of the operation includes some or all of the breeding, rearing and finishing of cattle intended for beef consumption. The chapter addresses the welfare aspects of beef cattle production systems, from birth through to finishing. In particular, the newly published text requires 'respecting the welfare of animals, when affecting their lives and existence, including by providing decent conditions for keeping, breeding, producing, transporting and using animals. Consistent with the diverse needs of the 178 member countries, the recommendations do not contain mandatory standards. The proposed Australian Animal Welfare Standards and Guidelines for Cattle are also consistent with these recommendations.

The proposed Australian standards also make specific mention of the physical and psychological wellbeing of animals in several chapters. Animal welfare has been integrated into actions governing ethical behaviour, consumer issues and community involvement as well as development, specifically in wealth and income creation.

Although not regulated in law, the expectation of OIE members is that they will achieve the outcomes set out in the OIE guidelines. The regulatory framework of Australia's Export Supply Chain Assurance Scheme (ESCAS) requires evidence that animals will be handled and processed in accordance with the internationally accepted OIE animal welfare guidelines. Accordingly, the proposed standards are consistent with the principles contained in the OIE guidelines; but are not directly comparable as the OIE guidelines do not contain mandatory statements.

New Zealand, England and the European Union however do have cattle welfare standards that provide a relevant comparison with the proposed standards. In general, the comparison shows that there are no significant differences in the types of cattle welfare standards mandated in these overseas countries. The difference lies in the more detailed and considerably greater legal enforceability of these standards in overseas countries compared to the Australian proposed standards.

Mutilations (painful husbandry procedures) and electro-immobilisation[26] of cattle in NZ, England and the EU are also considered.

New Zealand

[24] Fraser et al, 2013.
[25] OIE Terrestrial Animal Health Code- Chapter 7.9 Animal Welfare and Beef Cattle Production Systems

[26] Electro-immobilisation should not be confused with electrical stunning prior to slaughter

New Zealand has two principle cattle Codes of Welfare containing both mandatory and recommended standards for cattle farming.[27] Beef cattle share a Code with sheep.[28] Additionally, there is a separate Code of Welfare covering painful husbandry procedures applying to animals including farmed cattle;[29] and a Code covering the emergency slaughter of farm livestock.[30] Codes of Welfare are deemed to be regulations but only their minimum standards have legal effect. Together, these three codes have similar but more detailed standards compared with the proposed Australian standards.

England

England's *The Welfare of Farmed Animals (England) Regulations 2007* contains mandatory standards for the welfare of farmed animals including cattle. The *Mutilations (Permitted Procedures) (England) Regulations 2007* at Schedule 2 contains mandatory standards regarding castration, reproduction procedures, dehorning, disbudding and supernumerary teats of cattle.[31] England makes standards mandatory by according them Regulation status.

There is also an English *Code of Recommendations for the Welfare of Livestock - Cattle 23 April 2003* which contains mandatory language requiring adherence to many similar standards proposed in Australia. It should be noted though that this Code is not law, but failure to follow its provisions may be used as evidence in court when a prosecution is taken for causing unnecessary suffering to cattle. One difference between the Code and the proposed Australian standards is a reference by the Code at Recommendation 49 to the necessity to keep medication records. There is also a reference to another English Code of Practice on the responsible use of animal medicines on the farm.

Canada

In Canada, the Scientists' Committee (SC) report peer review is complete and final edits are being done. The Code Development Committee (CDC), utilizing the SC report, continues to work on the Beef Cattle Code which will operate as guidelines. A second survey, targeted at beef producers, assesses routine management practices including animal identification (branding), dehorning, and castration.[32]

European Union

The European Union has made two relevant Council Directives which lay down minimum legally enforceable standards. The first relates to farmed animal welfare in general and secondly, there are specific rules relating to calf welfare. National governments may adopt more stringent rules provided they are compatible with the relevant European Union Treaty.

The European Union has not explicitly banned electro-immobilisation. However, a possible restriction on its use is provided in Article 3 of Council Directive 98/58/EC on the protection of animals kept for farming purposes: "Member States shall make provision to ensure that the owners or keepers take all responsible steps to ensure the welfare of

[27] Ministry for Primary Industries, New Zealand Government
[28] Ministry for Primary Industries, New Zealand Government
[29] Ministry for Primary Industries, New Zealand Government
[30] Ministry for Primary Industries, New Zealand Government
[31] The Mutilations (Permitted Procedures) (England) Regulations 2007, legislation.gov.au
[32] National Farm Animal Care Council Update: September 2012

animals under their care and to ensure that those animals are not caused any unnecessary pain, suffering or injury."

There is no general EU legislation or standards for disbudding, dehorning or other cattle mutilations except for organic farming.[33]

1.2.3.6 Relevant industry guidelines and 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. 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.

The **Cattle Council of Australia** brings together in a single organisation all farmer organisations whose members have beef cattle enterprises. The Cattle Council employs the services of an animal health and welfare adviser and utilises an Animal Health, Welfare & Biosecurity Taskforce from within its own ranks. These resources enable the Council to manage the detail of the key animal health, welfare and biosecurity affairs affecting industry.

The Cattle Council works closely with AHA to deliver the national animal health system's strategic priorities for improving animal health, market access, food safety and quality, animal welfare and livestock productivity as it relates to animal health and welfare. The Council promotes sound animal health management practices to its members with a focus on Quality Assurance programs, such as the industry's Livestock Production Assurance (LPA) program for which an animal, welfare and biosecurity module is being developed.[34]

The **Australian Dairy Industry Council** (ADIC) is the dairy industry's peak policy body. The industry has developed a *National Dairy Industry Animal Welfare Strategy* that supports the Federal government's vision under the Australian Animal Welfare Strategy that "the welfare of all animals in Australia is promoted and protected by the adoption of sound animal welfare standards and practices".

Both the beef and dairy industries have been closely involved in the development of the proposed national standards.

The **Australian Lot Feeders' Association** is the peak national body for the feedlot industry in Australia. This was the first agriculturally based industry in Australia to embrace quality assurance and has had in place the National Feedlot Accreditation Scheme (NFAS) since 1994.[35] This program has around 450 feedlots accredited and covers animal health & welfare, environmental conservation and product integrity. The

[33] Animal welfare, European Commission website
[34] Cattle Council of Australia, Viewed 28 November 2012
[35] The NFAS is managed by state governments and industry representatives and is recognised under various state and territory legislation.

scheme requires that every accredited feedlot is independently audited on an annual basis to ensure they comply with legislation.[36]

Meat and Livestock Australia (MLA) is a producer-owned company that provides services to livestock producers, processors, exporters, food service operators and retailers. Amongst other things, MLA has published guidelines on best practice husbandry in beef cattle regarding branding, castrating and dehorning.[37] MLA states that

> "The welfare of sheep, cattle and goats affects the productivity, profitability and sustainability of the Australian livestock industries. The welfare of livestock is important during all stages of production, from birth to slaughter. Good animal welfare practices are an integral part of a property management plan. MLA is committed to investing in animal welfare research that provides tools and knowledge to producers to help them improve the wellbeing of their livestock and address issues of community concern."

MLA asks its producers to consider the 'Five Freedoms for animals' and the need to incorporate these into property management plans and procedures:

- Freedom from hunger and thirst
- Freedom from discomfort
- Freedom from pain, injury and disease
- Freedom to express normal behaviour
- Freedom from fear and distress.[38]

1.3 Consultation processes

1.3.1 Development of the proposed standards

The Consultation Guidelines (Appendix F of the COAG Guidelines) have been considered in the consultation strategy for this RIS.

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

The standards were developed under the auspices of the former Animal Welfare Committee (AWC) which was ultimately responsible to state and territory primary industries ministers (formerly PIMC and SCoPI). Membership of AWC comprised representatives from each of the state and territory departments with responsibility for animal welfare, CSIRO, and the Australian Government Department of Agriculture. This Committee has since been reorganised with membership from governments only.

[36] Animal Welfare Briefing, ALFA website
[37] Meat & Livestock Australia, 2007
[38] Animal Welfare, MLA website

The standards development process was managed by Animal Health Australia (AHA) under a business plan available on the Animal Welfare Standards website. This business plan employs an operational structure consisting of a core writing group and a larger reference group. The writing group undertakes the bulk of the development process and consists of:

- An Independent Chair
- The AHA Livestock Welfare Manager and Project Officer
- An Australian Government representative
- An Animal Welfare Committee government representative
- Industry members as relevant
- Relevant independent science representation
- Invited consultants.

The Writing Group is supported by a widely representative Standards Reference Group (SRG). The SRG includes the writing group and national interest organisations such as the RSPCA Australia, Animals Australia, the Australian Veterinary Association and representatives of the eight state and territory governments. Further drafts of the standards were developed by AHA in consultation with the writing and reference groups as per the business plan.

In addition to the relevant Federal, state and territory government departments, stakeholder organisations represented on the SRG include (in alphabetical order):

- **Animals Australia Inc.** (AA) is a federation representing some 40 member societies and thousands of individual supporters throughout Australia.[39]

- The **Australian Dairy Industry Council** (ADIC) is the dairy industry's peak policy body. It co-ordinates industry's policy and represents all sectors of the industry on national and international issues through its two constituent bodies, the Australian Dairy Farmers Ltd (ADF) and the Australian Dairy Products Federation (ADPF). These bodies were represented on the SRG by Dairy Australia. [40]

- 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.[41]

- The **Australian Livestock Export Corporation Limited** (LiveCorp) is the provider of Research, Development and Extension services for the benefit of the livestock export industry. LiveCorp's current membership (as at 2012) consists of 41 licensed Australian exporters. LiveCorp members are involved in the export of cattle (including dairy), sheep and goats for both slaughter and breeding purposes and operate in worldwide markets.[42]

[39] <http://www.animalsaustralia.org/about/>
[40] http://www.dairyaustralia.com.au/Industry-overview/About-Dairy-Australia.aspx
[41] <http://www.livecorp.com.au>
[42] From LiveCorp direct

- **Australian Livestock Markets Association** (ALMA) On 8 July 2010 Saleyard Operators Australia joined with Saleyards Association Queensland and operators in South Australia, Victoria and WA to unite in a truly national body representing approximately 100 saleyards. Members of the association now transact 6.3 million units (sheep, cattle and pigs); with a value in excess of $A3.6 billion and representing 75% of the nation's saleyard throughput.

- 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.[43]

- The **Australian Livestock and Rural Transporters Association** (ALRTA) 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.[44]

- The **Australian Lot Feeders' Association** (ALFA) is the peak national body for the feedlot industry in Australia.[45]

- 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.[46]

- The **Australian Veterinary Association** (AVA) is the professional organisation for veterinarians. The core objective of the AVA is to advance veterinary science.[47]

- The **Cattle Council of Australia's** (CCA) charter is to represent and promote the interests of Australian grass fed 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.[48]This includes representation on all relevant Animal Health Australia and Meat and Livestock Australia program committees (over 30 committees Australia wide).

- **Dairy Australia** (DA) is the national service body for the dairy industry, owned by farmer members and the Australian Dairy Farmers Limited and Australian Dairy Products Federation. The company invests the Dairy Services Levy, matching government funds

[43] Australian Livestock & Property Agents Association website
[44] ALTA website
[45] ALFA website
[46] Australian Meat Industry Council website
[47] Australian Veterinary Association website
[48] Cattle Council of Australia website

and other money in activities across the dairy supply chain to get the best outcomes for farmers, the dairy industry and the broader community.[49]

- **Meat and Livestock Australia** (MLA) is a producer-owned company that provides services to livestock producers, processors, exporters, food service operators and retailers. MLA has over 43,000 livestock producer 'members' who have stakeholder entitlements in the company.[50] MLA invests $0.75 to $1m p.a. of producer levies, with matched support from the federal government, into improving the welfare of cattle, sheep and goats. Additional funding supports the delivery of products with a welfare benefit.[51]

- The **National Farmers' Federation** (NFF) is the peak national body representing farmers and, more broadly, agriculture across Australia.[52]

- **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 cattle are published on its national web site.[53]

Key development process components include public consultation [54]and the conduct of a regulation impact analysis[55]. Key development process values include a commitment to consultation and consensus decision-making, transparency and accountability. The final proposed Standard and Guidelines (S&G) documents will be submitted for consideration for endorsement as policy by the jurisdictional Ministers responsible for livestock welfare, primarily the AMF.

The participation of Australian Government, state and territory governments, industry and community stakeholders in the standards setting process provides robust policy outcomes. Whilst the final endorsement is by AMF, the relevant industry is able to collaborate in policy development in a meaningful way that contributes to more effective and feasible outcomes.

1.3.2 The public consultation process

The public consultation objective was to seek the views and advice of interested parties in further formulating a preferred national regulatory framework for cattle welfare.

Specifically, views from interested parties were sought about how the:
- draft cattle welfare standards would ensure the welfare of cattle, and the
- associated Consultation RIS demonstrates the need for the standards, and identifies the key costs and benefits for cattle producers, government and the wider community.

[49] Wording provided directly by Dairy Australia.
[50] MLA website
[51] From MLA direct
[52] National Farmers' Federation website
[53] RSPCA website
[54] Conducted through; Animal Welfare Standards website
[55] As required by the Office of best Practice Regulation

An open public consultation period ran from 7 March – 5 August 2013. State and territory ministers for primary industry directed that consultation be extended from the agreed 60 days for a further 90 days just before the initial closure.

Media releases from AHA occurred prior and during the consultation period. Paid advertisements were placed in larger regional newspapers and one major weekend newspaper just prior to 7 March. At that time, reference group organisations (government, industry and welfare) were asked to duplicate the prepared messages through their own networks and resources. Organisations were encouraged to consult with their members and to maintain a log of all related activities. AHA maintained updates on the AHA website and at the consultation site animalwelfarestandards.net.au. In most cases, the complementary efforts were timely and helpful.

Three categories of submission were received - 66 substantial written documents, and 20,250 email letters, many of the latter in a similar format. (Animal Health Australia preferred respondents to forward written comments electronically). There were 1566 responses (in part or whole) to the online survey, with or without additional comments. The substantial submissions are publicly available at the following web site:

www.animalwelfarestandards.net.au.

In general terms **17 animal welfare groups supported Option C (Variations of B under Options C1-C7)** as presented in the RIS; in addition several suggested further variations. For example Voiceless proposed additional variations - banning all dehorning and mandating pain relief for all surgical procedures.

Of the **26 Cattle industry organisations** (notably CCA, Northern Pastoral Company Group, AgForce and ALRTA) and many individual producer submissions **generally supported Option B (the proposed standards as drafted) and opposed or had concerns with some of the variations**. AgForce expressed further reservations about relevance and accuracy of the RIS and the feasibility of pain relief standards. AMIC, ALPA and ALFA support the proposed standards and the RIS and did not pass comment on any of the variations. While broadly stating their support for the standards and their opposition to all variations, the DA-ADF, UDV, Norco, QDO, WAFF (Dairy) and Far North Coast Dairy Industry Group submissions all presented specific arguments against Options C4, C5 and C6 because of their direct application to dairy cattle. While opposing Option C6, Fonterra suggested nationally-agreed targets to reduce the rate of calving induction, modelled on an MOU operating in New Zealand. WAFF's separate submission included specific opposition to Options C1, C2 and C7. The TFGA indicated specific opposition to Options C4, C5 and C6.

The **five government submissions received generally supported Option B (the proposed standards as drafted), with some variations as discussed below**. Governments have otherwise indicated support for Option B throughout the development process.

The Queensland Government (DAFF) submission took issue with aspects of the RIS, suggesting some imbalance and omissions in the benefit cost analyses, over estimation of the costs and omission of key benefits (e.g. of training dogs and effective control of dogs, improved competency of trained spayers and resultant animal production benefits from

more expert spaying) and inadequate coverage of government costs. There was implied support of all variations. In relation to Option C1 the Qld DAFF submission was that the financial benefits of pain relief for all spaying have been ignored in the RIS.[56] There was also support for Option C2 (based on a claimed incomplete analysis in the RIS of costs and benefits of flank spaying/webbing); for Option C3 (based on claimed failure of Option B to comply with one of the five freedoms); for C4, on the basis of a claimed inconsistency with LTS and lack of complete benefit-costs data; C5, on the basis that caustic disbudding is not required; C6, on the basis that induction is not required in Queensland; and C7 on the basis that electro immobilisation is probably not justifiable.

The Victorian DEPI supported Option C1 on the basis that it is a veterinarian-only procedure in Victoria; Option C4, on the basis of a claimed inconsistency with LTS; and Option C7 because electro-immobilisation is banned under POCTA. In relation to Option C6, Victorian DEPI support adoption of alternative practices and phasing out of calving induction.

The Northern Territory Department of Primary Industry and Fisheries (NT DPIF) supported Option B and the variations except for the C2 ban on flank spaying and the C7, ban on electro-immobilisation. Some of these variations are of low relevance to the NT DPIF as there is no dairy industry there.

The Tasmanian Department of Primary Industries, Parks, Water and Environment did not indicate a preference for an option whilst supporting the standards with some qualifications relating to existing law in Tasmania (vet only pain relief over 6 months, vet only electro immobilisation) and revisions to other standards.

The few written submissions containing specific technical comment on data and assumptions in the RIS have been taken into consideration in this Decision RIS, resulting in some changes to the cost/benefit analysis.

General comments in the 66 written submissions, unrelated to specific Standards or Guidelines, contained some common themes. They were:

1. Criticism (mostly by welfare advocates and lawyer groups) of the use of "general" Standards and subjective terms such as "reasonable", "adequate" and "appropriate" – covered under 'language and construction' below;

2. Concern (mostly in livestock industry organisations) about the capacity and commitment of government regulatory authorities to monitor and enforce compliance, and the consistency of enforcement by states and territories;

3. The difficulties in compliance with pain relief, veterinary procedures and age limits in remote pastoral production systems;

4. Concern and mistrust in some industry groups about the potential for courts to prosecute on the basis of failure to comply with Guidelines – covered under 'scope' below;

[56] See Part 4.2 of this RIS for a response to this point.

5. The perceived lack of specificity (by welfare advocates) in some Standards and their preference for adopting Guidelines as Standards;

The most controversial issues related to individual draft Standards were:

1. Pain relief for surgical procedures - castration, dehorning, spaying of cattle (S6.2, 6.4, 6.5, 6.7 and 6.8)
   - Mandate irrespective of the age of the animal (all animal welfare and animal rights groups, some academic groups)
   - Mandate at any age is impractical (many producer groups, including major national and northern Australian cattle producer groups)

2. Availability of water daily (S2.1) – non-acceptance of "reasonable access"

3. The absence of a mandate for provision of shelter under Sections 2, 4 or 10

4. Use of electric prodders (S5.3) – proposals/demands for prohibition

5. Electro-immobilisation (S5.7)
   - calls to prohibit or mandate competency (welfare advocates)
   - strong defence as a management and welfare aid (industry groups, scientists)

6. Induction of calving (S7.3)
   - restrict to "necessary for welfare" only (welfare groups)
   - retain as an essential management practice in dairy cattle (industry, veterinarians)

7. Permanent tethering (S5.6) – calls for prohibition

8. Hot-iron branding (S5.9 and G5.24)
   - calls to either prohibit or mandate analgesia (welfare groups)
   - strong defence as an essential management tool (northern cattle producers)

9. Slaughtering of calves by head trauma (S11.5)
   - Age too difficult to confirm/audit
   - S11.1 not achieved by head trauma anyway

These issues were highlighted most frequently in written submissions and/or characterised by an "agreement" rate of less than 70%, attracting the heaviest numbers of comments in the on-line survey.

AgForce Queensland expressed strong concerns about the RIS: "*AgForce Cattle questions the relevance and accuracy of the RIS as a tool to gauge impacts given that throughout the document it acknowledges its inherent flaws and inability to capture accurate data. AgForce Cattle has not addressed the consultation questions in the RIS for this reason. Acquiring this data is a significant undertaking and should not be at the behest of industry.*" AgForce Cattle suggests that more time is taken to properly investigate the

feasibility and cost of proposed measures within the RIS as the current document does not reflect the status quo or base case."

NSW Farmers supported Option A because it was "*not convinced that an additional layer of regulation will actually improve animal welfare outcomes as intended. The vast majority of producers already ensure that the welfare of animals in their care is upheld and for the minority of cases where this does not occur there is already legislation, the Prevention of Cruelty to Animals Act, which can be used to enforce minimum standards*." Its stand on the S&G implies opposition to the RIS variations but NSW Farmers emphasised specific opposition to C5, C6 and C7. Pastoralists and Graziers Association WA (PGA WA) and Livestock SA also supports voluntary guidelines only.

The NTCA's submission generally indicated support for Option A, reflecting its satisfaction with the existing Model Codes of Practice and its over-riding view that many of the draft Standards (in particular those requiring age definition for pain relief) are impractical and likely to fail. The NTCA also indicated opposition to all Options except C5 (on which it had no comment), and provided (in its written submission) estimates in response to a few of the RIS public consultation questions (Q2, Q18-19, Q22-23).

Tasmanian Farmers and Graziers Association (TFGA) supported Option B with some conditions relating to competent enforcement and use of dogs on calves. TFGA does not support Options C4, C5 & C6 and did not comment on the other variations.

The AVA submission was an assemblage of individual veterinary submissions to the AVA. In general there was support for Option B with concerns expressed that the supply of pain relief drugs must be retained under veterinary control.

The South Coast and Tablelands Regional Livestock Health Committee (SCTRLHC a NSW rural veterinary group) supported Option B and Options C1, C3, C4 and C5. The Warrnambool Veterinary Group (15 veterinarians, serving 250 dairy farms in western Victoria) made a comprehensive submission defending the draft S&G in relation to calving induction and rejecting Option C6.

Many industry organisations made the point that their industry's continuing support for the Standards and Guidelines is dependent on successful harmonisation of State and Territory welfare legislation.

Some written submissions made specific comments on statements and assumptions in the RIS. For example the RSPCA Australia expressed concern that "*the RIS does not appear to take into account the extent to which compliance costs can be internalised and passed on through the supply chain. The costs of higher welfare options proposed in the RIS are all attributed to 'cattle farmers' alone. The RIS appears to play down the ability of cattle farmers to internalise these costs simply on the basis that 'the market share for other animal welfare-related products indicates that only a small percentage of consumers would be likely to be influenced in their purchasing decisions. This ignores the steady year-on-year increase in demand and market share for higher welfare products, and subsequently, distorts the perception of how the economic impacts may be distributed*".

Approximately 20,250 email letters were received, of which the vast majority supported better welfare standards. In many cases objections to specific standards or practices were

mentioned but rarely any new alternatives to achieve cattle husbandry outcomes were proposed. In a large number of cases the desired position of livestock was asked to be compared to that of urban companion animals. *E.g. "It is also unacceptable that cattle will still be subjected to surgical procedures without pain relief, including: castration, dehorning, disbudding, branding, and dropped ovary spaying. We would not allow this practice for cats, dogs or horses so why are cattle any different?"*

The majority of concerns focused on daily access to water, shelter/shade provisions and pain relief for all surgical producers. The submissions stated the concerns that the standards and guidelines for cattle will not protect them from cruelty and allowed workers to strike, use electric prodders and allowed electro-immobilisation.

Concern was expressed that dairy cows can still be subjected to the dangerous and unnecessary practice of calving induction.

It was repeatedly stated that cattle are just as capable of feeling pain and fear as any other animal and that the standards do not reflect the growing community concern about animal welfare, or the values society holds about how these animals should treated.

What was also reflected in numerous submissions was the cost to farmers and how if costs were reduced, farmers could provide better welfare. E.g. *"More and more our farmers are seeing their marginal profits squeezed out of them by Coles and Woolworths... so every cent has to be gleaned from somewhere... goodbye animal welfare"*.

The on-line survey sought responses on each of the 53 draft Standards - specifically, whether or not the Standard would benefit the welfare of cattle – and on 33 questions raised in the Consultation RIS.

There were 1566 responses to the online survey. An average of 920 (59%) provided a response on the welfare Standards. The survey has been criticised for its low value, length and the confusing nature of the questions but is still supported by respondents as a means of consultation. The overall outcome is that the survey added a little to the overall process with views expressed being consistent with other material and no new facts emerging.

The Writing Group and SRG have considered the public submissions and have decided to support Option B (the proposed standards) with some relatively minor amendments. In summary, the public consultation process resulted in one new standard (S7.1a), revision to 15 standards and 20 guideline revisions or inclusions. These decisions are recorded in the Public Consultation – Response Action Plan, available at animalwelfarestandards.net.au

2.0 The problems and policy objective

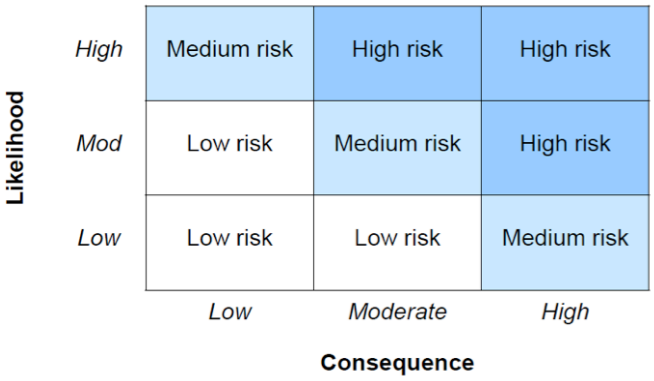
2.1 Identifying the problems

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

2.1.1 Introduction

Farming of animals and animal husbandry can pose risks to animal welfare. However, before discussing such risks in detail, it should be noted that risk assessment has two dimensions – the likelihood of an adverse event occurring; and the severity of the consequences if it does occur, as illustrated in Figure 2 below.

Figure 2 - Assessing the level of risk



Source: Victorian Competition and Efficiency Commission

The proposed national standards are not starting from a zero base. They are not introducing national standards for the first time – they are replacing inadequate existing standards (refer to Part 1.2.3.3 of this RIS). The risks associated with cattle farming are all currently being managed by the various state and territory governments in co-operation with the industry. They all have relevant Acts and Regulations in place dealing with the welfare of animals including beef and dairy cattle; and jurisdictions already have standards or codes practice dealing with many of the matters covered in the proposed national standards. As listed in Appendix 4 to this RIS, all jurisdictions except Victoria have adopted the existing MCOP (a set of national standards and guidelines). Victoria has its own code of practice based on the existing MCOP. The existing MCOP and the state codes are a confusing and inconsistent mixture of standards and guidelines, as discussed in Part 2.1.2 of this RIS.

It is important to note that the existing MCOP is not sun setting - it will remain in place as part of the base case if the problems outlined below are not addressed. It is therefore not possible to discuss the problems being addressed in this RIS without reference to the inadequacies of the existing MCOP.

The main problems underlying the development of the proposed national standards are those relating to:

- *Risks to the welfare of cattle* due to deficiencies in the existing MCOP for the welfare of cattle; and to a lesser extent;
- *Uncertainty for industry* due to a lack of clear and verifiable standards; and
- *Excess regulatory burden* arising from a lack of national consistency and unnecessary standards.

The primary problem being addressed by the proposed standards and alternative options is overall risks to animal welfare. Regulatory differences between the jurisdictions and excess regulatory burden, whilst relevant, are a secondary problem in this RIS. It is important to note that cattle rather than businesses are affected by the primary problem of risks to animal welfare. To the extent that farm businesses will benefit from improved animal welfare, they have market incentives to do this voluntarily, rather than in response to mandatory standards, as discussed under the heading 'Market failure' in Part 2.1.2 below. Thus, any incremental benefits to be derived from the mandatory reduction of risks to animal welfare would be received by the animals themselves rather than their owners.

On the other hand, secondary problems based on regulatory differences between jurisdictions do affect businesses in the form of excess regulatory burden; however the number of businesses affected is currently unknown. The public consultation questions attempted to gather information about the number of businesses that are facing excess regulatory burden because of operating under different codes across multiple jurisdictions, with limited success.

Whilst the number of cattle affected by risks to animal welfare from various practices may seem an obvious measure – such a measure fails to take into consideration a) whether or not a practice is ongoing and b) the impact of the procedure or practice on the animal. That is to say, simply providing for the number of animals affected does not provide any information regarding the duration of the effect nor the impact of the effect on the animal. For example, castration and tail docking are more serious welfare issues than tethering, although the latter practice occurs over the lifetime of the cattle, as opposed to just a one-off occurrence. Therefore, the combination of factors that determine the *severity of the consequence* include:

- Number of animals affected (small or large);
- Duration of practice (one-off or ongoing); and
- Impact of animal husbandry procedure (primarily invasive or less-invasive).

Notwithstanding this caveat, the number of cattle affected by each practice or procedure is discussed *only* where there is certainty or where there are robust assumptions based on experience in the industry. There is in many cases a degree of uncertainty surrounding the number of cattle affected and information on the number of cattle affected by particular practices or procedures, due to lack of data. In these cases, the number of cattle affected is not provided in this consultation RIS.

2.1.2 Risks to the welfare of cattle

The main consequence of the lack of a clear, consistent and up-to-date set of national standards is uncoordinated risk management in relation to the welfare of farmed cattle.

As discussed in Part 1.2.2 of this RIS, animal welfare means how an animal is coping with the conditions in which it lives. An animal is in a good state of welfare if (as indicated by scientific evidence) it is healthy, comfortable, well nourished, safe, able to express innate behaviour, and if it is not suffering from unpleasant states such as pain, fear, and distress.[57] There is increasing evidence that animals kept in conditions where their welfare is poor can have weakened immune systems and so be more likely succumb to diseases.[58]

It is important to note that poor animal welfare includes, but is not restricted to, practices that could attract a prosecution under the cruelty provisions of existing animal welfare legislation. Poor animal welfare outcomes can be linked to both market failure and regulatory failure.

Market failure

Some agricultural producers argue that market forces alone can prevent animal suffering because a producer has an economic incentive to protect animal welfare – that is to say, it is in the financial interest of a farmer to maintain positive physical attributes and reduce mortality rates.[59] These producers often assert that profitability and animal welfare go hand-in-hand. Common arguments include: 'I can't make money if my animals aren't well cared for,' or 'Profitable animals are happy animals.'[60] However there is a fundamental flaw with this reasoning as economists advise that maximising production and maximising profits are two different things:

> The level of input usage that maximises production or yield is not the same as the level of input usage which maximises profits. When inputs are costly, a profit maximising farmer will choose to produce less than is biologically possible. Similar reasoning suggests that a profit-maximising livestock producer will choose levels of production that do not coincide with biologically optimal levels of animal production or animal welfare.[61]

Moreover, it is possible to have a *physically healthy productive animal* that is in a *poor state of welfare* due to, for instance, mental stress. Indeed, apart from physiological functioning, physical condition and performance – brain state, behaviour, and even an animal's emotions are now all recognised as key factors in assessing an animal's welfare.[62] In terms of this broader understanding of animal welfare there would be insufficient economic incentive for a farmer to reduce risks to animal welfare, especially where doing so would increase costs. The shortcomings (i.e. failures) to market forces delivering completely on the full spectrum of animal welfare is now discussed. Specifically, this RIS identifies three key sources of market failure relevant to this RIS:

- *Public good* nature of animal welfare risk management itself;

[57] Article 7.1.1 World Organisation for Animal Health 2010, code. Viewed 10 June 2012
[58] Dawkins, M.S., 2012
[59] See: https://theconversation.com/why-market-forces-dont-protect-animal-welfare-15501
[60] Lusk, J.L, and Norwood, F.B., Animal Welfare Economics, Applied Economic Perspectives and Policy (2011), p.2.
[61] Lusk, J.L, and Norwood, F.B., Animal Welfare Economics, Applied Economic Perspectives and Policy (2011), p.2.
[62] Broom, D.M. (in prep) The roles of science and industry in improving animal welfare. See: http://www.daff.gov.au/animal-plant-health/welfare/aaws/aaws_international_animal_welfare_conference/animal_welfare_future_knowledge,_attitudes_and_solution.

- *Negative externalities* (poor welfare outcomes) of cattle farming; and
- *Information failure* by end users (consumers) of cattle meat and dairy products.

With respect to public goods, any beneficial outcome associated with better risk management practices on behalf of the farmer are non-excludable ('I cannot keep you from enjoying the fact that I employ better cattle management practices') and non-rival ('the satisfaction I receive from knowing a cow benefits from better management practices does not prohibit you from also being satisfied with the cow's better life') amongst the community. Therefore some farmers may under invest in such management practices due to free riding. That is to say:

> First and foremost is the fact that animal welfare is not priced in any conventional way…[and]…it is relatively difficult to ascertain the price of higher farm animal welfare. Without a price, the market will not necessarily work its magic in efficiently allocating resources to their most valued use.[63]

Many farmers are motivated by animal welfare considerations, as well as, financial returns. However, if a farmer was to voluntarily invest in say; higher levels of pain relief, better infrastructure and general animal health management, this would not necessarily be reflected in the meat or dairy product or its price, especially where livestock are sold at auction.

This is not to suggest that there are no market incentives at all to improve animal welfare. If rational and informed farmers can save themselves money by improving welfare, then they will do it voluntarily, without being forced to do so by mandatory standards.

With respect to negative externalities of cattle farming, the costs of poor animal welfare are not always incurred by cattle farmers when making production decisions. Market forces on their own may provide a partial solution by way of threat to revenues in the case that poor welfare outcomes (malnutrition, dehydration) directly affect the quality or quantity of meat, dairy, hide or other by-products in cattle. However, such market solutions would be unlikely to be sufficient where there is no identifiable link between risks to animal welfare and product quality or quantity. For example, performing invasive animal husbandry procedures can result in negative externalities by way of poor animal welfare; however, such procedures have not been shown to affect meat or product quantity or quality at the point of sale. Therefore such costs would fail to be 'internalised' in cattle farmers' production decisions. Under an economic model 'productivity is prioritised and animal suffering is treated as a market externality. Market signals will generally cause welfare standards to fall below community expectations.'[64] To the extent that animal welfare conditions are externality effects, therefore, 'there can be no expectation that market data for food products will ever provide a sufficient route to their measurement.'[65]

In short, 'because animal welfare is evidently a public good externality there is an obvious role for government policy in establishing and enforcing standards.'[66]

Finally, there is also a lack of information in the market place, as consumers of meat and dairy products are not aware of the welfare status of the cattle used to produce the

[63] Lusk, J.L, and Norwood, F.B., Animal Welfare Economics, Applied Economic Perspectives and Policy (2011), p.2.
[64] See: https://theconversation.com/why-market-forces-dont-protect-animal-welfare-15501
[65] McInerney, J. (2004), Animal Welfare, Economics and Policy, Report on a study undertaken for the Farm & Animal Health Economics Division of Defra
[66] McInerney, J. (2004), Animal Welfare, Economics and Policy, Report on a study undertaken for the Farm & Animal Health Economics Division of Defra

products they are buying. The main reason for this is a lack of any significant schemes available for cattle producers that offer assurance of welfare credentials, for example, by product labelling. However, even if such consumer information was available, the low market share for other animal welfare-related products (such as free-range pork, chicken and eggs) indicates that only a small percentage of consumers would be likely to be influenced in their purchasing decisions. Market assurance schemes would therefore be of limited benefit in coping with the animal welfare problems discussed in the RIS.

Regulatory failure

Although a second edition was published in 2004, the existing MCOP relating to the welfare of cattle was originally published in 1992. It is in need of further updating in the light of new knowledge and experience. Regulatory failure in the form of several deficiencies have been identified in the existing MCOP, including the lack of standards dealing with the following welfare issues where there are either guidelines only, or, there is no mandatory requirements in the MCOP for:

- The control of dogs during handling of cattle;
- Electro-immobilisation;
- Identification and branding;
- Pain relief during castration, disbudding, dehorning, and spaying;
- Heat stress of dairy and feedlot cattle; and
- Euthanasia of very young calves.

Moreover, original MCOPs did not incorporate an official system for developing or reviewing a code, which resulted in substantial variation in the quality, consultation, timeliness and content of the codes. In addition the review of codes did not comprehensively consider contemporary animal welfare science as a basis for a standard or include a regulatory impact analysis. The development and review process was unfunded and relied on the in-kind contributions of representatives of government and other stakeholders. It also did not include a requirement for a Regulatory Impact Analysis.

Ministerial Council and the AAWS participants recognised that there is a national recognition of and a commitment to the need to review and update the existing codes in line with contemporary science and community views. The development of Australian animal welfare standards represents a commitment to simultaneous refreshment of the legislation that will achieve greater effect and harmonisation than if done unilaterally and over time. This is a significant issue for the cattle industry as higher welfare standards such as mandating lower ages for pain relief for castration or tail docking could have a profound effect on farm viability as a result of consequential management changes required to address the new standards or associated welfare risks.

The existing MCOP and some of the current state and territory codes of practice are an indistinct mixture of both standards (‘must’ requirements) and guidelines (‘should’ advisory statements). As such, these codes are not sufficiently clear or verifiable for implementation and enforcement purposes.

For example, Clause 1.0.2 of the existing MCOP reads as follows:

The basic need of cattle *must* be met, irrespective of the nature of the husbandry or the farming system. There are… *(emphasis added)*

Clause 1.4.3 states:

Cattle being fed for survival *must* be attended to at least twice weekly….Shy feeders *should* be separated from the herd to ensure their feed requirements are met. *(emphasis added).*

Clause 1.5 states:

As far as practicable, cattle *should* be protected from adverse weather conditions and the consequences of adverse weather, including climatic extremes…Shade, or alternative means of cooling such as misters and sprays, *must* be provided where cattle would otherwise suffer from heat stress… *(emphasis added).*

Similarly, Clause 2.2.5.3 states:

All cattle, excluding those fed by self-feeders, *must* be fed with the feed being added to the troughs at least once daily, *preferably* twice to maintain freshness…Feed troughs *should not* be allowed to be empty for more than 2-3 hours if at all. (*emphasis added).*

Such lack of clear and verifiable standards would make their integration into industry programs such as training and quality assurance (QA) much more difficult creating another restriction on adequately managing animal welfare risks.

The regulatory base case issue is further complicated by differences between jurisdictions regarding the regulation of veterinary practices such as the provision of pain relief for castration and other surgical procedures. In some jurisdictions (NT, WA, Tas), there are clearly stated 'acts of veterinary science' based on an age limit with no exemptions for livestock owners, in other jurisdictions (SA, NSW, Qld) there are exemptions for an owner to performs these 'acts of veterinary science' as long as it is not for fee or reward. In other jurisdictions (Vic) the matter is not covered under legislation regulating veterinary surgeons and their work.

This regulatory issue is further complicated by differences between jurisdictions' prevention of cruelty to animals acts (POCTA) which are mostly general in their description of offences. In relation to pain relief for castration of cattle, NSW is an exception with a specific age limit of six months.

Risks to cattle from painful husbandry procedures

The main areas of incremental risk to cattle welfare are in relation to painful husbandry procedures. In 2001, a report by the European Scientific Committee on Animal Health and Animal Welfare identified the following main procedures involving risk to cattle welfare, based on scientific grounds: castration; spaying; tail docking; dehorning; disbudding; and hot branding.[67] Most of these procedures involve surgical cutting or application of heat or caustic substances to destroy tissue. In general, the impact on the animal and level of perceived pain increases with the animal's size and age. There is a need to agree on acceptable age limits before pain relief is applied.

Scientific advice of this nature needs to be taken into account in the setting of national standards and/or guidelines. Much of this European report is relevant to Australian cattle

[67]Scientific Committee on Animal Health and Animal Welfare, 2001

production systems despite often large differences in the way in which cattle have to be managed here.

The following explains the nature of the risks to Australian cattle welfare in more detail.

Castration of cattle

Castration remains an important tool for cattle husbandry and on-farm management of male calves in Australia. Castration of cattle leads to reduced aggression and sexual activity leading to males being less likely to fight, thus reducing bruising and injuries to themselves and other cattle. Castrated males are more sociable herd-orientated animals as opposed to the solitary, aggressive nature of many bulls. Selection of a realistic proportion of entire males in a breeding herd also leads to better welfare outcomes for cycling (oestrus) cows.

The most common methods of castration of calves in Australia are by cutting (scalpel) or constriction by rubber rings. All methods cause considerable pain at all ages, but levels of pain vary between methods over time.

However, there are major welfare detriments to cattle from castration including: the pain from this procedure; consequential healing issues that may occur including severe and fatal infection; and a reduced growth rate in the short and longer term. The magnitude of chronic pain is not understood. Early castration (two days to six months) significantly reduces:

- Pain and discomfort of the cattle
- Risk of bleeding and infection
- Recovery time after castration
- Weight loss after castration
- Difficulty of restraining the calf and performing the procedure
- Risks to the operator and the amount of labour needed.

In Australia there are currently an estimated 66,012 calves that are castrated without pain relief over 6 months of age or under 12 months of age and not at their first yarding - with the majority in Qld.

Table 1 – Estimated number of calves castrated without pain relief per annum – by state and territory[68]

Jurisdiction	Calves affected
NSW	-
Vic	7,498
Qld	38,377
SA	-
WA	9,516
Tas	-

[68] See Table A2.10 of Appendix 2 for source of estimates

Jurisdiction	Calves affected
NT	10,590
ACT	30
Australia	**66,012**

Spaying of cattle

Spaying is important for animal husbandry and on-farm management of female cattle in extensive pastoral environments particularly where there are difficulties with bull control. Spaying is primarily carried out on beef cattle in Queensland, the Northern Territory and the Pilbara and Kimberley regions of Western Australia.[69] Cattle spaying has been practised for the past 60 years[70] and is viewed as a "husbandry procedure that can assist herd management by preventing heifers (and cows) from becoming pregnant thereby increasing their chances of survival and improving weight gain to become marketable"[71]. Spaying techniques include flank spaying, flank webbing, drop-ovary (Willis) technique (DOT) or passage spaying.

Flank spaying and flank webbing both require an incision of all layers of the left para-lumbar abdominal wall.

The DOT method requires a per-rectal manipulation of the spaying tool, which is inserted into the abdominal cavity via a small puncture in the vaginal wall.

Passage spaying is not widely used in Australia and involves a sizeable per-vaginal incision to allow manipulation of the ovaries, which are removed. The method is difficult to perform in heifers and small cattle due to the small dimensions of the pelvis and vaginal spreaders are used.

The main problems under the base case relating to spaying and cattle welfare relate to welfare detriments from spaying as an invasive procedure and from a lack of competency by some performing this procedure - discussed as follows:

The major welfare detriments from spaying include: the pain from the procedure[72]; consequential healing issues that may occur including severe and fatal haemorrhage and infection; and a reduced growth rate in the short and longer term. The use of vaginal spreaders is also very painful for small cattle and heifers. In Australia there are currently an estimated 186,162 heifers and 58,255 cows per annum that are spayed using a flank/flank webbing method without pain relief - with the majority in Qld.

[69] See: AAWS Education and Training Stocktake Beef Cattle FINAL REPORT – 1 February 2008
[70] Dr. Alistair Henderson, pers. comm
[71] See: AAWS Education and Training Stocktake Beef Cattle FINAL REPORT – 1 February 2008
[72] Petherick JC, McCosker K, Mayer DG, Letchford P, McGowan M, "Evaluation of the impacts of spaying by either the dropped ovary technique or ovariectomy via flank laparotomy on the welfare of Bos indicus beef heifers and cows", *Journal of Animal Science*, 2012 Oct 9

Table 2 – Estimated number of heifers and cows spayed (flank or flank webbing method) without pain relief per annum – by state and territory[73]

Jurisdiction	No. heifers	No. cows
NSW	-	-
Vic	-	-
Qld	152,288	47,655
SA	-	-
WA	11,163	3,493
Tas	-	-
NT	22,711	7,107
ACT	-	-
Australia	**186,162**	**58,255**

As shown in Table 3, the number of cows spayed with the use of spreaders is estimated to be 10,174 per annum with the majority, 8,998, in Qld.

Table 3 – Estimated number of cows spayed (passage method) with spreaders per annum – by state and territory[74]

Jurisdiction	No. cows
NSW	-
Vic	-
Qld	8998
SA	-
WA	388
Tas	-
NT	789
ACT	-
Australia	**10,174**

Insufficient accreditation or supervision of those performing spaying procedures by accredited persons can lead to adverse welfare outcomes. A lack of competency results in a risk to adequately meet the following key animal welfare considerations:

- Reducing the impact of (mustering), handling and restraint;
- Knowledge of the appropriate age/size/stage of pregnancy considerations for selection of method;
- Demonstrated manual skill;
- Appropriate hygiene; and
- Appropriate instruments.

As shown in Table 4, the number of persons lacking accreditation and appropriated competency is estimated to be 237 per annum with the majority of persons located in Qld.

[73] See Table A2.14 of Appendix 2 for source of estimates
[74] See Table A2.15 of Appendix 2 for source of estimates

However the number of cattle affected by inadequate training of those performing spaying is currently unknown.

Table 4 – Estimated number of persons requiring training and accreditation per annum – by state and territory[75]

Jurisdiction	Number of farmhands annually requiring training and accreditation
NSW	-
Vic	-
Qld	179
SA	-
WA	19
Tas	-
NT	39
ACT	-
AUSTRALIA	**237**

Tail docking of cattle

Removal of the lower portion of the cow's tail is commonly referred to as 'tail docking'. Some producers believe that tail docking improves working conditions for milking personnel, enhances udder cleanliness, decreases the risk of mastitis, and improves milk quality and milk hygiene. Support for these claims is largely anecdotal, and research has not identified any protection against the transmission of leptospirosis, improvements in udder hygiene, somatic cell count, or the prevalence of intra-mammary pathogens that could be attributed to tail docking. With the possible exception of improved worker comfort, producers have little to gain from adopting this procedure.

On the other hand, behavioural evidence suggests that a proportion of calves experience some transient discomfort or pain during tail docking, and tail-docking older cattle using rubber rings has minimal effects. Although the acute effects of tail docking on dairy cattle, in terms of acute pain and distress, are probably low, the long-term adverse effects must also be considered. The procedure increases temperature sensitivity of the tail, and the presence of neuromas[76] suggest that tail docking may be associated with chronic pain[77]. Additionally, fly avoidance behaviours are more frequent in docked cattle.[78]

According to Table 5 the number of dairy cows tail docked without veterinary advice, and not for the purpose of treating injury or disease, is estimated to be 61,800 per annum with the majority in Vic (i.e. 50,000 cows).

[75] See Table A2.12 of Appendix 2 for source of estimates
[76] Barnett, J. L., et al. (1999). "Tail docking and beliefs about the practice in the Victorian dairy industry." *Australian Veterinary Journal*, 77(11): 742-747
[77] Eicher, S. D., et al. (2006). Short Communication: Behavioural and Physiological Indicators of Sensitivity or Chronic Pain Following Tail Docking. *Journal of Dairy Science*. 89: 3047-3054
[78] Eicher, S. D. & J. W. Dalley (2002). "Indicators of acute pain and fly avoidance behaviours in Holstein calves following tail-docking." *Journal of Dairy Science* 85, (11): 2850-2858

Table 5 – Estimated number of dairy cows affected by tail docking without veterinary advice and not for treatment of injury or disease per annum – by state and territory[79]

Jurisdiction	Total dairy cows affected
NSW	800
Vic	50,000
Qld	-
SA	-
WA	-
Tas	11,000
NT	-
ACT	-
Australia	**61,800**

Dehorning of cattle

Dehorning or disbudding is the process of removing or stopping the growth of horns in livestock. On intensively managed properties, it is feasible to dehorn very young calves (up to two months old). Three methods are commonly used: hot iron, knife, and spoon or tube. The justification is that livestock without horns:

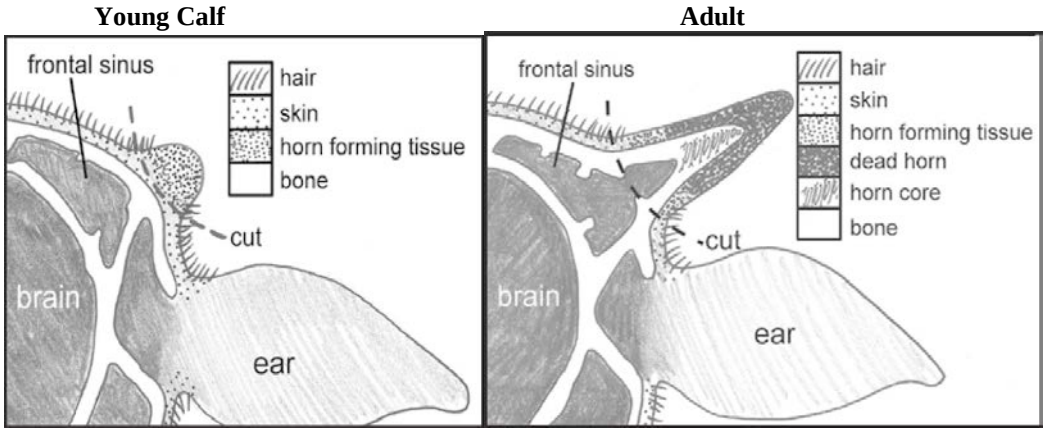
- Are less likely to hurt or injure other livestock;
- Are less likely to hurt or injure themselves;
- Are easier to handle;
- Cause less damage to farm infrastructure such as yards, gates and troughs;
- Require less space during transport;
- Require less space in feedlots; and
- Are easier to catch in a head bail and apply ear tags to.[80]

Bruising costs the Australian beef cattle industry an estimated $20m per annum and extensive research in NSW and Qld has shown that the single major cause of bruising is the presence of horns on cattle.[81]

All methods of dehorning are invasive and involve tissue destruction as shown in Figure 3 below. Several studies by Graf and Senn (1999)[82] and McMeekan *et al* (1999)[83] have demonstrated the negative welfare experiences of dehorning without pain relief based on both behavioural and physiological factors. In Australia there are an estimated 174,733 calves dehorned every year without the use of pain relief, as shown in Table 6. The majority of calves affected by potential adverse welfare impacts are in Qld, Vic and NSW.

[79] See Table A2.19 of Appendix 2 for source of estimates
[80] http://www.mla.com.au/Livestock-production/Animal-health-welfare-and-biosecurity/Husbandry/Dehorning-and-disbudding
[81] http://www.dpi.nsw.gov.au/agriculture/livestock/beef/husbandry/general/dehorning-cattle
[82] Graf, B. and M. Senn (1999), "Behavioural and physiological responses of calves to dehorning by heat cauterization with or without local anaesthesia", *Applied Animal Behavioural Sci*ence, 62:153-171
[83] McMeekan, C., Stafford, K.J., Mellor, D.J., Bruce, R.A., Ward, R.N. and N. Gregory (1999), "Effects of a local anaesthetic and a non-steroidal anti-inflammatory analgesic on the behavioural responses of calves to dehorning", *New Zealand Veterinary Journal*, 47: 92-96

Figure 3: Illustration of surgical cutting during the dehorning of cattle



Source: Meat & Livestock Australia (2007) A guide to best practice husbandry in beef cattle - branding, castrating and dehorning

Table 6 – Estimated number of calves dehorned without pain relief per annum – by state and territory[84]

Jurisdiction	Calves affected
NSW	30,690
Vic	24,637
Qld	78,086
SA	-
WA	20,080
Tas	-
NT	21,180
ACT	60
Australia	**174,733**

Of all the methods used to destroy horn tissue - chemical disbudding (chemical cauterization with caustic paste) has been considered to be more painful than heat cauterization (hot iron) on the basis of differences in cortisol responses in a single study by Morrise *et al* (1995) [85]. Weary (2006) [86] found that pain-related behaviours increased in calves that were dehorned with caustic paste versus those sham dehorned. However, more recently, a study concluded that caustic paste causes pain, but that it is *less* than that caused by the hot iron, even when using local anaesthetic[87]. Moreover, caustic disbudding has a lower impact in younger animals and works best in calves less than 14 days old before the development of the horn bud into horn tissue. Furthermore, chemical burns pain may be transient.

[84] See Table A2.11 of Appendix 2 for source of estimates
[85] Morrise, JP, Cotte, JP, Huonnic, D (1995) Effect of dehorning on behaviour and plasma cortisol responses in young calves. *Applied Animal Behaviour Science* 43, 239-247
[86] Weary D, *Reducing pain due to caustic paste dehorning*, University of British Columbia, Vol 6 No.4
[87] Vickers, KJ, Niel, L, Kiehlbauch, LM, Weary, DM (2005) Calf response to caustic paste and hot-iron dehorning using sedation with and without local anesthetic. *J Dairy Sci* 88, 1454-1459

Nonetheless, chemical or caustic disbudding has additional risks associated with the caustic chemical getting into eyes and other sensitive tissues when calves lick each other or nuzzle their dams, or when it rains.

The number of calves affected by caustic disbudding in Australia is estimated to be around 24,346 per annum, with the majority (i.e. an estimated 15,520 calves) in Vic.

Table 7 – Estimated number of calves dehorned with caustic chemicals – by state and territory[88]

Jurisdiction	No. calves affected
NSW	3,043
Vic	15,520
Qld	1,369
SA	1,369
WA	837
Tas	2,206
NT	-
ACT	-
Australia	**24,346**

Branding of cattle

Cattle identification is essential to enable legal proof of ownership for those responsible for cattle welfare and cattle management. Branding is the placing of permanent identifying marks on the hide of cattle by destroying hair follicles and altering hair growth using heat or cold. Freeze branding has limited applications because of:

- High level of preparation required including clipping and swabbing
- Requirement for liquid nitrogen, dry ice and alcohol procurement and storage
- Long contact time necessitating longer restraint time
- The brand is not visible on white or grey cattle.

Although branding reduces the cash value of the hide - hot iron branding is an important practice especially for extensively managed herds, where there is no alternative of simple and permanent identification that is 100% reliable. Branding is also a legal requirement in the NT and some states. However, amongst all identification methods, branding is considered to have a high animal welfare impact. Some branding procedures can cause a degree of pain, especially hot iron branding, however it is not currently possible to measure the pain experienced during this procedure. For example, the immediate pain response using hot iron branding is greater than with freeze branding however the longer term response to the different methods is not conclusive (Lay and colleagues, cited by Hayward 2002) The use of some techniques is no longer acceptable. Examples include; the use of caustic chemicals to mark the skin and the application of hot iron brands to the

[88] See Table A3.17 of Appendix 3 for source of estimates

head/face of cattle. The number of cattle affected by painful branding procedures is unknown.
Further information on invasive procedures is provided in a series of discussion papers available from the website: www.animalwelfarestandards.net.au

Other areas of welfare concern are:

- **Handling -** There is the possibility of incorrect cattle handing by lifting, dropping, dragging, striking, tail breaking, wounding. As shown in Table 8 – this would affect an unknown proportion of 16.75m cattle across Qld, WA and NT with the largest potential number in Qld.

Table 8 – Unknown % of cattle affected by mishandling – by state and territory[89]

Jurisdiction	% of cattle affected
NSW	-
Vic	-
Qld	% of 12,539,625
SA	-
WA	% of 2,009,382
Tas	-
NT	% of 2,197,359
ACT	-
AUSTRALIA	**% of 16,746,366**

There is also the possibility of driving cattle to exhaustion. As shown in Table 9 – this would affect an unknown proportion of 23.53m cattle across NSW, Qld, SA, WA and NT.

Table 9 – Unknown % of cattle affected by exhaustion – by state and territory[90]

Jurisdiction	% of cattle affected
NSW	% of 5,583,931
Vic	-
Qld	% of 12,539,625
SA	% of 1,199,640
WA	% of 2,009,382
Tas	-
NT	% of 2,197,359
ACT	-
AUSTRALIA	**% of 23,529,937**

- **Electric prodders -** are used to handle and manage the movement of cattle in some cases. An abuse of electric prodders can all cause pain and distress. An electric stock prod uses a relatively high-voltage, low-current electric shock that is painful to

[89] See Table A2.5 of Appendix 2 for source of estimates
[90] See Table A2.5 of Appendix 2 for source of estimates

cattle; the pain stimulates movement. As shown in Table 10 – this would affect an unknown proportion of 27.54m cattle across all states and territories**.**

Table 10 – Unknown % of cattle affected by inappropriate use of electric prodders – by state and territory[91]

Jurisdiction	% of cattle affected
NSW	% of 5,583,931
Vic	% of 3,385,850
QLD	% of 12,539,625
SA	% of 1,199,640
WA	% of 2,009,382
Tas	% of 611,583
NT	% of 2,197,359
ACT	% of 8,807
AUSTRALIA	**% of 27,536,177**

- **Dogs not under effective control or muzzled when moving calves** - Dogs have evolved as a predator species and cattle are a prey species; thus contact between the two can cause fear and stress. Dogs need to be trained and kept under control to reduce incidences of biting and wounding cattle and in particular when moving calves they are required to be muzzled. As shown in Table 11, there are an estimated 745 dogs, which are not under effective control with the majority of 272, 192, and 160 in NSW, Qld and Vic, respectively. However the number of cattle affected by the lack of control of such dogs is not known.

Table 11 – Estimated number of dogs not under effective control – by state and territory[92]

Jurisdiction	Dogs not under effective control
NSW	272
Vic	160
QLD	192
SA	46
WA	45
Tas	26
NT	3
ACT	1
AUSTRALIA	**745**

As shown in Table 12, there are an estimated 72 dogs, which are not under effective control with the majority of 27, 20, and 12 in NSW, Qld and Tas, respectively. However the number of calves affected by the lack of muzzling of dogs is unknown.

[91] See Table A2.5 of Appendix 2 for source of estimates
[92] See Table A2.2 of Appendix 2 for source of estimates

Table 12 – Estimated number of dogs not muzzled whilst moving calves – by state and territory[93]

Jurisdiction	No. of dogs not muzzled
NSW	27
Vic	-
Qld	20
SA	8
WA	5
Tas	12
NT	-
ACT	-
Australia	**72**

- **Electro-immobilisation** - This is the use of pulsed, low-frequency electrical current to restrain an animal. The process produces tetanic contractions of skeletal muscles and therefore voluntary movement is not possible. Poorly restrained cattle pose a risk to handlers and to the animals themselves; so the restraint allows the safe handling of cattle for procedures such as dehorning, foot examination and other short-term husbandry practices. This is especially the case in extensive properties where handling facilities are inadequate and cattle are often not used to handling. There is a risk of the muscular contractions being aversive and breathing can be arrested in severe cases. Electro-immobilisation enables procedures to be done that should receive pain relief. As shown in Table 13, the number of cattle restrained with electro-immobilisation in Australia is estimated to be around 241,503 per annum, with the majority (i.e. an estimated 125,396 cattle) in Qld.

Table 13 – Estimated number of cattle restrained by electro-immobilisation– by state and territory[94]

Jurisdiction	No. Cattle affected
NSW	55,839
Vic	-
Qld	125,396
SA	11,996
WA	20,094
Tas	6,116
NT	21,974
ACT	88
Australia	**241,503**

- **Tethering -** is where an animal is confined to a specific area by an anchored chain and is typically used on an individual cow to allow grazing and access to pasture/feed in

[93] See Table A2.2 of Appendix 2 for source of estimates
[94] See Table A3.28 of Appendix 3 for source of estimates

unfenced areas. Tethering is regarded as a temporary method of restraint that is not suitable for long-term confinement. [95] (This problem does not include the short term tethering of cattle in shows for grooming, judging and display). The particular welfare concerns of permanently tethered cattle[96] are that they may be unable to obtain sufficient exercise and are typically isolated from other cattle (which are herd animals). Both of these issues are likely to result in adverse welfare outcomes for permanently tethered cattle. The probability of both these issues occurring is reasonably high. However the extent of permanent tethering in Australia is not substantial in relation to the overall population of cattle. There are an estimated 150 permanently tethered cattle in Australia with the majority (100) in NSW, as shown in Table 14.

Table 14 – Estimated number of cattle permanently tethered – by state and territory[97]

Jurisdiction	No. of cattle permanently tethered
NSW	100
Vic	10
Qld	10
SA	10
WA	10
Tas	10
NT	-
ACT	-
Australia	**150**

- **Induction of calving** - is used predominantly in pasture-based seasonal dairying systems as a management tool to achieve a compact herd calving pattern to maximise milk production from pasture. It is generally done during the third trimester of pregnancy on cows with a late calving due date (typically later than 8 weeks into the seasonal calving period) with little risk to the cow but often with reduced viability of the early calf. The early calves need particular attention. Induction is also used by veterinarians as an individual cow treatment to hasten calving to address cow and calf welfare concerns. However, there are two main welfare concerns with induced calving:
  - the welfare of the calves produced by induced cows; and
  - the effect of the procedure on the health of the cow. Induced cows may be more prone to a number of health problems, including retained foetal membranes, photosensitisation, mastitis and toxaemic collapse. This morbidity is understood to be a rare issue.

  There are an estimated 84,139 cattle per annum that are induced in Australia with the majority (72,216) in Vic, as shown in Table 15.

[95] See Table A2.3 of Appendix 2 for source of estimates
[96] Typically, pet cattle, show cattle and farm house paddock cattle
[97] See Table A2.4 of Appendix 2 for source of estimates

Table 15 – Estimated number of cows induced annually – by state and territory[98]

Jurisdiction	No. of Cows affected
NSW	-
Vic	72,216
QLD	-
SA	-
WA	-
Tas	11,923
NT	-
ACT	-
Australia	**84,139**

- **Heat stress of dairy and feedlot cattle** - Heat stress can cause significant discomfort and occasionally death in confined cattle. There are a number of management strategies that can reduce this impact, including shade, the provision of cold drinking water, etc. The Australian feedlot industry has highly developed quality management systems in place for the management of hot conditions – however this does not cover the number of cattle managed by 1,762 unaccredited feedlots (see Table 18). Moreover, as shown in Table 16, there are an estimated 3,868 dairy farms, needing to manage heat stress to a degree with the majority of 2,753, 484, and 357 in Vic, NSW and Qld, respectively. However the number of cattle affected by the lack of heat stress management in dairy farms and unaccredited feedlots is not known;

  Table 16 – Estimated number of dairy farms needing to manage heat stress – by state and territory[99]

Jurisdiction	No. of dairy farms affected
NSW	484
Vic	2,753
Qld	357
SA	172
WA	102
Tas	-
NT	-
ACT	-
Australia	**3,868**

- **Inadequately cleaned pens in calf rearing systems -** There is a minority of cattle farmers who allow faeces and urine to accumulate in pens to a stage that is compromising the welfare of calves in an intensive production system via disease. It is estimated that there are approximately 22 inadequately cleaned pens affecting approximately 548 calves across Australia, as shown in Table 17. The majority of these calves and pens are in NSW and Tas. - followed by Qld and SA (see Table 17).

[98] See Table A3.24 of Appendix 3 for source of estimates
[99] See Table A2.18 of Appendix 2 for source of estimates

Table 17 – Estimated number of calves affected by inadequately cleaned pens – by state and territory[100]

Jurisdiction	No. of calves affected
NSW	189
Vic	-
Qld	85
SA	85
WA	52
Tas	137
NT	-
ACT	-
Australia	**548**

- **Feedlots and diet -** Feedlots are yarded areas developed for the purpose of ensuring that cattle can reach a specific weight to achieve a consistent quality and quantity of meat for market requirements either before slaughter or during drought. However there are a number of unaccredited feedlots where quality of feed (composition) and quantity of feed (including daily access to feed) cannot be assured. This would have welfare impacts for cattle in such unaccredited feedlots with respect to hunger or a lack of a necessary diet to maintain full health and vigour. As shown in Table 18, there are an estimated 1,762 feedlots. Whilst this is much larger and almost four times the number of accredited feedlots (i.e. 450) this does not represent four times more cattle serviced. This is because the largest share of cattle belongs to large accredited facilities. Therefore, the number of cattle in unaccredited feedlots affected by risk of poor diet remains unknown.

Table 18 – Estimated number of accredited and unaccredited feedlots – by state and territory[101]

Jurisdiction	No. accredited feedlots	Estimated No. non-accredited feedlots
NSW	93	366
Vic	41	161
Qld	216	846
SA	19	75
WA	34	133
Tas	8	32
NT	38	149
ACT	-	1
Australia	**450**	**1,762**

- **Killing including of very young calves** - Killing of animals is an expert skill and is often regarded as controversial; but humane standards of killing must be agreed to

[100] See Table A2.17 of Appendix 2 for source of estimates
[101] See Table A2.20 of Appendix 2 for source of estimates

provide the most appropriate welfare outcome where a cow or calf needs to be euthanased. Given the reduced availability of guns and captive bolt slaughter devices, the use of blunt trauma by a single blow to the head of a calf is regarded as a humane and practical method of killing very young animals. Whilst the expert application of blunt trauma in calves is a cheap and practical method of killing it is seen as cruel where the calf is greater than 24hrs old. The number of calves that are killed with blunt trauma over 24hrs of age is unknown.

2.1.3 Excess regulatory burden

Excess regulatory burden arises from a lack of national consistency and from unnecessary existing standards.

Lack of national consistency

A project to address the need for consistency in animal welfare arrangements was endorsed by PIMC in 2006 and funded under the AAWS. It followed agreement by livestock industries that inconsistency of welfare requirements and operational arrangements for industry members under existing jurisdictional laws and enforcement arrangements was the most important impediment to achievement of improved and nationally consistent animal welfare outcomes.

In addition the AAWS Livestock and Production Animals Working Group repeatedly stated that consistency in animal welfare arrangements is the single biggest obstacle to achieving nationally consistent improvements in animal welfare outcomes.

A lack of consistency in regulation of animal welfare arrangements also results in unnecessary regulatory burden for farm businesses that operate in more than one state or territory, and would be subject to different requirements across borders. The extent of cattle farming businesses operating in more than one jurisdiction and the number of cattle that are affected adversely is currently unknown. In addition a lack of consistency results in impediments to the setup and operation of national quality assurance schemes by industry associations.

An example of the effect of inconsistent implementation of animal welfare regulations is provided by the fourth edition of the poultry code. The implementation of the poultry code experienced years of delay after its endorsement by Ministerial Council in 2002 (when it was envisaged that the code would be implemented within around 12 months). Regulations to give effect to the poultry code were only implemented by the end of 2008 in some jurisdictions. In addition the regulation of the code varied substantially between jurisdictions.

As discussed in Part 1.2.2.3 of this RIS, a key objective of the AAWS was ‘to facilitate improved consistency of legislation across states and territories for improved and sustainable animal welfare outcomes.’ The aim is to ensure all animals receive a standard level of care and treatment. 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. At the 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.

The main jurisdictional differences in animal welfare standards for cattle are the following cases where one or more jurisdictions have explicit standards whereas others have either guidelines or no mention:

- Electro-immobilisation is banned in Vic and can only be used by veterinarians in NSW and Tas. In other states, veterinarians are not required.

- Branding cattle on the head is currently banned in SA and Qld; and in NSW unless performed by a veterinarian. Head branding is unlikely to be done in Vic or WA because of requirements for alternative ID systems;

- Castration of cattle over 6 months of age is banned in Tas and NSW unless done by a veterinarian. In SA, castration of cattle over 3 months of age is banned in unless done by a veterinarian. (It is assumed that veterinarians would use pain relief).

- Dehorning of cattle over 6 months of age is banned in Tas and SA unless done by a veterinarian. In NSW, dehorning of cattle over 12 months of age is banned unless done by a veterinarian.

- Spaying of cattle banned in Tas, NSW and SA unless done by a veterinarian.

The number of businesses affected by these inconsistencies (i.e. those operating across jurisdictions) and the number of cattle involved is currently unknown; however estimates were sought via public consultation questions. In their submission to the consultation RIS, the Northern Territory Cattlemen's Association (NTCA) estimated that 40% - 60% of NT production (i.e. 1 to 1.5 million head of cattle) came from 20 to 50 business entities representing 200 cattle stations that operated in more than one jurisdiction. However, the total number of cattle businesses operating across different Australian jurisdictions and operating under different legislation in the context of standards S5.7, S5.10, S6.2 S6.4 and S6.7 remains unquantifiable.

Such inconsistencies have the potential to cause unnecessary regulatory burden as a result of interstate businesses having to comply with different standards. Where those differences are not risk–based, any additional costs represent waste.

Some differences in standards are required because of biological or behavioural variations between cattle breeds, climate or other regional differences; but other inconsistencies in standards are not necessary for these reasons. Such differences would be about promoting 'best practice' rather than national consistency for consistency's sake.

Where regional or other critical differences are not apparent, 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.[102]

[102] TU Dresden and Fraunhofer Institute, 2000

Unnecessary existing standards

Excess regulatory burden can also be imposed by unnecessary existing standards. Specifically;

- Clause 5.1.3 of the existing MCOP requires that procedures applied to cattle must be competently performed, implying a requirement for formal training and excluding on-the–job training under experienced supervision.

- Clause 5.8.4 of the existing MCOP bans the use of corrosive chemicals to dehorn cattle; whereas caustic disbudding at a very young age is relatively low impact and any pain may be transient and reduced by ensuring certain conditions including ensuring that a calf:
  - is under fourteen days old; and
  - can be segregated from its mother for four hours after treatment; and
  - can be kept dry for 12 hours after treatment; and
  - is not wet.

2.2 Policy objective

The former Animal Welfare Committee (AWC) which provided expert advice to state and territory primary industries ministers requested that animal welfare standards be: 'clear, essential and verifiable.' To complement these criteria, the four main decision-making principles used for policy analysis in the welfare standards development process are that they are:

- Desirable for animal welfare, and preferably supported by science;
- Feasible for industry and government to implement;
- Important for the animal welfare regulatory framework; and
- Will achieve a valid, intended outcome for animal welfare.[103]

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

To minimise risks to cattle welfare and unnecessary regulatory burden in a way that is practical for implementation and industry compliance.

The main criterion for evaluating the proposed standards and the feasible alternatives is net benefit for the community, in terms of achieving this policy objective. As part of the evaluation, there will be a need to ensure that the benefits of the proposed standards justify their costs, and that they take into account the expectations of the Australian and international communities.

[103]Adapted from Linstone and Turoff 2002 The Delphi Method: Techniques and Applications III.B.I The Policy Delphi

3.0 Options considered

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

Having no standards at all is not a feasible option, because jurisdictions already have their own standards as part of the base case; and it is outside the scope of this RIS to consider changes to individual state or territory standards.

Similarly, public education campaigns as an alternative to national standards are likely to be ineffective and therefore not a feasible alternative. The behaviours that need to be changed are displayed by only a small percentage of farmers who are unlikely to be more influenced by public education campaigns than by enforceable standards.

As discussed in Part 2.1.2 of this RIS, there is a lack of information in the market place, as consumers of beef and dairy products are not aware of the welfare status of the cattle used to produce the products they are buying. However, even if such consumer information were available, the market share for other animal welfare-related products indicates that only a small percentage of consumers would be likely to be influenced in their purchasing decisions. Thus better consumer information is not a practical alternative to welfare standards and guidelines.

At the SRG meetings in 2009 and 2010, alternative positions and views were expressed by governments, industry and animal welfare organisations regarding the need to consider various practicable alternatives, resulting in a provisional list of variations to the proposed standards. This list was prioritised to seven variations by the Animal Welfare Committee, on the basis of contentious issues that might provide further improvements in animal welfare, but before the costs of such improvements had been estimated. In arriving at the variations to be examined, the same four main decision-making principles used for policy analysis in the welfare standards development process (refer to Part 2.2. of this RIS) were used to assess the potential suitability of the variations for further analysis. The public consultation sought the views and advice of interested parties in the further formulation of variations to the existing proposals.

The feasible alternatives together with the proposed national standards will from here on be referred to as ‘options’. The options to be evaluated in terms of costs and benefits are:

- **Option A:** converting the proposed national standards as currently drafted into national voluntary guidelines (the minimum intervention option);

- **Option B:** the proposed national standards as currently drafted with the intention of them being made mandatory;

- **Option C:** the proposed mandatory national standards as currently drafted with one or more of the following variations;

    - *Option C1*: pain relief for all spaying

    - *Option C2*: banning flank spaying/flank webbing

- *Option C3*: banning permanent tethering
- *Option C4*: banning the use of dogs on calves
- *Option C5*: banning caustic dehorning
- *Option C6*: banning induction of early calving except for veterinary requirements
- *Option C7*: banning electro-immobilisation.

Information on the meanings and impacts of these options is given in the evaluation of costs and benefits in the next part of this RIS.

4.0 Evaluation of Costs and Benefits

4.1 Introduction

This part of the RIS identifies the relative costs and benefits for the proposed national standards and each of the other options, as identified in Part 3.0, in comparison with the 'base case'. The 'base case' is used as a reference point for measuring the incremental costs and benefits of each of the options, including the proposed standards. Each of the options is assessed in relation to how well the underlying policy objective identified in Part 2.2 of this RIS is likely to be achieved.

Where data exists, discounted[104] quantitative estimates of costs and benefits are provided over 10 years of implementation. A discount factor of 7% is used for present value (PV) calculations in this RIS, as recommended by the Commonwealth Office of Best Practice Regulation (OBPR). Whilst it is expected that the standards would be reviewed every 5 years, a 10-year analysis is conducted to effectively capture their full impact, taking into consideration implementation lag times. A detailed discussion of the estimation of costs is provided in Appendices 2 and 3 to this RIS. All data used are sufficiently certain, and robust assumptions are stated. However, where cost and benefit data or assumptions is not available, then a quantitative measure is not possible and the assessment is made using qualitative criteria about the achievement of the policy objective. All costs and benefits reported are incremental to the base case (refer to Part 4.2 of this RIS).

The costs and benefits of Options A, B, and C (the practical alternatives) are evaluated by using the following criteria (**I to III**) to compare the effectiveness of each option in achieving the relevant part of the policy objective:

I. Animal welfare benefits;

II. Reduction in regulatory burden; and

III. Net compliance costs to industry and government.

4.2 The base case

The term 'base case' means relevant status quo, or the situation that would exist if the proposed standards were not adopted i.e. existing standards plus market forces and the relevant federal, state and territory legislation (refer to Appendix 4 for details). The base case provides the benchmark for measuring the incremental costs and benefits of the proposed standards and other options. It is important to note that the market forces component of the base case applies to the benefits as well as the costs. Just as the influence of market forces is subtracted from the gross costs, in order to estimate incremental costs, if there are financial gains from improved production then these market forces should also be subtracted from the gross benefits in order to estimate incremental benefits. In other words, if rational and informed farmers can save themselves money by improving welfare, then they will do it voluntarily, without being forced to do so by mandatory standards. (These points are made in response to the submission from Queensland DAFF).

[104] A discount factor of 7% is used for present value (PV) calculations in this RIS, as recommended by OBPR

Cruelty and other unlawful practices can already be prosecuted under cruelty and other offence provisions of animal welfare legislation. For example, cattle must not be allowed to suffer malnutrition or dehydration, or worse still die from lack of feed or water.

The proposed standards are intended to replace the following model code of practice:

- Model Codes of Practice for the Welfare of Animals: Cattle, 2nd edition PISC Report 85, CSIRO Publishing, 2004

The proposed standards once implemented may also over-ride provisions for cattle in the following codes of practice:

- Model Codes of Practice for the Welfare of Animals: Animals at Saleyards, PISC/SCARM Report Series 31, CSIRO Publishing, 1991
- Model Codes of Practice for the Welfare of Animals: Livestock at Slaughtering Establishments, PISC/SCARM Report Series 79, CSIRO Publishing, 2001.

These proposed standards are consistent with those in the:

- Australian Animal Welfare Standards and Guidelines – Land Transport of Livestock, Edition One, Version 1.1, 21 September 2012.105

It is open to states and territories at any time to adopt the existing model code 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 AMF for endorsement, the decision to be made by AMF will be whether to replace the existing model code and relevant state codes with the proposed standards or alternative options. 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 the level of enforcement (which jurisdictions advise are unlikely). In other words, the RIS needs to separate out other factors (such as the level of enforcement) in order to measure the incremental costs and benefits of changes in standards; that is, to compare 'like' with 'like'.

4.3 Evaluation of options relative to the base case

The assessment of the costs and benefits of the proposed standards and other options will be conducted by discussing each option in terms of its expected incidence and distribution of costs and benefits, relative to the 'base case' (defined in Part 4.2 of the RIS).

Option C will entail one or more variations of Option B (i.e. Options C1 to C7), which unlike Options A and B are not mutually exclusive. Each Option C1 to C7 is analysed using the same criteria as for Options A and B. These variations have been requested by government and industry for further investigation in this RIS process. Options C1 to C7 would each involve the issuing and promotion of national standards (same as Option B), to be reviewed once every 5 years by AMF. These agreed national standards would become regulations and would be mandatory. Like Option B, any such variations of the mandatory national standards would also replace relevant state or territory codes of practice that currently exist under the 'base case'.

[105] http://www.animalwelfarestandards.net.au/land-transport/

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 the appendices.

A list of the proposed national standards with negligible incremental costs relative to the base is provided in Appendix 5.

In order to consolidate the analysis by removing duplication and thereby making the options easier to compare, the following main benefit and cost features of the proposed national standards are outlined in Part 4.3.1 and 4.3.2, respectively. The discussion of options therefore highlights their differences, thereby avoiding the repetition of text and figures.

4.3.1 Benefit drivers of the proposed national standards

This part of the RIS highlights the main benefit drivers, which underlie the proposed standards. These are identified as unquantifiable benefits in terms of improved welfare outcomes and reduced regulatory burden.

Drivers of unquantifiable animal welfare benefits – Criterion I

The UK Farm Animal Welfare Council 'Five Freedoms' forms a reasonable framework for the description and consideration of animal welfare benefits addressed in the two Options and seven Variations (the key operating words are highlighted). The list does not represent a priority or hierarchy of needs or the basis for ranking the impact of welfare insult. 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. However, this RIS does not deal with perceived benefits of the options; but rather looks strictly at factual considerations, based on scientific evidence where available.

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.[106]

The standards take a balanced approach to address risks to the welfare of cattle in all of these areas. There is a focus on developing these standards that address the issues of husbandry procedures that cause pain, and on confinement issues. These are issues of

[106] http://www.fawc.org.uk/freedoms.htm

commission or direct intervention by humankind as opposed to issues of omission or mis-management. In the former, mankind could take a more proactive role in the management of welfare risk and these standards direct what is reasonable.

The relevant proposed standards for addressing *animal welfare problems*, identified in Part 2.1, are directed at providing benefits to cattle welfare, from better compliance often as a result of explicitly stating implied standards of welfare. In some cases the standards spell out unacceptable behaviours that could otherwise result in a cruelty prosecution. Some jurisdictions already have equivalent legislation or standards under the base case. Jurisdictions where an improvement in welfare is expected are indicated in brackets after each standard, as follows:

- **Risk management of extreme weather, natural disasters, disease, injury and predation:**

  - *Proposed Standard 3.2 - must ensure the inspection of cattle at intervals and at a level appropriate to the production system and the risk to the welfare of cattle.* Uninspected cattle in all states and territories would achieve welfare benefits. As shown in Table 10, this has the potential to benefit the current number of uninspected cattle, which is an unknown proportion of 27.54 million cattle per annum. The welfare benefits are a function of the number of cattle that are currently inadequately inspected;

- **The handling and management of cattle including electro-immobilisation and identification and branding:**

  - *Proposed Standard 5.1 – must handle cattle in a reasonable manner*. As discussed in Part 2.1.2 of this RIS this standard would reduce the incidence of incorrect cattle handling (i.e. dropping, dragging, striking, tail breaking and wounding) for an *unknown proportion of 16.75 million cattle* across Qld, WA and NT (see Table 8). The welfare benefits are a function of the number of cattle that are currently incorrectly handled;

  - *Proposed Standard 5.2 – must not drive cattle to the point of collapse.* This standard would help to prevent the exhaustion of *an unknown proportion of 23.53 million cattle* across NSW, Qld, SA, WA and NT (see Table 9). The welfare benefits are a function of the number of cattle that are currently mistreated in this way;

  - *Proposed Standard 5.3 – must consider the welfare of cattle when using an electric prodder*. This proposed standard would restrict the inappropriate use of electric prodders for *an unknown proportion of 27.54 million cattle* across Australia (see Table 10). The welfare benefits are a function of the number of cattle that are currently mistreated in this way;

  - *Proposed Standard 5.4 – must keep a dog under effective control at all times during handling of cattle*. Cattle in all states and territories would receive welfare benefits from reduced likelihood of being bitten by dogs. The number of cattle that would otherwise be likely to be bitten by dogs not under effective control at all times remains unknown. The welfare benefits are a function of the number of cattle that are currently mistreated in this way;

  - *Proposed Standard 5.5 – must ensure a dog is muzzled when moving calves less than 30 days old that are without their mothers*. Calves in all states and territories would receive welfare benefits from no longer being bitten by dogs. The number of calves

that would otherwise be bitten by non-muzzled dogs remains unknown. The welfare benefits are a function of the number of cattle that are currently mistreated in this way;

- *Proposed Standard 5.6 – must ensure cattle are accustomed to tethering and must ensure tethered cattle are able to exercise daily.* Tethered cattle in all states and territories would receive welfare benefits except NT and ACT where cattle are not known to be tethered. As shown in Table 14 in this RIS, this would improve the welfare of an estimated 150 cattle across Australia with 100 cattle in NSW and 10 cattle in each of the remaining states of Vic; Qld; SA; WA and Tas;

- *Proposed Standard 5.7 – Electro-immobilisation on cattle must only be used under certain conditions and only by trained persons or under direct supervision of a veterinarian or a trained person. An unknown proportion of 179,548[107] cattle* for which electro-immobilisation is used would benefit from this practice being performed by competent persons. (cattle in Qld, SA, WA, NT and ACT);

- *Proposed Standard 5.8 – Electro immobilisation on cattle must not be used as an alternative to pain relief.* An *unknown proportion of an estimated 241,503 cattle* would no longer be subject to the use of electro-immobilisation as a form of pain relief (see Table 13). The welfare benefits are a function of the number of cattle that are currently mistreated in this way;

- *Proposed Standard 5.9 – must ensure use of appropriate methods and techniques to identify cattle that are applicable to the production system.* As noted in Part 2.1.2 in this RIS, *an unknown number of 27.54 million cattle* in all states and territories would be affected. The welfare benefits are a function of the number of cattle that are currently inappropriately identified;

- *Proposed Standard 5.10 – must not place a permanent *brand* on the head of cattle.* An unknown number of 2.2 million[108] cattle in NT, 611,583 cattle in Tas and 8,808 cattle in ACT would benefit from elimination of this painful procedure. The welfare benefits are a function of the number of cattle that are currently mistreated in this way;

- **Pain relief during castration, disbudding, dehorning and spaying:**

- *Proposed Standard 6.2 – must use *pain relief* when castrating cattle unless < 6 months old or < 12 months old if at their first yarding and where the later age is approved in the jurisdiction.* An estimated 66,012 calves would benefit from pain relief with 38,377; 10,590; and 9,516 calves affected in Qld, NT and WA, respectively (see Table 1 in this RIS);

- *Proposed Standard 6.4 – must use *pain relief* when dehorning cattle unless < 6 months old or < 12 months old if at their first yarding and where the later age is approved in the jurisdiction.* An estimated 174,733 calves would benefit from pain relief with the majority of 78,086; 30,690; and 24,637 calves affected in Qld, NSW and Vic, respectively (see Table 6 in this RIS);

- *Proposed Standard 6.5 – must consider the welfare of the calf when using caustic chemicals for disbudding, and must only use it under certain conditions.* The number of calves that would benefit from restraint of use of caustic disbudding would be an unknown proportion of 24,346 calves per annum with the majority (i.e. an unknown

[107] See estimate in Table 13 in this RIS less estimated of cattle in NSW and Tas
[108] See Table A2.5 of Appendix 2 for source of estimate

proportion of 15,520 calves) in Vic (see Table 7 in this RIS). The welfare benefits are a function of the number of cattle that are currently mistreated in this way;

- *Proposed Standard 6.7 – training or direct supervision requirement for spaying of cattle.* As shown in Table 4 in this RIS, the number of persons lacking accreditation and appropriated competency is estimated to be at 237 per annum with the majority of 179 persons located in Qld. However, the number of cattle affected by inadequate training or supervision of those performing spaying would be an unknown proportion of an estimated 319,582 heifers and 169,574 cows per annum throughout Australia and with the majority in Qld.[109] The welfare benefits are a function of the number of cattle that are currently adversely affected by inadequate training or supervision of those performing spaying

- *Proposed Standard 6.8 – must use pain relief when performing the flank approach for*spaying* or *webbing* of cattle.* As shown in Table 2, an estimated 186,162 heifers and 58,255 cows per annum throughout Australia would benefit from pain relief - with the majority in Qld (i.e. 199,943 heifers and cows); and

- *Proposed Standard 6.9 – must not use vaginal spreaders to *spay* a small or immature female cattle.* As shown in Table 3, the number of cows spayed that would benefit from the proposed standard is estimated to be 10,174 per annum with the majority, 8,998, in Qld.

- **Breeding management:**

  - *Proposed Standard 7.2 - must ensure *inspection* of calving cattle at intervals appropriate to the production system and the level of risk to the welfare of cattle* (cattle in all states and territories); Uninspected calving cattle in all states and territories would achieve welfare benefits. This would affect *an unknown proportion of 14.57 million cattle* (with the bulk of 6.31 million in Qld).[110]. The welfare benefits are a function of the number of cattle that are currently inadequately inspected;

  - *Proposed Standard 7.4 - must ensure an induced calf receives adequate colostrum or is *humanely killed* at the first reasonable opportunity, and by 12 hours old.* As shown in Table 15 in this RIS, an unknown proportion of 84,139 calves would be affected by improvements to welfare with the majority likely to be in Vic. The welfare benefits are a function of the number of cattle that are currently mistreated in this way;

- **Calf rearing systems:**

  - *Proposed Standard 8.4 - must not allow the faeces and urine of calves housed in an indoor system to accumulate to the stage that compromises the health and welfare of the calf.* It is estimated that approximately 548 calves across Australia, would experience an improvement in welfare, as shown in Table 17. The majority of these calves would be in NSW (189 calves) and Tas (137 calves) - followed by Qld and SA (see Table 17).

- **Dairy management:**

  - *Proposed Standard 9.2 - must implement appropriate actions to minimise heat stress of cattle.* This standard would affect *an unknown proportion of 1.6 million dairy cattle*

[109] See Table A3.1 of Appendix 3 for source of estimates
[110] Taken as all dairy cattle plus 50% of beef cattle in Table A2.5 of Appendix 2

throughout Australia including: NSW, Vic, Qld, SA, WA, NT and ACT. The welfare benefits are a function of the number of cattle that are currently mistreated in this way;

- *Proposed Standard 9.3 - must only *tail dock* cattle on veterinary advice and only to treat injury or disease*. According to Table 5 the number of cows, which would benefit from being tail docked with veterinary advice, and for the purpose of treating injury or disease, is estimated to be 61,800 per annum with the majority in Vic (i.e. 50,000 cows).

- **Beef feed lots:**

- *Proposed Standard 10.2 - must ensure the diet composition and quantities fed are recorded and records maintained for the duration of the feeding period of each group of cattle.* This would improve the welfare of an *unknown number of cattle* in all states and territories that are fed in unaccredited feedlots. The welfare benefits are a function of the number of cattle for which inadequate records of feeding are currently kept;

- *Proposed Standard 10.3 - must ensure feed is available daily to cattle in the beef feedlot.* This would improve the welfare of an *unknown number of cattle* in all states and territories that are fed in unaccredited feedlots. The welfare benefits are a function of the number of cattle that are currently not fed daily.

- *Proposed Standard 10.4 - must do a risk assessment each year for the heat load risk at the feedlot and implement appropriate actions to manage ongoing heat load risk.* This would improve the welfare of an *unknown number of cattle* in all states and territories that are currently experiencing heat stress in unaccredited feedlots. The welfare benefits are a function of the number of cattle that are currently at risk in this way;

- **Humane killing:**

- *Proposed Standard 11.5 - calf must be less than 24 hours old for a person to kill it by a blow to the forehead.* The number of calves that would benefit from this proposed standard (that would otherwise be killed with blunt trauma over 24hrs of age) is unknown however calves in all states and territories would benefit. The welfare benefits are a function of the number of cattle that are currently mistreated in this way;

Drivers of unquantifiable benefits of a reduction in regulatory burden – Criterion II

Proposed standards creating national consistency with respect to handling and husbandry would lead to lower transaction costs in the economy as a whole, as well as savings for individual businesses operating across jurisdictional boundaries.[111]

- **Resolving national inconsistencies with regards to handling and husbandry:**

- *Proposed Standard 5.7 electro-immobilisation requirements* would remove any inconsistencies between businesses operating across jurisdictions where electro-immobilisation is banned (i.e. Vic) or where it could only be done by veterinarians (NSW and Tas). The number of farms (and cattle) that would be affected by inconsistencies with regards to electro-immobilisation remains unknown. The benefits are a function of the number of farming business affected by inconsistencies with regards to the electro-immobilisation of cattle;

[111] TU Dresden and Fraunhofer Institute, 2000

- *Proposed Standard 5.10 ban on head branding* would remove any inconsistencies for businesses across jurisdictions where branding cattle on the head is banned (i.e. SA and Qld) or where it could only be performed by a veterinarian (NSW). This would not be relevant to businesses operating in Vic or WA as there would be requirements for alternative ID systems. The number of farms (and cattle) that would be affected by inconsistencies with regards to head branding remains unknown. The benefits are a function of the number of farming business affected by inconsistencies with regards to the head branding of cattle;

- *Proposed Standard 6.2 pain relief for castration under certain circumstances* would remove any inconsistencies for businesses across jurisdictions where castration of cattle over 6 months is banned unless performed by a veterinarian (i.e. Tas and NSW) or where castration of cattle over 3 months is banned unless performed by a veterinarian (i.e. SA). The number of farms (and cattle) that would be affected by inconsistencies with regards to castration remains unknown. The benefits are a function of the number of farming business affected by inconsistencies with regards to the castration of cattle;

- *Proposed Standard 6.4 pain relief for dehorning under certain circumstances* would remove any inconsistencies for businesses operating across jurisdictions where dehorning of cattle over 6 months of age is banned unless performed by a veterinarian (i.e. Tas and SA) or where dehorning of cattle over 12 months of age is banned unless done by a veterinarian (NSW). The number of farms (and cattle) that would be affected by inconsistencies with regards to dehorning remains unknown. The benefits are a function of the number of farming business affected by inconsistencies with regards to the dehorning of cattle;

- *Proposed Standard 6.7 training or a direct supervision requirement for spaying* would remove any inconsistencies for businesses operating across jurisdictions where spaying of cattle is already banned unless performed by a veterinarian (i.e. Tas, NSW and SA). The number of farms (and cattle) that would be affected by inconsistencies with regards to spaying remains unknown. The benefits are a function of the number of farming business affected by inconsistencies with regards to the spaying of cattle;

- **Removing unnecessary regulation with respect to training and caustic dehorning:**

  - *Proposed Standards: 6.1 (castration); 6.6 (dehorning); 7.1 (artificial breeding procedures)* would remove the need for formal training and allow for on-the-job training with experienced or veterinary supervision appropriate to the level of welfare risk for the cattle affected. However given that the number of farmhands that would otherwise need to be formally trained for the aforementioned procedures is unknown, this benefit remains unquantifiable. The benefits are a function of the number of employers who would not need to undergo formal training and the number of employers who would not need to pay for it.

  - *Proposed Standard 6.5* would allow the use of caustic disbudding at a very young age as such a procedure results in relatively low impact with transient pain as long as the following conditions were met:

    - is under fourteen days old; and
    - can be segregated from its mother for four hours after treatment; and
    - can be kept dry for 12 hours after treatment; and

- is not wet.

This would result in cost savings with respect to unnecessary regulatory burden for those farmers who would otherwise need to resort to organising expert contract labour for dehorning or disbudding. Given that the instances where farmers would prefer to use caustic disbudding as opposed to hiring contractors is unknown - these savings are unquantifiable. The benefits are a function of these cost savings.

4.3.2 Cost drivers of the proposed national standards

This part of the RIS highlights the main cost drivers of the proposed national standards, as shown in Table 19; that is, the standards that impose the highest costs. The 10-year incremental cost is estimated to be ***$52.45m***. This part also helps to contextualize the proposed national standards by illustrating the impact of discounted 2012-13 dollar costs and the average cost per cow in each state and territory, as shown in Table 20. For the purpose of the cost benefit analysis – the cost of making the necessary regulations to adopt the standards is deemed to be relatively small and in any case, part of the normal role of government. Therefore, it is not considered as part of the incremental costs. On the contrary, having national standards would save jurisdictions the cost of developing their own standards. A list of unquantifiable costs is also provided at the end of these tables. All other proposed standards have been assessed as imposing negligible incremental costs relative to the base case.

Table 19 – Quantifiable 10-year incremental cost of proposed national standards (Option B) by state and territory – 2012-13 dollars (7% discount rate) ($m) [112]

Proposed Standard	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	TOTAL
5.4 (dog control)	$0.66	$0.39	$0.47	$0.11	$0.11	$0.06	$0.01	$0.00	$1.81
5.5 (dog muzzling)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
5.6 (tethering and exercise)	$2.02	$0.23	$0.20	$0.19	$0.22	$0.26	$0.00	$0.00	$3.13[113]
5.7 (Electro-immobilisation training)	-$0.20	$0.02	$0.07	$0.01	$0.01	-$0.02	$0.01	$0.00	-$0.11
6.2 (Castration with pain relief)	$0.00	$0.43	$2.20	$0.00	$0.55	$0.00	$0.61	$0.00	$3.79
6.4 (Dehorning with pain relief)	$1.76	$1.41	$4.48	$0.00	$1.15	$0.00	$1.22	$0.00	$10.03
6.7 (Spaying training)	$0.00	$0.00	$6.49	$0.00	$0.70	$0.00	$1.37	$0.00	$8.57[114]
6.8 (Spaying with pain relief)	$0.00	$0.00	$14.78	$0.00	$1.08	$0.00	$2.20	$0.00	$18.06
6.9 (Banning use of spreaders)	$0.00	$0.00	$0.50	$0.00	$0.02	$0.00	$0.04	$0.00	$0.56
7.2 (Inspection of calving cows)	$0.63	$0.63	$0.71	$0.25	$0.12	$0.14	$0.08	$0.00	$2.56
8.4 (calf feeding requirements)	$0.13	$0.00	$0.06	$0.06	$0.04	$0.12	$0.00	$0.00	$0.41
9.2 (Heat stress	$0.13	$0.72	$0.09	$0.04	$0.03	$0.00	$0.00	$0.00	$1.01

[112] See Table A2.25 of Appendix 2 for source of estimates

[113] States and territories have different hourly time costs for farm workers (see section A1.1 of Appendix 1).

[114] This estimate includes a one-off cost for a competency unit for the establishment of a syllabus and materials estimated to be $10,481 in present value dollars. It is not captured for any particular jurisdiction (by columns) as it is unknown where the Registered Training Organisation will be based. This explains the discrepancy between the horizontal sum of the totals by jurisdiction and the vertical sum of the totals by proposed standard.

Proposed Standard	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	TOTAL
management in dairy cattle)									
9.3 (Banning tail docking unless for welfare reasons)	$0.00	$0.02	$0.00	$0.00	$0.00	$0.01	$0.00	$0.00	$0.03
10.2 (Keeping records of feed quality)	$0.01	$0.00	$0.02	$0.00	$0.00	$0.00	$0.00	$0.00	$0.04
10.4 (Heat emergency requirements)	$0.09	$0.05	$0.21	$0.02	$0.04	$0.01	$0.02	$0.00	$0.43
11.5 (Banning of blunt force trauma killing of calves >24hrs of age)	$0.23	$1.42	$0.17	$0.08	$0.06	$0.16	$0.00	$0.00	$2.12
Total PV	***$5.46***	***$5.32***	***$30.45***	***$0.77***	***$4.13***	***$0.74***	***$5.57***	***$0.01***	***$52.45***

Table 20 and other similar tables in this RIS showing average cost per cow are designed to give an estimated total cost per animal in each jurisdiction and to provide an understanding of the relative impact of standards (or variations) by state or territory. However, some of the standards (variations) will apply only to beef cattle, dairy cattle, or both and the average cost per cow is not broken down into this detail. Furthermore, even if it were broken down, it is not possible to determine the number of animals either affected or not affected by one or more standards (variations). Therefore, care should be taken in using the average cost per cow in a jurisdiction to interpret the impact of standards or variations on a particular industry sector or an individual farmer's herd.

Table 20 – Range of average 10-year cost *per cow* as a result of the proposed national standards (Option B) by state and territory – 2012-13 dollars[115]

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	TOTAL
Total ($m)	$5.46	$5.32	$30.45	$0.77	$4.13	$0.74	$5.57	$0.01	$52.45
Total beef and dairy herd (m)	5.58	3.39	12.54	1.20	2.01	0.61	2.20	0.01	27.54
Cost per cow	**$0.98**	**$1.57**	**$2.43**	**$0.64**	**$2.05**	**$1.21**	**$2.53**	**$0.86**	**$1.90**

The list of unquantifiable costs (cost savings) under the proposed standards is given as follows:

- *Proposed Standard 3.2* – Unquantifiable minor incremental cost of inspecting cattle at intervals and at a level appropriate to the production system and risk to the welfare of cattle. Possible risks to cattle welfare include and are not limited to: fire; lack of water; lack of supplements (e.g. calcium or minerals); and bovine diseases. The incremental cost remains unquantifiable due to unknown variables in relation to – cattle breeds; regions; production systems; risks to welfare; and levels of existing inspections. This standard would not incur any additional cost for Qld (as noted in the submission by DAFF (Qld) to the consultation RIS) as current legislation already requires such activity under the base case.

- *Proposed Standard 10.3* – Unquantifiable minor incremental cost saving of ensuring feed is available daily to cattle in the beef feedlot. This would result in costs savings to beef feedlots not in the NFAS (estimated to be around 1,762[116]) in not being required to remove stale or spoilt feed, although in many cases this would probably be done

[115] See Table A2.26 of Appendix 2 for source of estimates
[116] See Table A2.20 for source of estimate

anyway. Given that the frequency of this is unknown – this cost savings remains unquantifiable.

Based on advice received from jurisdictions on the far more detailed Land Transport Standards[117], a reasonable assumption is made that there will be negligible incremental costs in enforcing the proposed standards compared to the existing code under the base case.

4.3.3 Option A: (non-regulatory option – voluntary national guidelines)

Option A would involve the issuing and promotion of agreed national risk-based guidelines once every 5 years by AMF. These agreed national guidelines would encompass 'should statements' as opposed to 'must statements' and, unlike the proposed standards, these guidelines would not become regulations and therefore would not be mandatory (i.e. adherence[118] would be voluntary).

These agreed national guidelines would be additional to industry guidelines or QA programs in the 'base case'. The voluntary national guidelines would also be additional to existing state or territory standards and codes of practice and guidelines under the 'base case'.

Unquantifiable incremental net benefits of Option A (Criterion I – animal welfare)

Option A would be likely to lead to improved animal welfare outcomes, depending on the level of *voluntary adherence* with the national guidelines, through a better management of risks to animal welfare in both beef and dairy cattle farms. Specifically, there would be improvements to the welfare of animals in ensuring the provision of adequate feed and water, suitable environments, health care, opportunity to express most normal behaviours and protection from fear and distress. However, any resulting improvement over the base case is likely to be significantly less than that which would occur under a situation of *mandatory compliance* with enforceable, risk-based and clearly understood standards.

Potential and unquantifiable incremental net costs of Option A (Criterion III – adherence costs)

Under Option A the beef and dairy farm industries would incur voluntary costs, depending on the degree of adherence to the voluntary guidelines. However there would be *no incremental costs imposed under Option A* as compared to the 'base case'. Importantly, *any voluntary cost incurred* would be driven by the degree of adherence to the guidelines. A description of potential voluntary costs that might be incurred is summarised in Table 19 in Part 4.3.2 of this RIS. The cost per state or territory under Option A (as illustrated in Table 19 in Part 4.3.2) will again depend on the degree of adherence to the guidelines.

[117] Tim Harding & Associates, 2008
[118] Compliance is not relevant as guidelines are not binding or enforceable

Unquantifiable incremental net benefits of Option A (Criterion V – nationally consistent guidelines)

Option A would be marginally more effective in promoting consistency, albeit from the prospective of voluntary guidelines. Industry-wide guidelines (as an alternative to regulated standards) would be likely to have a limited positive effect on the economy through an unquantifiable reduction in regulatory burden from the status quo in industry complying with a single national set of guidelines; however this would be limited by the extent of adherence. The AAWS would be limited in its ability to facilitate improved consistency of animal welfare outcomes across states and territories.

4.3.4 Option B: (the proposed national standards)

Option B would involve the issuing and promotion of agreed national risk-based standards once every 5 years post-implementation by the AMF. These agreed national standards would encompass 'must statements' and, unlike Option A, these standards would become regulations and would be mandatory (i.e. compliance would be mandatory). The mandatory national standards would replace existing state or territory model codes of practice and guidelines under the 'base case'.

Unquantifiable incremental net benefits of Option B (Criterion I – animal welfare)

As compared with Option A, Option B would lead to much more improved animal welfare outcomes, through a better management of risks to animal welfare in cattle farms due to mandatory compliance with enforceable risk-based standards. Specifically, there would be improvements to the welfare of animals in ensuring adequate feed and water, suitable environments, health care, opportunity to express most normal behaviours and protection from fear and distress. In particular:

- **risk management of extreme weather, natural disasters, disease, injury and predation:** all uninspected cattle across all states and territories may achieve welfare benefits. As shown in Table 10, this has the potential to affect *an unknown proportion of 27.54 million* cattle per annum;

- **handling and management of cattle including electro-immobilisation and identification and branding**: an unknown proportion of *16.75m cattle* (see Table 8) across Qld, WA and NT would benefit from better handling; an unknown proportion of *23.54 million cattle* per annum across NSW, Qld, SA, WA and NT would benefit from mitigation of exhaustion (see Table 9); an unknown proportion of *27.53 million cattle* across Australia would benefit from a reduction in the inappropriate use of electric prodders (see Table 10); reducing dog bites of cattle or calves by requiring dogs to be under effective control or muzzled when moving calves; there would be improved welfare for an estimated 150 tethered cattle across Australia with 100 cattle in NSW and 10 cattle in each of the remaining states of Vic; Qld; SA; WA and Tas (see Table 14) by requiring exercise; an unknown proportion of *179,548*[119] *cattle* for which electro-immobilisation is used would benefit from this practice being performed by

[119] See estimate in Table 13 in this RIS less estimates of cattle in NSW and Tas

competent persons in Qld, SA, WA, NT and ACT (see Table 13); *an unknown proportion of 241,503 cattle* would no longer be subject to the use of electro-immobilisation as a form of pain relief (see Table 13); an unknown number of *27.54 million cattle* in all states and territories would be affected by an improvement in cattle identification techniques appropriate to the production system; an unknown proportion of 2.2 million[120] cattle in NT, 611,583 cattle in Tas and 8,808 cattle in ACT would benefit from elimination of the painful head branding procedure.

- **pain relief during castration, disbudding, dehorning and spaying:** An estimated 66,012 calves would benefit from pain relief with 38,377; 10,590; and 9,516 calves affected in Qld, NT and WA, respectively (see Table 1 in this RIS); An estimated 174,733 calves would benefit from pain relief with the majority of 78,086; 30,690; and 24,637 calves affected in Qld, NSW and Vic, respectively (see Table 6 in this RIS); the number of calves that would benefit from conditions placed on use of caustic disbudding would be an unknown proportion of 24,346 calves per annum with the majority (i.e. an unknown proportion of 15,520 calves) in Vic (see Table 7); as shown in Table 4, Option B would require accreditation and appropriate competency with regards to spaying with the number of cattle affected being some unknown proportion of an estimated 319,582 heifers and 169,574 cows per annum throughout Australia and with the majority in Qld[121]; pain relief with respect to spaying would benefit 186,162 heifers and 58,255 cows per annum throughout Australia with the majority in Qld (i.e. 199,943 heifers and cows) (see Table 2); an estimated 10,174 cattle per annum with the majority, 8,998, in Qld would benefit from a ban on the use of vaginal spreaders (see Table 3);
- **breeding management:** uninspected calving cattle in all states and territories would achieve welfare benefits. This would affect an unknown proportion of *14.57 million cattle* (with the bulk of 6.31 million in Qld)[122]*;* as shown in Table 15, an unknown proportion of 84,139 induced calves would be affected by improvements to welfare in terms of either receiving colostrum or being humanely killed by 12hrs of age and with the majority likely to be in Vic.
- **calf rearing systems:** approximately 548 calves across Australia would experience an improvement in welfare in relation to the prevention of accumulation of faeces and urine in indoor systems (see as Table 17). The majority of these calves would be in NSW (189 calves) and Tas (137 calves) - followed by Qld and SA (see Table 17).
- **dairy management:** an unknown proportion of *1.6 million dairy cattle* throughout Australia including: NSW, Vic, Qld, SA, WA, NT and ACT would benefit from improvements in heat stress management; the number of dairy cows, which would benefit from being tail docked with veterinary advice, and for the purpose of treating injury or disease, is estimated to be 61,800 per annum with the majority in Vic (i.e. 50,000 cows) (see Table 5).
- **beef feedlots:** *an unknown proportion of cattle* housed in unaccredited feedlots throughout Australia would benefit from improved heat management and dietary outcomes under Option B.

[120] See Table A2.5 of Appendix 2 for source of estimate.
[121] See Table A3.1 of Appendix 3 for source of estimates
[122] Taken as all dairy cattle plus 50% of beef cattle in Table A2.5 of Appendix 2

- **humane killing:** an unknown number of calves that would otherwise be killed with blunt force trauma over 24hrs of age would benefit under Option B in all states and territories.

The number of cattle affected by particular standards across Australia is summarised in Table 21. The breakdown in welfare impacts and number of cattle affected by state and territory is summarised in Appendix 6 of this RIS.

Table 21 – Summary of number of cattle affected annually by welfare standards under Option B as compared to the base case[123]

Welfare issue resolved under Option B	Number of cattle affected
Inspection of cattle at intervals	% of 27,536,177
Better handling of cattle	% of 16,746,366
Reduced exhaustion of cattle	% of 23,529,937
Reduced misuse of electric prodders	% of 27,536,177
Reduced biting of cattle from dogs not under effective control	unknown
Reduced biting of calves from unmuzzled dogs	unknown
Exercise of permanently tethered cattle	150
Electro-immobilisation performed by competent persons	% of 179,548
Electro-immobilisation not be used as pain relief	% of 241,503
Improved less painful cattle identification techniques	% of 27,536,177
Banning of painful head branding procedure for cattle	% of 2,817,749
Requirement of pain relief for castration	66,012
Requirement of pain relief for dehorning	174,733
Conditional use of caustic disbudding	% of 24,346
Accreditation and competency required for spaying	% of 730,621
Requirement of pain relief for spaying	244,417
Banning the use of vaginal spreaders	10,174
Inspection of calving cattle	% of 14,568,089
Humane killing or receipt of colostrum for induced calves less than 12hrs old	% of 84,139
Prevention of accumulation of faeces and urine in calf rearing indoor systems	548
Improved heat stress management for dairy cattle	% of 1,600,000
Tail docking only to occur under veterinary advice and for welfare reasons	61,800
Improved heat stress management and dietary outcomes for cattle in unaccredited feedlots	unknown
Humane killing of calves over 24hrs of age	unknown

Unquantifiable incremental net benefits of Option B (Criterion II – reduced regulatory burden)

Option B would be effective in promoting national consistency. Industry-wide standards in relation to: S5.7 electro-immobilisation; S5.10 head branding; S6.2 castration; S6.4 dehorning and S6.7 spaying - would reduce regulatory burden for businesses operating in more than one jurisdiction. The number of farms affected by a reduction in jurisdictional inconsistencies is currently unknown, but was sought via public consultation questions. In their submission to the consultation RIS, the Northern Territory Cattlemen's Association (NTCA) estimated that 40% - 60% of NT production (i.e. 1 to 1.5 million head of cattle) came from 20 to 50 business entities representing 200 cattle stations that operated in more than one jurisdiction. However, the total number of cattle businesses operating across different Australian jurisdictions and operating under different legislation in the context of

[123] See Table A6.1 of Appendix 6 for source of estimates

standards S5.7, S5.10, S6.2 S6.4 and S6.7 remains unquantifiable. The AAWS would have increased ability to facilitate improved consistency of animal welfare outcomes across states and territories.

Furthermore, Option B would reduce regulatory burden with respect to unnecessary competency requirements with respect to castration, dehorning and artificial breeding procedures and would allow for caustic dehorning of calves under certain conditions. However both the extent of competency training that would be saved and the variety of conditions for caustic dehorning are not known. Therefore, the incremental benefit of Option B in relation to these matters remains unknown.

Quantifiable and unquantifiable incremental net costs of Option B (Criterion III – compliance costs)

Option B would impose incremental costs of approximately ***$52.45m*** over 10 years in 2012-13 dollars[124], as summarised in Table 19. The costs would be mainly attributable to the cost of pain relief[125] when either dehorning cattle under certain circumstances; or when performing the flank approach for spaying or webbing[126] of cattle, under proposed national standards S6.4 and S6.8, respectively. These two incremental costs would amount to approximately *$28.09m* in 2012-13 dollars (see Table 19). As shown in Table 19, the most impacted state would be Qld with respect to both proposed national standards (S6.4 and S6.8), with an incremental cost of *$19.26m* in 2012-13 dollars. Proposed standards under Option B are also likely to result in minor unquantifiable costs and cost savings as discussed in Part 4.3.2 of this RIS.

4.3.5 Option C1: (variation of proposed national standard S6.8)

Option C1 (variation of Option B) would be a variation of the proposed national standards (Option B) that would amend proposed standard 6.8, *requiring pain relief for all spaying*.

Unquantifiable incremental net benefits of Option C1 (Criterion I - animal welfare)

Option C1 would lead to greater animal welfare outcomes than Option B in relation to the 'base case', as it would require pain relief for all spaying. That is to say Option C1 would provide all the welfare gains under Option B but with additional cattle obtaining pain relief over and above just those involved in flank spaying or webbing. Under Option C1 cattle involved with DOT spaying would also receive pain relief. The main welfare gain is the reduction in pain from the procedure of spaying in the short term; and this is likely to be the largest reduction in pain and welfare impact experienced amongst Option B and the Variations. There are a limited number of analgesic drugs registered for use in cattle[127]. Ketoprofen (a non-steroidal anti-inflammatory drug) appears to be a successful drug in abolishing the short to medium term pain response. Another more recent report has confirmed that flank and DOT spaying should not be conducted without measures to

[124] Discounted at a rate of 7%
[125] A non-steroidal analgesic (i.e. Ketoprofen)
[126] See glossary for definition of terms
[127] Stafford KJ, Mellor DJ, Todd SE, Bruce RA, and Ward RN '*Effects of local anaesthesia or local anaesthesia plus a non-steroidal anti-inflammatory drug on the acute cortisole response of calves to five different methods of castration*' Research in Veterinary Science 2002, 73 61-70

manage the associated pain and stress[128]. Option C1 would improve the welfare for an additional estimated 486,204[129] heifers and cows, with the majority of these animals coming from Qld. That is to say, as compared to Option B, Option C1 would provide an additional benefit to cows that are DOT spayed (i.e.). Other welfare benefits under Option C1 would be identical to Option B.

Unquantifiable incremental net benefits of Option C1 (Criterion II – reduced regulatory burden)

Option C1 would result in the same reduction in regulatory burden as Option B.

Quantifiable and unquantifiable incremental net costs of Option C1 (Criterion III – compliance costs)

Option C1 would impose incremental costs of approximately ***$89.94m*** over 10 years in 2012-13 dollars[130], as summarised in Table 22. The costs would be mainly attributable to the cost of pain relief[131] when either dehorning cattle under certain circumstances; or when performing all spaying[132] of cattle, under proposed national standards S6.4 and the variation of S6.8, respectively. These two incremental costs would amount to approximately *$65.59m* in 2012-13 dollars (see Table 22). As shown in Table 22, the most impacted state would be Qld with respect to both proposed national standard S6.4 and variation to proposed national standard S6.8, with an incremental cost of *$49.93m* in 2012-13 dollars. Proposed standards under Variation C1 (of Option B) are also likely to result in minor unquantifiable costs and cost savings as discussed in Part 4.3.2 of this RIS.

Table 22 – Quantifiable 10-year incremental cost of Variation C1 by state and territory – 2012-13 dollars (7% discount rate) ($m) [133]

Proposed Standard	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	TOTAL
5.4 (dog control)	$0.66	$0.39	$0.47	$0.11	$0.11	$0.06	$0.01	$0.00	$1.81
5.5 (dog muzzling)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
5.6 (tethering and exercise)	$2.02	$0.23	$0.20	$0.19	$0.22	$0.26	$0.00	$0.00	$3.13
5.7 (Electro-immobilisation training)	-$0.20	$0.02	$0.07	$0.01	$0.01	-$0.02	$0.01	$0.00	-$0.11
6.2 (Castration with pain relief)	$0.00	$0.43	$2.20	$0.00	$0.55	$0.00	$0.61	$0.00	$3.79
6.4 (Dehorning with pain relief)	$1.76	$1.41	$4.48	$0.00	$1.15	$0.00	$1.22	$0.00	$10.03
6.7 (Spaying training)	$0.00	$0.00	$6.49	$0.00	$0.70	$0.00	$1.37	$0.00	$8.57[134]

[128] Petherick JC, McCosker K, Mayer DG, Letchford P, McGowan M, "Evaluation of the impacts of spaying by either the dropped ovary technique or ovariectomy via flank laparotomy on the welfare of *Bos indicus* beef heifers and cows", *Journal of Animal Science*, 2012 Oct 9

[129] Calculated as 730,621 total cattle spayed (see Table A3.1 of Appendix 3) less 244,417 cattle that are flank spayed/webbing (see Table A2.12 of Appendix 2)

[130] Discounted at a rate of 7%

[131] A non-steroidal analgesic (i.e. Ketoprofen)

[132] See glossary for definition of terms

[133] See Table A3.2 of Appendix 3 for source of estimates

[134] This estimate includes a one-off cost for a competency unit for the establishment of a syllabus and materials estimated to be $10,481 in present value dollars. It is not captured for any particular jurisdiction (by columns) as it is unknown where the Registered Training Organisation will be based. This explains the discrepancy between the horizontal sum of the totals by jurisdiction and the vertical sum of the totals by proposed standard.

Proposed Standard	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	TOTAL
6.8 (pain relief for all spaying)	$0.00	$0.00	$45.45	$0.00	$3.33	$0.00	$6.78	$0.00	$55.56
6.9 (Banning use of spreaders)	$0.00	$0.00	$0.50	$0.00	$0.02	$0.00	$0.04	$0.00	$0.56
7.2 (Inspection of calving cows)	$0.63	$0.63	$0.71	$0.25	$0.12	$0.14	$0.08	$0.00	$2.56
8.4 (calf feeding requirements)	$0.13	$0.00	$0.06	$0.06	$0.04	$0.12	$0.00	$0.00	$0.41
9.2 (Heat stress management in dairy cattle)	$0.13	$0.72	$0.09	$0.04	$0.03	$0.00	$0.00	$0.00	$1.01
9.3 (Banning tail docking unless for welfare reasons)	$0.00	$0.02	$0.00	$0.00	$0.00	$0.01	$0.00	$0.00	$0.03
10.2 (Keeping records of feed quality)	$0.01	$0.00	$0.02	$0.00	$0.00	$0.00	$0.00	$0.00	$0.04
10.4 (Heat emergency requirements)	$0.09	$0.05	$0.21	$0.02	$0.04	$0.01	$0.02	$0.00	$0.43
11.5 (Banning of blunt force trauma killing of calves >24hrs of age)	$0.23	$1.42	$0.17	$0.08	$0.06	$0.16	$0.00	$0.00	$2.12
Total PV	***$5.46***	***$5.32***	***$61.12***	***$0.77***	***$6.37***	***$0.74***	***$10.14***	***$0.01***	***$89.94***

Table 23 gives the average net cost impact per cow ranging from a cost of $0.64 in SA to a cost of $4.87 in Qld.

Table 23 – Range of average 10-year cost *per cow* as a result of Variation C1 by state and territory – 2012-13 dollars[135]

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	TOTAL
Total ($m)	$5.46	$5.32	$61.12	$0.77	$6.37	$0.74	$10.14	$0.01	$89.94
Total beef and dairy herd (m)	5.58	3.39	12.54	1.20	2.01	0.61	2.20	0.01	27.54
Cost per cow	**$0.98**	**$1.57**	**$4.87**	**$0.64**	**$3.17**	**$1.21**	**$4.62**	**$0.86**	**$3.27**

Note: Care should be taken in using the average cost per cow in a jurisdiction to interpret the impact of standards or variations on a particular industry sector or an individual farmer's herd.

4.3.6 Option C2: (variation of proposed national standard S6.8)

Option C2 (variation of Option B) would be a variation of the proposed national standards (Option B) that would amend proposed standard 6.8, *banning flank spaying and flank webbing*.

Unquantifiable incremental net benefits of Option C2 (Criterion I - animal welfare)

As compared to the 'base case' Option C2 (banning flank spaying and flank webbing) would lead to greater animal welfare outcomes than Option B but less than under Option C1 as it is expected that most cows would still be spayed. This is because DOT spayed cows would still be subject to acute pain in the short term. One of the major findings of a recent paper by Petherick et al (October, 2012)[136] was that DOT spaying is preferable to

[135] See Table A3.3 of Appendix 3 for source of estimates

[136] Petherick JC, McCosker K, Mayer DG, Letchford P, McGowan M, "Evaluation of the impacts of spaying by either the dropped ovary technique or ovariectomy via flank laparotomy on the welfare of *Bos indicus* beef heifers and cows", *Journal of Animal Science*, 2012 Oct 9

flank spaying in that flank spaying had longer-lasting adverse impacts on welfare. In 2011, Petherick *et al* had reported that whilst flank spaying and DOT spaying were found to cause similar acute pain responses in female *Bos indicus* cattle – the inflammatory and pain responses in flank spayed cattle were still significantly increased four days after the procedure[137]. Option C2 would improve the welfare for approximately 186,162 heifers and 58,255 cows[138] (i.e. 244,417 cattle in total), with the majority of these animals again located in Qld. In summary, Option C2 would affect 199,943 cattle in Qld, 14,656 cattle in WA and 29,818 in NT[139]. The remainder of welfare benefits under Option C2 would be identical to those under Option B.

Unquantifiable incremental net benefits of Option C2 (Criterion II – reduced regulatory burden)

Option C2 would result in the same unquantifiable reduction in regulatory burden as Option B.

Quantifiable and unquantifiable incremental net costs of Option C2 (Criterion III – compliance costs)

Option C2 would impose incremental costs of approximately ***$257.05m*** over 10 years in 2012-13 dollars[140], as summarised in Table 24. The costs would be mainly attributable to the cost of pain relief[141] when either dehorning cattle under certain circumstances; and to the banning of all flank spaying and flank webbing[142] of cattle, under proposed national standards S6.4 and the variation of S6.8, respectively. These two incremental costs would amount to approximately *$232.69m* in 2012-13 dollars (see Table 24). As shown in Table 24, the most impacted state would be Qld with respect to both proposed national standard S6.4 and variation to proposed national standard S6.8, with an incremental cost of *$186.63m* in 2012-13 dollars. Proposed standards under Option C2 are also likely to result in minor unquantifiable costs and cost savings as discussed in Part 4.3.2 of this RIS.

Table 24 – Quantifiable 10-year incremental cost of Option C2 by state and territory – 2012-13 dollars (7% discount rate) ($m) [143]

Proposed Standard	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	TOTAL
5.4 (dog control)	$0.66	$0.39	$0.47	$0.11	$0.11	$0.06	$0.01	$0.00	$1.81
5.5 (dog muzzling)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
5.6 (tethering and exercise)	$2.02	$0.23	$0.20	$0.19	$0.22	$0.26	$0.00	$0.00	$3.13
5.7 (Electro-immobilisation training)	-$0.20	$0.02	$0.07	$0.01	$0.01	-$0.02	$0.01	$0.00	-$0.11
6.2 (Castration with pain relief)	$0.00	$0.43	$2.20	$0.00	$0.55	$0.00	$0.61	$0.00	$3.79
6.4 (Dehorning with pain relief)	$1.76	$1.41	$4.48	$0.00	$1.15	$0.00	$1.22	$0.00	$10.03

[137] Petherick JC, McCosker K, Mayer DG, Letchford P and McGowan M "Preliminary investigation of some physiological responses of *Bos indicus* heifers to surgical spaying" AVJ_89 131-137, 2011
[138] See Table A3.4 of Appendix 3 for source of estimates
[139] See Table A3.1 of Appendix 3 for source of estimates
[140] Discounted at a rate of 7%
[141] A non-steroidal analgesic (i.e. Ketoprofen)
[142] See glossary for definition of terms
[143] See Table A3.6 of Appendix 3 for source of estimates

Proposed Standard	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	TOTAL
6.7 (Spaying training)	$0.00	$0.00	$6.49	$0.00	$0.70	$0.00	$1.37	$0.00	$8.57[144]
6.8 (banning all flank spaying or flank webbing)	$0.00	$0.00	$182.15	$0.00	$13.35	$0.00	$27.16	$0.00	$222.66
6.9 (Banning use of spreaders)	$0.00	$0.00	$0.50	$0.00	$0.02	$0.00	$0.04	$0.00	$0.56
7.2 (Inspection of calving cows)	$0.63	$0.63	$0.71	$0.25	$0.12	$0.14	$0.08	$0.00	$2.56
8.4 (calf feeding requirements)	$0.13	$0.00	$0.06	$0.06	$0.04	$0.12	$0.00	$0.00	$0.41
9.2 (Heat stress management in dairy cattle)	$0.13	$0.72	$0.09	$0.04	$0.03	$0.00	$0.00	$0.00	$1.01
9.3 (Banning tail docking unless for welfare reasons)	$0.00	$0.02	$0.00	$0.00	$0.00	$0.01	$0.00	$0.00	$0.03
10.2 (Keeping records of feed quality)	$0.01	$0.00	$0.02	$0.00	$0.00	$0.00	$0.00	$0.00	$0.04
10.4 (Heat emergency requirements)	$0.09	$0.05	$0.21	$0.02	$0.04	$0.01	$0.02	$0.00	$0.43
11.5 (Banning of blunt force trauma killing of calves >24hrs of age)	$0.23	$1.42	$0.17	$0.08	$0.06	$0.16	$0.00	$0.00	$2.12
Total PV	***$5.46***	***$5.32***	***$197.82***	***$0.77***	***$16.39***	***$0.74***	***$30.53***	***$0.01***	***$257.05***

Table 25 gives the net cost impact per cow ranging from a cost of $0.64 in SA to a cost of $15.78 in Qld.

Table 25 – Range of average 10-year cost *per cow* as a result of Variation C2 by state and territory – 2012-13 dollars[145]

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	TOTAL
Total ($m)	$5.46	$5.32	$197.82	$0.77	$16.39	$0.74	$30.53	$0.01	$257.05
Total beef and dairy herd (m)	5.58	3.39	12.54	1.20	2.01	0.61	2.20	0.01	27.54
Cost per cow	**$0.98**	**$1.57**	**$15.78**	**$0.64**	**$8.16**	**$1.21**	**$13.89**	**$0.86**	**$9.34**

Note: Care should be taken in using the average cost per cow in a jurisdiction to interpret the impact of standards or variations on a particular industry sector or an individual farmer's herd.

4.3.7 Option C3: (variation of proposed national standard S5.6)

Option C3 (variation of Option B) would be a variation of the proposed national standards that would amend proposed standard 5.6, *banning permanent tethering*.

Unquantifiable incremental net benefits of Option C3 (Criterion I - animal welfare)

Option C3 would involve an alternative to proposed Standard 5.6 whereby daily exercise of tethered cattle would be replaced by a complete ban on tethering. This would involve approximately 150 animals as discussed in Part A2.3 of Appendix 2. This would include 100 cattle in NSW and 10 in each of the remaining states of Vic, Qld, SA, WA and Tas.

[144] This estimate includes a one-off cost for a competency unit for the establishment of a syllabus and materials estimated to be $10,481 in present value dollars. It is not captured for any particular jurisdiction (by columns) as it is unknown where the Registered Training Organisation will be based. This explains the discrepancy between the horizontal sum of the totals by jurisdiction and the vertical sum of the totals by proposed standard.

[145] See Table A3.7 of Appendix 3 for source of estimates

This would provide slightly more welfare benefits as compared to the 'base case' than under Option B - with cattle free to express normal behaviours including socialisation with other animals. The remaining welfare benefits under Option C3 would be identical to Option B.

Unquantifiable incremental net benefits of Option C3 (Criterion II – reduced regulatory burden)

Option C3 would result in the same unquantifiable reduction in regulatory burden as Option B.

Quantifiable and unquantifiable incremental net costs of Option C3 (Criterion III – compliance costs)

Option C3 would impose quantifiable incremental costs of approximately ***$50.84m*** over 10 years in 2012-13 dollars[146], as summarised in Table 26. These quantifiable costs would be $1.61m less than those for Option B as a result the costs saved from not having to exercise tethered cattle.

The other costs of Option C3 would be the same as for Option B. These costs are mainly attributable to the cost of pain relief[147] when either dehorning cattle under certain circumstances; and to pain relief for spaying[148] of cattle, under proposed national standards S6.4 and S6.8, respectively. These two incremental costs would amount to approximately *$28.09m* in 2012-13 dollars (see Table 26). As shown in Table 26, the most impacted state would be Qld with respect to both proposed national standard S6.4 and variation to proposed national standard S6.8, with an incremental cost of *$19.26m* in 2012-13 dollars.

Proposed standards under Option C3 are also likely to result in similar minor unquantifiable costs and cost savings to those under Option B, as discussed in Part 4.3.2 of this RIS. However, under this option there could also be some other unquantifiable impacts relative Option B. For example, there could be an impact on the choice of individuals to keep cattle as pets (for which a large part do). Also, banning tethering could impact on individuals to keep 'pets' from trampling lawns and gardens (fencing off garden beds from lawns would be less unattractive and would defeat the purpose of having combined garden and lawn areas) and impact on the benefits of a unique type of pet ownership.

Table 26 – Quantifiable 10-year incremental cost of Variation C3 by state and territory – 2012-13 dollars (7% discount rate) ($m) [149]

Proposed Standard	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	TOTAL
5.4 (dog control)	$0.66	$0.39	$0.47	$0.11	$0.11	$0.06	$0.01	$0.00	$1.81
5.5 (dog muzzling)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00

[146] Discounted at a rate of 7%
[147] A non-steroidal analgesic (i.e. Ketoprofen)
[148] See glossary for definition of terms
[149] See Table A3.10 of Appendix 3 for source of estimates

Proposed Standard	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	TOTAL
5.6 (tethering ban)	$1.01	$0.10	$0.10	$0.10	$0.10	$0.10	$0.00	$0.00	$1.51
5.7 (Electro-immobilisation training)	-$0.20	$0.02	$0.07	$0.01	$0.01	-$0.02	$0.01	$0.00	-$0.11
6.2 (Castration with pain relief)	$0.00	$0.43	$2.20	$0.00	$0.55	$0.00	$0.61	$0.00	$3.79
6.4 (Dehorning with pain relief)	$1.76	$1.41	$4.48	$0.00	$1.15	$0.00	$1.22	$0.00	$10.03
6.7 (Spaying training)	$0.00	$0.00	$6.49	$0.00	$0.70	$0.00	$1.37	$0.00	$8.57[150]
6.8 (Spaying with pain relief)	$0.00	$0.00	$14.78	$0.00	$1.08	$0.00	$2.20	$0.00	$18.06
6.9 (Banning use of spreaders)	$0.00	$0.00	$0.50	$0.00	$0.02	$0.00	$0.04	$0.00	$0.56
7.2 (Inspection of calving cows)	$0.63	$0.63	$0.71	$0.25	$0.12	$0.14	$0.08	$0.00	$2.56
8.4 (calf feeding requirements)	$0.13	$0.00	$0.06	$0.06	$0.04	$0.12	$0.00	$0.00	$0.41
9.2 (Heat stress management in dairy cattle)	$0.13	$0.72	$0.09	$0.04	$0.03	$0.00	$0.00	$0.00	$1.01
9.3 (Banning tail docking unless for welfare reasons)	$0.00	$0.02	$0.00	$0.00	$0.00	$0.01	$0.00	$0.00	$0.03
10.2 (Keeping records of feed quality)	$0.01	$0.00	$0.02	$0.00	$0.00	$0.00	$0.00	$0.00	$0.04
10.4 (Heat emergency requirements)	$0.09	$0.05	$0.21	$0.02	$0.04	$0.01	$0.02	$0.00	$0.43
11.5 (Banning of blunt force trauma killing of calves >24hrs of age)	$0.23	$1.42	$0.17	$0.08	$0.06	$0.16	$0.00	$0.00	$2.12
Total PV	***$5.46***	***$5.32***	***$30.45***	***$0.77***	***$4.13***	***$0.74***	***$5.57***	***$0.01***	***$50.84***

Table 27 gives the net cost impact per cow ranging from a cost of $0.64 in SA to a cost of $2.53 in NT.

Table 27 – Range of average 10-year cost *per cow* as a result of Variation C3 by state and territory – 2012-13 dollars[151]

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	TOTAL
Total ($m)	$5.46	$5.32	$30.45	$0.77	$4.13	$0.74	$5.57	$0.01	$50.84
Total beef and dairy herd (m)	5.58	3.39	12.54	1.20	2.01	0.61	2.20	0.01	27.54
Cost per cow	**$0.98**	**$1.57**	**$2.43**	**$0.64**	**$2.05**	**$1.21**	**$2.53**	**$0.86**	**$1.85**

Note: Care should be taken in using the average cost per cow in a jurisdiction to interpret the impact of standards or variations on a particular industry sector or an individual farmer's herd.

4.3.8 Option C4: (variation of proposed national standard S5.5)

Option C4 (variation of Option B) would be a variation of the proposed national standards that would amend proposed standard 5.5, *banning the use of dogs on calves*.

[150] This estimate includes a one-off cost for a competency unit for the establishment of a syllabus and materials estimated to be $10,481 in present value dollars. It is not captured for any particular jurisdiction (by columns) as it is unknown where the Registered Training Organisation will be based. This explains the discrepancy between the horizontal sum of the totals by jurisdiction and the vertical sum of the totals by proposed standard.

[151] See Table A3.11 of Appendix 3 for source of estimates

Unquantifiable incremental net benefits of Option C4 (Criterion I - animal welfare)

Option C4 would involve replacing proposed Standard 5.5 under Option B (i.e. extending muzzling to all relevant dogs rather than just those prone to bite) - by banning dogs completely. This variation would be considered in the context of mustering of calves less than 30 days old and would be consistent with Standard SB4.7 of the Land Transport Standards and Guidelines, which requires that dogs must not be used to move bobby calves.

As with Option B – Option C4 would result in an improvement in the welfare of calves that are mustered and less than 30 days old, as compared to the 'base case', in that they would no longer face the potential stress caused by the presence of dogs. Whilst the extent of stress caused by the presence of dogs is unknown (although unlikely to be high) the number of calves that would be potentially affected including an unknown proportion of 5,871 beef calves and 1,576,222 dairy calves.[152] The remaining welfare impacts under Option C4 would be identical to Option B.

Unquantifiable incremental net benefits of Option C4 (Criterion II – reduced regulatory burden)

Option C4 would result in the same unquantifiable reduction in regulatory burden as Option B.

Quantifiable and unquantifiable incremental net costs of Option C4 (Criterion III – compliance costs)

Option C4 would impose incremental costs of approximately ***$52.87m*** over 10 years in 2012-13 dollars[153], as summarised in Table 28. The costs would be mainly attributable to the cost of pain relief[154] when either dehorning cattle under certain circumstances; and to pain relief for spaying[155] of cattle, under proposed national standards S6.4 and S6.8, respectively. These two incremental costs would amount to approximately *$28.09m* in 2012-13 dollars (see Table 28). As shown in Table 28, the most impacted state would be Qld with respect to both proposed national standard S6.7 and variation to proposed national standard S6.8, with an incremental cost of *$21.27m* in 2012-13 dollars. Proposed standards under Option C4 are also likely to result in minor unquantifiable costs and cost savings as discussed in Part 4.3.2 of this RIS.

Table 28 – Quantifiable 10-year incremental cost of Option C4 by state and territory – 2012-13 dollars (7% discount rate) ($m) [156]

Proposed Standard	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	TOTAL
5.4 (dog control)	$0.66	$0.39	$0.47	$0.11	$0.11	$0.06	$0.01	$0.00	$1.81
5.5 (ban use of dogs on calves)	$0.15	$0.00	$0.11	$0.04	$0.03	$0.08	$0.00	$0.00	$0.42
5.6 (Exercise of tethered cattle)	$2.02	$0.23	$0.20	$0.19	$0.22	$0.26	$0.00	$0.00	$3.13

[152] See Table A2.9 of Appendix 2 for source of estimates
[153] Discounted at a rate of 7%
[154] A non-steroidal analgesic (i.e. Ketoprofen)
[155] See glossary for definition of terms
[156] See Table A3.14 of Appendix 3 for source of estimates

Proposed Standard	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	TOTAL
5.7 (Electro-immobilisation training)	-$0.20	$0.02	$0.07	$0.01	$0.01	-$0.02	$0.01	$0.00	-$0.11
6.2 (Castration with pain relief)	$0.00	$0.43	$2.20	$0.00	$0.55	$0.00	$0.61	$0.00	$3.79
6.4 (Dehorning with pain relief)	$1.76	$1.41	$4.48	$0.00	$1.15	$0.00	$1.22	$0.00	$10.03
6.7 (Spaying training)	$0.00	$0.00	$6.49	$0.00	$0.70	$0.00	$1.37	$0.00	$8.57[157]
6.8 (Spaying with pain relief)	$0.00	$0.00	$14.78	$0.00	$1.08	$0.00	$2.20	$0.00	$18.06
6.9 (Banning use of spreaders)	$0.00	$0.00	$0.50	$0.00	$0.02	$0.00	$0.04	$0.00	$0.56
7.2 (Inspection of calving cows)	$0.63	$0.63	$0.71	$0.25	$0.12	$0.14	$0.08	$0.00	$2.56
8.4 (calf feeding requirements)	$0.13	$0.00	$0.06	$0.06	$0.04	$0.12	$0.00	$0.00	$0.41
9.2 (Heat stress management in dairy cattle)	$0.13	$0.72	$0.09	$0.04	$0.03	$0.00	$0.00	$0.00	$1.01
9.3 (Banning tail docking unless for welfare reasons)	$0.00	$0.02	$0.00	$0.00	$0.00	$0.01	$0.00	$0.00	$0.03
10.2 (Keeping records of feed quality)	$0.01	$0.00	$0.02	$0.00	$0.00	$0.00	$0.00	$0.00	$0.04
10.4 (Heat emergency requirements)	$0.09	$0.05	$0.21	$0.02	$0.04	$0.01	$0.02	$0.00	$0.43
11.5 (Banning of blunt force trauma killing of calves >24hrs of age)	$0.23	$1.42	$0.17	$0.08	$0.06	$0.16	$0.00	$0.00	$2.12
Total PV	***$5.61***	***$5.32***	***$30.55***	***$0.81***	***$4.16***	***$0.82***	***$5.57***	***$0.01***	***$52.87***

Table 29 gives the net cost impact per cow ranging from a cost of $0.67 in SA to a cost of $2.53 in NT.

Table 29 – Range of average 10-year cost *per cow* as a result of Variation C4 by state and territory – 2012-13 dollars[158]

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	TOTAL
Total ($m)	$5.61	$5.32	$30.55	$0.81	$4.16	$0.82	$5.57	$0.01	$52.87
Total beef and dairy herd (m)	5.58	3.39	12.54	1.20	2.01	0.61	2.20	0.01	27.54
Cost per cow	**$1.01**	**$1.57**	**$2.44**	**$0.67**	**$2.07**	**$1.35**	**$2.53**	**$0.86**	**$1.92**

Note: Care should be taken in using the average cost per cow in a jurisdiction to interpret the impact of standards or variations on a particular industry sector or an individual farmer's herd.

4.3.9 Option C5: (variation of proposed national standard S6.5 banning caustic dehorning)

Option C5 (variation of Option B) would be a variation of the proposed national standards that would have an additional standard, *banning caustic dehorning*.

Unquantifiable incremental net benefits of Option C5 (Criterion I - animal welfare)

[157] This estimate includes a one-off cost for a competency unit for the establishment of a syllabus and materials estimated to be $10,481 in present value dollars. It is not captured for any particular jurisdiction (by columns) as it is unknown where the Registered Training Organisation will be based. This explains the discrepancy between the horizontal sum of the totals by jurisdiction and the vertical sum of the totals by proposed standard.

[158] See Table A3.15 of Appendix 3 for source of estimates

Option C5 would entail banning caustic dehorning replacing proposed Standard 6.5 under Option B. A study by Morrise *et al* 1995 found chemical disbudding to be more painful than heat cauterisation on the basis of differences in cortisol responses *however* the study involved comparing techniques undertaken in calves at different ages[159]. It is believed that caustic disbudding does cause pain and Weary (2006) found that pain-related behaviours increased in calves that were dehorned with caustic paste versus those sham dehorned.[160] More recently, subtle differences in behaviour were observed in calves subjected to thermal and caustic disbudding after administration of a sedative and/or local anaesthetic[161]. It was concluded that caustic paste causes pain, but that it is less than that caused by the hot iron, even when using local anaesthetic[162]. Moreover, caustic disbudding has a lower impact in younger animals and works best in calves less than 14 days old due to development of the horn bud into horn tissue. Furthermore, chemical burns pain may be transient. The science and industry practice suggest that this technique can be performed with acceptable outcomes for the calf.

Chemical or caustic disbudding has additional risks associated with the caustic chemical getting into eyes and other sensitive tissues when calves lick each other or nuzzle their dams, or when it rains. Segregation and keeping indoors would help to prevent caustic chemicals causing damage to other areas of the calf or other cattle. Indeed under Option B the following conditions minimise any additional risks:

- Is under fourteen days old; and
- Can be segregated from its mother for four hours after treatment; and
- Can be kept dry for 12 hours after treatment; and
- Is not wet.

Consequently, due to the lack of undisputed literature on caustic dehorning and animal welfare and due to the conditions required under which caustic dehorning is allowable under Option B – it is not clear that Option C5 would result in additional animal welfare outcomes in relation to the 'base case' as compared to Option B. Other welfare impacts of Option C5 would also be identical to Option B.

Unquantifiable incremental net benefits of Option C5 (Criterion II – reduced regulatory burden)

Option C5 would result in the same unquantifiable reduction in regulatory burden as Option B.

Quantifiable and unquantifiable incremental net costs of Option C5 (Criterion III – compliance costs)

[159] Morrise, JP, Cotte, JP, Huonnic, D (1995) Effect of dehorning on behaviour and plasma cortisol responses in young calves. *Applied Animal Behaviour Science* 43, 239-247
[160] Weary D, *Reducing pain due to caustic paste dehorning*, University of British Columbia, Vol 6 No.4
[161] Vickers, KJ, Niel, L, Kiehlbauch, LM, Weary, DM (2005) Calf response to caustic paste and hot-iron dehorning using sedation with and without local anesthetic. *J Dairy Sci* 88, 1454-1459
[162] Vickers, KJ, Niel, L, Kiehlbauch, LM, Weary, DM (2005) Calf response to caustic paste and hot-iron dehorning using sedation with and without local anesthetic. *J Dairy Sci* 88, 1454-1459

Option C5 would impose incremental costs of approximately ***$52.93m*** over 10 years in 2012-13 dollars[163], as summarised in Table 30. The costs would be mainly attributable to the cost of pain relief[164] when either dehorning cattle under certain circumstances; and to pain relief for spaying[165] of cattle, under proposed national standards S6.4 and S6.8, respectively. These two incremental costs would amount to approximately *$28.09m* in 2012-13 dollars (see Table 30). As shown in Table 30, the most impacted state would be Qld with respect to both proposed national standard S6.7 and variation to proposed national standard S6.8, with an incremental cost of *$21.27m* in 2012-13 dollars. Proposed standards under Option C5 are also likely to result in minor unquantifiable costs and cost savings as discussed in Part 4.3.2 of this RIS.

Table 30 – Quantifiable 10-year incremental cost of Option C5 by state and territory – 2012-13 dollars (7% discount rate) ($m) [166]

Proposed Standard	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	TOTAL
5.4 (dog control)	$0.66	$0.39	$0.47	$0.11	$0.11	$0.06	$0.01	$0.00	$1.81
5.5 (dog muzzling)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
5.6 (Exercise of tethered cattle)	$2.02	$0.23	$0.20	$0.19	$0.22	$0.26	$0.00	$0.00	$3.13
5.7 (Electro-immobilisation training)	-$0.20	$0.02	$0.07	$0.01	$0.01	-$0.02	$0.01	$0.00	-$0.11
6.2 (Castration with pain relief)	$0.00	$0.43	$2.20	$0.00	$0.55	$0.00	$0.61	$0.00	$3.79
6.4 (Dehorning with pain relief)	$1.76	$1.41	$4.48	$0.00	$1.15	$0.00	$1.22	$0.00	$10.03
6.5 (Banning caustic dehorning)	$0.06	$0.31	$0.03	$0.03	$0.02	$0.04	$0.00	$0.00	$0.48
6.7 (Spaying training)	$0.00	$0.00	$6.49	$0.00	$0.70	$0.00	$1.37	$0.00	$8.57[167]
6.8 (Spaying with pain relief)	$0.00	$0.00	$14.78	$0.00	$1.08	$0.00	$2.20	$0.00	$18.06
6.9 (Banning use of spreaders)	$0.00	$0.00	$0.50	$0.00	$0.02	$0.00	$0.04	$0.00	$0.56
7.2 (Inspection of calving cows)	$0.63	$0.63	$0.71	$0.25	$0.12	$0.14	$0.08	$0.00	$2.56
8.4 (calf feeding requirements)	$0.13	$0.00	$0.06	$0.06	$0.04	$0.12	$0.00	$0.00	$0.41
9.2 (Heat stress management in dairy cattle)	$0.13	$0.72	$0.09	$0.04	$0.03	$0.00	$0.00	$0.00	$1.01
9.3 (Banning tail docking unless for welfare reasons)	$0.00	$0.02	$0.00	$0.00	$0.00	$0.01	$0.00	$0.00	$0.03
10.2 (Keeping records of feed quality)	$0.01	$0.00	$0.02	$0.00	$0.00	$0.00	$0.00	$0.00	$0.04
10.4 (Heat emergency requirements)	$0.09	$0.05	$0.21	$0.02	$0.04	$0.01	$0.02	$0.00	$0.43
11.5 (Banning of blunt force trauma killing of calves >24hrs of age)	$0.23	$1.42	$0.17	$0.08	$0.06	$0.16	$0.00	$0.00	$2.12
Total PV	***$5.52***	***$5.62***	***$30.47***	***$0.79***	***$4.14***	***$0.79***	***$5.57***	***$0.01***	***$52.93***

[163] Discounted at a rate of 7%
[164] A non-steroidal analgesic (i.e. Ketoprofen)
[165] See glossary for definition of terms
[166] See Table A3.19 of Appendix 3 for source of estimates
[167] This estimate includes a one-off cost for a competency unit for the establishment of a syllabus and materials estimated to be $10,481 in present value dollars. It is not captured for any particular jurisdiction (by columns) as it is unknown where the Registered Training Organisation will be based. This explains the discrepancy between the horizontal sum of the totals by jurisdiction and the vertical sum of the totals by proposed standard.

Table 31 gives the average net cost impact per cow ranging from a cost of $0.66 in SA to a cost of $2.53 in NT.

Table 31 – Range of average 10-year cost *per cow* as a result of Option C5 by state and territory – 2012-13 dollars[168]

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	TOTAL
Total ($m)	$5.52	$5.62	$30.47	$0.79	$4.14	$0.79	$5.57	$0.01	$52.93
Total beef and dairy herd (m)	5.58	3.39	12.54	1.20	2.01	0.61	2.20	0.01	27.54
Cost per cow	**$0.99**	**$1.66**	**$2.43**	**$0.66**	**$2.06**	**$1.29**	**$2.53**	**$0.86**	**$1.92**

Note: Care should be taken in using the average cost per cow in a jurisdiction to interpret the impact of standards or variations on a particular industry sector or an individual farmer's herd.

4.3.10 Option C6: (variation of proposed national standard with an additional standard banning induction of early calving except for veterinary requirements)

Option C6 (variation of Option B) would be a variation of the proposed national standards that would have an additional standard, *banning induction of early calving except for veterinary requirements*.

Unquantifiable incremental net benefits of Option C6 (Criterion I - animal welfare)

Option C6 would lead to the banning of induction of calves unless for veterinary reasons. Importantly, there are two main welfare concerns with induced calving. The first concern is the welfare of the calves produced by induced cows and the second welfare concern is the effect of the procedure on the health of the cow[169]. However cow morbidity is understood to be a rare issue. This variation in the proposed national standards would impact on the potential welfare of 84,139 calves[170] with the majority in Vic (72,216) and some in Tas (11,923). To this extent Option C6 would provide additional welfare benefits in relation to the 'base case' as compared to Option B. However these additional benefits would be marginal, as Option B would require the humane killing or provision of colostrum to induced calves less than 12hrs old. Other welfare impacts under Option C6 would be identical to Option B.

Unquantifiable incremental net benefits of Option C6 (Criterion II – reduced regulatory burden)

Option C6 would result in the same reduction in unquantifiable regulatory burden as Option B.

Quantifiable and unquantifiable incremental net costs of Option C6 (Criterion III – compliance costs)

[168] See Table A3.18 of Appendix 3 for source of estimates
[169] Induced cows may be more prone to a number of health problems, including retained foetal membranes, photosensitisation, mastitis and toxaemic collapse. Foetal viability is also seriously compromised (see Mansell P, Aug 2006)
[170] See Table A3.14 of Appendix 3 for source of estimates

Option C6 would impose incremental costs of approximately ***$525.7m*** over 10 years in 2012-13 dollars[171], as summarised in Table 32. The costs would be mainly attributable to: the cost of banning induction under Option C6; the cost of pain relief[172] when dehorning cattle under certain circumstances; and pain relief for spaying[173] of cattle, under the additional standard and proposed national standards S6.4 and S6.8, respectively. These three incremental costs would amount to approximately *$501.34m* in 2012-13 dollars (see Table 32). As shown in Table 32, the most impacted state would be Victoria with respect to the additional standard, with an incremental cost of *$406.18m* in 2012-13 dollars. Tasmania would also be substantially affected with a banning of induction with an incremental cost of *$67.06m* in 2012-13 dollars. Proposed standards under Option C6 are also likely to result in minor unquantifiable costs and cost savings as discussed in Part 4.3.2 of this RIS.

Table 32 – Quantifiable 10-year incremental cost of Option C6 by state and territory – 2012-13 dollars (7% discount rate) ($m)[174]

Proposed Standard	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	TOTAL
5.4 (dog control)	$0.66	$0.39	$0.47	$0.11	$0.11	$0.06	$0.01	$0.00	$1.81
5.5 (dog muzzling)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
5.6 (Exercise of tethered cattle)	$2.02	$0.23	$0.20	$0.19	$0.22	$0.26	$0.00	$0.00	$3.13
5.7 (Electro-immobilisation training)	-$0.20	$0.02	$0.07	$0.01	$0.01	-$0.02	$0.01	$0.00	-$0.11
6.2 (Castration with pain relief)	$0.00	$0.43	$2.20	$0.00	$0.55	$0.00	$0.61	$0.00	$3.79
6.4 (Dehorning with pain relief)	$1.76	$1.41	$4.48	$0.00	$1.15	$0.00	$1.22	$0.00	$10.03
Additional standard	$0.00	$406.18	$0.00	$0.00	$0.00	$67.06	$0.00	$0.00	$473.25
6.7 (Spaying training)	$0.00	$0.00	$6.49	$0.00	$0.70	$0.00	$1.37	$0.00	$8.57[175]
6.8 (Spaying with pain relief)	$0.00	$0.00	$14.78	$0.00	$1.08	$0.00	$2.20	$0.00	$18.06
6.9 (Banning use of spreaders)	$0.00	$0.00	$0.50	$0.00	$0.02	$0.00	$0.04	$0.00	$0.56
7.2 (Inspection of calving cows)	$0.63	$0.63	$0.71	$0.25	$0.12	$0.14	$0.08	$0.00	$2.56
8.4 (calf feeding requirements)	$0.13	$0.00	$0.06	$0.06	$0.04	$0.12	$0.00	$0.00	$0.41
9.2 (Heat stress management in dairy cattle)	$0.13	$0.72	$0.09	$0.04	$0.03	$0.00	$0.00	$0.00	$1.01
9.3 (Banning tail docking unless for welfare reasons)	$0.00	$0.02	$0.00	$0.00	$0.00	$0.01	$0.00	$0.00	$0.03
10.2 (Keeping records of feed quality)	$0.01	$0.00	$0.02	$0.00	$0.00	$0.00	$0.00	$0.00	$0.04
10.4 (Heat emergency requirements)	$0.09	$0.05	$0.21	$0.02	$0.04	$0.01	$0.02	$0.00	$0.43
11.5 (Banning of blunt force trauma killing of calves >24hrs of age)	$0.23	$1.42	$0.17	$0.08	$0.06	$0.16	$0.00	$0.00	$2.12

[171] Discounted at a rate of 7%
[172] A non-steroidal analgesic (i.e. Ketoprofen)
[173] See glossary for definition of terms
[174] See Table A3.24 of Appendix 3 for source of estimates
[175] This estimate includes a one-off cost for a competency unit for the establishment of a syllabus and materials estimated to be $10,481 in present value dollars. It is not captured for any particular jurisdiction (by columns) as it is unknown where the Registered Training Organisation will be based. This explains the discrepancy between the horizontal sum of the totals by jurisdiction and the vertical sum of the totals by proposed standard.

Proposed Standard	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	TOTAL
Total PV	*$5.46*	*$411.50*	*$30.45*	*$0.77*	*$4.13*	*$67.80*	*$5.57*	*$0.01*	*$525.70*

Table 33 gives the net cost impact per cow ranging from a cost of $0.64 in SA to a cost of $121.54 in Vic.

Table 33 – Range of average 10-year cost *per cow* as a result of Option C6 by state and territory – 2012-13 dollars[176]

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	TOTAL
Total ($m)	$5.46	$411.50	$30.45	$0.77	$4.13	$67.80	$5.57	$0.01	$525.70
Total beef and dairy herd (m)	5.58	3.39	12.54	1.20	2.01	0.61	2.20	0.01	27.54
Cost per cow	**$0.98**	**$121.54**	**$2.43**	**$0.64**	**$2.05**	**$110.87**	**$2.53**	**$0.86**	**$19.09**

Note: Care should be taken in using the average cost per cow in a jurisdiction to interpret the impact of standards or variations on a particular industry sector or an individual farmer's herd.

4.3.11 Option C7: (variation of proposed national standards S5.7 and S5.8)

Option C7 (variation of Option B) would be a variation of the proposed national standards that would amend proposed Standards 5.7 and 5.8, *banning electro-immobilisation*.

Unquantifiable incremental net benefits of Option C7 (Criterion I - animal welfare)

Option C7 would lead to the banning of electro-immobilisation (EI) and the replacement of proposed Standard 5.7 under Option B (i.e. – Electro-immobilisation on cattle must only be used under certain conditions and only by trained or accredited persons or under direct supervision of a veterinarian) and proposed standard 5.8 under Option B (i.e. – Electro immobilisation on cattle must not be used as an alternative to pain relief).

Option C7 would eliminate potential animal welfare risks from EI for cattle including:

- Abuse of EI to carry out surgery without anaesthesia;
- Masking an animal's ability to react normally to pain and distress;
- Asphyxia (at least initially) followed by dyspnoea;
- Cardiac effects;
- Aversive for the animals; and
- Possible misuse with inappropriate settings and prolonged use.

Given that EI is banned in Victoria (and likely to remain so), Option C7 would affect welfare of 1% of the population of cattle in other states and territories (i.e. 241,503 cattle[177]) with the largest impact in Queensland. However, under Option B with proposed Standard 5.7, EI would not be allowed unless:

[176] See Table A3.25 of Appendix 3 for source of estimates
[177] See Table A3.28 of Appendix 3 for source of estimate

- The device is approved for use in the jurisdiction; and
- The cattle are > 6 months old; and
- Person performing EI is trained and accredited – or the procedure is done under direct veterinary supervision; and
- Alternative restraining methods are inadequate to hold cattle sufficiently for the procedure being performed.

Moreover, under proposed Standard 5.8 under Option B, EI would not be permitted an alternative to pain relief. Therefore the ability of Option C7 to further improve animal welfare as compared to Option B in relation to the 'base case' would be limited. Other remaining welfare impacts under Option C7 would be identical to Option B.

Unquantifiable incremental net benefits of Option C7 (Criterion II – reduced regulatory burden)

Option C7 would result in the same reduction in regulatory burden as Option B.

Quantifiable and unquantifiable incremental net costs of Option C7 (Criterion III – compliance costs)

Option C7 would impose incremental costs of approximately ***$59.85m*** over 10 years in 2012-13 dollars[178], as summarised in Table 34. The costs would be mainly attributable to: the cost of banning electro-immobilisation; the cost of pain relief[179] with dehorning cattle; and pain relief for spaying[180] of cattle, under the variation of proposed national standard S5.7 and proposed national standards S6.4 and S6.8, respectively. These three incremental costs would amount to approximately *$35.37m* in 2012-13 dollars (see Table 34). As shown in Table 34, Australia as a whole would be the most impacted with respect to the variation of S5.7, with an incremental cost of *$5.34m* in 2012-13 dollars. This would represent the total cost of fatality and injury across Australia by not being able to restrain cattle using via electro-immobilisation. Qld would incur the largest incremental cost of $31.40m mainly attributable to pain relief with respect to dehorning and spaying, as well as, training costs with respect to spaying competency (see Table 34). Proposed standards under Option C7 are also likely to result in minor unquantifiable costs and cost savings as discussed in Part 4.3.2 of this RIS.

Table 34 – Quantifiable 10-year incremental cost of Option C7 by state and territory – 2012-13 dollars (7% discount rate) ($m) [181]

Proposed Standard	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	AUS	TOTAL
5.4 (dog control)	$0.66	$0.39	$0.47	$0.11	$0.11	$0.06	$0.01	$0.00	$0.00	$1.81
5.5 (dog muzzling)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
5.6 (Exercise of tethered cattle)	$2.02	$0.23	$0.20	$0.19	$0.22	$0.26	$0.00	$0.00	$0.00	$3.13

[178] Discounted at a rate of 7%
[179] A non-steroidal analgesic (i.e. Ketoprofen)
[180] See glossary for definition of terms
[181] See Table A3.19 of Appendix 3 for source of estimates

Proposed Standard	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	AUS	TOTAL
5.7 (Banning electro-immobilisation)	$0.46	$0.00	$1.02	$0.10	$0.18	$0.07	$0.12	$0.00	$5.34	$7.28[182]
6.2 (Castration with pain relief)	$0.00	$0.43	$2.20	$0.00	$0.55	$0.00	$0.61	$0.00	$0.00	$3.79
6.4 (Dehorning with pain relief)	$1.76	$1.41	$4.48	$0.00	$1.15	$0.00	$1.22	$0.00	$0.00	$10.03
6.7 (Spaying training)	$0.00	$0.00	$6.49	$0.00	$0.70	$0.00	$1.37	$0.00	$0.00	$8.57[183]
6.8 (Spaying with pain relief)	$0.00	$0.00	$14.78	$0.00	$1.08	$0.00	$2.20	$0.00	$0.00	$18.06
6.9 (Banning use of spreaders)	$0.00	$0.00	$0.50	$0.00	$0.02	$0.00	$0.04	$0.00	$0.00	$0.56
7.2 (Inspection of calving cows)	$0.63	$0.63	$0.71	$0.25	$0.12	$0.14	$0.08	$0.00	$0.00	$2.56
8.4 (calf feeding requirements)	$0.13	$0.00	$0.06	$0.06	$0.04	$0.12	$0.00	$0.00	$0.00	$0.41
9.2 (Heat stress management in dairy cattle)	$0.13	$0.72	$0.09	$0.04	$0.03	$0.00	$0.00	$0.00	$0.00	$1.01
9.3 (Banning tail docking unless for welfare reasons)	$0.00	$0.02	$0.00	$0.00	$0.00	$0.01	$0.00	$0.00	$0.00	$0.03
10.2 (Keeping records of feed quality)	$0.01	$0.00	$0.02	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.04
10.4 (Heat emergency requirements)	$0.09	$0.05	$0.21	$0.02	$0.04	$0.01	$0.02	$0.00	$0.00	$0.43
11.5 (Banning of blunt force trauma killing of calves >24hrs of age)	$0.23	$1.42	$0.17	$0.08	$0.06	$0.16	$0.00	$0.00	$0.00	$2.12
Total PV	***$6.13***	***$5.30***	***$31.40***	***$0.86***	***$4.30***	***$0.82***	***$5.68***	***$0.01***	***$5.34***	***$59.85***

Table 35 gives the net cost impact per cow ranging from a cost of $0.71 in SA to a cost of $2.59 in NT.

Table 35 – Range of average 10-year cost *per cow* as a result of Variation C7 by state and territory – 2012-13 dollars[184]

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	TOTAL
Total ($m)	$6.13	$5.30	$31.40	$0.86	$4.30	$0.82	$5.68	$0.01	$59.85
Total beef and dairy herd (m)	5.58	3.39	12.54	1.20	2.01	0.61	2.20	0.01	27.54
Cost per cow	**$1.10**	**$1.57**	**$2.50**	**$0.71**	**$2.14**	**$1.35**	**$2.59**	**$0.93**	**$2.17**

Note: Care should be taken in using the average cost per cow in a jurisdiction to interpret the impact of standards or variations on a particular industry sector or an individual farmer's herd.

4.4 Selection of preferred Option

The incremental costs and benefits relative to the base case of Option A, Option B (the proposed national standards) and Variations C1 to C7 are provided in Table 36. The

[182] Notwithstanding time required for more traditional methods for restraint, this estimate includes a total cost of fatality and injury estimated to be ***$5,338,574*** in present value dollars. It is not captured for any particular jurisdiction (by columns) as it is unknown where fatalities and injuries are likely to occur. This explains the discrepancy between the horizontal sum of the totals by jurisdiction and the vertical sum of the totals by proposed standard. For a more detailed discussion see Part A3.7 of Appendix 3

[183] This estimate includes a one-off cost for a competency unit for the establishment of a syllabus and materials estimated to be $10,481 in present value dollars. It is not captured for any particular jurisdiction (by columns) as it is unknown where the Registered Training Organisation will be based. This explains the discrepancy between the horizontal sum of the totals by jurisdiction and the vertical sum of the totals by Proposed Standard.

[184] See Table A3.18 of Appendix 3 for source of estimates

incremental cost of Option C is not provided, because the combination of variations of Option B (C1 to C7) were not combined into a single option.

There is no significant interdependency between the individual variations. There is a small relationship between variations C1 and C2, where adoption of C2 simultaneously with C1 would make C1 adoption slightly cheaper, because with the absence of the flank approach not all cattle are able to be spayed and therefore would not require pain relief. However this cost saving would be small in comparison to the overall cost of adopting C1 and C2. (Adoption of C2 without adoption of C1 is possible but unlikely). Moreover, it is open for ministers to adopt a complementary combination of Options (C1 to C7) amongst those proposed.

Comparing the costs and benefits against the base case is hindered by the inherent inability to quantify benefits to animal welfare.

The three evaluation criteria used were:

I. Animal welfare benefits

II. Reduction in regulatory burden; and

III. Net compliance costs to industry and government.

It is important to note that the number of cattle alone does not reflect the severity of consequences; but rather it is the combination of:

- Number of animals affected (small or large);
- Duration of practice (one-off or ongoing); and
- Impact of animal husbandry procedure (primarily invasive or less-invasive).

Moreover, the cattle numbers for the variations in Table 36 are not mutually exclusive, because cattle can be affected by different issues and the preferred combination of variations has not yet been selected. Therefore, even if the number of cattle affected by each issue were known - any summation and inference from such a summation would be misleading and incorrect.

Table 36: Incremental 10-year costs and benefits of Options A and B and Options C1 to C7 relative to the base case – 2012-13 dollars ($m)

Option	I. Incremental Animal welfare benefits (unquantifiable)	Number of cattle affected under Criterion I	II. Reduction in regulatory burden (unquantifiable)	III. Incremental compliance costs to cattle farmers (quantifiable)
Option A (guidelines)	< B	A small undetermined % of 27.54m	< B	$0.00
Option B (Proposed national standards)	> A	A larger undetermined % of 27.54m	> A	$52.45
Option C1 (pain relief for all spaying)	> B	As with Option B + 486,204	= B	$89.94
Option C2 (banning flank spaying/flank webbing)	> B	As with Option B + 244,417	= B	$257.05

Option	I. Incremental Animal welfare benefits (unquantifiable)	Number of cattle affected under Criterion I	II. Reduction in regulatory burden (unquantifiable)	III. Incremental compliance costs to cattle farmers (quantifiable)
Option C3 (banning permanent tethering)	> B	As with Option B	= B	$50.84
Option C4 (banning the use of dogs on calves)	> B	As with Option B +1.58m	= B	$52.87
Option C5 (banning caustic dehorning)	= B	As with Option B	= B	$52.93
Option C6 (banning induction of early calving except for veterinary requirements)	> B	As with Option B + 84,139	= B	$525.70
Option C7 (banning electro-immobilisation)	> B	As with Option B + 241,503	=B	$59.85

The main criterion for evaluating the proposed standards and the feasible alternatives is net benefit for the community, in terms of achieving the policy objective. The incremental costs and benefits of options relative to the base case are summarised in Table 36 above.

The welfare impact, as well as, costs or cost savings per animal affected in going from the base case to Options A or Option B or base case to Options C1 to C7 is summarised as follows:

- The likely animal welfare benefits of the Option B and Options C1 to C7, whilst unquantifiable, are all likely to produce minor to significant welfare improvements over the base case and Option A (voluntary guidelines in lieu of mandatory standards).

- All variations under Option C, except Option C5 (banning caustic dehorning), would be likely to result in greater welfare benefits than Option B. However, all variations under Option C, except Option C3 (banning permanent tethering), would be likely to result in higher quantifiable costs than Option B; with Options C2 (banning flank spaying/flank webbing) and C6 (banning induction of early calving except for veterinary requirements) being substantially higher in quantifiable costs.

- Option C1, which requires pain relief for all spaying, would provide the highest welfare impact for the greatest number of animals. However, as discussed above, it is difficult to assess and match the relative welfare benefits and costs for each option/variation of option so that policy makers have a clear picture of the expected net benefits of the proposed reforms. In the case of Option C1, it would be misleading to focus on the quantifiable costs only, without better appreciation of the unquantifiable welfare benefits.

- There is no significant interdependency between the individual options. There is a small relationship between Options C1 and C2, where adoption of C2 simultaneously with C1 would make C1 adoption slightly cheaper, because with the absence of the flank approach not all cattle are able to be DOT or passage spayed and therefore

would not require pain relief. However, this cost saving would be small in comparison to the overall cost of adopting C1 and C2. (Adoption of C2 without adoption of C1 is possible but not likely to be recommended).

A sensitivity analysis at the 3% discount rate and 10% discount rate reveals no change in the ranking of quantifiable costs between the Options and Variations, as shown in Table 37.

Table 37: Sensitivity analysis for ranking of quantifiable costs at the 7%, 3% and 10% discount rate

Ranking of costs	PV 7%	Ranking of costs	PV 3%	Ranking of costs	PV 10%
Option A	$0.00	Option A	$0.00	Option A	$0.00
Option C3	$50.84	Option C3	$63.91	Option C3	$43.39
Option B	$52.45	Option B	$65.94	Option B	$44.76
Option C5	$52.87	Option C5	$66.46	Option C5	$45.11
Option C4	$52.93	Option C4	$66.55	Option C4	$45.17
Option C7	$59.85	Option C7	$75.51	Option C7	$55.54
Option C1	$89.94	Option C1	$142.90	Option C1	$94.86
Option C2	$257.05	Option C2	$382.36	Option C2	$252.05
Option C6	$525.70	Option C6	$663.02	Option C6	$447.49

Table 38 shows the incremental 10-year costs and benefits of Options C1 to C7 relative to Option B.

Table 38: Incremental costs and benefits of Options C1 to C7 relative to Option B – 2012-13 dollars ($m)

Option/Variation	I. Incremental Animal welfare benefits (unquantifiable)	II. Reduction in regulatory burden (unquantifiable)	III. Incremental compliance costs to cattle farmers (quantifiable)
Option C1 (pain relief for all spaying)	> B	0	$37.49
Option C2 (banning flank spaying/flank webbing)	> B	0	$204.60
Option C3 (banning permanent tethering)	> B	0	-$1.61
Option C4 (banning the use of dogs on calves)	> B	0	$0.41
Option C5 (banning caustic dehorning)	= B	0	$0.48
Option C6 (banning induction of early calving except for veterinary requirements)	> B	0	$473.25
Option C7 (banning electro-immobilisation)	> B	0	$7.39

Finally, Table 39 shows the incremental average net cost impact of Options A and B and Options C1 to C7 per cow. Option C6 would result in the highest cost per cow (i.e. $19.09) and the lowest would be Option C3 at $1.85 per cow.

Table 39: Incremental average net cost per cow of Options A and B and Options C1 to C7 2012-13 dollars

Option/Variation	Incremental net cost per cow (Australia)
Option A	$0
Option B	$1.90
Option C1	$3.27
Option C2	$9.34
Option C3	$1.85
Option C4	$1.92
Option C5	$1.92
Option C6	$19.09
Option C7	$2.17

Note: Care should be taken in using the average cost per cow in a jurisdiction to interpret the impact of standards or variations on a particular industry sector or an individual farmer's herd.

To the extent that the majority of cattle farms and approximately 50% of feedlots are defined as small businesses (i.e. have less than 20 FTE staff) - the proposed national standards and variations (Options C1 to C7) would be unlikely to disproportionately impact on small business. For example, the additional cost per beef cow under Option C3 is likely to be approximately $1.85 (based on a total herd of 27.54 million cattle and a total 10-year cost of this option of $50.84m in 2012-13 dollars). Assuming an average supermarket retail yield of 180kg meat per cow (conservatively based on 75%[185] of an average hot carcase weight of 240kg per cow in supermarkets),[186] this additional cost would be around one cent per kilo of meat. This additional cost is relatively minor compared to seasonal and other fluctuations in meat prices that consumers face. At $1.85 per cow, this would represent only about 0.25% of the average replacement cost of a beef cow, which is estimated to be $750. [187]

Option C3 would be unlikely to be a barrier to entry or a restriction of competition in the industry.

The basis of the selection of the preferred option is the one that generates the greatest net benefit for the community. Option C1, which is the variation of the proposed standards under Option B (but which requires pain relief for all spaying), would provide the highest welfare impact however, it would cost an additional $37.49m over 10 years in 2012-13 dollars. According to experts in cattle management at the SRG meeting on the 11th of December 2013 and in the context of the difficulty in measuring animal welfare benefits – it was considered that such a high incremental cost of Option C1 over Option B could not be justified on welfare grounds. Furthermore, it was determined by the SRG that none of the additional costs of Options C2 and C4 to C7 over Option B ranging from $0.41m to $473.25m over 10 years in 2012-13 dollars (see Table 38) could be justified in terms of the additional animal welfare benefits over Option B and, therefore, were dismissed on net benefit grounds.

[185] Lemenager, undated.
[186] Andrews and Littler, 2007.
187 A contemporary estimate from public sources

Option C3, banning permanent tethering, would eliminate the need for daily exercise of tethered cattle. This has been estimated at about $1.61m over 10 years in 2012-13 dollars as a result of the costs saved from not having to exercise tethered cattle. In addition, while banning permanent tethering would affect a small number of cattle, it would be expected to provide slightly more welfare benefits compared to the Option B.

As indicated in Table 36, Option C3 is expected to have greater animal welfare (unquantifiable) benefits than Option B and incremental (quantifiable) compliance costs to cattle farmers less than Option B. However, under Option C3 there would be an unquantifiable impact on the choice of individuals to keep cows in a house paddock as pets (which a small percentage of farm families do). Banning tethering may make it difficult for individuals to enjoy the benefits of cows as pets. As judged by members of the SRG at its meeting on the 11th of December 2013, the quantifiable cost savings does not outweigh the potential unquantifiable costs under Option C3 including loss of choice in having cattle as pets.

While it is up to Ministers to decide on the options presented in this RIS (or any other option), the analysis presented in this RIS suggests that Option C3 is the preferred combination of options that generate the greatest net benefit for the community. It should be also noted that the SRG considered Option B as a preferred option, without adopting any of the variations offered under Option C.

5.0 Implementation and evaluation

The intent of preparing national standards is to replace current jurisdictional standards, if and when adopted by the AMF. The specific method of implementation is a matter for each jurisdiction according to the provisions of their own enabling legislation, as listed in Appendix 4 to this RIS.

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

Jurisdictions are unlikely to adopt particular standards that are inconsistent with their primary legislation; although these exceptions would apply in only a small number of cases. For instance, the Victorian DEPI has supported Option C1 on the basis that spaying is a vet-only procedure in Victoria. It has also supported Option C7 because electro-immobilisation is banned under the Victorian Prevention of Cruelty to Animals Act. The Tasmanian Department of Primary Industries, Parks, Water and Environment has supported the standards with some qualifications relating to existing law in Tasmania (vet-only pain relief over 6 months of age and vet-only electro-immobilisation) .

As discussed in Part 4.3.2 of this RIS, the cost of making the necessary regulations to adopt the standards is likely to be relatively small and in any case, is part of the normal role of government. Based on advice received from jurisdictions on the far more detailed Land Transport Standards[188], a reasonable assumption has been made that there will be negligible incremental costs in enforcing the proposed standards compared to the existing code under the base case.

The effectiveness of the proposed standards will be evaluated when the standards are next reviewed. Indicators will include the extent to which the standards have been:

- Officially adopted by the various government jurisdictions;
- Implemented by the cattle industries; and
- Accepted by the Australian community.

[188] Tim Harding & Associates, 2008.

7.0 Conclusions and findings

The key points of the RIS were:

1. The main problems underlying the development of the proposed national standards are those relating to:

    - *Risks to the welfare of cattle* due to deficiencies in the existing MCOP for the welfare of cattle; and to a lesser extent
    - *Uncertainty for industry* due to a lack of clear and verifiable standards; and
    - *Excess regulatory burden* arising from a lack of national consistency and unnecessary standards.

2. The main areas of direct concern to cattle welfare are in relation to painful husbandry procedures, such as castration, spaying, dehorning, and tail docking. The number of cattle that could be affected by current poor practices in regards to as castration, spaying, dehorning, and tail docking are potentially significant, however, the extent of such practices is currently unknown. This RIS is seeking greater information from industry and other stakeholders in order to ascertain the magnitude of the problem.

3. In relation to the proposed standards and feasible alternatives the following overarching policy objective is identified:

    To minimise risks to cattle welfare and unnecessary regulatory burden in a way that is practical for implementation and industry compliance.

4. In terms of the policy development process and consultation to date, a number of alternative positions and views expressed by governments, industry and animal welfare organizations have been considered. A list was prioritised and narrowed by the Animal Welfare Committee and the cattle industries comprising feasible options, and included variations that were considered controversial but that might provide further benefits in animal welfare.

5. The options and variations evaluated in terms of the indicative costs and benefits were:

    - **Option A:** converting the proposed national standards into national voluntary guidelines (the minimum intervention option);

    - **Option B:** the proposed national standards as currently drafted;

    - **Option C:** variations of the proposed national standards as follows:

        - *Option C1*: pain relief for all spaying
        - *Option C2*: banning flank spaying/flank webbing
        - *Option C3*: banning permanent tethering
        - *Option C4*: banning the use of dogs on calves
        - *Option C5*: banning caustic dehorning

- *Option C6*: banning induction of early calving except for veterinary requirements
- *Option C7*: banning electro-immobilisation.

6. Comparing the costs and benefits against the 'base case' is hindered by the inherent inability to quantify benefits to animal welfare. This is particularly important for castration, spaying, dehorning, and tail docking, which may affect a large number of cattle. The three evaluation criteria used were:

I. Animal welfare benefits

II. Reduction in regulatory burden; and

III. Net compliance costs to industry and government.

5. The basis of the selection of the preferred option is the one that generates the greatest net benefit for the community.

6. The main criterion for evaluating the proposed standards and the feasible alternatives is net benefit for the community, in terms of achieving the policy objective. The incremental costs and benefits of options relative to the base case are summarised in Table 36 below.

Table 36: Incremental 10-year costs and benefits of Options A and B and Options C1 to C7 relative to the base case – 2012-13 dollars ($m)

Option	I. Incremental Animal welfare benefits (unquantifiable)	Number of cattle affected under Criterion I	II. Reduction in regulatory burden (unquantifiable)	III. Incremental compliance costs to cattle farmers (quantifiable)
Option A (guidelines)	< B/C	A small undetermined % of 27.54m	< B/C	$0.00
Option B (Proposed national standards)	> A	A larger undetermined % of 27.54m	> A	$52.45
Option C1 (pain relief for all spaying)	> B	As with Option B + 486,204	= B	$89.94
Option C2 (banning flank spaying/flank webbing)	> B	As with Option B + 244,417	= B	$257.05
Option C3 (banning permanent tethering)	> B	As with Option B	= B	$50.84
Option C4 (banning the use of dogs on calves)	> B	As with Option B +1.58m	= B	$52.87
Option C5 (banning caustic dehorning)	= B	As with Option B	= B	$52.93
Option C6 (banning induction of early calving except for veterinary requirements)	> B	As with Option B + 84,139	= B	$525.70
Option C7 (banning electro-immobilisation)	> B	As with Option B + 241,503	=B	$59.85

7. The welfare impact, as well as costs or cost savings per animal affected in going from the base case to Options A or Option B to Options C1 to C7 under Option C is summarised as follows:

- The likely animal welfare benefits of the Option B and Options C1 to C7, whilst unquantifiable, are all likely to produce minor to significant welfare improvements over the base case and Option A (voluntary guidelines in lieu of mandatory standards).

- All variations under Option C, except Option C5 (banning caustic dehorning), would be likely to result in greater welfare benefits than Option B. However, all variations under Option C, except Option C3 (banning permanent tethering), would be likely to result in higher quantifiable costs than Option B; with Options C2 (banning flank spaying/flank webbing) and C6 (banning induction of early calving except for veterinary requirements) being substantially higher in quantifiable costs.

- Option C1, which requires pain relief for all spaying, would provide the highest welfare impact for the greatest number of animals. However, as discussed above, it is difficult to assess and match the relative welfare benefits and costs for each option/variation of option so that policy makers have a clear picture of the expected net benefits of the proposed reforms. In the case of Option C1, it would be misleading to focus on the quantifiable costs only, without better appreciation of the unquantifiable welfare benefits.

8. The basis of the selection of the preferred option under the COAG guidelines is the one that generates the greatest net benefit for the community.

9. Option C1, which is a variation of the proposed standards under Option B (but which requires pain relief for all spaying), would provide the highest welfare impact however, it would cost an additional $37.49m more than Option B over 10 years in 2012-13 dollars. According to experts in cattle management and welfare at the SRG meeting on the 11th of December 2013 and in the context of the difficulty in measuring animal welfare benefits – it was considered that such a high incremental cost of Option C1 over Option B could not be justified on welfare grounds. Furthermore, it was advised by the SRG that none of the additional costs of Options C2 and C4 to C7 over Option B ranging from $0.41m to $473.25m over 10 years in 2012-13 dollars (see Table 38) could be justified in terms of the additional animal welfare benefits over Option B and therefore were not supported on net benefit grounds.

10. Option C3, banning permanent tethering, would eliminate the need for daily exercise of tethered cattle. This has been estimated at about $1.61m over 10 years in 2012-13 dollars as a result of the costs saved from not having to exercise tethered cattle. In addition, while banning permanent tethering would affect a small number of cattle, it would be expected to provide slightly more welfare benefits compared to Option B.

11. As indicated in Table 36, Option C3 is expected to have greater animal welfare (unquantifiable) benefits than Option B and incremental (quantifiable) compliance costs to cattle farmers less than Option B. However, under Option C3 there would be

an unquantifiable impact on the choice of individuals to keep cows in a house paddock as pets (which a small percentage of farm families do). Banning tethering may make it difficult for individuals to enjoy the benefits of cows as pets. As judged by members of the SRG at its meeting on the 11th of December 2013, the quantifiable cost savings does not outweigh the potential unquantifiable costs under Option C3 including loss of choice in having cattle as pets.

12. However, overall, based on the analysis undertaken in this RIS and feedback through consultation, Option C3 appears to generate the greatest net benefit for the community. On this basis, Option C3 is the preferred option, which is effectively Option B with the ban on tethering.

Glossary of terms and acronyms

ABS:	Australian Bureau of Statistics.
ABARE:	Australian Bureau of Agricultural and Resource Economics.
AHA:	Animal Health Australia.
ALFA:	Australian Lot Feeders Association.
Animal welfare:	the state of an animal and how well it is coping with the conditions in which it lives.
AVA:	Australian Veterinary Association.
Base case:	the situation that would exist if the proposed standards were not adopted.
Blunt trauma:	a single blow to the forehead causing immediate loss of consciousness.
Castration:	removal or disruption of the function of the testes by excision, or by constriction and/or crushing of testicular blood supply (rubber ring, tension band or burdizzo clamp) or by dysfunction created by the cryptorchid method.
Cattle:	all members of the genus *Bos*.
COAG:	Council of Australian Governments.
Cow:	an individual female of the genus *Bos*.
DA:	Australian Government Department of Agriculture
Dehorning:	removal of attached horns.
Disbudding:	removal of an area of skin including the horn bud in a young calf prior to solid attachment of the horn bud to the skull.
Economic efficiency:	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.
Electro-immobilisation:	the use of pulsed, low-frequency electrical current to restrain an animal. The process produces tetanic contractions of skeletal muscles and therefore voluntary movement is not possible. The process does not produce pain relief.
Externality:	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.
Feedpad:	that part of a farm that is used for regular supplementary feeding of cattle on an area of land that is either, formed, surfaced or stocked at a rate that precludes the growth of vegetation.
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. Compare with *Standards.*
EU:	European Union.
FTE:	Full time equivalent.

Heat stress:	when the response by animals to hot conditions above their thermo-neutral limit (heat load) exceeds the ability of their behavioural, physiological or psychological coping mechanisms.
Humane destruction:	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.
Immature female:	a cow less than 12 months of age.
Market:	an area of close competition between firms, or the field of rivalry in which firms operate.
Market failure:	the situation which occurs when freely functioning markets, operating without government intervention, fail to deliver an efficient or optimal allocation of resources.
Merit goods:	underprovided goods/services in a market economy which are determined by government to be good for society whether or not consumers desire them.
Monopoly:	a market structure such that only one firm supplies the entire market.
MLA:	Meat and Livestock Australia.
NFAS:	National Feedlots Accreditation Scheme.
OIE:	World Organisation for Animal Health.
Owner:	a person or company who owns livestock.
Pain relief:	the administration of drugs that reduce the intensity and duration of a pain response.
Person in charge:	the person who is responsible for the welfare of the livestock at a particular time. Responsibility for duty of care for livestock welfare may extend to the person's employer.
PIMC:	Primary Industries Ministerial Council, then became the Standing Council on Primary Industries (SCoPI) which ceased in December 2013..
Prescribed:	specified by regulations made under an Act.
Producer:	a farmer of livestock.
Public good:	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.
Restriction of competition:	something that prevents firms in a market or potential entrants to a market from undertaking the process of economic rivalry.
RIS:	Regulation Impact Statement.
QA:	Quality Assurance.
RSPCA:	Royal Society for the Prevention of Cruelty to Animals.
SCoPI:	Standing Council on Primary Industries (SCoPI) which ceased in December 2013.
Social cost:	the total of all costs of a particular economic activity borne by all economic agents in society, including consumers, producers and government.

Standards:	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'.
Stock handler:	a person who undertakes the immediate day-to-day husbandry tasks associated with looking after animals.
Stock handling:	putting into practice the skills, knowledge, experience, attributes and empathy necessary to manage stock.
Stress:	means a response by animals that activates their behavioural, physiological or psychological coping mechanisms.
Supply chain:	a group of businesses linked together for mutual benefit to supply products to customers.
Tail docking:	The removal of a portion of a cow's tail, or actions that cause the loss of a section of the tail. It does not include any trimming of the switch hairs (the bush).
Tethering:	The securing of an animal to an anchor point to confine it to a desired area. It is not short term tying up or hobbling.
Weaning:	when liquid feed is no longer provided to the calf.

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Appendices

1. Hourly time costs for farm workers
2. Estimates of Quantifiable costs of the proposed standards – Option B
3. Estimates of Quantifiable costs – Options C1, C2, C3, C4, C5, C6 and C7
4. List of relevant federal, state and territory legislation.
5. List of standards with negligible incremental cost impact.
6. Number of cattle annually affected by welfare standards under Option B by state and territory
7. Full list of public consultation questions.

Appendix 1: Hourly time costs for farm workers

A primary resource requirement of activities undertaken in relation to cattle and dairy farming is labour time. The purpose of this appendix is to capture the dollar cost per hour of this resource which will be used in later appendices as relevant to estimate impacts of various Standards with respect to time requirements on stakeholders.

A1.1 – Estimation of hourly time cost for farm workers

It is understood, that the actual cost of time may vary between businesses, between individuals in a business and from day to day. However due to lack of specific data, time costs are estimated by taking average weekly earnings for 'Farm, forestry and garden workers'[189], as shown in Table 1 column (a). Average weekly earnings are then annualised and converted to May 2012 values using an 8.35% growth in average wages between 2010 and 2012[190] in column (c).

Table A1.1 – Estimated hourly charge out rate for farm workers by State and Territory – 2012-13[191]

Jurisdiction	May 2010 Average weekly earnings (a)	May 2010 Annual earnings (b) = (a) x 52	May 2012 annual earnings (c) = (b) + [(b) *8.35%]	Projected on-cost multiplier (d)	Overhead cost multiplier (e)	No. weeks worked per annum (f)	No. hours worked per week (g)	Hrly Rate (h) = (c)/{(f)*(g)}*(d)*(e)[192]
NSW	$843	$43,836	$47,496	1.19	1.5	44	38	**$51**
Vic	$971	$50,492	$54,708	1.17	1.5	44	38	**$57**
Qld	$851	$44,252	$47,947	1.15	1.5	44	38	**$49**
SA	$817	$42,484	$46,031	1.18	1.5	44	38	**$49**
WA	$922	$47,944	$51,947	1.18	1.5	44	38	**$55**
Tas	$1,091	$56,732	$61,469	1.18	1.5	44	38	**$65**
NT	$544	$28,288	$30,650	1.21	1.5	44	38	**$33**
ACT	$764	$39,728	$43,045	1.2	1.5	44	38	**$46**

The projected on-cost multiplier in column (d) represents salary on-costs of superannuation, payroll tax, Fringe Benefits Tax (FBT) and workers compensation by state and territory. Leave loading is already incorporated in annual earnings in column (c).Each of the projected on-cost multipliers reflects the ratio of salary on-costs to total earnings within the state and territory as noted in 2002-03[193]. The projection is based on the annual increase of this ratio between 1993-94 and 2002-03, which varies for each of the states and territories. Other salary related on-costs are considered in column (f) – the number of weeks worked per annum (44), which takes account of an average of two weeks of sick leave and two weeks of public holidays plus four weeks of annual leave. The 38-hour working week [column (g)], is based on the guarantee of maximum ordinary hours in the Australian Government Workplace Relations Act.

[189] ABS (2011) – Employee Earnings and Hours, Australia, Cat. 6306.0, Table 1a, Average weekly cash earnings and hours paid for, full-time non-managerial adult employees, Australia–Detailed occupation (ANZSCO)
[190] ABS (2012) – Average Weekly Earnings, Australia, Cat. 6302.0
[191] All figures have been rounded to whole numbers for ease of presentation
[192] Rounded to the nearest whole number
[193] ABS (2003) – Labour Costs, Australia 2002-03, Table 1a. Major Labour Costs, State/Territory, Cat. 6348.0.55.001

The overhead cost multiplier in column (e) incorporates non-salary related costs such as a vehicle and computer. This multiplier is based on a guidance note from the Victorian Competition and Efficiency commission, which states,

> The Australian Vice–Chancellor's Committee guidance to universities on bidding for research funding suggests multipliers of 1.52 for on-costs and 1.4 for non-laboratory infrastructure costs (excluding other direct, non-salary costs). This suggests that an overhead multiplier of at least 1.5 may be appropriate.[194]

The hourly charge out rate is then calculated by dividing annual earnings by the product of the number of weeks worked and hours per week and then multiplying this by the overhead cost and on-cost multipliers:

Hourly charge out rate = annual earnings/ (working weeks x hours per week) x on-cost multiplier x overhead cost multiplier

[194]Victorian Competition and Efficiency Commission 2006, *Guidance Note on Suggested Default Methodology and Values for Staff Time in BIA/RIS Analysis*, Melbourne, p.3.

Appendix 2 – Estimates of Quantifiable costs of the proposed standards – Option B

The purpose of this Appendix is to establish the quantifiable costs and benefits of the proposed Australian Animal Welfare Standards and Guidelines - Cattle ('the proposed standards'). This includes only those proposed standards with estimated costs that are incremental to the base case. That is, proposed standards with costs assessed to be not greater than the base case are not estimated here.

A2.1 Standard 3.2 – Unquantifiable incremental cost of inspecting cattle

Under proposed Standard 3.2, a person in charge must ensure the inspection of cattle at intervals and at a level appropriate to the production system and risk to the welfare of cattle. Possible risks to cattle welfare include and are not limited to: fire; lack of water; lack of supplements (e.g. calcium or minerals); disease; and injury. The incremental cost remains unquantifiable due to unknown variables in relation to – cattle breeds; regions; production systems; risks to welfare; and levels of existing inspections under the base case. However, in response to the consultation RIS, DAFF (Qld) advised that regular inspections of cattle are an obligation under the **Animal Care and Protection Act 2011** (ACPA) as part of duty of care provisions; are current practice and carried out during normal management procedures in accordance with the husbandry regime. Therefore there would be no increase in costs associated with inspecting cattle in Queensland. Moreover proposed Standard 3.2 would result in incremental unquantifiable benefits to cattle welfare, commensurate with costs.

A2.2 Standard 5.4 – Effective control of dogs

Dogs are an efficient part of the mustering team. Loss of the ability to use dogs acceptably will result in less effective mustering, the need to use more stock people and increased costs to industry and increased stress to cattle. The acceptable use of dogs for handling and mustering of young cattle is an important issue for the cattle industry in the context of cattle training. Early training programs greatly facilitate the later handling of adult cattle and result in less stress to stockpersons and cattle. The proposed standard permits the ongoing responsible use of dogs with cattle.

According to proposed Standard 5.4, a person in charge must have a dog under effective control at all times during handling of cattle. The number of dogs assumed is 1 per establishment (on average) involved in beef cattle farming[195]. The number of beef cattle farms per state and territory is summarised in Table A.1 and is estimated to be around 74,447 across Australia.

Table A2.1 – Estimated number of dairy and beef cattle farms by state and territory - 2010-11

Jurisdiction	Dairy cattle farms* (i)	Beef cattle farms** (j)	Total cattle farms (k)=(i)+(j)

[195] On advice from AHA

Jurisdiction	Dairy cattle farms* (i)	Beef cattle farms** (j)	Total cattle farms (k)=(i)+(j)
NSW	807	27,166	27,973
Vic	4,588	16,020	20,608
Qld	595	19,226	19,821
SA	286	4,629	4,915
WA	170	4,528	4,698
Tas	437	2,603	3,040
NT	-	254	254
ACT	-	51	51
AUSTRALIA	**6,883**	**74,477**	**81,360**

*Source: Dairy Australia, *Australian Dairy Industry in Focus 2011*
**Source: ABS (2011) – *Agricultural Commodities by State & Territory* - Cat. No. 7121.0 2010-11

For simplicity of estimation purposes, it is assumed that the proportion of dogs not under effective control is 1% or 745 dogs and that this would be constant each year. It is acknowledged that the proportion of dogs not under control would most likely be such that in fact a larger proportion than 1% would need training in the first year and a lower proportion than 1% would need training in subsequent years (i.e. turnover is not exactly constant). Dog-training costs are taken as being around $370[196] per dog. As shown in Table A2.2, the 10-year cost of training under proposed Standard 5.4 is estimated to be approximately **$2.76m** or ***$1.8m*** in 2012-13 present value[197] dollars.

This analysis does not consider the cost savings arising from having well trained dogs in the form of:

- reduced loss of production from injured stock; and
- human labour savings.

However, these aforementioned cost savings would be driven by market forces rather than Standard 5.4. That is to say, market forces would mean that farmers would not wish cattle to be bitten as this would undermine their sales and any potential to improve productivity in farm labour by having well trained dogs would be pursued. On the other hand, the objective of Standard 5.4 is more broadly about the welfare of beef cattle in relation to predator anxiety, stress and pain from bites.

Table A2.2 –10-year incremental cost of training for beef cattle dogs under Standard 5.4 – 2012-13 dollars

Jurisdiction	No. Beef cattle farm dogs (j)	Dogs not under effective control (l) = (j)*1%	Training cost per dog (m)	Annual cost (o)= (l)*(m)	10-year cost (o)'= (o)*10
NSW	27,166	272	$370	$100,514	$1,005,142
Vic	16,020	160	$370	$59,274	$592,740

[196] http://planetk9.com.au/dogtrainingclasses.html
[197] All present value 2012-13 dollars are discounted using a 7% discount rate

Jurisdiction	No. Beef cattle farm dogs (j)	Dogs not under effective control (l) = (j)*1%	Training cost per dog (m)	Annual cost (o)= (l)*(m)	10-year cost (o)'= (o)*10
Qld	19,226	192	$370	$71,136	$711,362
SA	4,629	46	$370	$17,127	$171,273
WA	4,528	45	$370	$16,754	$167,536
Tas	2,603	26	$370	$9,631	$96,311
NT	254	3	$370	$940	$9,398
ACT	51	1	$370	$189	$1,887
AUSTRALIA	**74,477**	**745**	**$370**	**$275,565**	**$2,755,649**
Present value 7% discount rate					***$1,808,834***
3% discount rate					$2,282,160
10% discount rate					$1,539,297

A2.3 Standard 5.5 – Muzzling of dogs used to move calves under 30 days old

The acceptable use of dogs for handling and mustering of young cattle is an important issue for the cattle industry in the context of cattle training. Early training programs greatly facilitate the later handling of adult cattle and result in less stress to stockpersons and cattle. However for the management of calves less than 30 days old the use of dogs is largely a dairy industry issue and largely restricted to their use with replacement female calves.

According to proposed Standard 5.5, a person in charge must ensure a dog is muzzled when moving calves less than 30 days old that is without its mother.

The number of dogs assumed is 1 per farm (on average) involved in beef cattle and dairy cattle farming[198], but not every farm would work calves with that dog. The number of beef and dairy cattle farms per state and territory is summarised in Table A.1 and is estimated to be around 74,477[199] and 6,883[200] farms, respectively, across Australia. All dairy farms are considered to be affected and only 1% of cattle farms.

Assuming 0.5 dogs per farm used on calves, accept for Victoria where the use of dogs on calves is not permitted[201], then this would leave the population of relevant dogs affected as:

- 1% x beef cattle farms (excluding Victoria) x 0.5 dogs per farm used on calves; and
- 100% x of dairy cattle farms (excluding Victoria) x 0.5 dogs per farm used on calves.

Furthermore, it is assumed for the purpose of estimation that the proportion of dogs currently muzzled either because they are prone to biting or because of market forces[202],

[198] On advice from AHA
[199] See row (e) in Table A1 for source of estimate
[200] See row (a) in Table A1 for source of estimate
[201] See Victorian Code 7.2
[202] It is in the interest of a farmer to ensure that the hides of calves are not marked, as this would reduce the future sale value of a calf/bull/cow

is currently *95%*. Incremental costs are assumed to be around $30[203] per muzzle per dog. Also muzzles are likely to be purchased only once and reused from dog to dog. However, this may be an underestimate as some cattle dogs may need to have their muzzles replaced over their lifetimes.
As shown in Table A2.3, the one-off cost of muzzling dogs under proposed Standard 5.5, is estimated to be approximately **$2,160** in 2014-15 or ***$1,886*** in 2012-13 present value dollars.

Table A2.3 – One-off incremental cost of muzzles for beef cattle and dairy cattle dogs as required under Standard 5.5 –2012-13 dollars

Jurisdiction	No. Beef and dairy farm dogs affected (p)=(j)*1%*50% +(i)*100%*50%	% not muzzled (q)=(k)*5%	Muzzle cost per dog (r)	One-off cost (s)= (q)*(r)
NSW	539	27	$30	$809
Vic	-	-	$30	$0
Qld	394	20	$30	$590
SA	166	8	$30	$249
WA	108	5	$30	$161
Tas	232	12	$30	$347
NT	1	0.1	$30	$2
ACT	-	-	$30	$0
Australia	**1,440**	**72**	**$30**	**$2,160**
Present value 7% discount rate				***$1,886***
3% discount rate				$2,036
10% discount rate				$1,785

A2.4 Standard 5.6 – Exercise of tethered cattle

According to proposed Standard 5.6, a person in charge must ensure cattle are accustomed to tethering before they are tethered for long periods. A person in charge must ensure tethered cattle are able to exercise daily. Tethering of cattle is a minority practice associated with peri-urban cattle ownership.

The main resource cost of this standard would be the time required to ensure that exercise is undertaken for cattle. Hourly charge out rates for each state and territory are established in Appendix 1 (see column (h) in Table A1.1). Moreover, for the purpose of estimation, the amount of time required per day to exercise permanently tethered cattle would be 10 minutes per animal, even if the exercise is off-leash as some oversight would be required to prevent damage to house paddocks.

Based on advice from AWC the estimated number of cattle permanently tethered by state or territory is summarised in Table A2.4.

[203]Online price survey for durable wire muzzles suitable for Australian cattle dogs - prices range from $20 to $40 - based on size - assume average cost (see http://www.myshopping.com.au/ZM--717820982_Pet_Supplies)

As shown in Table A2.4, the 10-year cost of exercising permanently tethered cattle under proposed Standard 5.6 is estimated to be approximately **$4.76m** or ***$3.13m*** in 2012-13 present value dollars.

Table A2.4 – 10-year incremental cost of exercising permanently tethered cattle under Standard 5.6 –2012-13 dollars

Jurisdiction	No. of cattle permanently tethered (t)	Hourly charge out rates (h)[204]	Annual cost of exercise (u) = (t)*(h)*0.167 hrs*365 days	10-year cost (v) = (u)*10
NSW	100	$51	$308,463	$3,084,632
Vic	10	$57	$34,933	$349,328
Qld	10	$49	$30,092	$300,924
SA	10	$49	$29,644	$296,437
WA	10	$55	$33,454	$334,535
Tas	10	$65	$39,585	$395,855
NT	-	$33	$0	$0
ACT	-	$46	$0	$0
Australia	**150**		**$476,171**	**$4,761,711**
Present value 7% discount rate				***$3,125,633***
3% discount rate				$3,943,530
10% discount rate				$2,659,878

A2.5 Standard 5.7 – Electro-immobilisation requirements

Electro-immobilisation[205] is the use of pulsed, low-frequency electrical current to restrain an animal. It is an important supplement to cattle restraint for treatments and procedures, most frequently used where, using conventional restraint methods, cattle are highly likely to injure themselves or stock people (Petherick 2005). Electro-immobilisation does not provide pain relief but is useful for assisting cattle treatments and procedures in skilled hands.

According to Standard 5.6, a person must only use electro-immobilisation on cattle if:

1. the device is approved for use in the jurisdiction[206];
2. the cattle are over six months old;
3. the operator is trained or it is done under direct supervision of a veterinarian[207] or a trained person; and
4. alternative restraining methods are inadequate to hold cattle sufficiently for the procedure being performed.

[204] See Table A1.1 for the source of estimates
[205] (see http://www.DA.gov.au/animal-plant-health/welfare/nccaw/guidelines/livestock/electro-immobilisation)
[206] Banned in Victoria under the base case
[207] Direct Veterinary Supervision is defined as "ongoing, continuous and direct personal supervision of an activity by a registered veterinary practitioner. The supervising registered veterinary practitioner must be on the same premises, or in the case of a visit, must accompany the person being supervised".

The implication of this is that there will be additional training costs in all states and jurisdictions less costs of direct veterinary supervision in New South Wales and Tasmania where the cheaper option of training and accreditation would now be available[208]. Although Victoria is likely to retain its ban on electro-immobilisation this costing is for the proposed national standards that are intended to replace all other standards. (The proposed national standards represent minimum standards of welfare that do not preclude jurisdictions from retaining existing higher requirements). The standard determines the basis for acceptable use of electro-immobilisation. The risk to industry if this method is banned would be increased costs due to the need to apply different methods of restraint (better veterinary crushes, roping, veterinary sedation and anaesthesia), injuries to stock persons and the need to apply alternative more expensive treatments.

According to AHA, the cost of training and accreditation is likely to be minor as it is envisaged that this would be provided by the retailer as a support service accompanied by a 'soft' accreditation approach and estimated to take one hour. This is mainly envisaged as a defensive standard with minimal cost impact. Moreover, according to Dairy Australia this would only be relevant to beef cattle.

It is noted that a total of 45,534[209] individuals (i.e. farmhands) are employed in the production of beef cattle. Of this number, it is estimated that 2,212 farmhands are employed in accredited and unaccredited feedlots (see Part A2.18 for discussion and estimate). Therefore the total number of farmhands relevant for this estimation is 45,534 minus 2,212 or 43,322 farmhands. Pro rata estimates of the number of farmhands employed by state and territory are based on the number of beef cattle in each jurisdiction, as outlined in Table A2.5.

Table A2.5 – Total cattle herd by state and territory 2010-11

Jurisdiction	Dairy cattle herd* (w)	Beef cattle herd ** (x)	Total cattle herd (y)=(w)+(x)
NSW	200,000	5,383,931	**5,583,931**
Vic	1,020,000	2,365,850	**3,385,850**
Qld	90,000	12,449,625	**12,539,625**
SA	90,000	1,109,640	**1,199,640**
WA	55,000	1,954,382	**2,009,382**
Tas	145,000	466,583	**611,583**
NT	-	2,197,359	**2,197,359**
ACT	-	8,807	**8,807**
AUSTRALIA	**1,600,000**	**25,936,177**	**27,536,177**

*Source: Dairy Australia, *Australian Dairy Industry in Focus 2011*
**Source: ABS (2011) – *Agricultural Commodities by State & Territory* - Cat. No. 7121.0 2010-11

Based on the total beef cattle herd in column (x) in Table A2.5 the following pro rata estimates of the number of farmhands by state and territory is provided in Table A2.6.

[208] Electro-immobilisation is only allowable under veterinary supervision in NSW and Tas under the base case
[209] See: http://www.ibisworld.com.au/industry/default.aspx?indid=17 (accessed 1 October 2012)

Table A2.6 – Estimated number of beef cattle farmhands by state and territory 2010-11

Jurisdiction	No. Farmhands beef cattle (z) = 43,322/ 25,936,177 *(x)[210]
NSW	8,993
Vic	3,952
Qld	20,795
SA	1,853
WA	3,264
Tas	779
NT	3,670
ACT	15
AUSTRALIA	**43,322**

It is assumed that 1% of farmhands would need to be trained under proposed Standard 5.7 at a time cost of around one hour per farmhand (including training and testing), DVD costs at $1 per disc and reading materials at $0.50 per reading material - per farmhand. It is also assumed that the turnover in the number of beef cattle farmhands will be constant and stable over 10 years, as well as, and those needing training (i.e. 1% or in other words 455 per annum).

The total 10-year incremental training/disc production cost and publication cost is estimated to be approximately $0.22m or *$0.15m* in 2012-13 present value dollars, as shown in Table A2.7.

Table A2.7 – 10-year incremental training cost of beef cattle farmhands by state and territory under Standard 5.7 –2012-13 dollars

Jurisdiction	No. Farmhands requiring training (a1)=(z)*1%	Hourly cost (h)[211]	Training cost (b1)=(a1)*(h)	Disc production cost (c1)=(a1)*$1	Material publication cost (d1)=(a1)*$0.50	Annual cost (e1)=(b1)+(c1)+(d1)	10-year cost (e1)'=(e1)*10
NSW	90	$51	$4,560	$90	$45	$4,695	$46,949
Vic	40	$57	$2,269	$40	$20	$2,329	$23,285
Qld	208	$49	$10,287	$208	$104	$10,599	$105,986
SA	19	$49	$903	$19	$9	$931	$9,310
WA	33	$55	$1,795	$33	$16	$1,844	$18,442
Tas	8	$65	$507	$8	$4	$519	$5,188
NT	37	$33	$1,221	$37	$18	$1,276	$12,762
ACT	0	$46	$7	$0	$0	$7	$70
Australia	**433**					**$22,199**	**$221,993**
Present value 7% discount rate							***$145,718***
3% discount rate							$183,849
10% discount rate							$124,004

Moreover, there would be an annual cost savings of $220[212] per hour of veterinary costs (routine issues for multiple animals[213] including travel costs) for around 1.5%[214] of beef

[210] See Table A2.5 for source of estimates
[211] See Table A1.1 in Appendix 1 for source of estimates

cattle in New South Wales and Tasmania, as veterinary supervision would no longer be required where training is undertaken. The 10-year cost savings would be equal to $0.39m or *$0.26m* in 2012-13 present value dollars, as shown in Table A2.8.

Table A2.8 – 10-year incremental cost savings of no longer exclusively requiring veterinary supervision in NSW and Tas for electro-immobilisation under Standard 5.7 –2012-13 dollars

Jurisdiction	No. cattle affected (f1)= (x)*1.5%	Annual veterinary cost savings (g1)=(f1)*$220hr/180	10-year cost savings (h1)=10*(g1)
NSW	80,759	$35,893	$358,929
Tas	6,999	$3,111	$31,106
Australia	**87,758**	**$39,003**	**$390,034**
Present value 7% discount rate			***$256,022***
3% discount rate			$323,017
10% discount rate			$217,872

The *net 10-year incremental cost savings* of proposed Standard 5.7 would therefore be approximately equal to **$0.17m** or ***$0.11m***[215] in 2012-13 present value dollars. This reflects purely the impact of the proposed standard on all the jurisdictions and *does not reflect the choice* of particular states or territories, such as NSW or Tas to retain existing higher standards.

A2.6 Standard 5.8 – Ban of electro-immobilisation as form of pain relief

According to proposed Standard 5.8, a person must not use electro-immobilisation on cattle as an alternative to pain relief. Apart from the fact that several studies have shown that electro-immobilisation does **not** produce analgesia[216] this is a defensive standard with a negligible cost impact, as this form of pain relief is not likely to be effective. That is to say, the purpose of electro-immobilisation is to restrain cattle and not to provide pain relief, which is covered by other standards.

A2.7 Standard 5.10 – Ban of permanent brand on head of cattle

According to proposed Standard 5.10, must not place a permanent *brand* on the head of cattle. However based on advice from AHA, this practice is no longer done and is a defensive standard with negligible cost impact for the Northern Territory[217].

A2.8 Standard 6.2 – Requirement for pain relief when castrating cattle under certain circumstances

[212] Based on advice from AHA
[213] Assumed to be 20 seconds per cow (same amount of time to administer a non-steroidal analgesic with an injection)
[214] Greater than 1% based on advice from AHA
[215] Incremental 10-year training accreditation cost minus 10-year cost savings from no longer exclusively needing veterinary supervision in NSW and Tas
[216] See http://www.DA.gov.au/animal-plant-health/welfare/nccaw/guidelines/livestock/electro-immobilisation
[217] This practice is currently banned in NSW and Tas unless done by a vet, and banned in South Australia and Queensland. This practice is unlikely to be pursued in Victoria or Western Australia because of the requirement for alternative identification as required by the national livestock identification scheme (NLIS)

Castration remains an important tool for cattle husbandry and on-farm management of male calves in Australia.
According to proposed Standard 6.2, a person in charge must use *pain relief* when castrating unless cattle are:

1. under six months old; or
2. under 12 months old if at their first yarding and where the later age is approved in the jurisdiction.

Setting acceptable time limits for the conduct of husbandry operations in young cattle without pain relief is an important issue. Under Australian circumstances, the application of pain relief for all husbandry procedures is not possible due to the widely spaced and remote nature of much of the cattle industry. The alternative requirements in the standard provide a practical basis for the extensive industry to operate successfully, whilst limiting the welfare impact in cattle over 12 months of age.

Drugs such as Ketoprofen are the common means by which pain relief is achieved and the delivery of drugs would be done by a competent contractor/person under indirect veterinary supervision.

Pain relief is defined as 'the administration of drugs that reduce the intensity and duration of a pain response'. Besides Ketoprofen, there are other injectable non-steroidal anti-inflammatory drugs for cattle and other pain-relief, drug strategies are possible; but these are more costly or require higher skill levels that could be expected of lay operators without extensive training. It is acknowledged that Ketoprofen is only likely to affect the medium-term pain response.

The time cost for the injection of local anaesthetic has significant consequential operational costs (on large properties an average stock camp (labour team) costs about $3,000 per day), which will significantly add to the cost of the procedures. Furthermore, veterinarians have pointed out that at their higher hourly rate, they are not likely to be competitive in the application of local anaesthesia. There are additional pain relief techniques such as the delivery of epidural anaesthesia and the use of sedative analgesics but these techniques require a high degree of expertise and can have severe negative consequences in the context of non-ambulatory (recumbent) animals in a large-scale commercial cattle enterprise. In short, there could be significant negative animal welfare consequences and additional treatment and animal costs whether they are applied by a skilled veterinarian or a skilled layperson.

Veterinarians would have to bear the responsibility for training and proper conduct of lay operators to whom they may supply the S4 drugs. Veterinarians are coming under increasing regulatory scrutiny for the proper handling of scheduled substances under poisonous and dangerous drugs and veterinarian legislations. There are various penalties on veterinarians if found guilty of improper prescribing. These aspects have not been fully estimated in the calculation presented here.

A single dose non-steroidal analgesic (i.e. Ketoprofen) is taken to be $1.00 per ml delivered[218] plus $0.50 disposal (needle costs) plus time cost of $80[219] per hour for a competent contractor. Noting that it would take around 20 seconds to administer the analgesic per calf, this would mean a time cost of $0.44 per calf. The average weight of a calf affected in southern Australia would be around 260kg (where the over 6 months old requirement for pain relief would typically apply) and 260kg[220] in northern Australia (where the under 12 months old requirement for pain relief would apply to calves *not* at first yarding). The dose for pain relief is 3ml for 100kg @ $1 per ml delivered including a 100% markup, therefore for a calf in northern Australia or southern Australia, the cost of pain relief (Ketoprofen) would be $7.80 plus $0.50 disposal cost plus a time cost of $0.44 per calf = *$8.74 per calf.*

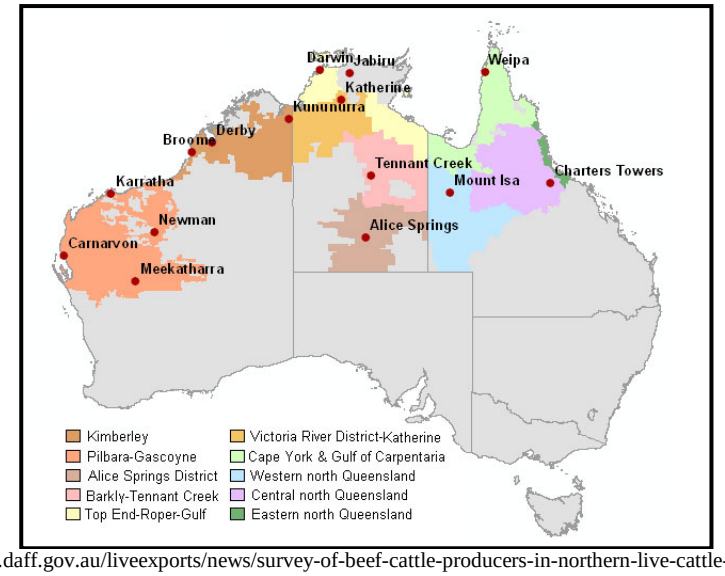
Table A2.9 – Estimated number of beef and dairy calves by jurisdiction

Jurisdiction	Beef calves[221] (i1)	Dairy calves[222] (j1)=1,512,14[223]8*(w) /1,600,000	Dairy rearing calves[224] (k1) = 64,074*(w)/1,600,000	Total calves (l1)=(i1)+(j1)
NSW	1,432,000	189,019	8,009	**1,621,019**
Vic	709,000	963,994	40,847	**1,672,994**
Qld	2,448,000	85,058	3,604	**2,533,058**
SA	319,000	85,058	3,604	**404,058**
WA	470,000	51,980	2,203	**521,980**
Tas	137,000	137,038	5,807	**274,038**
NT	353,000	-	-	**353,000**
ACT	3,000	-	-	**3,000**
AUSTRALIA	**5,871,000**	**1,512,148**	**64,074**	**7,383,148**

As shown in Table A2.9 the number of dairy and beef cattle calves in Australia is estimated to be 7,383,148. The number of calves affected by Standard 6.2 will depend on the regions of cattle production (i.e. northern or southern Australia). Figure A2.1 illustrates the northern cattle producing regions in Australia, which include the northern parts of Western Australia and Queensland, and the Northern Territory.

Figure A2.1 Northern cattle producing regions of Australia

[218] Based on the AVA submission the NSAID drug cost is overestimated by about 20%, however $1.00/ml is used as a conservative estimate as it is not clear that all responsible persons would have access to this drug at this discount.
[219] Based on advice from AHA
[220] For practical purposes, this average weight is based upon the first muster following the wet season after weaning
[221] ABS (2011) – *Agricultural Commodities by State & Territory* - Cat. No. 7121.0 2010-11
[222] See Table A2.5 for source of estimate for (w)
[223] Based on non-replacement male calf figure of 756,074 x 2 (male and female) (see Destinations of dairy calves in Victoria for 2006 (Dairy 2007: Situation & Outlook Report to the Australian Dairy Industry)
[224] Based on non-replacement male dairy calf designated for rearing given as 64,074



Source: http://www.daff.gov.au/liveexports/news/survey-of-beef-cattle-producers-in-northern-live-cattle-export-regions

Proposed Standard 6.2 would, of course, only relate to male calves (i.e. 50% of calves). More specifically, it is assumed that *2%* of male beef calves and male dairy rearing calves would be affected in southern cattle producing regions such as the southern regions of Western Australia and Queensland, and Victoria. Hence the affected population would be 2% of 50% of beef calves and dairy rearing calves. On, the other hand, *6%* of male beef calves and male dairy rearing calves would be affected in northern regions reflecting feedback from the Northern Territory Cattlemen's Association (NTCA) on the consultation RIS[225]. Moreover, all jurisdictions would be affected by proposed Standard 6.2, apart from Tasmania; New South Wales; and South Australia.

In order to determine the proportion of calves affected in southern (i.e. 2%) vs northern regions (i.e. 6%) of Queensland and Western Australia – the percentage of beef cattle in northern regions to total beef cattle in these states is estimated. As shown in Figure 1 in this RIS, as of 30 June 2011 there were 12.6 million total beef cattle in Queensland with 3.56m[226] or *28.27%* of total beef cattle in the Cape York, Gulf of Carpentaria, western, eastern and central north regions of Queensland. Also shown in Figure 1 in this RIS is that there were 2.1 million total beef cattle in Western Australia with 1.07m[227] or *50.76%* of total beef cattle in the Kimberley and Pilbara-Gascoyne regions of Western Australia. It is taken that all production in the Northern Territory is considered be in the northern region.

The incremental 10-year cost of pain relief using a non-steroidal analgesic is estimated to be **$5.77m** or ***$3.79m*** in 2012-13 present value dollars, as shown in Table A2.10.

Table A2.10 – 10-year incremental cost of non-steroidal analgesic as pain relief for castration of calves by state and territory under Standard 6.2 –2012-13 dollars

[225] The NTAC provides estimates of 2% to 10% of annual production of calves affected, therefore an average of 6% is used for calves affected in northern regions.
[226] See: http://www.daff.gov.au/liveexports/news/survey-of-beef-cattle-producers-in-northern-live-cattle-export-regions
[227] See: http://www.daff.gov.au/liveexports/news/survey-of-beef-cattle-producers-in-northern-live-cattle-export-regions

Jurisdiction	Calves affected (m1)= [(i1)+(k1)]*0.5*2% (Vic and ACT) or (m1)= {[(i1)+(k1)]*0.5*6%}*28.27%+{[(i1)+(k1)]*0.5*2%}*71.73% (Qld) or (m1)= {[(i1)+(k1)]*0.5*6%}*50.76%+{[(i1)+(k1)]*0.5*2%}*49.24% (WA) or (m1)= [(i1)+(k1)]*0.5*6% (NT)	Annual cost of pain relief (non-steroidal analgesic) (n1) = (m1)*$8.74	10-year cost (o1) = (n1)*10
NSW	-	$0	$0
Vic	7,498	$65,570	$655,700
Qld	38,377	$335,588	$3,355,885
SA	-	$0	$0
WA	9,516	$83,212	$832,122
Tas	-	$0	$0
NT	10,590	$92,604	$926,037
ACT	30	$262	$2,623
Australia ***Present value 7% discount rate***	**66,012**	**$577,237**	**$5,772,366** ***$3,789,036***
3% discount rate			$4,780,530
10% discount rate			$3,224,426

A2.9 Standard 6.4 – Requirement for pain relief when dehorning cattle under certain circumstances

Dehorning remains an important tool for cattle husbandry and on-farm management of all calves in Australia. The practice of removing horns in cattle is undertaken to improve animal welfare in the longer term and for operator safety during handling. There is an increased risk of injury, hide damage and bruising in horned cattle compared to polled cattle, particularly during handling, yarding and transport.

According to proposed Standard 6.4, a person in charge must use *pain relief* when dehorning unless cattle are:

1. under six months old; or
2. under 12 months old if at their first yarding and where the later age is approved in the jurisdiction.

Setting acceptable time limits for the conduct of husbandry operations in young cattle without pain relief is an important issue. Under Australian circumstances, the application of pain relief for all husbandry procedures is not possible due to the widely spaced and remote nature of much of the cattle industry. The alternative requirements in the standard provide a practical basis for the extensive industry to operate successfully, whilst limiting the welfare impact in cattle over 12 months of age.

As with proposed Standard 6.4, the dose for pain relief would be 3ml for 100kg @ $1 per ml delivered including a 100% markup, therefore for a calf in northern and southern Australia the cost of pain relief (Ketoprofen) would be *$8.74 per calf*. With dehorning, it

is assumed that *2%* of both male and female beef calves would be affected (see column i1 of Table A2.9); 2% of female dairy calves would be affected (see column j1 of Table A2.9); and 2% of male dairy rearing calves would be affected (see column k1 of Table A2.9). On, the other hand, *6%* of the same category of calves would be affected in northern regions reflecting feedback from the Northern Territory Cattlemen's Association (NTCA) on the consultation RIS[228]. Again, *28.27%* and *50.76%* of total beef cattle in Queensland and Western Australia, respectively, would represent production in the northern regions. Moreover, all jurisdictions would be affected by proposed Standard 6.4, apart from Tasmania and South Australia.

The incremental 10-year cost of pain relief using a non-steroidal analgesic for dehorning is estimated to be **$15.28m** or ***$10.03m*** in 2012-13 present value dollars, as shown in Table A2.11.

Table A2.11 – 10-year incremental cost of non-steroidal analgesic as pain relief for dehorning of calves by state and territory under Standard 6.4 –2012-13 dollars

Jurisdiction	Calves affected (r1) = (i1)[229]*2%+(j1)*50%*2%+(k1)*2% (NSW, Vic and ACT) or (r1) = {[(i1)*2%+ (j1)*50%*2%+(k1)*2%]*71.73%}+ {[(i1)*6%+ (j1)*50%*6%+(k1)*6%]*28.27%} (Qld) or (r1) = {[(i1)*2%+ (j1)*50%*2%+(k1)*2%]*49.24%}+ {[(i1)*6%+ (j1)*50%*6%+(k1)*6%]*50.76%} (WA) or (r1) = (i1)*6%+(j1)*50%*6%+(k1)*6% (NT)	Annual cost of pain relief (s1) = (r1)* $8.74	10-year cost (t1) = (s1)*10
NSW	30,690	$268,370	$2,683,702
Vic	24,637	$215,436	$2,154,359
Qld	78,086	$682,820	$6,828,202
SA	-	$0	$0
WA	20,080	$175,584	$1,755,844
Tas	-	$0	$0
NT	21,180	$185,207	$1,852,073
ACT	60	$525	$5,247
Australia	**174,733**	**$1,527,943**	**$15,279,426**
Present value 7% discount rate			***$10,029,561***
3% discount rate			$12,654,040
10% discount rate			$8,535,042

[228] The NTAC provides estimates of 2% to 10% of annual production of calves affected, therefore an average of 6% is used for calves affected in northern regions.
[229] See Table A2.9 for source of estimates

A2.10 Standard 6.5 – Unquantifiable cost savings of permitting caustic chemicals for disbudding calves less than 14 days old.

Disbudding can be achieved through excision, cautery, and cryosurgery (freezing) or through the application of caustic agents. Of the recommended methods, excision is the most commonly applied practice for beef calves and cautery is the most commonly applied practice for dairy calves. The use of caustic provides a low impact method of disbudding very young calves and as such it is most relevant for the dairy industry.

Under proposed Standard 6.5, a person must consider the welfare of the calf when using a caustic chemical for disbudding, and must only use it if the calf:

1. is under fourteen days old; and
2. can be segregated from its mother for four hours after treatment; and
3. can be kept dry for 12 hours after treatment; and
4. is not wet.

The proposed standard permits the acceptable use of this disbudding technique instead of alternative burning or excision methods.

This proposed standard would result in a cost savings by allowing dairy farmers to use caustic chemicals on dairy calves under 14 days old as long as the conditions listed above are maintained. However, given that the likelihood of these conditions occurring is unknown, these cost savings are as yet unquantifiable.

A2.11 Standard 6.7 –Training or direct supervision requirement for spaying

According to Standard 6.7, a person spaying a cow must be a veterinarian or where permitted in the jurisdiction be accredited or be under the direct supervision of a person who is accredited.

Cattle spaying has been practiced in northern Australia for the past 60 years and is viewed as a "husbandry procedure that can assist herd management by preventing heifers and cows from becoming pregnant thereby increasing their chances of survival and improving weight gain to become marketable"[230]. Spaying techniques include flank spaying, flank webbing or drop-ovary (Willis) technique (DOT). Spaying is an important husbandry procedure for remote areas of northern Australia that are not able to be serviced by veterinarians. There are an estimated 489,156 cattle spayed per annum[231]. Acceptable standards of performance by lay spayers is desirable to meet industry needs until a cost-effective alternative to surgical procedures is available.

Spaying is primarily carried out on beef cattle in Queensland, Northern Territory and the Pilbara and Kimberley regions of Western Australia.[232] Furthermore, based on spaying data from survey of cattle husbandry practices[233], up to 7% of beef producing businesses

[230] See: AAWS Education and Training Stocktake Beef Cattle FINAL REPORT – 1 February 2008
[231] See Table A3.1 of Appendix 3 for source of estimate
[232] See: AAWS Education and Training Stocktake Beef Cattle FINAL REPORT – 1 February 2008
[233] MLA (October 2008), *A 2008 producer survey on spaying of cattle in Northern Australia*

in northern Australia are involved in spaying activity. As shown in Table A2.12, the total number of businesses involved in spaying is around 1,522[234].

Table A2.12 – Estimated number of beef cattle farms by state and territory involved in spaying

Jurisdiction	Beef cattle farms involved with spaying (w1) = (j)[235]*7% except for WA and NT[236]	Beef cattle farms involved with self-spaying (x1) = (w1)*55%	Number of farmhands annually requiring training and accreditation (y1) = [(x1)*10%]*71.73%[237]+[(x1)*60%]*28.27% (Qld) or (y1) = (x1)*60% (WA) or (y1) = (x1)*60% (NT)
NSW	-	-	-
Vic	-	-	-
Qld	1,346	740	179
SA	-	-	-
WA	58	32	19
Tas	-	-	-
NT	118	65	39
ACT	-	-	-
AUSTRALIA	**1,522**	**837**	**237**

Moreover, based on the cattle husbandry survey by MLA[238], up to 55% of businesses are involved in flank spaying of heifers (i.e. spaying conducted by 'staff/self'). Therefore, it is assumed that up to 837 businesses may be involved in flank spaying, as shown in Table A2.12. Furthermore, one farmhand per business is assumed to be involved in spaying per business and 10%[239] (southern Queensland) and 60%[240] (northern Queensland, Pilbara and Kimberley regions of WA, and NT) would require training and accreditation by an industry association every year (i.e. 237 farmhands per annum) assuming a constant turnover in the industry[241]. Northern Australian businesses are taken to experience higher turnover based on feedback from the Northern Territory Cattlemen's Association on the consultation RIS.

However, the Australian Cattle Veterinary Association submission notes that:

> "There is no formal practical training program available. However, it is believed that some veterinarians particularly in Qld provide some 'hands-on' demonstration to interested parties during 'spay runs' on specific properties."

[234] For the purpose of estimation it is assumed that spaying only relates to beef cattle and only in northern Australia (i.e. NT, QldQld and part of WA)
[235] See Table A2.1 for source of estimates
[236] Based on advice from AHA
[237] Proportion based on the percentage of total beef cattle in southern Queensland to total beef cattle produced in Queensland.
[238] MLA (October 2008), *A 2008 producer survey on spaying of cattle in Northern Australia*
[239] On advice from AHA
[240] Based on feedback on consultation RIS by the NTCA on the number of those needing training at 30-50 people per year
[241] It is unlikely that veterinary supervision or trained lay contractors would be utilised - as this would be a large on-going cost of $220 per hour each time spaying was required, whereas training and accreditation could be achieved at a one-off cost

Therefore, in order to meet the requirements of Standard 6.7, the Cattle Council of Australia (CCA) is overseeing the development of a standard for a Unit of Competency (Ouch) for DOT lay spayers. The administrative cost of this accreditation scheme would involve hiring an administrator to process accreditation and associated membership with a fee for service assumed to be $60 per certificate[242].

Delivery of the Ouch would also involve a Registered Training Organisation (RTO). This arrangement would involve a one-off establishment cost for the particular competency unit for the establishment of a syllabus and materials (including workbooks) estimated to be around $10,000 for unit development[243] and $2,000 for printing hardcopy workbooks at $20 each for around for up to 100 farm hands (includes an additional half a dozen spare workbooks for replacement). The training for the competency unit would be done on the farm for a day (7.5hrs) with an average 1000km return trip per assessment by an individual veterinarian. Transport costs are assumed to 74 cents/km[244]. This would mean an average transport cost to $740.

For the remaining 90% of 837 lay spayers (i.e. 753 spayers) – a one-off recognised prior learning (RPL) would need to be obtained from the CAA in the first year of implementation at a cost of $60 per certificate including processing cost. This would also involve a time cost for farmhands in preparing the necessary documents for RPL requirements at an average assumed time of 2hrs per farmhand.

As shown in Table A2.13, the 10-year incremental cost of providing for training and accreditation and RPL would be approximately **$13.01m** or ***$8.57m*** in 2012-13 present value dollars.

Table A2.13 – 10-year incremental cost of training and accreditation and RPL under Standard 6.7 –2012-13 dollars

Jurisdiction	Farmhand's time cost for training (z1) = (y1)[245]*(h)[246]*7.5hrs	Cost of certificate by CCA (z4) = $60*(y1)	One-off unit cost for RTO including materials (z5) = $12,000	Vet's time cost for training and travel (including transport) (z6) = (y1)*[$740 + (10hrs travel*$245) + (7.5hrs training*$245)]	One-off farmhand's time cost for preparing documents for RPL and one-off cost of RPL and certificate by CCA (z7) = [(x1)[247]*90%*(h)*2hrs] +[$60*(x1)*90%]	Annual cost year 1 (z8) = (z1)+ (z4)+ (z5)+ (z6)+ (z7)	Annual cost years 2 to 10 (z9) = (z1)+ (z4)+ (z6)	10-year cost (z10) = (z8) + [(z9)*9]
NSW	$0	$0		$0	$0	$0	$0	$0
Vic	$0	$0		$0	$0	$0	$0	$0
Qld	$66,278	$10,719		$898,147	$105,879	$1,081,023	$975,145	$9,857,324
SA	$0	$0		$0	$0	$0	$0	$0
WA	$7,894	$1,148		$96,226	$4,880	$110,149	$105,269	$1,057,569

[242] It is around $60/certificate for the AHA arrangement with local RTO for EAD training
[243] Typical cost of developing a one day intensive course
[244] See: http://atotaxrates.info/tax-deductions/work-related-car-expenses/cents-per-kilometre
[245] See Table A2.12 for source of estimates
[246] See Table A1.1 of Appendix 1 for source of estimates
[247] See Table A2.12 for source of estimates

Jurisdiction	Farmhand's time cost for training (z1) = (y1)[245]*(h)[246]*7.5hrs	Cost of certificate by CCA (z4) = $60*(y1)	One-off unit cost for RTO including materials (z5) = $12,000	Vet's time cost for training and travel (including transport) (z6) = (y1)*[$740 + (10hrs travel*$245) + (7.5hrs training*$245)]	One-off farmhand's time cost for preparing documents for RPL and one-off cost of RPL and certificate by CCA (z7) = [(x1)[247]*90%*(h)*2hrs] +[$60*(x1)*90%]	Annual cost year 1 (z8) = (z1)+ (z4)+ (z5)+ (z6)+ (z7)	Annual cost years 2 to 10 (z9) = (z1)+ (z4)+ (z6)	10-year cost (z10) = (z8) + [(z9)*9]
Tas	$0	$0		$0	$0	$0	$0	$0
NT	$9,717	$2,336		$195,771	$7,391	$215,216	$207,824	$2,085,633
ACT	$0	$0		$0	$0	$0	$0	$0
Australia	**$90,105**	**$14,204**	**$12,000**	**$1,190,145**	**$118,150**	**$1,418,388**	**$1,288,238**	**$13,012,526**
Present value 7% discount rate								***$8,569,792***
3% discount rate								$10,791,541
10% discount rate								$7,303,619

A2.12 Standard 6.8 – Pain relief with flank spaying or webbing of cattle

The flank approach for spaying or webbing is recognised to be the most painful method of spaying.

Under proposed Standard 6.8, a person in charge must use pain relief when performing the flank approach for spaying or webbing of cattle.

The adoption of pain relief for these flank methods and their ongoing use will permit a more successful application of pregnancy control for northern cattle as the other approaches are not successful in all female cattle. Whilst pain relief is a cost, the loss of effective pregnancy control will be a greater cost to industry.

According to the cattle husbandry survey[248] 7% of businesses are involved in spaying heifers with an average of 210 heifers and with 39% using the flank or flank/webbing approach. With cows, 4% of businesses are involved in spaying cows with an average of 195 cows and with 23% using the flank or flank/webbing approach. It is not known if this is mutually exclusive and it is most likely that properties that spay heifers also spay cows.

The dose for pain relief with a non-steroidal analgesic (Ketoprofen) is 3ml for 100kg @ $1 per ml delivered including a 100% markup. Therefore for a 2-year old heifer (320kg[249]) or a mature cow (420kg[250]) in northern Australia the cost of pain relief would $10.54 per heifer and $13.54 per cow (including $0.44 time cost per heifer or cow and $0.50 disposables).

A multiplier of *2.35* is used for the number of heifers and cows for WA, NT and northern Queensland in Table A2.14. This is to capture the higher degree of flank spaying and flank/webbing activity in northern region of production, based on feedback provided by

[248] MLA (October 2008), *A 2008 producer survey on spaying of cattle in Northern Australia*
[249] On advice from AHA
[250] On advice from AHA

the NTAC on the consultation RIS. According to the NTAC the number of cattle in the NT is difficult to establish due to a lack of data but the "estimated annual cattle numbers could be in the order of 30,000 per year".

The incremental 10-year cost of pain relief using a non-steroidal analgesic for flank and flank/webbing spaying is estimated to be **$27.52m** or ***$18.06m*** in 2012-13 present value dollars, as shown in Table A2.14.

Table A2.14 – 10-year incremental cost of non-steroidal analgesic as pain relief for flank spaying and flank/webbing of cattle by state and territory under Standard 6.8 –2012-13 dollars

Jurisdiction	Business affected (w1)[251]	No. heifers (a2) = [(w1)*210*39%*71.73%] +[(w1)*210*39%*28.27%]*2.35 (Qld) or (a2) = (w1)*210*39%*2.35 (WA[252] and NT)	No. cows (b2) = [(w1)*4%/7%[253]*195*23%*71.73%]+[(w1)*4%/7%*195*23%*28.27%]*2.35 (Qld) or (b2) = (w1)*4%/7%[254]*195*23%*2.35 (WA and NT)	Annual cost (d2)=(a2)*$10.54+ (b2)*$13.54	10-year cost (e2) = (d2)*10
NSW	-	-	-	$0	$0
Vic	-	-	-	$0	$0
Qld	1,346	152,288	47,655	$2,251,255	$22,512,546
SA	-	-	-	$0	$0
WA	58	11,163	3,493	$165,020	$1,650,204
Tas	-	-	-	$0	$0
NT	118	22,711	7,107	$335,731	$3,357,312
ACT	-	-	-	$0	$0
Australia	**1,522**	**186,162**	**58,255**	**$2,752,006**	**$27,520,062**
Present value 7% discount rate					***$18,064,430***
3% discount rate					$22,791,428
10% discount rate					$15,372,624

A2.13 Standard 6.9 – Banning of vaginal spreaders for small or immature cattle

The performance of the per-vaginal 'passage' spaying method is a minority method. The use of vaginal spreaders is unwarranted in the context of alternative methods of spaying as described below.

Under proposed Standard 6.9, a person must not use vaginal spreaders to *spay* small or immature female cattle.

[251] See Table A2.12 for source of estimates
[252] Businesses affected in WA only reflect operators in the Kimberley and Pilbara regions (i.e. the northern part of WA).
[253] This represents the proportion of those spaying that are involved in spaying cows (i.e. 4% of the 7%) notwithstanding that there may be some farms that only spay cows however this detail is unknown
[254] This represents the proportion of those spaying that are involved in spaying cows (i.e. 4% of the 7%) notwithstanding that there may be some farms that only spay cows however this detail is unknown

According to the MLA cattle husbandry survey[255], 4% of businesses are involved in spaying cows with an average of 195 cows and with 20% using the passage spaying technique. Of these 30% would have mechanical spreaders used. This proposed standard would mean the move away from passage to flank spaying or flank webbing, which would imply the need for pain relief. Deferral has not been costed as it is likely to be a higher cost than alternatives. *(Cost estimates are based on minimum costs).*

The dose for pain relief with a non-steroidal analgesic is 3ml for 100kg @ $1 per ml delivered including a 100% markup. Such cattle are assumed to be around 250kg on average in northern Australia and the cost of pain relief would $8.44 per immature cow (including $0.44 time cost per cow and $0.50 disposables).

The incremental 10-year cost of pain relief using a non-steroidal analgesic for flank and flank/webbing spaying (due to passage spaying no longer be allowable) is estimated to be $0.86m or ***$0.56m*** in 2012-13 present value dollars, as shown in Table A2.15.

Table A2.15 – 10-year incremental cost of non-steroidal analgesic as pain relief for flank spaying and flank/webbing of small or immature cattle by state and territory under Standard 6.9 –2012-13 dollars

Jurisdiction	Business affected (w1)[256]	No. cows (h2) = (w1)*4%/7%* 195*20%*30%	Annual cost (i2)=(h2) *$8.44	10-year cost (j2) = (i2)*10
NSW	-	-	$0	$0
Vic	-	-	$0	$0
Qld	1,346	8998	$75,981	$759,812
SA	-	-	$0	$0
WA	158	388	$3,275	$32,745
Tas	-	-	$0	$0
NT	18	789	$6,662	$66,619
ACT	-	-	$0	$0
Australia	**1,522**	**10,174**	**$85,918**	**$859,176**
Present value 7% discount rate				***$563,971***
3% discount rate				$711,548
10% discount rate				$479,933

A2.14 Standard 7.2 – Inspection of calving cow at intervals

Under proposed Standard 7.2, a person in charge must ensure the *inspection* of calving cow at intervals appropriate to the production system and the level of risk to the welfare of cattle. As calving dairy cattle get inspected twice per day this proposed standard would apply to farmhands for beef cattle. It is assumed that this is not a major issue for beef farming and only 2%[257] of farmhands would be affected. It is also assumed that these affected farmhands would have to undertake two inspections per day in Victoria, South

[255] MLA (October 2008), *A 2008 producer survey on spaying of cattle in Northern Australia*
[256] See Table A2.12 for source of estimates
[257] Based on AHA advice

Australia, and Tasmania[258] over 60 days a year during calving periods with an average of 10 minutes per mob inspection. Therefore, the incremental average daily time cost of this proposed standard would be 60 minutes per day for these jurisdictions.

It is also assumed that affected farmhands in New South Wales and the ACT would have to undertake one inspection per day over 60 days a year with an average of 10 minutes per inspection. Therefore, the daily time cost of this proposed standard would be 10 minutes per day for these jurisdictions.

Affected farmhands in Queensland, Northern Territory and Western Australia would have to undertake one inspection every 2 days over 60 days a year with 10 minutes per inspection. Therefore, the incremental average daily time cost of this proposed standard would be 5 minutes per day for these jurisdictions.

As shown in Table 2.16, the 10-year incremental cost of inspecting calving cows would be approximately **$3.91m** or ***$2.56m*** in 2012-13 present value dollars.

Table A2.16 – 10-year incremental cost inspecting calving cows by state and territory under Standard 7.2 –2012-13 dollars

Jurisdiction	Beef farmhands (z)[259]	Hourly charge out rates (h)[260]	Annual cost of inspecting calving cows (h2)=(z)*(h)*2% *20/60*60 days/year (Vic, SA and Tas) or (h2)=(z)*(h)*2%*10/60*60 days/year (NSW and ACT) or (h2)=(z)*(h)*2%*5/60*60 days/year (Qld, NT and WA)	10-year cost (i2) = (h2)*10
NSW	9,452	$51	$95,856	$958,564
Vic	4,154	$57	$95,405	$954,046
Qld	21,857	$49	$108,119	$1,081,187
SA	1,948	$49	$37,972	$379,720
WA	3,431	$55	$18,869	$188,686
Tas	819	$65	$21,321	$213,213
NT	3,858	$33	$12,835	$128,352
ACT	15	$46	$143	$1,433
Australia	**45,534**		**$390,520**	**$3,905,200**
Present value 7% discount rate				***$2,563,410***
3% discount rate				$3,234,189
10% discount rate				$2,181,433

[258] Although calving could be year-round with some seasonality, this is not likely the case for majority of smaller farms. Therefore this assumption is conservative

[259] See Table A2.6 for source of estimates

[260] See Table A1.1 of Appendix 1 for source of estimates

This of course does not take into account the unquantifiable financial benefit of calves and cows saved due to more inspections, nor the welfare benefits of such inspections which have the capacity to prevent animals from unnecessarily suffering.

A2.15 Standard 8.4 – Preventing faeces and urine from compromising health of calf in indoor system

It is usually dairy calves that are reared in group housing systems in Australia. Temporary single pen confinement does occur but the production of 'white veal' does not occur.

Under proposed Standard 8.4, a person in charge must not allow the faeces and urine of calves housed in an indoor system to accumulate to the stage that compromises the health and welfare of the calf. This would apply to dairy calves in every jurisdiction except for Victoria, which currently has this requirement under the base case. There are also no dairy calves in the Northern Territory or the ACT. The cost of cleaning pens is assumed to involve one hour of labour time per pen and once a week. For the purpose of estimation it is assumed that 0.1%[261] of pens are affected and that there are 20 to 30 calves per pen.

As shown in Table 2.17, the 10-year incremental cost of cleaning pens would be approximately **$0.62m** or ***$0.41m*** in 2012-13 present value dollars.

Table A2.17 – 10-year incremental cost of cleaning pens by state and territory under Standard 8.4 –2012-13 dollars

Jurisdiction	Total dairy calves (j1)[262]	No. of pens affected (m2) = (l1)/25*0.1%	Annual cost of cleaning pens (n2) = (m2)*1hr*52*(h)[263]	10-year cost (n3) = (n2)*10
NSW	189,019	7.56	$19,936	$199,356
Vic	-	-	$0	$0
Qld	85,058	3.40	$8,752	$87,517
SA	85,058	3.40	$8,621	$86,213
WA	51,980	2.08	$5,946	$59,457
Tas	137,038	5.48	$18,548	$185,481
NT	-	-	$0	$0
ACT	-	-	$0	$0
Australia	**548,154**	**22**	**$61,802**	**$618,024**
Present value 7% discount rate				***$405,677***
3% discount rate				$511,832
10% discount rate				$345,226

[261] Based on advice from AHA
[262] See Table A2.9 for source of estimates
[263] See Table A1.1 of Appendix 1 for source of estimates

A2.16 Standard 9.2 – Minimise heat stress of cattle

Heat stress management is an issue for intensively managed cattle but the beef feedlots industry is well advanced in risk management of heat stress. A standard to promote better heat stress management is in the dairy industry's interest.

Under proposed Standard 9.2, a person in charge must implement appropriate actions to minimise heat stress of cattle. This would apply to every jurisdiction except for Tasmania, which currently has this requirement under the base case. According to Dairy Australia this would involve a one-off capital cost of $300 per dairy farm for a tarpaulin and 60% of farms would be affected.

As shown in Table 2.18, the one-off incremental cost of minimising heat stress of dairy cattle would be approximately **$1.16m** or ***$1.01m*** in 2012-13 present value dollars.

Table A2.18 – One-off incremental cost of minimising the heat stress of dairy cattle by state and territory under Standard 9.2 –2012-13 dollars

Jurisdiction	No. of dairy farms (i)[264]	No. of farms affected (o2) = (i)*60%	One-off cost (p2) = (o2)*$300
NSW	807	484	$145,260
Vic	4,588	2753	$825,840
Qld	595	357	$107,100
SA	286	172	$51,480
WA	170	102	$30,600
Tas	-	-	$0
NT	-	-	$0
ACT	-	-	$0
Australia	**6,446**	**3868**	**$1,160,280**
Present value 7% discount rate			***$1,013,433***
3% discount rate			$1,093,675
10% discount rate			$958,909

A2.17 Standard 9.3 – Tail docking only on veterinary advice to treat injury or disease

Tail docking of dairy cattle is currently practised by only a small minority of Australian dairy producers and the industry has voluntary phase out initiatives in place. The regulation of this standard will complete the abolition of this unnecessary practice.

Under proposed Standard 9.3, a person must only *tail dock* cattle on veterinary advice and only to treat injury or disease. This would mean that farmers would have to change to switch hair trimming where they would have otherwise tail docked a dairy cow. This means that the net cost of this standard would involve the time taken to switch trim less the time and cost involved in tail docking. It is assumed that switch trimming would take place during milking.

[264] See Table A2.1 for source of estimates

The average incremental time to switch trim a cow's tail is taken to be 32.5 seconds[265]. The time taken to tail dock is roughly 2.5 seconds[266] plus 2 minutes (120 seconds) for yarding and preparing the cow (i.e. 122.5 seconds). Assuming an average age of 5 years for a typical milking cow – the cost of tail docking would be incurred twice over 10 years. Therefore, under proposed Standard 9.3 there would be an incremental time cost saving of 122.5 seconds per cow in years 1 and 6 and an incremental time cost of 32.5 seconds per cow per annum – for dairy cows affected. Furthermore, tail docking is performed in the wetter dairy areas and this standard would apply to dairy cattle in such areas only.

As shown in Table 2.19, the 10-year incremental cost of moving to switch hair trimming under proposed Standard 9.3 would be approximately **$14,629** or ***$5,495m*** in 2012-13 present value dollars.

Table A2.19 – 10-year net incremental cost of moving from tail docking to switch hair trimming under proposed Standard 9.3 –2012-13 dollars

Jurisdiction	Total dairy cows affected (q2)[267]	Hrly rate (h)[268]	Annual *cost savings* of abandoning tail docking in years 1 and 6 (q2)' = (q2)*(h)*122.5/3,600	Annual cost of switch trimming (r2) = (q2)*(h)*32.5/3,600	10-year incremental cost (s2) = ((r2)*10) – (2*(q2)')
NSW	800	$51	$1,380	$366	$901
Vic	50,000	$57	$97,700	$25,920	$63,804
Qld	-	$49	$0	$0	$0
SA	-	$49	$0	$0	$0
WA	-	$55	$0	$0	$0
Tas	11,000	$65	$24,357	$6,462	$15,906
NT	-	$33	$0	$0	$0
ACT	-	$46	$0	$0	$0
Australia	**61,800**		**$123,437**	**$32,749**	**$80,612**
Present value 7% discount rate					***$30,280***
3% discount rate					$54,499
10% discount rate					$17,576

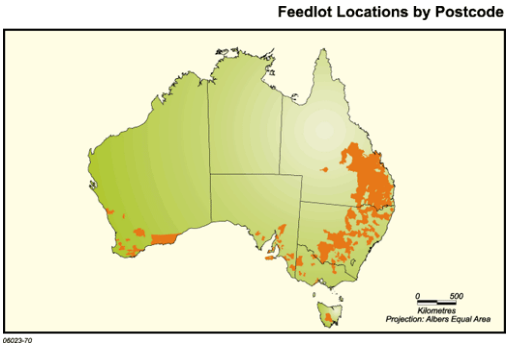
A2.18 Standard 10.2 – Keeping records of feed quantity

The Australian Lot Feeders Association has recognised this as an important cattle welfare management tool in feedlots. The development of a standard will extend this practice to all Australian feedlots including non-accredited operations not in the National Feedlot Accreditation scheme (NFAS) for better welfare risk management. This is a recurring issue for several aspects of feedlot management. (The NFAS is managed by state Governments and industry representatives and is recognised under various state and

[265] As middle of range is from 20 to 45 seconds - as sited in Dairy Australia, "How to trim a cow's tail"
[266] On advice from AHA
[267] Dairy Australia
[268] See Table A1.1 in Appendix 1 for source of estimates

territory legislation. Under the scheme, feedlots are independently audited each year by AUSMEAT).

Under proposed Standard 10.2, a person in charge must ensure the diet composition and quantities are fed are recorded and records maintained for the duration of the feeding period of each group of cattle. It is estimated that it would take an additional 30 seconds per day to examine feed characteristics and quantity and make note of it by farmhands working in feedlots. According to the Australian Lot Feeders' Association (ALFA), there are 450 *accredited* feedlots in Australia with the majority located in southeast Qld; the northern tablelands of NSW and the Riverina area of NSW with expanding numbers in Victoria, South Australia and Western Australia[269]. Membership with ALFA represents over 90% of Australian feedlot capacity. Feedlot locations by postcode are shown below:



Source: http://www.anra.gov.au/topics/agriculture/beef/index.html

The pro-rata estimates for the number of accredited feedlot farmhands affected by state and territory in Table A2.20 is based on the number of farmhands in the beef cattle industry (i.e. 45,534[270]) and the total number of accredited feedlots (i.e. 450). Also it assumed that there would be one responsible person per feedlot making records.

Furthermore, there are approximately 160 unaccredited feedlots in Victoria[271]. According to ALFA, the total number of feedlots who are not in the National Feedlot Accreditation Scheme (NFAS) remains unknown. However according to ALFA, the vast majority of such feedlots would be small, opportunistic operations, which only operate during periods of grass shortage or market opportunity. Total pro-rata estimates for the number of unaccredited feedlot farmhands affected by state and territory is based on the ratio of unaccredited feedlots in Victoria to accredited feedlots in Victoria (i.e. 161:41 = 3.9:1). As shown in Table A2.20, the number of unaccredited feedlots in Australia is estimated to be 1,762.

[269] See the ALFA website (current number is being updated by ALFA for publication)
[270] See Table A2.6
[271] See: <http://www.dpi.vic.gov.au/agriculture/beef-and-sheep/beef/beef-cattle-industry> However this is reduced by a factor of 64.29% to represent the reduction in total feedlots from 700 to 450 in recent times

Table A2.20 – The estimated number of feedlot farmhands (accredited and non-accredited feed lots) by state and territory

Jurisdiction	No. accredited feedlot farmhands affected (t2) = (z)[272]/ 45,534*450	Estimated No. non-accredited feedlot farmhands affected (apart from Vic) (t3) = (t2)*161/41	Total estimated number of feedlot farmhands (t4) = (t3)+(t2)
NSW	93	366	459
Vic	41	161	202
Qld	216	846	1,062
SA	19	75	95
WA	34	133	167
Tas	8	32	40
NT	38	149	187
ACT	0	1	1
Australia	**450**	**1,762**	**2,212**

As shown in Table A2.21, the 10-year incremental cost of keeping records of feed quantity would be approximately **$67,278** or ***$44,162*** in 2012-13 present value dollars.

Table A2.21 – 10-year incremental cost of keeping records of feed quantity by state and territory under Standard 10.2 –2012-13 dollars

Jurisdiction	Estimated no. feedlot farmhands affected (t4)[273]	Annual record keeping cost (u2) = (t4)*30/3600*(h)[274]*365	10-year cost (v2)=(u2)*10
NSW	459	$1,397	$13,966
Vic	202	$614	$6,137
Qld	1,062	$3,229	$32,294
SA	95	$288	$2,878
WA	167	$507	$5,070
Tas	40	$121	$1,210
NT	187	$570	$5,700
ACT	1	$2	$23
Australia	**2,212**	**$6,728**	**$67,278**
Present value 7% discount rate			***$44,162***
3% discount rate			$55,718
10% discount rate			$37,581

A2.19 Standard 10.3 – Unquantifiable cost savings of ensuring feed is available daily to beef cattle

Under proposed Standard 10.3, a person in charge must ensure feed is available daily to cattle in the beef feedlot. This would result in an incremental cost savings to beef feedlots

[272] See Table A2.6 for source of estimates
[273] See Table A2.20 for source of estimates
[274] See Table A1.1 of Appendix 1 for source of estimates

not in the NFAS[275] (estimated to be around 1,762[276]) in not being required to remove stale or spoilt feed, although in many cases this would probably be done anyway. Given that the frequency of this is unknown – this cost savings remains unquantifiable.

A2.20 Standard 10.4 – Risk assessment for heat load risk at feedlots

Under proposed Standard 10.4, a person in charge must do a risk assessment each year for the heat load risk at the feedlot and implement appropriate actions to manage ongoing heat load risk. This issue relates to smaller feedlots and it is assumed that 10%[277] of non-accredited feedlots would be affected (estimated to be around 1,762). This would involve the annual cost of documenting an excessive heat load action plan and implementing appropriate actions in the event of a heat load emergency. A conservative estimate is one day (7.5hrs) per annum per feedlot and it is assumed that this would cover both documentation and implementation with one emergency per annum per feedlot.

As shown in Table 2.22, the 10-year incremental cost of documenting and implementing heat load action plans under proposed Standard 10.4 would be approximately **$0.66m** or ***$0.43m*** in 2012-13 present value dollars.

Table A2.22 – 10-year incremental cost of documenting and implementing heat load action plans by state and territory under Standard 10.4 –2012-13 dollars

Jurisdiction	No. non-accredited feedlot farmhands (w2) = (t2)[278]*10%	Annual record keeping cost (x2)=(w2)*10%*7.5hrs*(h)[279]	10-year cost (y2)=(x2)*10
NSW	366	$13,909	$139,088
Vic	161	$6,922	$69,216
Qld	846	$31,376	$313,761
SA	75	$2,755	$27,549
WA	133	$5,476	$54,757
Tas	32	$1,547	$15,469
NT	149	$3,725	$37,248
ACT	1	$21	$208
Australia	**1,762**	**$65,730**	**$657,296**
Present value 7% discount rate			***$431,455***
3% discount rate			$544,356
10% discount rate			$367,163

A2.21 Standard 11.5 – Age constraint for killing calves by blow to forehead

Killing of animals is an expert skill and is often regarded as controversial; but humane standards of killing must be agreed to provide the most appropriate welfare outcome where a cow or calf needs to be euthanased. Given the reduced availability of guns and

[275] National Feedlot Accreditation Scheme
[276] See Table A2.20 for source of estimate
[277] Advice from AHA
[278] See Table A2.20 for source of estimates
[279] See Table A1.1 in Appendix 1 for source of estimates

captive bolt slaughter devices, the use of blunt trauma by a single blow to the head of a calf is regarded as a humane and practical method of killing very young animals.

Under proposed Standard 11.5, a calf must be less than 24 hours old for a person to kill it by a blow to the forehead.

Whilst the expert application of blunt trauma in calves less than 24 hours old is a cheap and practical method of killing, its limited window of application means that other methods must be used in calves older than one day. This standard would involve a the one-off cost of switching to alternative killing methods for dairy calves older than 24 hours, and would require that persons in charge have access to suitable rifle or captive bolt. Dairy calves commonly develop scours at 3 days of age so delay means they need to be killed with a captive bolt[280]. This would be relevant to 10%[281] of dairy farmhands. Captive bolt guns can be purchased in Australia for around $400[282]. The firearm licence would be $200 over 5 years, as required in WA and Tas.[283] Training would be *for half a day* with an estimated cost of registration of $100 for an adult[284] plus a time cost 4.25hrs (including 1hr travel time). The cost in the first year would therefore be $500 for all jurisdictions except for WA and Tas where it would be $700 (including the firearm licence).

Travel would also involve a cost of $0.74 per km. Assuming total travel of 100km in 1hr, this would bring the average transport cost to $74. Whilst this does not include storage cost it is assumed that a farm would already have a secure storage area for valuable belongings under lock and key.

In years 2 to 4 and 6 to 10 there would only be the registration cost of $100 plus the time and travel cost of the farmhand. However in year 5 there would be an additional cost of $200 for renewal of the firearm licence in WA and Tas.

As shown in Table 2.23, the 10-year incremental cost of switching to an alternative killing method for calves greater than two days old would be approximately **$3.14m** or ***$2.12m*** in 2012-13 present value dollars.

[280] Advice from Dairy Australia
[281] Advice from AHA
[282] NSW DPI (Dec 2009), Selecting and managing beef heifers, Primefact 975. ($500 stated however can be purchased for around $400)
[283] http://www.firearmtraining.com.au/html/10applyL.htm
[284] http://www.shooting.org.au/index.php?p=1_2

Table A2.23 – 10-year incremental cost of switching to an alternative killing method for calves > 24hrs by state and territory under Standard 11.5 –2012-13 dollars

Jurisdiction	Dairy farms (i)[285]	Annual cost in year 1 of captive bolt, licence and training plus farmhand's time plus travel cost (1hr) (z2) = ((i)*10%*$500) + ((h)*(i)*10%*4.25hrs)+ ((i)*10%*$74) or (z2) = ((i)*10%*$700) + ((h)*(i)*10%*4.25hrs)+ ((i)*10%*$74) for WA and Tas	Annual cost in years 2 to 4 and years 6 to 10 of training plus farmhand's time plus travel cost (a5) = ((i)*10%*$100) + ((h)*(i)*10%*4.25hrs)+ ((i)*10%*$74)	Annual cost in year 5 renewal of licence plus training plus farmhand's time plus travel cost (b5) = ((i)*10%*$100) + ((h)*(i)*10%*4.25hrs)+ ((i)*10%*$74) or (b5= ((i)*10%*$300) + ((h)*(i)*10%*4.25hrs)+ ((i)*10%*$74) for WA and Tas	10-year cost (c5) = (z2)+ [(a5)*8]+ (b5)
NSW	807	$63,713	$31,433	$31,433	$346,608
Vic	4,588	$375,322	$191,802	$191,802	$2,101,540
Qld	595	$46,662	$22,862	$22,862	$252,419
SA	286	$22,339	$10,899	$10,899	$120,435
WA	170	$17,131	$6,931	$10,331	$82,912
Tas	437	$45,909	$19,689	$28,429	$231,853
NT	-	$0	$0	$0	$0
ACT	-	$0	$0	$0	$0
Australia	**6,883**	**$571,077**	**$283,617**	**$295,757**	**$3,135,766**
Present value 7% discount rate					***$2,120,325***
3% discount rate					$2,629,672
10% discount rate					$1,828,074

A2.21 Summary of 10-year quantifiable costs of the proposed Standards – Option B

A summary of 10-year quantifiable costs of the proposed Standards under Option B is summarised in Table A2.24. The total 10-year incremental quantifiable cost is estimated to be **$79.42m** or ***$52.45m*** in present value dollars using a 7% discount rate.

Table A2.24 – Summary of quantifiable 10-year incremental cost of proposed standards under Option B –2012-13 dollars

Proposed Standard	10-year cost	PV cost - 7% discount rate	PV cost - 3% discount rate	PV cost - 10% discount rate
5.4	$2,755,649	$1,808,834	$2,282,160	$1,539,297
5.5	$2,160	$1,886	$2,036	$1,785
5.6	$4,761,711	$3,125,633	$3,943,530	$2,659,878
5.7	-$168,042	-$110,304	-$139,168	-$93,867
6.2	$5,772,366	$3,789,036	$4,780,530	$3,224,426
6.4	$15,279,426	$10,029,561	$12,654,040	$8,535,042
6.7	$13,012,526	$8,569,792	$10,791,541	$7,303,619

[285] See Table A2.1 for source of estimates

Proposed Standard	10-year cost	PV cost - 7% discount rate	PV cost - 3% discount rate	PV cost - 10% discount rate
6.8	$27,520,062	$18,064,430	$22,791,428	$15,372,624
6.9	$859,176	$563,971	$711,548	$479,933
7.2	$3,905,200	$2,563,410	$3,234,189	$2,181,433
8.4	$618,024	$405,677	$511,832	$345,226
9.2	$1,160,280	$1,013,433	$1,093,675	$958,909
9.3	$80,612	$30,280	$54,499	$17,576
10.2	$67,278	$44,162	$55,718	$37,581
10.4	$657,296	$431,455	$544,356	$367,163
11.5	$3,135,766	$2,120,325	$2,629,672	$1,828,074
Total	**$79,419,491**	**$52,451,582**	**$65,941,586**	**$44,758,700**

A summary of 10-year quantifiable costs of the proposed Standards by state and territory under Option B in 2012-13 present value dollars by state and territory is summarised in Table A2.25.

Table A2.25 – Summary of quantifiable 10-year incremental cost of proposed standards under Option B by state and territory – 2012-13 dollars

Proposed Standard	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	TOTAL
5.4	$659,785	$389,080	$466,945	$112,425	$109,972	$63,219	$6,169	$1,239	$1,808,834
5.5	$707	$0	$516	$218	$141	$303	$2	$0	$1,886
5.6	$2,024,782	$229,303	$197,529	$194,584	$219,592	$259,843	$0	$0	$3,125,633
5.7	-$204,786	$15,285	$69,570	$6,111	$12,105	-$17,012	$8,377	$46	-$110,304
6.2	$0	$430,408	$2,202,835	$0	$546,213	$0	$607,859	$1,722	$3,789,036
6.4	$1,761,608	$1,414,142	$4,482,096	$0	$1,152,552	$0	$1,215,719	$3,444	$10,029,561
6.7	$0	$0	$6,493,420	$0	$695,257	$0	$1,370,633	$0	$8,569,792
6.8	$0	$0	$14,777,449	$0	$1,083,210	$0	$2,203,771	$0	$18,064,430
6.9	$0	$0	$498,747	$0	$21,494	$0	$43,730	$0	$563,971
7.2	$629,210	$626,245	$709,701	$249,252	$123,855	$139,955	$84,251	$941	$2,563,410
8.4	$130,859	$0	$57,447	$56,591	$39,028	$121,752	$0	$0	$405,677
9.2	$126,876	$721,321	$93,545	$44,965	$26,727	$0	$0	$0	$1,013,433
9.3	$339	$23,966	$0	$0	$0	$5,975	$0	$0	$30,280
10.2	$9,167	$4,028	$21,198	$1,889	$3,328	$794	$3,741	$15	$44,162
10.4	$91,299	$45,434	$205,956	$18,083	$35,943	$10,154	$24,450	$136	$431,455
11.5	$234,522	$1,419,300	$170,856	$81,537	$56,523	$157,587	$0	$0	$2,120,325
Total PV -7% discount	**$5,464,367**	**$5,318,511**	**$30,447,810**	**$765,655**	**$4,125,941**	**$742,569**	**$5,568,703**	**$7,543**	**$52,451,582**

Taking the total 10-year incremental cost of the standards in each state or territory in 2012-13 dollars (in Table A2.25) and the number of cattle in each state or territory (in Table A2.5) - the average cost per cow ranges from $0.64 in the SA to $2.53 in NT, as shown in Table A2.26.

Table A2.26 – Range of average 10-year cost per cow as a result of the proposed standards under Option B by state and territory –2012-13 dollars

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	TOTAL
Total	$5,464,367	$5,318,511	$30,447,810	$765,655	$4,125,941	$742,569	$5,568,703	$7,543	$52,451,582
Total herd	5,583,931	3,385,850	12,539,625	1,199,640	2,009,382	611,583	2,197,359	8,807	27,536,177
Cost per cow	**$0.98**	**$1.57**	**$2.43**	**$0.64**	**$2.05**	**$1.21**	**$2.53**	**$0.86**	**$1.90**

Note: Care should be taken in using the average cost per cow in a jurisdiction to interpret the impact of standards or variations on a particular industry sector or an individual farmer's herd.

Appendix 3 – Estimates of Quantifiable costs – Options C1, C2, C3, C4, C5, C6 and C7

The purpose of this Appendix is to estimate the quantifiable costs of Options C1 to C7 to the proposed standards under Option B. It is not proposed that a variation or combination of options would become a possible option/alternative to Option B under Option C at this stage. These costs are estimated in the following sections.

A3.1 Incremental cost of pain relief for all spaying – Option C1

This option would require pain relief for all spaying, whether by flank approach (as already proposed) or per-vaginal approach. A recent scientific study has demonstrated that the DOT method can also have a significant impact on the welfare of the cow[286].

According to the MLA cattle husbandry survey,[287] 7% of businesses are involved in spaying heifers with an average of 210 heifers and with 39% using the flank or flank/webbing approach. With cows, 4% of businesses are involved in spaying cows with an average of 195 cows and with 23% using the flank or flank/webbing approach. The value in this proposal to industry is that it proposes a potentially acceptable way for spaying to continue. Spaying is a key means of pregnancy control in the extensive northern cattle industry and is important for long term cow welfare and enterprise viability.

A recent report has compared the welfare outcomes for *Bos indicus* cattle (100 heifers and 50 cows) spayed by either the dropped ovary technique (DOT) or ovariectomy via flank laparotomy (FL) - with cattle subjected to physical restraint (C), restraint by electro immobilization in conjunction with physical restraint (EIM), and physical restraint and mock AI (MAI).[288] Welfare assessment used measures of morbidity; mortality; BW change; and behaviour and physiology indicative of pain and stress. One of the major findings of this paper was that flank and DOT spaying should not be conducted without measures to manage the associated pain and stress. The following discussion looks at the economic incremental cost of moving to pain relief for all spaying using non-steroidal analgesic (Ketoprofen). Proposed Standard S6.8 requires pain relief for the flank approach for spaying only.

As discussed in Part A2.12 in Appendix 2 - the cost of pain relief (non-steroidal analgesic (Ketoprofen) for a 2-year old heifer or a mature cow in northern Australia would $10.54 and $13.54, respectively (including $0.44 time cost per heifer or cow and $0.50 disposables).

[286] Petherick JC, McCosker K, Mayer DG, Letchford P, McGowan M, "Evaluation of the impacts of spaying by either the dropped ovary technique or ovariectomy via flank laparotomy on the welfare of Bos indicus beef heifers and cows", *Journal of Animal Science*, 2012 Oct 9

[287] MLA (October 2008), *A 2008 producer survey on spaying of cattle in Northern Australia*

[288] Petherick JC, McCosker K, Mayer DG, Letchford P, McGowan M, "Evaluation of the impacts of spaying by either the dropped ovary technique or ovariectomy via flank laparotomy on the welfare of Bos indicus beef heifers and cows", *Journal of Animal Science*, 2012 Oct 9

A multiplier of *2.35* is used for the number of heifers and cows for WA, NT and northern Queensland in Table A3.1. This is to capture the higher degree of spaying activity in northern region of production, based on feedback provided by the NTAC on the consultation RIS.

The incremental 10-year cost of pain relief using a non-steroidal analgesic for all spaying (flank, passage & DOT) is estimated to be **$84.64m** or ***$55.56m*** in 2012-13 present value dollars, as shown in Table A3.1.

Table A3.1 –10-year incremental cost of non-steroidal analgesic as pain relief for all spaying of cattle by state and territory under Option C1 –2012-13 dollars

Jurisdiction	Business affected (w1)[289]	No. heifers (a3) = [(w1)*210*71.73%[290]]+[(w1)*210*28.27%]*2.35 or (w1)*210*2.35 (WA and NT)	No. cows (b3) = [(w1)*4%/7%*195*71.73%]+[(w1)*4%/7%*195*28.27%]*2.35 or (w1)*4%/7%*195*2.35 (WA and NT)	Annual cost (d3)=(a3)*$10.54+ (b3)*$13.54	10-year cost (e3) = (d3)*10
NSW	-	0	0	$0	$0
Vic	-	0	0	$0	$0
Qld	1,346	390483	207195	$6,923,767	$69,237,673
SA	-	0	0	$0	$0
WA	58	28623	15188	$507,523	$5,075,228
Tas	-	0	0	$0	$0
NT	118	58233	30899	$1,032,546	$10,325,464
ACT	-	0	0	$0	$0
Australia	**1,522**	**477339**	**253282**	**$8,463,836**	**$84,638,364**
Present value 7% discount rate					***$55,557,426***
3% discount rate					$70,095,380
10% discount rate					$47,278,737

A3.1.1 Incremental cost of Option C1 from the base case

The total 10-year incremental cost all standards under Option C1 as compared to the base case would be approximately ***$89.94m*** in 2012-13 dollars, as shown in Table A3.2.

Table A3.2 – Summary of quantifiable 10-year incremental cost of proposed standards under Option C1 by state and territory – 2012-13 dollars

Proposed Standard	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	TOTAL
5.4	$659,785	$389,080	$466,945	$112,425	$109,972	$63,219	$6,169	$1,239	$1,808,834
5.5	$707	$0	$516	$218	$141	$303	$2	$0	$1,886
5.6	$2,024,782	$229,303	$197,529	$194,584	$219,592	$259,843	$0	$0	$3,125,633
5.7	$204,786	$15,285	$69,570	$6,111	$12,105	$17,012	$8,377	$46	$110,304

[289] See Table A2.12 of Appendix 2 for source of estimates
[290] Percentage of total beef cattle that is produced in southern Queensland

Proposed Standard	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	TOTAL
6.2	$0	$430,408	$2,202,835	$0	$546,213	$0	$607,859	$1,722	$3,789,036
6.4	$1,761,608	$1,414,142	$4,482,096	$0	$1,152,552	$0	$1,215,719	$3,444	$10,029,561
6.7	$0	$0	$6,493,420	$0	$695,257	$0	$1,370,633	$0	$8,569,792
Variation of 6.8	$0	$0	$45,448,266	$0	$3,331,428	$0	$6,777,732	$0	$55,557,426
6.9	$0	$0	$498,747	$0	$21,494	$0	$43,730	$0	$563,971
7.2	$629,210	$626,245	$709,701	$249,252	$123,855	$139,955	$84,251	$941	$2,563,410
8.4	$130,859	$0	$57,447	$56,591	$39,028	$121,752	$0	$0	$405,677
9.2	$126,876	$721,321	$93,545	$44,965	$26,727	$0	$0	$0	$1,013,433
9.3	$339	$23,966	$0	$0	$0	$5,975	$0	$0	$30,280
10.2	$9,167	$4,028	$21,198	$1,889	$3,328	$794	$3,741	$15	$44,162
10.4	$91,299	$45,434	$205,956	$18,083	$35,943	$10,154	$24,450	$136	$431,455
11.5	$234,522	$1,419,300	$170,856	$81,537	$56,523	$157,587	$0	$0	$2,120,325
Total PV -7% discount	**$5,464,367**	**$5,318,511**	**$61,118,627**	**$765,655**	**$6,374,159**	**$742,569**	**$10,142,664**	**$7,543**	**$89,944,577**

Note: Care should be taken in using the average cost per cow in a jurisdiction to interpret the impact of standards or options on a particular industry sector or an individual farmer's herd.

Taking the total 10-year incremental cost of the standards in each state or territory in 2012-13 dollars (in Table A3.2) and the number of cattle in each state or territory (in Table A2.5) - the average cost per cow ranges from $0.64 in the SA to $4.87 in Qld, as shown in Table A3.3.

Table A3.3 – Range of average 10-year cost per cow as a result of the proposed standards under Option C1 by state and territory –2012-13 dollars

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	TOTAL
Total	$5,464,367	$5,318,511	$61,118,627	$765,655	$6,374,159	$742,569	$10,142,664	$7,543	$89,944,577
Total herd	5,583,931	3,385,850	12,539,625	1,199,640	2,009,382	611,583	2,197,359	8,807	27,536,177
Cost per cow	**$0.98**	**$1.57**	**$4.87**	**$0.64**	**$3.17**	**$1.21**	**$4.62**	**$0.86**	**$3.27**

Note: Care should be taken in using the average cost per cow in a jurisdiction to interpret the impact of standards or options on a particular industry sector or an individual farmer's herd.

A3.1.2 Incremental cost of *Option* C1 from Option B

The total 10-year incremental cost all standards under Option C1 as compared to Option B (i.e. replacing the cost of proposed Standard 6.8 with the alternative under Option C1) would be approximately ***$37.49m*** in 2012-13 dollars. Table A3.4 shows the 10-year incremental cost of Option C1 as compared to Option B by state and territory. These estimates are provided from tables A3.1 and A2.25 in Appendix 2. The main impact of going to Option C1 as compared with Option B would be on Qld and equal to $30.67m in 2012-13 dollars.

Table A3.4 – 10-year incremental cost of Option C1 as compared to Option B by state and territory –2012-13 dollars

Going from Option B to Variation C1	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	TOTAL
Less proposed standard 6.8 under Option B[291]	$0	$0	$22,512,546	$0	$1,650,204	$0	$3,357,312	$0	$27,520,062
Plus alternative to proposed standard 6.8 under Option C1[292]	$0	$0	$69,237,673	$0	$5,075,228	$0	$10,325,464	$0	$84,638,364
Net Difference between Option B and Option C1	**$0**	**$0**	**$46,725,127**	**$0**	**$3,425,024**	**$0**	**$6,968,152**	**$0**	**$57,118,302**
PV (7% discount rate) Net difference between Option B and Option C1	***$0***	***$0***	***$30,670,817***	***$0***	***$2,248,218***	***$0***	***$4,573,961***	***$0***	***$37,492,996***

A3.2 Incremental cost of banning flank spaying/flank webbing – Option C2

This option would ban flank spaying and flank webbing because of the visual impact and the short term impact on the welfare of the cow. The value in this proposal to industry is that it proposes a way for methods of spaying regarded to be acceptable to continue. Spaying is a key means of pregnancy control in the extensive northern cattle industry and is important for long term cow welfare and enterprise viability.

One of the major findings of the paper by Petherick et al (October, 2012) was that DOT spaying is preferable to flank spaying in that flank spaying had longer-lasting adverse impacts on welfare. In a paper by Jubb et al (2003),[293] a trial introduction of the Willis dropped ovary technique (DOT) for spaying was reviewed for cattle in northern Australia. Flank spaying or flank webbing was found to be 100% successful in preventing pregnancy whereas, DOT was 92 to 97% effective, depending on operator experience. The time taken to spay using DOT was similar to or less than that required for the traditional methods. For the purpose of estimation it is assumed that DOT is on average 5.5% less effective than flank spaying or flank webbing and that it would be the major alternative spaying method.

According to the MLA cattle husbandry survey[294], 7% of businesses are involved in spaying heifers with an average of 210 heifers and with 39% using the flank or flank/webbing approach. With cows, 4% of businesses are involved in spaying cows with an average of 195 cows and with 23% using the flank or flank/webbing approach.

Based on a study by Neithe and Holmes (2008), it was found that the incremental economic benefit of effectively spaying a female ranged from $219.27 to $306.93.[295] For the purpose of estimation is assumed that the average incremental economic benefit of spaying is $263.10. The higher gross margin per adult equivalent occurs because the

[291] See Table A2.25 of Appendix 2 for source of estimates
[292] See Table A3.1 for source of estimates
[293] Jubb TF, Fordyce G, Bolam MJ, Hadden DJ, Cooper NJ, Whyte TR, Fitzpatrick LA, Hill F, D'Occhio MJ, "Trial introduction of the Willis dropped ovary technique for spaying cattle in northern Australia", *Australian Veterinary Journal*, 2003 Jan-Feb;81(1-2):66-70
[294] MLA (October 2008), *A 2008 producer survey on spaying of cattle in Northern Australia*
[295] Despite the lower number of progeny produced and the subsequent reduction in total herd sales (see Niethe GE, Holmes WE, "Modeled female sale options demonstrate improved profitability in northern beef herds", *Australian Veterinary Journal*, Volume 86, No 12, December 2008)

increased value of the spayed females more than compensates for the fewer stock sold, despite the increased number of weaners produced and the increased stock sales under no spaying.

Therefore, for the purpose of estimating Option C2, the following assumptions are made:

- DOT approach is 5.5% less effective than flank spaying or flank webbing and therefore 5.5% of females would result in lower economic benefit;
- The reduction in economic benefit would be $263.10 per female;
- 39% of heifers are spayed using the flank or flank webbing approach;
- 23% of cows are spayed using the flank or flank webbing approach; and
- 50% of heifers and cows currently spayed using the flank or flank webbing approach would be left carry through their pregnancy and 50% would be spayed using DOT approach.

As shown in Table A3.5, the 10-year incremental cost of banning flank spaying or flank webbing under Option C2 would be approximately **$227.11m** or ***$149.08m*** in 2012-13 present value dollars.

Table A3.5 – 10-year incremental cost of banning flank spaying/flank webbing by state and territory under Option C2 –2012-13 dollars

Jurisdiction	Business affected (w1)[296]	No. heifers (a2)[297]	No. cows (b2)[298]	Annual cost (h3)= [[{(a2)*$263.10*5.5%}+ {(b2)*$263.10*5.5%}]*50%] + [[{(a2)*$263.10} +{(b2)*$263.10}]*50%]	10-year cost (i3) = (h3)*10
NSW	-	-	-	$0	$0
Vic	-	-	-	$0	$0
Qld	1,346	152,288	47,655	$27,749,168	$277,491,677
SA	-	-	-	$0	$0
WA	58	11,163	3,493	$2,034,057	$20,340,566
Tas	-	-	-	$0	$0
NT	118	22,711	7,107	$4,138,253	$41,382,532
ACT	-	-	-	$0	$0
Australia	**1,522**	**186,162**	**58,255**	**$33,921,478**	**$339,214,776**
Present value 7% discount rate					***$149,075,175***
3% discount rate					$188,084,328
10% discount rate					$126,861,278

A3.2.1 Incremental cost of Option C2 from the base case

The total 10-year incremental cost all standards under Option C2 as compared to the base case would be approximately ***$257.05m*** in 2012-13 dollars, as shown in Table A3.6.

[296] See Table A2.12 for source of estimates
[297] See Table A2.14 of Appendix 2 for source of estimates
[298] See Table A2.14 of Appendix 2 for source of estimates

Table A3.6 – Summary of quantifiable 10-year incremental cost of proposed standards under Option C2 by state and territory – 2012-13 dollars

Proposed Standard	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	TOTAL
5.4	$659,785	$389,080	$466,945	$112,425	$109,972	$63,219	$6,169	$1,239	$1,808,834
5.5	$707	$0	$516	$218	$141	$303	$2	$0	$1,886
5.6	$2,024,782	$229,303	$197,529	$194,584	$219,592	$259,843	$0	$0	$3,125,633
5.7	-$204,786	$15,285	$69,570	$6,111	$12,105	-$17,012	$8,377	$46	-$110,304
6.2	$0	$430,408	$2,202,835	$0	$546,213	$0	$607,859	$1,722	$3,789,036
6.4	$1,761,608	$1,414,142	$4,482,096	$0	$1,152,552	$0	$1,215,719	$3,444	$10,029,561
6.7	$0	$0	$6,493,420	$0	$695,257	$0	$1,370,633	$0	$8,569,792
Variation of 6.8	$0	$0	$182,148,170	$0	$13,351,741	$0	$27,163,887	$0	$222,663,798
6.9	$0	$0	$498,747	$0	$21,494	$0	$43,730	$0	$563,971
7.2	$629,210	$626,245	$709,701	$249,252	$123,855	$139,955	$84,251	$941	$2,563,410
8.4	$130,859	$0	$57,447	$56,591	$39,028	$121,752	$0	$0	$405,677
9.2	$126,876	$721,321	$93,545	$44,965	$26,727	$0	$0	$0	$1,013,433
9.3	$339	$23,966	$0	$0	$0	$5,975	$0	$0	$30,280
10.2	$9,167	$4,028	$21,198	$1,889	$3,328	$794	$3,741	$15	$44,162
10.4	$91,299	$45,434	$205,956	$18,083	$35,943	$10,154	$24,450	$136	$431,455
11.5	$234,522	$1,419,300	$170,856	$81,537	$56,523	$157,587	$0	$0	$2,120,325
Total PV -7% discount	**$5,464,367**	**$5,318,511**	**$197,818,532**	**$765,655**	**$16,394,473**	**$742,569**	**$30,528,818**	**$7,543**	**$257,050,949**

Taking the total 10-year incremental cost of the standards in each state or territory in 2012-13 dollars (in Table A3.6) and the number of cattle in each state or territory (in Table A2.5) - the average cost per cow ranges from $0.64 in the SA to $15.78 in Qld, as shown in Table A3.7.

Table A3.7 – Range of average 10-year cost per cow as a result of the proposed standards under Option C2 by state and territory –2012-13 dollars

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	TOTAL
Total	$5,464,367	$5,318,511	$197,818,532	$765,655	$16,394,473	$742,569	$30,528,818	$7,543	$257,050,949
Total herd	5,583,931	3,385,850	12,539,625	1,199,640	2,009,382	611,583	2,197,359	8,807	27,536,177
Cost per cow	**$0.98**	**$1.57**	**$15.78**	**$0.64**	**$8.16**	**$1.21**	**$13.89**	**$0.86**	**$9.34**

Note: Care should be taken in using the average cost per cow in a jurisdiction to interpret the impact of standards or options on a particular industry sector or an individual farmer's herd.

A3.2.2 Incremental cost of *Option C2* from Option B

The total 10-year incremental cost all standards under Option C2 as compared to Option B (i.e. replacing the cost of proposed Standard 6.8 (pain relief) with the alternative under Option C2) would be approximately ***$204.6m*** in 2012-13 dollars. Table A3.8 shows the 10-year incremental cost of Option C2 as compared to Option B by state and territory. These estimates are provided from tables A3.5 and A2.25 in Appendix 2. The main impact of going to Option C2 as compared with Option B would be on Qld.

Table A3.8 – 10-year incremental cost of Option C2 as compared to Option B by state and territory –2012-13 dollars

Going from Option B to Option C2	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	TOTAL
Less proposed standard 6.8 under Option B[299]	$0	$0	$22,512,546	$0	$1,650,204	$0	$3,357,312	$0	$27,520,062
Plus alternative to proposed standard 6.8 under Option C2[300]	$0	$0	$277,491,677	$0	$20,340,566	$0	$41,382,532	$0	$339,214,776
Net Difference between Option B and Option C2	**$0**	**$0**	**$254,979,131**	**$0**	**$18,690,362**	**$0**	**$38,025,220**	**$0**	**$311,694,714**
PV (7% discount rate) Net difference between Option B and Option C2	***$0***	***$0***	***$167,370,722***	***$0***	***$12,268,531***	***$0***	***$24,960,115***	***$0***	***$204,599,368***

A3.3 Incremental cost of banning permanent tethering – Option C3

Tethering of cattle is a minority practice associated with peri-urban cattle ownership. Option C3 would involve an alternative to proposed Standard 5.6 whereby daily exercise of tethered cattle would be replaced by a complete ban on tethering. This would involve approximately 150 animals as discussed in Part A2.3 of Appendix 2. The impact of a ban on tethering would mean the cheapest option of having to mow lawns belonging to all house yards and move cattle to suitable paddocks. Furthermore, for half the animals affected[301]it would mean having to purchase of at least 2 litres of milk for a household per week (taken to be around $3.70 retail per 2L). This would mean that abolition of such animals as the other alternative would be to install fencing around garden and flower beds to protect landscaped areas and contain the cows and would come at a substantial cost.

A rule of thumb in mowing lawns is $1 a minute. For the purpose of estimation it is assumed that mowing a house paddock (half an acre[302]) would take at least one hour and therefore would cost $60 and would need to be done at least twice a month. The annual cost of mowing per house paddock would be $60 x 2 x 12 months or $1,440 and the annual cost purchasing milk for half the house paddocks would be $192.40 per house paddock.

As shown in Table A3.9, the 10-year incremental cost of banning tethering under Option C3 would be approximately **$2.3m** or ***$1.51m*** in 2012-13 present value dollars.

[299] See Table A2.25 of Appendix 2 for source of estimates
[300] See Table A3.5 for source of estimates
[301] Due to lack of data it is assumed that half the tethered cattle involve the production of milk
[302] Approximately 2000 square metres

Table A3.9 – 10-year incremental cost of banning tethering by state and territory under Option C3 –2012-13 dollars

Jurisdiction	No. of cattle permanently tethered (t)[303]	Annual cost of mowing and milk purchases (j3) =[(t)*$1,440]+[(t)*50%*$192.40]	10-year cost (k3) = (j3)*10
NSW	100	$153,620	$1,536,200
Vic	10	$15,362	$153,620
Qld	10	$15,362	$153,620
SA	10	$15,362	$153,620
WA	10	$15,362	$153,620
Tas	10	$15,362	$153,620
NT	-	$0	$0
ACT	-	$0	$0
Australia	**150**	**$230,430**	**$2,304,300**
Present value 7% discount rate			***$1,512,564***
3% discount rate			$1,908,364
10% discount rate			$1,287,175

A3.3.1 Incremental cost of *Option* C3 from the base case

The total 10-year incremental cost all standards under Option C3, as compared to the base case, would be approximately ***$50.84m*** in 2012-13 dollars, as shown in Table A3.10.

Table A3.10 – Summary of quantifiable 10-year incremental cost of proposed standards under Variation C3 by state and territory – 2012-13 dollars

Proposed Standard	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	TOTAL
5.4	$659,785	$389,080	$466,945	$112,425	$109,972	$63,219	$6,169	$1,239	$1,808,834
5.5	$707	$0	$516	$218	$141	$303	$2	$0	$1,886
Variation of 5.6	$1,008,376	$100,838	$100,838	$100,838	$100,838	$100,838	$0	$0	$1,512,564
5.7	-$204,786	$15,285	$69,570	$6,111	$12,105	-$17,012	$8,377	$46	-$110,304
6.2	$0	$430,408	$2,202,835	$0	$546,213	$0	$607,859	$1,722	$3,789,036
6.4	$1,761,608	$1,414,142	$4,482,096	$0	$1,152,552	$0	$1,215,719	$3,444	$10,029,561
6.7	$0	$0	$6,493,420	$0	$695,257	$0	$1,370,633	$0	$8,569,792
6.8	$0	$0	$14,777,449	$0	$1,083,210	$0	$2,203,771	$0	$18,064,430
6.9	$0	$0	$498,747	$0	$21,494	$0	$43,730	$0	$563,971
7.2	$629,210	$626,245	$709,701	$249,252	$123,855	$139,955	$84,251	$941	$2,563,410
8.4	$130,859	$0	$57,447	$56,591	$39,028	$121,752	$0	$0	$405,677
9.2	$126,876	$721,321	$93,545	$44,965	$26,727	$0	$0	$0	$1,013,433
9.3	$339	$23,966	$0	$0	$0	$5,975	$0	$0	$30,280
10.2	$9,167	$4,028	$21,198	$1,889	$3,328	$794	$3,741	$15	$44,162
10.4	$91,299	$45,434	$205,956	$18,083	$35,943	$10,154	$24,450	$136	$431,455
11.5	$234,522	$1,419,300	$170,856	$81,537	$56,523	$157,587	$0	$0	$2,120,325
Total PV	**$5,464,367**	**$5,318,511**	**$30,447,810**	**$765,655**	**$4,125,941**	**$742,569**	**$5,568,703**	**$7,543**	**$50,838,513**

[303] See Table A2.4 of Appendix 2 for source of estimates

Proposed Standard -7% discount	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	TOTAL

Taking the total 10-year incremental cost of the standards in each state or territory in 2012-13 dollars (in Table A3.10) and the number of cattle in each state or territory (in Table A2.5) - the average cost per cow ranges from $0.64 in the SA to $2.53 in NT, as shown in Table A3.11.

Table A3.11 – Range of average 10-year cost per cow as a result of the proposed standards under Option C3 by state and territory –2012-13 dollars

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	TOTAL
Total	$5,464,367	$5,318,511	$30,447,810	$765,655	$4,125,941	$742,569	$5,568,703	$7,543	$50,838,513
Total herd	5,583,931	3,385,850	12,539,625	1,199,640	2,009,382	611,583	2,197,359	8,807	27,536,177
Cost per cow	**$0.98**	**$1.57**	**$2.43**	**$0.64**	**$2.05**	**$1.21**	**$2.53**	**$0.86**	**$1.85**

Note: Care should be taken in using the average cost per cow in a jurisdiction to interpret the impact of standards or options on a particular industry sector or an individual farmer's herd.

A3.3.2 Incremental cost of *Option* C3 from Option B

The total 10-year ***incremental quantifiable cost savings*** under Option C3 as compared to Option B (i.e. replacing the cost of proposed Standard 5.6 with the alternative under Option C3) would be approximately ***$1.61m*** in 2012-13 dollars, as shown in Table A3.12. Option C3 is likely to impose less total quantifiable cost than under Option B (the proposed national standard) as this option would save the time cost imposed by proposed Standard 5.6 under Option B in having to exercise tethered animals daily. Hence, compared to mowing lawns and buying milk (under Option C3), having to exercise a tethered animal daily (under Option B) the latter becomes a more expensive exercise.

Table A3.12 shows the 10-year incremental cost savings of Option C3 as compared to Option B by state and territory. These estimates are provided from tables A3.9 and A2.25 in Appendix 2. The main impact (saving of costs) of going to Option C3 as compared with Option B would be on NSW.

Table A3.12 – 10-year incremental cost of Option C3 as compared to Option B by state and territory –2012-13 dollars

Going from Option B to Option C3	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	TOTAL
Less proposed standard 5.6 under Option B[304]	$3,084,632	$349,328	$300,924	$296,437	$334,535	$395,855	$0	$0	$4,761,711
Plus alternative to proposed standard 5.6 under Option C3[305]	$1,536,200	$153,620	$153,620	$153,620	$153,620	$153,620	$0	$0	$2,304,300

[304] See Table A2.25 of Appendix 2 for source of estimates
[305] See Table A3.9 for source of estimates

Going from Option B to Option C3	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	TOTAL
Net Difference between Option B and Option C3	**-$1,548,432**	**-$195,708**	**-$147,304**	**-$142,817**	**-$180,915**	**-$242,235**	**$0**	**$0**	**-$2,457,411**
PV (7% discount rate) Net difference between Option B and Option C3	***-$1,016,406***	***-$128,465***	***-$96,691***	***-$93,747***	***-$118,754***	***-$159,005***	***$0***	***$0***	***-$1,613,068***

A3.4 Incremental cost of banning the use of dogs on calves less than 30 days old without their mothers – Option C4

The acceptable use of dogs for handling and mustering of young cattle is an important issue for the cattle industry in the context of cattle training. Early training programs greatly facilitate the later handling of adult cattle and result in less stress to stockpersons and cattle. However, the management of calves less than 30 days old is largely a dairy industry issue; and is largely restricted to the use of dogs on replacement female calves.

As with the Australian Animal Welfare Standards and Guidelines for the Land Transport of all commercial livestock, dog use on livestock – namely calves – is considered in the context of mustering and in livestock handling facilities. Standard SB4.7 of the Land Transport Standards and Guidelines requires that dogs must not be used to move bobby calves. However this would only be relevant in the instances where dogs are currently being used.

For the purpose of estimation it is assumed that 1,440 dogs are used (see part A2.3 for discussion) which includes 1% of dogs used in beef cattle farms and 100% of dogs used in dairy cattle farms. Similarly, it is assumed that dogs are used 10[306] times a year to muster calves and to replace such dogs would involve 5 min of additional time for a farmhand to replace each dog in the mustering activity (i.e. 5 min per dog). It is acknowledged that under the base case the use of dogs on calves in Victoria would not be permitted.

As shown in Table A3.13, the 10-year incremental cost of banning the use of dogs on calves less than 30 days old under Option C4 would be approximately **$0.63m** or ***$0.42m*** in 2012-13 present value dollars.

Table A3.13 – 10-year incremental cost of banning the use of dogs on calves less than 30 days old by state and territory under Option C4 –2012-13 dollars

Jurisdiction	No. Beef and dairy farm dogs (p)[307]	Hrs required to replace dogs (k3^) = 5/60*10*(p)	Annual cost (k3') = (k3^)*(h)[308]	10-year cost (k3'') = (k3')*10
NSW	539	449	$22,790	$227,895
Vic	-	0	$0	$0
Qld	394	328	$16,226	$162,264

[306] Based on advice from AHA
[307] See Table A2.3 for source of estimates
[308] See Table A1.1 for source of estimates

Jurisdiction	No. Beef and dairy farm dogs (p)[307]	Hrs required to replace dogs (k3^) = 5/60*10*(p)	Annual cost (k3') = (k3^)*(h)[308]	10-year cost (k3'') = (k3')*10
SA	166	138	$6,747	$67,468
WA	108	90	$4,933	$49,328
Tas	232	193	$12,554	$125,543
NT	1	1	$35	$352
ACT	0	0	$10	$98
Australia	**1,440**	**1,200**	**$63,295**	**$632,948**
Present value 7% discount rate				***$415,473***
3% discount rate				$524,192
10% discount rate				$353,563

A3.4.1 Incremental cost of *Option* C4 from the base case

The total 10-year incremental cost all standards under Option C4, as compared to the base case, would be approximately ***$52.87m*** in 2012-13 dollars, as shown in Table A3.14.

Table A3.14 – Summary of quantifiable 10-year incremental cost of proposed standards under Option C4 by state and territory – 2012-13 dollars

Proposed Standard	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	TOTAL
5.4	$659,785	$389,080	$466,945	$112,425	$109,972	$63,219	$6,169	$1,239	$1,808,834
5.5	$149,593	$0	$106,511	$44,287	$32,379	$82,408	$231	$65	$415,473
Variation of 5.6	$2,024,782	$229,303	$197,529	$194,584	$219,592	$259,843	$0	$0	$3,125,633
5.7	-$204,786	$15,285	$69,570	$6,111	$12,105	-$17,012	$8,377	$46	-$110,304
6.2	$0	$430,408	$2,202,835	$0	$546,213	$0	$607,859	$1,722	$3,789,036
6.4	$1,761,608	$1,414,142	$4,482,096	$0	$1,152,552	$0	$1,215,719	$3,444	$10,029,561
6.7	$0	$0	$6,493,420	$0	$695,257	$0	$1,370,633	$0	$8,569,792
6.8	$0	$0	$14,777,449	$0	$1,083,210	$0	$2,203,771	$0	$18,064,430
6.9	$0	$0	$498,747	$0	$21,494	$0	$43,730	$0	$563,971
7.2	$629,210	$626,245	$709,701	$249,252	$123,855	$139,955	$84,251	$941	$2,563,410
8.4	$130,859	$0	$57,447	$56,591	$39,028	$121,752	$0	$0	$405,677
9.2	$126,876	$721,321	$93,545	$44,965	$26,727	$0	$0	$0	$1,013,433
9.3	$339	$23,966	$0	$0	$0	$5,975	$0	$0	$30,280
10.2	$9,167	$4,028	$21,198	$1,889	$3,328	$794	$3,741	$15	$44,162
10.4	$91,299	$45,434	$205,956	$18,083	$35,943	$10,154	$24,450	$136	$431,455
11.5	$234,522	$1,419,300	$170,856	$81,537	$56,523	$157,587	$0	$0	$2,120,325
Total PV -7% discount	**$5,613,253**	**$5,318,511**	**$30,553,806**	**$809,724**	**$4,158,180**	**$824,673**	**$5,568,932**	**$7,608**	**$52,865,168**

Taking the total 10-year incremental cost of the standards in each state or territory in 2012-13 dollars (in Table A3.14) and the number of cattle in each state or territory (in Table A2.5) - the average cost per cow ranges from $0.64 in the SA to $2.53 in NT, as shown in Table A3.15.

Table A3.15 – Range of average 10-year cost per cow as a result of the proposed standards under Option C4 by state and territory –2012-13 dollars

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	TOTAL
Total	$5,613,253	$5,318,511	$30,553,806	$809,724	$4,158,180	$824,673	$5,568,932	$7,608	$52,865,168
Total herd	5,583,931	3,385,850	12,539,625	1,199,640	2,009,382	611,583	2,197,359	8,807	27,536,177
Cost per cow	**$1.01**	**$1.57**	**$2.44**	**$0.67**	**$2.07**	**$1.35**	**$2.53**	**$0.86**	**$1.92**

Note: Care should be taken in using the average cost per cow in a jurisdiction to interpret the impact of standards or options on a particular industry sector or an individual farmer's herd.

A3.4.2 Incremental cost of *Option* C4 from Option B

The total 10-year incremental cost all standards under Option C4 as compared to Option B (i.e. removing the incremental cost of proposed Code 5.5 (muzzling of dogs) and adding the alternative under Option C4) would be approximately ***$0.41m*** in 2012-13 dollars. This is summarised in Table A3.16. Table A3.16 shows the 10-year incremental cost of Option C4 as compared to Option B by state and territory. These estimates are provided from tables A3.13 and A2.25 in Appendix 2. The main impact of going to Option C4 as compared with Option B would be on NSW.

Table A3.16 – 10-year incremental cost of Option C4 as compared to Option B by state and territory –2012-13 dollars

Going from Option B to Option C4	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	TOTAL
Less proposed standard 5.5 under Option B[309]	$809	$0	$590	$249	$161	$347	$2	$0	$2,160
Plus alternative to proposed standard 5.5 under Option C4[310]	$227,895	$0	$162,264	$67,468	$49,328	$125,543	$352	$98	$632,948
Net Difference between Option B and Option C4	**$227,086**	**$0**	**$161,673**	**$67,219**	**$49,166**	**$125,196**	**$350**	**$98**	**$630,789**
PV (7% discount rate) Net difference between Option B and Option C4	***$148,886***	***$0***	***$105,996***	***$44,069***	***$32,238***	***$82,104***	***$229***	***$64***	***$413,587***

A3.5 Incremental cost of banning caustic dehorning – Option C5

Disbudding by caustic chemicals is a lower impact method of disbudding where there is close cattle control, such as in the dairy industry. This variation would entail banning caustic dehorning and reliance upon excision or heat cautery methods with some increase in costs and welfare impact. The impacts of chemical disbudding are controversial.

Dairy cattle are typically dehorned to reduce the risk of injuries to humans and other animals. Horn tissue is destroyed using a variety of methods including chemical

[309] See Table A2.25 of Appendix 2 for source of estimates
[310] See Table A3.13 for source of estimates

cauterization with caustic paste. Chemical disbudding has been considered to be more painful than heat cauterisation on the basis of differences in cortisol responses (Morrise *et al* 1995). However, the results of this single study should be treated with some caution as the comparison between techniques was undertaken in calves of different ages. It is believed that caustic disbudding does cause pain and Weary (2006) found that pain-related behaviours increased in calves that were dehorned with caustic paste versus those sham dehorned. More recently, subtle differences in behaviour were observed in calves subjected to thermal and caustic disbudding after administration of a sedative and/or local anaesthetic (Vickers *et al* 2005). It was concluded that caustic paste causes pain, but that it is less than that caused by the hot iron, even when using local anaesthetic (Vickers *et al* 2005).

However, chemical or caustic disbudding has additional risks associated with the caustic chemical getting into eyes and other sensitive tissues when calves suck each other or nuzzle their dams, or when it rains. The hair around the horn bud should be clipped to ensure the paste adheres to the horn bud and is applied accurately. Petroleum jelly may be used around the treated area to minimise chemical spread. Segregation and keeping indoors will also help prevent caustic chemical causing damage to other areas of the calf or other cattle.

Notwithstanding a lack of undisputed science there are calls for this method to be banned.

The incremental cost of Option C5 would involve the banning of caustic dehorning in dairy replacement calves and would be based on the difference in the rates for dehorning using caustic chemicals[311] (i.e. $22 per 20 calves) and the cost of moving to a contractor rate to dehorn calves using other methods (i.e. $80 per 20 calves). The difference would therefore be approximately $3 per calf. Moreover, 46% farmers do their own dehorning and 7% of these farmers use caustic chemicals[312].

As shown in Table A3.17, the 10-year incremental cost of banning caustic dehorning under Option C5 would be approximately ***$0.48m*** in 2012-13 present value dollars.

Table A3.17 – 10-year incremental cost of banning caustic dehorning by state and territory under Option C5 –2012-13 dollars

Jurisdiction	No. calves affected (l3) = (ji)[313]*50%*46%*7%	Annual cost of alternative dehorning methods (m3)*(l3)*$3	10-year cost (n3) = (m3)*10
NSW	3,043	$9,130	$91,296
Vic	15,520	$46,561	$465,609
Qld	1,369	$4,108	$41,083
SA	1,369	$4,108	$41,083
WA	837	$2,511	$25,106
Tas	2,206	$6,619	$66,190

[311] Can be obtained via the internet
[312] On advice from AHA
[313] See Table A2.9 of Appendix 2 for source of estimates

NT	-	$0	$0
ACT	-	$0	$0
Australia	**24,346**	**$73,037**	**$730,367**
Present value 7% discount rate			***$479,420***
3% discount rate			$604,872
10% discount rate			$407,981

A3.5.1 Incremental cost of *Option* C5 from the base case

The total 10-year incremental cost all standards under Option C5, as compared to the base case, would be approximately ***$52.93m*** in 2012-13 dollars, as shown in Table A3.18.

Table A3.18 – Summary of quantifiable 10-year incremental cost of proposed standards under Option C5 by state and territory – 2012-13 dollars

Proposed Standard	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	TOTAL
5.4	$659,785	$389,080	$466,945	$112,425	$109,972	$63,219	$6,169	$1,239	$1,808,834
5.5	$707	$0	$516	$218	$141	$303	$2	$0	$1,886
5.6	$2,024,782	$229,303	$197,529	$194,584	$219,592	$259,843	$0	$0	$3,125,633
5.7	-$204,786	$15,285	$69,570	$6,111	$12,105	-$17,012	$8,377	$46	-$110,304
6.2	$0	$430,408	$2,202,835	$0	$546,213	$0	$607,859	$1,722	$3,789,036
6.4	$1,761,608	$1,414,142	$4,482,096	$0	$1,152,552	$0	$1,215,719	$3,444	$10,029,561
Variation of 6.5	$59,928	$305,630	$26,967	$26,967	$16,480	$43,447	$0	$0	$479,420
6.7	$0	$0	$6,493,420	$0	$695,257	$0	$1,370,633	$0	$8,569,792
6.8	$0	$0	$14,777,449	$0	$1,083,210	$0	$2,203,771	$0	$18,064,430
6.9	$0	$0	$498,747	$0	$21,494	$0	$43,730	$0	$563,971
7.2	$629,210	$626,245	$709,701	$249,252	$123,855	$139,955	$84,251	$941	$2,563,410
8.4	$130,859	$0	$57,447	$56,591	$39,028	$121,752	$0	$0	$405,677
9.2	$126,876	$721,321	$93,545	$44,965	$26,727	$0	$0	$0	$1,013,433
9.3	$339	$23,966	$0	$0	$0	$5,975	$0	$0	$30,280
10.2	$9,167	$4,028	$21,198	$1,889	$3,328	$794	$3,741	$15	$44,162
10.4	$91,299	$45,434	$205,956	$18,083	$35,943	$10,154	$24,450	$136	$431,455
11.5	$234,522	$1,419,300	$170,856	$81,537	$56,523	$157,587	$0	$0	$2,120,325
Total PV -7% discount	**$5,524,294**	**$5,624,141**	**$30,474,778**	**$792,623**	**$4,142,421**	**$786,017**	**$5,568,703**	**$7,543**	**$52,931,002**

Taking the total 10-year incremental cost of the standards in each state or territory in 2012-13 dollars (in Table A3.18) and the number of cattle in each state or territory (in Table A2.5) - the average cost per cow ranges from $0.66 in the SA to $2.53 in NT, as shown in Table A3.19.

Table A3.19 – Range of average 10-year cost per cow as a result of the proposed standards under Option C5 by state and territory –2012-13 dollars

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	TOTAL
Total	$5,524,294	$5,624,141	$30,474,778	$792,623	$4,142,421	$786,017	$5,568,703	$7,543	$52,931,002
Total herd	5,583,931	3,385,850	12,539,625	1,199,640	2,009,382	611,583	2,197,359	8,807	27,536,177

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	TOTAL
Cost per cow	**$0.99**	**$1.66**	**$2.43**	**$0.66**	**$2.06**	**$1.29**	**$2.53**	**$0.86**	**$1.92**

Note: Care should be taken in using the average cost per cow in a jurisdiction to interpret the impact of standards or options on a particular industry sector or an individual farmer's herd.

A3.5.2 Incremental cost of *Options* C5 from Option B

The total 10-year incremental cost all standards under Option C5 as compared to Option B (i.e. adding the alternative under Option C5) would be approximately ***$0.48m*** in 2012-13 dollars. This is summarised in Table A3.20. Table A3.20 shows the 10-year incremental cost of Option C5 as compared to Option B by state and territory. These estimates are provided from Table A3.17. The main impact of going to Option C5 as compared with Option B would be on Victoria.

Table A3.20 – 10-year incremental cost of Option C5 as compared to Option B by state and territory –2012-13 dollars

Going from Option B to Option C5	**NSW**	**Vic**	**Qld**	**SA**	**WA**	**Tas**	**NT**	**ACT**	**TOTAL**
Plus alternative under Options C5[314]	$91,296	$465,609	$41,083	$41,083	$25,106	$66,190	$0	$0	$730,367
Net Difference between Option B and Option C5	**$91,296**	**$465,609**	**$41,083**	**$41,083**	**$25,106**	**$66,190**	**$0**	**$0**	**$730,367**
PV (7% discount rate) Net difference between Option B and Option C5	***$59,928***	***$305,630***	***$26,967***	***$26,967***	***$16,480***	***$43,447***	***$0***	***$0***	***$479,420***

A3.6 Quantifiable incremental cost of banning induction of early calving except for veterinary requirements –Option C6

This variation would ban induction of early calving except for veterinary reasons i.e. for the health or safety of the cow or calf.

Induction of calving is used predominantly in pasture-based seasonal dairying systems as a management tool to achieve a compact herd calving pattern to align peak nutritional needs associated with lactation to peak pasture growth. Other reasons include the ability to retain the cow in the herd or to hasten a problematic calving.

The major welfare impact is on the pre-term calf that is often not viable. However, the loss of this management method will have a large impact on farms that are currently tied to seasonal pasture based milk production.

Australian dairy production can be categorized into three production systems; seasonal, split/batch and year–round. The distribution of each calving system by dairying region is

[314] See Table A3.17 for source of estimates

illustrated in Table A3.21. Seasonal dairy herds are relevant in this discussion. These dairies are reliant on the dairy product export markets and will have difficulty in entering the alternative domestic market that is fully supplied. This means that changing management to a year–round milking system to supply a potential domestic whole market is not a realistic option.

Table A3.21 – Estimate of number of cows within each calving system distribution by dairying region

Current Calving System (cows)	National	Murray	West Vic	Gipps.	SDP	Dairy NSW	Dairy SA	West. Dairy	Dairy Tas.
Seasonal	740,674	118,688	259,098	221,737	9,260	0	22,160	10,749	98,983
Split/batch	880,026	297,005	188,022	218,854	16,457	13,208	41,886	45,600	58,993
Year-round	477,115	132,104	32,431	17,712	126,686	101,011	36,960	26,270	3,942
TOTAL	2,097,815	547,797	479,551	458,303	152,402	114,219	101,006	82,619	161,918

Induction of early calving is essentially required because it is difficult to condense sufficient conceptions within 8 weeks – the maximum desired calving period duration. In a truly seasonal system, a cow has only 56 days from the start of mating to become pregnant if the natural calving period is to be no longer than 8 weeks. This extends to 84 days if natural calving is to be restricted to less than 12 weeks. For an early calved cow this provides her with a maximum of 3 natural 21-day cycles in which to become pregnant and allow a maximum 8-week calving spread or 4 cycles for a 12-week calving spread. But because gestation is 282 days a proportion of cows will calve within 60 days of the mating start date. These cows will have reduced fertility and fewer opportunities to become pregnant in line with the desired seasonal calving pattern. Current herd reproductive performance is inadequate to maintain a tight calving pattern. A high proportion of cows will remain empty after 12 weeks of joining period even in herds with a compact and early calving pattern. Early induction of early calving remains the most profitable option for farmers with late pregnant cows who wish to maintain a wholly seasonal system.

Dairy Australia models clearly indicate that the current reproductive performance of the modern dairy cow is inadequate to maintain a tight seasonal calving herd without excessive empty rates using reproductive management alone. A not-in-calf rate after 12 weeks of joining can be expected in all herds – even those with a compact and early calving season. To compensate for declining fertility seasonal farmers have had to extend mating beyond 12 weeks (up to 21 weeks). All conceptions in this period will require induction of early calving if a tight and seasonal calving system is to be maintained. Conceptions within weeks 9-12 weeks of joining are also eligible for induction of early calving in farms in which the maximum duration of calving is < 9 weeks. Most seasonal farmers would prefer empty rates of 10% or less but the average seasonal dairy farmer can expect approximately 16% of the herd to be empty after extended mating and from 6% to 13% of the herd requiring induction of early calving each year. Use of induction of early calving has become an annual requirement for a seasonal herd to manage a significant portion of the herd.

Therefore, the main reasons for the artificial induction of calving in cows due to calve late in the season are to be able to retain the cow in the herd or to hasten a problematic calving. In summary, induction of early calving is used to achieve:

- More compact calving patterns
- Earlier calving at subsequent lactations
- Potential to increase milk production due to extra lactation days and match higher nutrition demands to peak feed production
- Increased opportunity for fertile oestrous cycles to commence before the next mating season
- Reduction in culling non-pregnant cows.

Importantly, there are two main welfare concerns with induced calving.

- The first concern is the welfare of the calves produced by induced cows.
- The second welfare concern is the effect of the procedure on the health of the cow[315]. This morbidity is understood to be a rare issue.

Farmers note that induction is used less as a routine industry practice for reproductive management and recent estimates from dairy veterinarians indicate induction of early calving is used in about 4% of cows nationally. The number of cows induced early and late with the major seasonal calving regions of Australia is summarised in Tables A3.22 and A3.23, respectively.

Table A3.22– Estimated distribution of seasonal herds that use induction of early calving early and of cows induced early within the major seasonal calving regions of Australia*

Region	No. seasonal herds in region	No. seasonal herds using induction that induce early	% herd induced early	No cows induced early
Western Districts	1003	506	16%	26,117
Gippsland	886	558	16%	22,351
North Victoria	552	348	16%	11,964
Tasmania	279	176	16%	9,977
Total	**2,720**	**1,587**		**70,409**

* Assumptions: 63% seasonal herds use inductions and 80% of these use early inductions (from dairy vet survey)

Table A3.23 – Estimated distribution of seasonal herds that use induction of early calving late and of cows induced late within the major seasonal calving regions of Australia*

Region	No. seasonal herds in region	No. seasonal herds using induction that induce late	% herd induced late	No. cows induced late
Western Districts	1003	164	12%	5,093
Gippsland	886	145	12%	4,358
North Victoria	552	90	12%	2,333
Tasmania	279	46	12%	1,946
Total	**2,720**	**446**		**13,730**

* Assumptions: 63% seasonal herds use inductions and 26% of these use late inductions (from dairy vet survey)

[315] Induced cows may be more prone to a number of health problems, including retained foetal membranes, photosensitisation, mastitis and toxaemic collapse. Foetal viability is also seriously compromised (see Mansell P, Aug 2006)

The estimated total number of cows induced in Australian seasonal dairy herds is therefore 84,139 head.

Net incremental replacement cost per cow from banning induction

Fifty percent of calves are female and most farms require between 20-25% replacements annually to cover deaths and allow culling for other factors such as mastitis, milk production and temperament. The demands to source an additional 4% maiden heifer replacements to maintain milking herd numbers may impact on heifer prices and may not able to be met.

If an induction ban is implemented as described it is assumed that effectively these cows will no longer be able to be managed in a seasonal calving herd and they will be sold. Replacements will need to be sought to maintain herd numbers. The average cost of a replacement maiden heifer is $1,800 and the average net return from sale of cull cows is $700 resulting in a net replacement cost of $1,100 per unit. There would also be an additional $10 transport cost, a $5 livestock levy and a 2% agents fee on $1,100 (i.e. $22) bringing the total net replacement cost to **$1,137 per unit**.

Net incremental savings in milk income per cow from banning induction

The termination of pregnancy by inducing parturition in late calving cows can allow for an increase in milk production by longer lactations than would otherwise occur in some cows.[316] As noted by the Department of Primary Industries in Victoria:

> Induced calving can be used to bring "late" cows back in line with the rest of the herd, while also gaining an extra months' production from "late" cows at the start of the season.[317]

DPI Victoria notes that induced cows brought forward by 35 days, give a potential production gain of 24.5 kilograms of milk solids (assuming cows are producing 0.7 kilograms of milk fat per day).[318]

On the other hand however, according to Jaques et al (2006) – a comparison of Holstein cows that were induced to calve and herd mates that calved spontaneously at approximately the same time in 88 dairy herds from Victoria and Tasmania, showed yield reductions following induced premature parturition. Such yield reductions were substantially higher in absolute as well as proportional terms in herds with higher milk yields:

- 40L less or 1.1% less for an average milk yield of 3,500L over 305 days; and
- 915L less or 11% less for an average milk yield of 8,500L over 305 days.[319]

[316] Mansell P (Aug 2006), Animal Health And Economic Justification Of Routine Induction Of Parturition In Dairy Cattle, University of Melbourne, Melbourne, *Australia International Symposia on Veterinary Epidemiology and Economics proceedings*, ISVEE 11: Proceedings of the 11th Symposium of the International Society for Veterinary Epidemiology and Economics, Cairns, Australia, Theme 3 - Animal health delivery & response: Short oral presentation session, p 195

[317] http://www.dpi.vic.gov.au/agriculture/dairy/breeding/calving-induction-dairy-cows

[318] http://www.dpi.vic.gov.au/agriculture/dairy/breeding/calving-induction-dairy-cows

[319] Jaques, S. A., Macmillan, K. L., Anderson, G. A. and Morton, J. M. (2006). Variation in yields of milk and milk solids in Holstein cows induced to calve prematurely. In: Proceedings of the New Zealand Society of Animal Production. NZSAP 2006 Proceedings. *New Zealand Society of Animal Production Conference 2006*, Hamilton, (344-349). 2006

Blackwell et al (2010) note that in New Zealand, "farmers with 'nil' and 'reducing' induction practices believed that their policy had not affected productivity to any great extent."[320]

For the purpose of estimation, it can therefore not be determined conclusively whether or not a ban on induction would result in less or more milk production for the individual cow, but the loss situation is presumed. The costs of induction – milk production loss, veterinary, disease, and loss of calves need to be counted as a cost saving if an induction ban is implemented.

Under induction this study incorporated a mid-range reduction in milk production based on an average lactation of 5,500L[321] and an estimated reduction of 525L at the average export manufacturing milk price of $0.34/L. Therefore the savings in milk income from banning induction would average to **$178.50 per cow**.

Net incremental savings in veterinary attendance costs per cow from banning induction

Average veterinary attendance costs per cow for an induction program are estimated at **$21 per cow** if induction is banned.

Net incremental cost savings per cow with destruction of calves and foregone return from bobby calf sales from banning induction

Generally calves from induced cows are not kept as replacements even if they are viable. Assuming that all calves are destroyed, owners would incur an estimated slaughter cost at $43.69 per hour with a slaughter time of 1 minute per calf involving a captive bolt and then bleeding out (i.e. $0.73 per calf); a willingness to pay to avoid slaughter of $1 per calf (i.e. the 'emotional cost'); and a cost of pick up by a knackery of $0 per calf.[322] This would come to a cost of slaughter of $1.73 per calf (male or female).

The farm gate value of the bobby calf trade (calves destined for slaughter) is in the order of $40m annually[323]. Given that there are 692,000 bobby calves destined for slaughter this would generate an average farm gate value of $57.80 per calf.[324] This would represent the forgone returns from bobby calf sales. The cost of slaughter and foregone returns from bobby calf sales would therefore be $59.53 per calf (i.e. $1.73 + $57.80). The cost of a female calf not sent to slaughter is estimated to be a nominal pro rata value of $100 based on 30kg weight (i.e. heifer estimated at 120kg has a sale price of $500). The cost of slaughter and foregone returns from female calf sales would therefore be $101.73 per calf (i.e. $1.73 + $100).

[320] Blackwell M.B., Burke C.R. and Verkerk G.A., "Reproductive management practices in New Zealand dairy farms: what will the future hold in a consumer-focused, export-driven marketplace?" Reproduction practices in an export sensitive market, *Proceedings of the 4th Australasian Dairy Science Symposium 2010.* Page 407

[321] Dairy Australia website

[322] See Bobby Calf RIS (full reference to be added in next draft)

[323] Trade data, Meat and Livestock Australia

[324] See Bobby Calf RIS (full reference to be added in next draft)

Given that each cow has one calf and that half the calves are male and half the calves are female - this would bring the incremental cost to 50% female calves @ $101.73 per cow and 50% bobby calves @ $59.53 per cow. The weighted cost savings per cow would therefore be **$80.63**.

Total net incremental cost per cow from banning induction

The net incremental cost per cow from banning induction is therefore estimated to be $856.87 assuming that the:

- Net incremental replacement cost per cow is $1,137 per unit;
- Net incremental cost savings in milk income per cow is $178.50 per cow;
- Net incremental cost savings in veterinary attendance costs per cow is $21 per cow; and
- Net incremental weighted cost savings of destruction of calves and foregone return from calf sales is $80.63.

As shown in Table A3.24, the 10-year additional incremental cost of banning induction under Option C6 would be **$720.96m** or ***$473.25m*** in 2012-13 present value dollars.

Table A3.24 – Estimated net incremental cost of banning induction under Option C6

Jurisdiction	Cows affected	Annual cost of banning induction	10-year cost
NSW	0	$0	$0
Vic	72,216	$61,879,724	$618,797,239
Qld	0	$0	$0
SA	0	$0	$0
WA	0	$0	$0
Tas	11,923	$10,216,461	$102,164,610
NT	0	$0	$0
ACT	0	$0	$0
Australia	**84,139**	**$72,096,185**	**$720,961,849**
Present value 7% discount rate			***$473,246,200***
3% discount rate			$597,082,603
10% discount rate			$402,727,133

Unquantifiable costs that have not been considered in the aforementioned estimation would include the impact of banning induction on farm stocking rates, feeding requirements and breeding management changes. Moreover another main issue behind the ban of induction would be for a move by farmers practicing induction in a routine way from a seasonal production system (where induction would be necessary) to another system if possible. The motivations of farmers to adopt a particular calving pattern vary and are based on a combination of production, financial and social factors.[325] In Victoria, for example, matching feed supply with animal demand and receiving milk price incentives were the major factors that influenced farm calving patterns. The link between such motivations such as holidays and structured workload and production systems is unknown and has not been estimated.

[325] Department of Primary Industries, Victoria in conjunction with Dairy Australia (2010), *Dairy Industry Farm Monitor Project* 2009/10 feature article (see http://www.dairyaustralia.com.au/Statistics-and-markets/Farm facts/~/media/Documents/People%20and%20business/Business-management/dairy-farm-monitoring/2009-10%20DIFMP%20Feature%20Article.ashx)

A3.6.1 Incremental cost of *Option* C6 from the base case

The total 10-year incremental cost all standards under Option C6, as compared to the base case, would be approximately ***$525.7m*** in 2012-13 dollars, as shown in Table A3.25.

Table A3.25 – Summary of quantifiable 10-year incremental cost of proposed standards under Option C6 by state and territory – 2012-13 dollars

Proposed Standard	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	TOTAL
5.4	$659,785	$389,080	$466,945	$112,425	$109,972	$63,219	$6,169	$1,239	$1,808,834
5.5	$707	$0	$516	$218	$141	$303	$2	$0	$1,886
5.6	$2,024,782	$229,303	$197,529	$194,584	$219,592	$259,843	$0	$0	$3,125,633
5.7	-$204,786	$15,285	$69,570	$6,111	$12,105	-$17,012	$8,377	$46	-$110,304
6.2	$0	$430,408	$2,202,835	$0	$546,213	$0	$607,859	$1,722	$3,789,036
6.4	$1,761,608	$1,414,142	$4,482,096	$0	$1,152,552	$0	$1,215,719	$3,444	$10,029,561
Additional standard banning induction	$0	$406,184,380	$0	$0	$0	$67,061,820	$0	$0	$473,246,200
6.7	$0	$0	$6,493,420	$0	$695,257	$0	$1,370,633	$0	$8,569,792
6.8	$0	$0	$14,777,449	$0	$1,083,210	$0	$2,203,771	$0	$18,064,430
6.9	$0	$0	$498,747	$0	$21,494	$0	$43,730	$0	$563,971
7.2	$629,210	$626,245	$709,701	$249,252	$123,855	$139,955	$84,251	$941	$2,563,410
8.4	$130,859	$0	$57,447	$56,591	$39,028	$121,752	$0	$0	$405,677
9.2	$126,876	$721,321	$93,545	$44,965	$26,727	$0	$0	$0	$1,013,433
9.3	$339	$23,966	$0	$0	$0	$5,975	$0	$0	$30,280
10.2	$9,167	$4,028	$21,198	$1,889	$3,328	$794	$3,741	$15	$44,162
10.4	$91,299	$45,434	$205,956	$18,083	$35,943	$10,154	$24,450	$136	$431,455
11.5	$234,522	$1,419,300	$170,856	$81,537	$56,523	$157,587	$0	$0	$2,120,325
Total PV -7% discount	**$5,464,367**	**$411,502,891**	**$30,447,810**	**$765,655**	**$4,125,941**	**$67,804,389**	**$5,568,703**	**$7,543**	**$525,697,781**

Taking the total 10-year incremental cost of the standards in each state or territory in 2012-13 dollars (in Table A3.25) and the number of cattle in each state or territory (in Table A2.5) - the average cost per cow ranges from $0.64 in the SA to $121.54 in Vic, as shown in Table A3.26.

Table A3.26 – Range of average 10-year cost per cow as a result of the proposed standards under Option C6 by state and territory –2012-13 dollars

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	TOTAL
Total	$5,464,367	$411,502,891	$30,447,810	$765,655	$4,125,941	$67,804,389	$5,568,703	$7,543	$525,697,781
Total herd	5,583,931	3,385,850	12,539,625	1,199,640	2,009,382	611,583	2,197,359	8,807	27,536,177
Cost per cow	**$0.98**	**$121.54**	**$2.43**	**$0.64**	**$2.05**	**$110.87**	**$2.53**	**$0.86**	**$19.09**

Note: Care should be taken in using the average cost per cow in a jurisdiction to interpret the impact of standards or options on a particular industry sector or an individual farmer's herd.

A3.6.2 Incremental cost of *Option* C6 from Option B

The total 10-year incremental cost all standards under Option C6 as compared to Option B would be approximately ***$473.25m*** in 2012-13 dollars. This is summarised in Table A3.27. Table A3.27 shows the 10-year incremental cost of Option C6 as compared to Option B by state and territory. These estimates are provided from Table A3.14. The main impact of going to Option C6 as compared with Option B would be on Victoria.

Table A3.27 – 10-year incremental cost of Option C6 as compared to Option B by state and territory –2012-13 dollars

Going from Option B to Option C6	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	TOTAL
Plus alternative to under Option C6[326]	$0	$618,797,239	$0	$0	$0	$102,164,610	$0	$0	$720,961,849
Net Difference between Option B and Option C6	**$0**	**$618,797,239**	**$0**	**$0**	**$0**	**$102,164,610**	**$0**	**$0**	**$720,961,849**
PV (7% discount rate) Net difference between Option B and Option C6	***$0***	***$406,184,380***	***$0***	***$0***	***$0***	***$67,061,820***	***$0***	***$0***	***$473,246,200***

A3.7 Incremental cost of banning electro-immobilisation – Option C7

Electro-immobilisation is the use of pulsed, low-frequency electrical current to restrain an animal. The process produces tetanic contractions of skeletal muscles and therefore voluntary movement is not possible. The restraint allows the safe handling of cattle (poorly restrained cattle pose a risk to handlers and to the animals themselves) for procedures. This is especially the case in extensive properties where handling facilities are inadequate and cattle are often not used to handling. Loss of this method will result in increased costs to industry and potentially poorer welfare outcomes for cattle.

Electro-immobilisation does not provide pain relief but is useful for assisting cattle treatments and procedures in skilled hands. Electro-immobilisation (EI) is currently practiced when needing to treat cattle in the following instances:

- General animal examination (especially of the lower legs);
- Flank spaying/webbing (the majority of cases);
- Ear tagging;
- Minor treatment (e.g. where cattle may be caught on wire); and
- Castration and dehorning.

However, the main animal welfare implications of EI for cattle are:

[326] See Table A3.24 for source of estimates

- Immobilisation may mask an animal's ability to react normally to pain and distress;
- It does not produce pain relief and it may be abused to carry out surgery without anaesthesia;
- It causes asphyxia (at least initially) followed by dyspnoea;
- It may have profound cardiac effects;
- There is evidence that it is aversive for the animals; and
- There is potential for misuse with inappropriate settings and prolonged use.

Given that veterinarians already have options for sedation, anaesthesia and analgesia the banning of EI comes down to the need for an alternative form of restraint which is less onerous from a welfare perspective. The option that would be available would be traditional roping and or the use of cattle crushes. The additional cost involved would be 1 to 2 minutes per animal (average of 1.5 minutes) for restraint[327], as well as, the potential for health hazards to farmhands including injuries and fatality. The AVA submission notes in its response to the consultation RIS that:

> electro-immobilisation provides a viable option to relieve animals from suffering and provide safety to those delivering it. There are numerous situations where it is not practical or safe to administer general anaesthetic to large animals in the extensive and hot regions of the north to perform a one minute procedure.

For the purpose of estimation it is assumed that relying on more traditional methods for restraint will result in the potential fatality of one farmhand every 5 years[328]. Based on a Value of Statistical Life (VOSL) of $3.5m (2007 dollars)[329] and a CPI adjustment factor[330] of 1.1454, additional mortality cost from banning EI is estimated to be $4,008,889. Furthermore, it is assumed that a fatality would occur in the third year of the operation of Variation C7 occurring in 2016-17 and in the 2021-22 – giving a total $8,017,778. In 2012-13 present value dollars (discounted at 7%) – this would equal *$5,238,932*.

The link between injuries and different restraint systems is not clear, however, there were 763 workers compensation claims between the period 1994-95 and 1999-00 involving cows/steers/cattle/bulls where injury was caused by a moving animal hitting a farmhand[331]. If only 1%[332] of these 763 claims over a 10-year period involved a lack of appropriate restraint methods, then a *conservative estimate* could be made for around 7.63 additional claims over 5 years under the banning of EI. The average cost of a claim made

[327]On advice from AHA. The AVA notes that trying to restrain a 650kg Brahman bull in a crush while you get ropes around his legs, then securing his leg as he goes down in the crush will take a lot longer and expose him to far more stress than one to two minutes of immobilisation – however does not provide suggestions for how much time is reasonable 'on average'. For this reason the RIS continues to use 1.5 minutes as an average across various sizes of cattle from around 250kg to 650kg Brahman Bulls.
[328]Cattle was classified as an agent of 2 fatalities on beef cattle properties in Australia between 1989 and 1992 (see RIRDC and Australian Centre for Agricultural Health and Safety, *Occupational health and safety risk in the Australian Beef Cattle Industry: Chart-book of Summary Information* 2005)
[329] Recommended by the OBPR
[330] Based on CPI index of 157.5 for June 2007 and 180.4 for June 2012 = 180.4/157.5 = 1.1454 (See ABS, *Consumer Price Index, Australia, June 2012*, Cat.6401.0)
[331]RIRDC and Australian Centre for Agricultural Health and Safety, *Occupational health and safety risk in the Australian Beef Cattle Industry: Chart-book of Summary Information* 2005
[332]Crushing was responsible for 5% of dairy farm injuries in 1995 (see Day, L (1996), *Dairy Farm Injury in Victoria*, Monash University Accident Research Centre)

in the cattle industry in Western Australia during 1993-96 was $7,422 in 2002 dollars[333] adjusted to $9,947.47[334]. For 7.63 claims this would leave injury costs over 5 years at around $75,899.16. Over 10 years this would be $151,798.39. Assuming that such injuries occurred evenly over 10 years then this would be equal to $15,179.83 per annum. In 2012-13 present value dollars (discounted at 7%) – the 10-year incremental cost would equal *$99,642*.

The total cost of fatality and injury is therefore estimated to be $8,169,576 or *$5,338,574* in 2012-13 dollars.

Given that EI is banned in Victoria, Option C7 would affect 1%[335] of the population of cattle in other states, where alternative methods of restraint would have to be adopted and additional time incurred (i.e. 1.5 minutes on average). As shown in Table A3.28, the 10-year incremental cost of banning EI under Option C7 would be approximately $2.96m or *$1.51m* in 2012-13 present value dollars.

Table A3.28 – 10-year incremental cost of banning electro-immobilisation by state and territory under Option C7 –2012-13 dollars

Jurisdiction	No. Cattle affected (o3) = (y)[336]*1%	Annual additional cost of time for restraining cattle (p3) = (o3) *(1.5/60)*(h)[337]	10-year cost (q3) = (p3)*10
NSW	55,839	$70,785	$707,851
Vic	-	$0	$0
Qld	125,396	$155,074	$1,550,741
SA	11,996	$14,614	$146,144
WA	20,094	$27,625	$276,250
Tas	6,116	$9,949	$99,492
NT	21,974	$18,277	$182,773
ACT	88	$102	$1,020
Australia	**241,503**	**$296,427**	**$2,964,272**
Present value 7% discount rate			***$1,512,564***
3% discount rate			$1,908,364
10% discount rate			$1,287,175

Including the total cost of fatality and injury across Australia of $8,169,576 or *$5,338,574* in 2012-13 dollars plus the additional time cost of restraint of $2,964,272 or *$1,512,564* in 2012-13 present value dollars – the 10-year additional incremental cost of Variation C7 would be **$11.13m** or ***$7.28m*** in 2012-13 present value dollars (See Table A3.29).

A3.7.1 Incremental cost of *Option* C7 from the base case

[333]RIRDC and Australian Centre for Agricultural Health and Safety, *Occupational health and safety risk in the Australian Beef Cattle Industry: Chart-book of Summary Information* 2005
[334]Based on a CPI index for WA for June 2002 of 134.6 and 180.4 for June 2012 (see ABS, 6401.0 - *Consumer Price Index*, Australia, Jun 2012)
[335]Assumption made on advice from AHA
[336]See Table A2.5 of Appendix 2 for source of estimates
[337]See Table A1.1 of Appendix 1 for source of estimates

The total 10-year incremental cost all standards under Option C7, as compared to the base case, would be approximately ***$59.85m*** in 2012-13 dollars, as shown in Table A3.29.

Table A3.29 – Summary of quantifiable 10-year incremental cost of proposed standards under Option C7 by state and territory – 2012-13 dollars

Proposed Standard	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	AUS	TOTAL
5.4	$659,785	$389,080	$466,945	$112,425	$109,972	$63,219	$6,169	$1,239		$1,808,834
5.5	$707	$0	$516	$218	$141	$303	$2	$0		$1,886
5.6	$2,024,782	$229,303	$197,529	$194,584	$219,592	$259,843	$0	$0		$3,125,633
Variation of 5.7	$464,640	$0	$1,017,921	$95,931	$181,333	$65,308	$119,974	$670	$5,338,574	$7,284,350
6.2	$0	$430,408	$2,202,835	$0	$546,213	$0	$607,859	$1,722		$3,789,036
6.4	$1,761,608	$1,414,142	$4,482,096	$0	$1,152,552	$0	$1,215,719	$3,444		$10,029,561
6.7	$0	$0	$6,493,420	$0	$695,257	$0	$1,370,633	$0		$8,569,792
6.8	$0	$0	$14,777,449	$0	$1,083,210	$0	$2,203,771	$0		$18,064,430
6.9	$0	$0	$498,747	$0	$21,494	$0	$43,730	$0		$563,971
7.2	$629,210	$626,245	$709,701	$249,252	$123,855	$139,955	$84,251	$941		$2,563,410
8.4	$130,859	$0	$57,447	$56,591	$39,028	$121,752	$0	$0		$405,677
9.2	$126,876	$721,321	$93,545	$44,965	$26,727	$0	$0	$0		$1,013,433
9.3	$339	$23,966	$0	$0	$0	$5,975	$0	$0		$30,280
10.2	$9,167	$4,028	$21,198	$1,889	$3,328	$794	$3,741	$15		$44,162
10.4	$91,299	$45,434	$205,956	$18,083	$35,943	$10,154	$24,450	$136		$431,455
11.5	$234,522	$1,419,300	$170,856	$81,537	$56,523	$157,587	$0	$0		$2,120,325
Total PV -7% discount	**$6,133,793**	**$5,303,226**	**$31,396,161**	**$855,475**	**$4,295,169**	**$824,889**	**$5,680,300**	**$8,167**	**$5,338,574**	**$59,846,236**

Taking the total 10-year incremental cost of the standards in each state or territory in 2012-13 dollars (in Table A3.29) and the number of cattle in each state or territory (in Table A2.5) - the average cost per cow ranges from $0.93 in the ACT to $2.50 in Qld, as shown in Table A3.30.

Table A3.30 – Range of average 10-year cost per cow as a result of the proposed standards under Option C6 by state and territory –2012-13 dollars

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	TOTAL
Total	$6,133,793	$5,303,226	$31,396,161	$855,475	$4,295,169	$824,889	$5,680,300	$8,167	$59,846,236
Total herd	5,583,931	3,385,850	12,539,625	1,199,640	2,009,382	611,583	2,197,359	8,807	27,536,177
Cost per cow	**$1.10**	**$1.57**	**$2.50**	**$0.71**	**$2.14**	**$1.35**	**$2.59**	**$0.93**	**$2.17**

Note: Care should be taken in using the average cost per cow in a jurisdiction to interpret the impact of standards or options on a particular industry sector or an individual farmer's herd.

A3.7.2 Incremental cost of *Option* C7 from Option B

The total 10-year incremental cost all standards under Option C7 as compared to Option B (i.e. replacing proposed Standard 5.7 under Option B with the alternative under Variation C7) would be approximately ***$7.39m*** in 2012-13 dollars. This is summarised in

Table A3.31. Table A3.31 shows the 10-year incremental cost of Option C7 as compared to Option B by state and territory. These estimates are provided from tables A3.28 and A2.25 in Appendix 2. The main impact of going to Option C7 as compared with Option B would be across Australia as a whole[338] and would be in terms of injury and death to farmhands.

Table A3.31 – 10-year incremental cost of Option C7 as compared to Option B by state and territory –2012-13 dollars

Going from Option B to Option C7	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Australia	TOTAL
Less proposed Standard 5.7 under Option B[339]	-$311,980	$23,285	$105,986	$9,310	$18,442	-$25,917	$12,762	$70	$0	-$168,042
Plus alternative to proposed standard 5.7 under Option C7[340]	$707,851	$0	$1,550,741	$146,144	$276,250	$99,492	$182,773	$1,020	$8,169,576	$11,133,848
Net Difference between Option B and Option C7	**$1,019,831**	**-$23,285**	**$1,444,755**	**$136,835**	**$257,809**	**$125,410**	**$170,011**	**$950**	$8,169,576	$11,301,890
PV (7% discount rate) Net difference between Option B and Option C7	***$669,427***	***-$15,285***	***$948,351***	***$89,819***	***$169,228***	***$82,320***	***$111,597***	***$624***	**$5,338,574**	**$7,394,654**

A3.8 Summary and comparison of quantifiable costs of Options A, B and options C1 to C7

A summary of quantifiable incremental costs for Options A, B and Options C1 to C7, as compared to the base case, is provided in Table A3.32 below.

Table A3.32 – Summary of quantifiable incremental 10-year costs of Options A, B, and Options C1 to C7 as compared to the base case –2012-13 dollars ($m)

Option/Variation	Incremental 10-year costs ($m)	Incremental cost PV ($m)
Option A[341]	$0.00	$0.00
Option B	$79.42	$52.45
Option C1	$136.54	$89.94
Option C2	$391.11	$257.05

[338] It is unknown where in Australia, injury or death would be likely to occur
[339] See Table A2.25 of Appendix 2 for source of estimates
[340] See Table A3.28 for source of estimates
[341] Option A would involve changing all the proposed standards under Option B to guidelines

Option/Variation	Incremental 10-year costs ($m)	Incremental cost PV ($m)
Option C3	$77.03	$50.84
Option C4	$80.05	$52.87
Option C5	$80.15	$52.93
Option C6	$800.38	$525.70
Option C7	$90.72	$59.85

Appendix 4 - List of relevant federal, state and territory legislation

Table A4.1: Summary of relevant state and territory legislation

State or Territory	Act	Existing regulations	Existing standards
ACT	Animal Welfare Act 1992 .	*Animal Welfare Regulation 2001*	Model Code of Practice for the Welfare of Animals – Cattle
NSW	Prevention of Cruelty to Animals Act 1979	*Prevention of Cruelty to Animals Regulation, 2006*	Model Code of Practice for the Welfare of Animals – Cattle
NT	Animal Welfare Act	*Animal Welfare Regulations*[342]	Model Code of Practice for the Welfare of Animals – Cattle
Qld	Animal Care and Protection Act 2001	*Animal Care and Protection Regulation 2002*	Model Code of Practice for the Welfare of Animals – Cattle
SA	Animal Welfare Act 1985	*Animal Welfare Regulations 2000*	Model Code of Practice for the Welfare of Animals – Cattle
Tas	Animal Welfare Act 1993	*Animal Welfare Regulations 2008*	Model Code of Practice for the Welfare of Animals – Cattle
Vic	Prevention of Cruelty to Animals Act 1986 Livestock Management Act 2010	*Prevention of Cruelty to Animals Regulations 1997*	Vic Code of Accepted Farming Practice for the Welfare of Cattle
WA	Animal Welfare Act 2002	*Animal Welfare (General) Regulations 2003*	Model Code of Practice for the Welfare of Animals – Cattle

[342] Regulations are not needed in NT to adopt standards. This can be done by the Minister by notice in the gazette.

Appendix 5 - List of proposed standards with negligible costs incremental to the base case

Proposed Std. No.	Subject matter	Base case
1	**Responsibilities**	
1.1	A person must take reasonable actions to ensure the welfare of cattle under their care.	Market forces, Tas Act,[343] MCOP[344] 1.0.1 and 1.0.2.
2	**Feed and Water**	
2.1	A person in charge must ensure cattle have reasonable access to adequate and appropriate feed and water.	Market forces, POCTA,[345] Tas Act, MCOP 1.1 and 1.3, Vic CoP[346] 6.6, ACT CoP[347] Appendix 2(1)
3	**Risk management of extreme weather, natural disasters, disease, injury and predation**	
3.1	A person in charge must take reasonable actions to ensure the welfare of from threats including extremes of weather, drought, fires, floods, disease, injury, and predation.	Market forces, POCTA, Tas Act (mostly), MCOP 1.4 and 1.5, Vic CoP 8.10 (calves weather extremes)
3.3	A person in charge must ensure appropriate treatment or humane killing for sick, injured or diseased cattle at the first reasonable opportunity.	Market forces, POCTA, Tas Act, MCOP 1.0.2 (5th dot point) 5.1.4, Vic CoP 5.3.
4	**Facilities and equipment**	
4.1	A person in charge must take reasonable actions in the construction, maintenance and operation of facilities and equipment to ensure the welfare of cattle.	Market forces, POCTA, Tas Act, MCOP 2.2.1.3, 2.2.6.5, 4.1 (guideline), Vic CoP 6.7
5	**Handling and management**	
5.1	A person must handle cattle in a reasonable manner and must not: 1 - lift if off the ground by the head, ears, horns, neck, or tail unless in an emergency; or 2 – drop it except to land and stand on its feet; or 3 – strike it in an unreasonable manner, punch or kick; or 4 – drag recumbent cattle, except in an emergency for the minimum distance to	POCTA,[348] Tas Act, MCOP 4.13 (tails) 5.11.7 (calves only),

[343] Duty of care provisions of Tasmanian *Animal Welfare Act 1993*
[344] PISC Model Code of Practice for the Welfare of Animals – Cattle (2nd edition).
[345] The general cruelty provisions of the relevant Prevention of Cruelty to Animals Act or equivalent in each state and territory.
[346] Victorian Code of accepted farming practice for the welfare of cattle (October 2001)
[347] ACT Code of Practice for the Welfare of Animals – Cattle
[348] Assuming that deliberate acts of this nature could result in a cruelty prosecution.

Proposed Std. No.	Subject matter	Base case
	allow safe handling, lifting, treatment or humane killing; or 5 – deliberately dislocate or break the tail of cattle, or 6 - use metal pellets as an aid for mustering	
5.2	A person must not drive cattle to the point of collapse.	POCTA, Tas Act, Vic CoP 9.6. ACT CoP 3
5.3	A person must consider the welfare of cattle when using an electric prodder, and must not use it: 1 – on genital, anal, udder or facial areas of cattle; 2 – on calves under three months old, unless its welfare is at risk; or 3 – on cattle that is clearly unable to move away; or 4 – in an unreasonable manner on cattle.	POCTA, MCOP 4.12, 5.11.7 (calves) Vic code 9.9 (in part)
	Identification	
5.9	A person must use appropriate methods and techniques to identify cattle that are applicable to the production system	POCTA, MCOP 5.7.1 (advisory), 5.7.2 (no corrosive chemicals).
6	**Castration, dehorning and spaying**	
6.1	A person performing castration or dehorning must have the relevant knowledge, experience and skills or be under the direct supervision of a person who has the relevant knowledge, experience and skills.	MCOP 5.1.3 (procedures must be competently performed) Vet only in NSW for dehorning >12 months or castration >6months. SA vet only for castration >3months.
	Castration	
6.3	A person must use appropriate tools and methods to castrate cattle.	POCTA, MCOP 5.1.3 (procedures must be competently performed) NSW vet only >6 months. SA vet only >3months.
	Disbudding and dehorning	
6.6	A person must use appropriate tools and methods to dehorn cattle and disbud calves.	POCTA, Tas Act, MCOP 5.1.3 (procedures must be competently performed) MCOP 5.8.4 (corrosive chemicals must not be used to dehorn cattle)
7	**Breeding management**	
7.1	A person performing artificial breeding procedures on cattle must take reasonable actions to minimise pain, distress or injury.	POCTA, vet only in Tas, MCOP 5.1.3 (procedures must be competently performed), 5.9.4 (training and supervision)
7.3	A person in charge must ensure induction of early calving of is done under veterinary advice.	MCOP 5.10.5

Proposed Std. No.	Subject matter	Base case
7.4	A person in charge must ensure an induced calf receives adequate colostrum or is *humanely killed* at the first reasonable opportunity, and by 12 hours old.	POCTA.
8	**Calf rearing systems**	
8.1	A person in charge must ensure the feeding and *inspection* calves in calf rearing systems at least daily.	Market forces, Tas Act, new standard elsewhere. (Negligible cost as calves are inspected during daily feeding).
8.2	A person in charge must ensure calves that are housed in pens can turn around, lie down and fully stretch their limbs.	Tas Act, MCOP 1.0.2 3rd dot point. Vic CoP 8.8
8.3	A person in charge must ensure sufficient iron in the diet to prevent anaemia in calves in veal production systems.	Market forces, Tas Act, MCOP 3.8
9	**Dairy Management**	
9.1	A person in charge must ensure the inspection of lactating dairy cows daily.	Market forces, Tas Act, new standard elsewhere. (Negligible incremental cost as lactating dairy cows are inspected at daily milking, except in robotic milking which is rare in Australia).
9.4	A person in charge must ensure dairy cattle that are kept on a feed pad for an extended period has access to a well-drained area for resting.	POCTA, new standard. (Dairy industry advises nil incremental cost).
10	**Beef feedlots**	
10.1	A person in charge must ensure a minimum area of nine m^2 per *Standard Cattle Unit* for cattle held in external pens.	MCOP 2.2.6.4 (2.5m^2 for shedded animals which are rare in Australia), Vic CoP 6.7.
10.5	A person in charge must have a documented *Excessive Heat Load Action* Plan and must implement appropriate actions in the event of a heat load emergency.	Tas Act, MCOP 2.2.7.2 (staff to take remedial action as per feedlot's Animal Care Statement)
10.6	A person in charge must have documented contingency plan in case of failure of feed or water supply and must implement appropriate actions in the event of feed or water supply failure.	Tas Act, Implied by MCOP 2.2.7.2 (fed into troughs once daily and stale or spoilt feed must be removed). MCOP 2.2.5.6 (fresh clean water must be available).
10.7	A person in charge must have a documented contingency plan in case of an emergency animal disease and must implement appropriate actions in the event of an emergency animal disease.	Implied by MCOP 2.2.4 (Health management).
10.8	A person in charge must ensure the daily *inspection* of all cattle within the feedlot.	Market forces, Tas Act, MCOP 2.2.5.3 (trained staff to ride or walk pens) Implied daily by MCOP 2.2.3.4.
10.9	A person in charge must ensure the appropriate management of calves born in the feed yards to ensure the welfare of the	Tas Act, MCOP 2.2.4.5 (special facilities must be provided for cows and calves). Vic CoP 6.5

Proposed Std. No.	Subject matter	Base case
	calves.	
10.10	A person in charge must clean feed yards and maintain surfaces on a planned basis to ensure that pen surfaces can drain freely.	MCOP 2.2.6.8, Vic CoP 6.7
11	**Humane killing**	
11.1	A person in charge must ensure *killing* methods for cattle result in rapid loss of consciousness followed by death while unconscious.	POCTA, Tas Act, MCOP 9.2 (must ensure killing asap, humanely and results in immediate death), Vic CoP 12.2, ACT CoP 7
11.2	A person must have the relevant knowledge, experience and skills to be able to humanely kill cattle or be under the direct supervision of a person who has the relevant knowledge, experience and skills unless: 1 – the cattle are suffering and need to be killed to prevent undue suffering; and 2 – there is an unreasonable delay until direct supervision by a person who has the relevant knowledge, experience and skills possible.	Implied by MCOP 9.2
11.3	A person in charge of cattle that are suffering from severe distress, disease or injury that cannot be reasonably treated. must ensure cattle are killed at the *first reasonable opportunity*	POCTA, Tas Act, implied by MCOP 9.2, Vic CoP 6.5.
11.4	A person killing cattle must take *reasonable action* to confirm the animal is dead.	POCTA, Tas Act, Implied by MCOP 9.2 (ensuring death implies confirmation of death).

Appendix 6 - Number of cattle annually affected by welfare standards under Option B by State and territory

The change of cattle farming/invasive procedures under Option B leading to additional welfare and the number of cattle affected is summarised in Table A6.1 by state and territory. However it is important to note the number of cattle alone does not reflect the severity of the consequences; but rather it is the combination of:

- Number of animals affected (small or large);
- Duration of practice (one-off or ongoing); and
- Impact of animal husbandry procedure (primarily invasive or less-invasive).

Moreover, the cattle numbers in Table A6.1 are not mutually exclusive whereby given cattle can be affected by different issues within a state or territory. Therefore, even if then number of cattle affected by each issue were known - any summation and inference from such a summation would be misleading and incorrect.

Jurisdiction	Welfare generating practice under Option B	Number of cattle affected
NSW	Inspection of cattle at intervals	% of 5,583,931
NSW	Better handling of cattle	-
NSW	Reduced exhaustion of cattle	% of 5,583,931
NSW	Reduced misuse of electric prodders	% of 5,583,931
NSW	Reduced biting of cattle from dogs not under effective control	unknown
NSW	Reduced biting of calves from unmuzzled dogs	unknown
NSW	Exercise of permanently tethered cattle	100
NSW	Electro-immobilisation performed by competent persons	-
NSW	Electro-immobilisation not to be used as pain relief	% of 55,839
NSW	Improved less painful cattle identification techniques	% of 5,583,931
NSW	Banning painful head branding of cattle	-
NSW	Requirement of pain relief for castration	-
NSW	Requirement of pain relief for dehorning	30,690
NSW	Conditional use of caustic disbudding	% of 3,043
NSW	Accreditation and competency required for spaying	-
NSW	Requirement of pain relief for spaying	-
NSW	Banning the use of vaginal spreaders	-
NSW	Inspection of calving cattle	% of 2,891,966
NSW	Humane killing or receipt of colostrum for induced calves less than 12hrs old	-
NSW	Prevention of accumulation of faeces and urine in calf rearing indoor systems	189
NSW	Improved heat stress management for dairy cattle	% of 200,000
NSW	Tail docking only to occur under veterinary advice and for welfare reasons	800
NSW	Improved heat stress management and dietary outcomes for cattle in unaccredited feedlots	unknown
NSW	Humane killing of calves over 24hrs of age	unknown

Jurisdiction	Welfare generating practice under Option B	Number of cattle affected
Vic	Inspection of cattle at intervals	% of 3,385,850
Vic	Better handling of cattle	-
Vic	Reduced exhaustion of cattle	-
Vic	Reduced misuse of electric prodders	% of 3,385,850
Vic	Reduced biting of cattle from dogs not under effective control	unknown
Vic	Reduced biting of calves from unmuzzled dogs	unknown
Vic	Exercise of permanently tethered cattle	10
Vic	Electro-immobilisation performed by competent persons	-
Vic	Electro-immobilisation not to be used as pain relief	-
Vic	Improved less painful cattle identification techniques	% of 3,385,850
Vic	Banning painful head branding of cattle	-
Vic	Requirement of pain relief for castration	7,498
Vic	Requirement of pain relief for dehorning	24,637
Vic	Conditional use of caustic disbudding	% of 15,520
Vic	Accreditation and competency required for spaying	-
Vic	Requirement of pain relief for spaying	-
Vic	Banning the use of vaginal spreaders	-
Vic	Inspection of calving cattle	% of 2,202,925
Vic	Humane killing or receipt of colostrum for induced calves less than 12hrs old	% of 72,216
Vic	Prevention of accumulation of faeces and urine in calf rearing indoor systems	-
Vic	Improved heat stress management for dairy cattle	% of 1,020,000
Vic	Tail docking only to occur under veterinary advice and for welfare reasons	50,000
Vic	Improved heat stress management and dietary outcomes for cattle in unaccredited feedlots	unknown
Vic	Humane killing of calves over 24hrs of age	unknown
Qld	Inspection of cattle at intervals	% of 12,539,625
Qld	Better handling of cattle	% of 12,539,625
Qld	Reduced exhaustion of cattle	% of 12,539,625
Qld	Reduced misuse of electric prodders	% of 12,539,625
Qld	Reduced biting of cattle from dogs not under effective control	unknown
Qld	Reduced biting of calves from unmuzzled dogs	unknown
Qld	Exercise of permanently tethered cattle	10
Qld	Electro-immobilisation performed by competent persons	% of 125,396
Qld	Electro-immobilisation not to be used as pain relief	% of 125,396
Qld	Improved less painful cattle identification techniques	% of 12,539,625
Qld	Banning painful head branding of cattle	-
Qld	Requirement of pain relief for castration	38,377
Qld	Requirement of pain relief for dehorning	78,086
Qld	Conditional use of caustic disbudding	% of 1,369
Qld	Accreditation and competency required for spaying	% of 597,678
Qld	Requirement of pain relief for spaying	199,943

Jurisdiction	Welfare generating practice under Option B	Number of cattle affected
Qld	Banning the use of vaginal spreaders	8,998
Qld	Inspection of calving cattle	% of 6,314,813
Qld	Humane killing or receipt of colostrum for induced calves less than 12hrs old	-
Qld	Prevention of accumulation of faeces and urine in calf rearing indoor systems	85
Qld	Improved heat stress management for dairy cattle	% of 90,000
Qld	Tail docking only to occur under veterinary advice and for welfare reasons	-
Qld	Improved heat stress management and dietary outcomes for cattle in unaccredited feedlots	unknown
Qld	Humane killing of calves over 24hrs of age	unknown
SA	inspection of cattle at intervals	% of 1,199,640
SA	Better handling of cattle	-
SA	Reduced exhaustion of cattle	% of 1,199,640
SA	Reduced misuse of electric prodders	% of 1,199,640
SA	Reduced biting of cattle from dogs not under effective control	unknown
SA	Reduced biting of calves from unmuzzled dogs	unknown
SA	Exercise of permanently tethered cattle	10
SA	Electro-immobilisation performed by competent persons	% of 11,996
SA	Electro-immobilisation not to be used as pain relief	% of 11,996
SA	Improved less painful cattle identification techniques	% of 1,199,640
SA	Banning painful head branding of cattle	-
SA	Requirement of pain relief for castration	-
SA	Requirement of pain relief for dehorning	-
SA	Conditional use of caustic disbudding	% of 1,369
SA	Accreditation and competency required for spaying	-
SA	Requirement of pain relief for spaying	-
SA	Banning the use of vaginal spreaders	-
SA	Inspection of calving cattle	% of 644,820
SA	Humane killing or receipt of colostrum for induced calves less than 12hrs old	-
SA	Prevention of accumulation of faeces and urine in calf rearing indoor systems	85
SA	Improved heat stress management for dairy cattle	% of 90,000
SA	Tail docking only to occur under veterinary advice and for welfare reasons	-
SA	Improved heat stress management and dietary outcomes for cattle in unaccredited feedlots	unknown
SA	Humane killing of calves over 24hrs of age	unknown
WA	Inspection of cattle at intervals	% of 2,009,382
WA	Better handling of cattle	% of 2,009,382
WA	Reduced exhaustion of cattle	% of 2,009,382
WA	Reduced misuse of electric prodders	% of 2,009,382
WA	Reduced biting of cattle from dogs not under effective control	unknown
WA	Reduced biting of calves from unmuzzled dogs	unknown
WA	Exercise of permanently tethered cattle	10

Jurisdiction	Welfare generating practice under Option B	Number of cattle affected
WA	Electro-immobilisation performed by competent persons	% of 20,094
WA	Electro-immobilisation not to be used as pain relief	% of 20,094
WA	Improved less painful cattle identification techniques	% of 2,009,382
WA	Banning painful head branding of cattle	-
WA	Requirement of pain relief for castration	9,516
WA	Requirement of pain relief for dehorning	20,080
WA	Conditional use of caustic disbudding	% of 837
WA	Accreditation and competency required for spaying	% of 43,811
WA	Requirement of pain relief for spaying	14,656
WA	Banning the use of vaginal spreaders	388
WA	Inspection of calving cattle	% of 1,032,191
WA	Humane killing or receipt of colostrum for induced calves less than 12hrs old	-
WA	Prevention of accumulation of faeces and urine in calf rearing indoor systems	52
WA	Improved heat stress management for dairy cattle	% of 55,000
WA	Tail docking only to occur under veterinary advice and for welfare reasons	-
WA	Improved heat stress management and dietary outcomes for cattle in unaccredited feedlots	unknown
WA	Humane killing of calves over 24hrs of age	unknown
Tas	inspection of cattle at intervals	% of 611,583
Tas	Better handling of cattle	-
Tas	Reduced exhaustion of cattle	-
Tas	Reduced misuse of electric prodders	% of 611,583
Tas	Reduced biting of cattle from dogs not under effective control	unknown
Tas	Reduced biting of calves from unmuzzled dogs	unknown
Tas	Exercise of permanently tethered cattle	10
Tas	Electro-immobilisation performed by competent persons	-
Tas	Electro-immobilisation not to be used as pain relief	% of 6,116
Tas	Improved less painful cattle identification techniques	% of 611,583
Tas	Banning painful head branding of cattle	% of 611,583
Tas	Requirement of pain relief for castration	-
Tas	Requirement of pain relief for dehorning	-
Tas	Conditional use of caustic disbudding	% of 2,206
Tas	Accreditation and competency required for spaying	-
Tas	Requirement of pain relief for spaying	-
Tas	Banning the use of vaginal spreaders	-
Tas	Inspection of calving cattle	% of 378,292
Tas	Humane killing or receipt of colostrum for induced calves less than 12hrs old	% of 11,923
Tas	Prevention of accumulation of faeces and urine in calf rearing indoor systems	137
Tas	Improved heat stress management for dairy cattle	% of 145,000
Tas	Tail docking only to occur under veterinary advice and for welfare reasons	11,000
Tas	Improved heat stress management and dietary outcomes for cattle in unaccredited feedlots	unknown

Jurisdiction	Welfare generating practice under Option B	Number of cattle affected
Tas	Humane killing of calves over 24hrs of age	unknown
NT	inspection of cattle at intervals	% of 2,197,359
NT	Better handling of cattle	% of 2,197,359
NT	Reduced exhaustion of cattle	% of 2,197,359
NT	Reduced misuse of electric prodders	% of 2,197,359
NT	Reduced biting of cattle from dogs not under effective control	unknown
NT	Reduced biting of calves from unmuzzled dogs	unknown
NT	Exercise of permanently tethered cattle	-
NT	Electro-immobilisation performed by competent persons	% of 21,974
NT	Electro-immobilisation not to be used as pain relief	% of 21,974
NT	Improved less painful cattle identification techniques	% of 2,197,359
NT	Banning painful head branding of cattle	% of 2,197,359
NT	Requirement of pain relief for castration	10,590
NT	Requirement of pain relief for dehorning	21,180
NT	Conditional use of caustic disbudding	-
NT	Accreditation and competency required for spaying	% of 89,132
NT	Requirement of pain relief for spaying	29,818
NT	Banning the use of vaginal spreaders	789
NT	Inspection of calving cattle	% of 1,098,680
NT	Humane killing or receipt of colostrum for induced calves less than 12hrs old	-
NT	Prevention of accumulation of faeces and urine in calf rearing indoor systems	-
NT	Improved heat stress management for dairy cattle	-
NT	Tail docking only to occur under veterinary advice and for welfare reasons	-
NT	Improved heat stress management and dietary outcomes for cattle in unaccredited feedlots	unknown
NT	Humane killing of calves over 24hrs of age	unknown
ACT	Inspection of cattle at intervals	% of 8,807
ACT	Better handling of cattle	-
ACT	Reduced exhaustion of cattle	-
ACT	Reduced misuse of electric prodders	% of 8,807
ACT	Reduced biting of cattle from dogs not under effective control	unknown
ACT	Reduced biting of calves from unmuzzled dogs	unknown
ACT	Exercise of permanently tethered cattle	-
ACT	Electro-immobilisation performed by competent persons	% of 88
ACT	Electro-immobilisation not to be used as pain relief	% of 88
ACT	Improved less painful cattle identification techniques	% of 8,807
ACT	Banning painful head branding of cattle	% of 8,807
ACT	Requirement of pain relief for castration	30
ACT	Requirement of pain relief for dehorning	60
ACT	Conditional use of caustic disbudding	-

Jurisdiction	Welfare generating practice under Option B	Number of cattle affected
ACT	Accreditation and competency required for spaying	-
ACT	Requirement of pain relief for spaying	-
ACT	Banning the use of vaginal spreaders	-
ACT	Inspection of calving cattle	% of 4,404
ACT	Humane killing or receipt of colostrum for induced calves less than 12hrs old	-
ACT	Prevention of accumulation of faeces and urine in calf rearing indoor systems	-
ACT	Improved heat stress management for dairy cattle	-
ACT	Tail docking only to occur under veterinary advice and for welfare reasons	-
ACT	Improved heat stress management and dietary outcomes for cattle in unaccredited feedlots	unknown
ACT	Humane killing of calves over 24hrs of age	unknown
Australia	Inspection of cattle at intervals	% of 27,536,177
Australia	Better handling of cattle	% of 16,746,366
Australia	Reduced exhaustion of cattle	% of 23,529,937
Australia	Reduced misuse of electric prodders	% of 27,536,177
Australia	Reduced biting of cattle from dogs not under effective control	unknown
Australia	Reduced biting of calves from unmuzzled dogs	unknown
Australia	Exercise of permanently tethered cattle	150
Australia	Electro-immobilisation performed by competent persons	% of 179,548
Australia	Electro-immobilisation not to be used as pain relief	% of 241,503
Australia	Improved less painful cattle identification techniques	% of 27,536,177
Australia	Banning painful head branding of cattle	% of 2,817,749
Australia	Requirement of pain relief for castration	66,012
Australia	Requirement of pain relief for dehorning	174,733
Australia	Conditional use of caustic disbudding	% of 24,346
Australia	Accreditation and competency required for spaying	% of 730,621
Australia	Requirement of pain relief for spaying	244,417
Australia	Banning the use of vaginal spreaders	10,174
Australia	Inspection of calving cattle	% of 14,568,089
Australia	Humane killing or receipt of colostrum for induced calves less than 12hrs old	% of 84,139
Australia	Prevention of accumulation of faeces and urine in calf rearing indoor systems	548
Australia	Improved heat stress management for dairy cattle	% of 1,600,000
Australia	Tail docking only to occur under veterinary advice and for welfare reasons	61,800
Australia	Improved heat stress management and dietary outcomes for cattle in unaccredited feedlots	unknown
Australia	Humane killing of calves over 24hrs of age	unknown

Appendix 7 – Full list of questions asked during the public consultation

Public consultation question 1: In your experience, to what extent do the existing MCOP and related regulations create uncertainty for industry? Does such uncertainty vary between different states and territories?

Public consultation question 2: Do you have evidence of the percentage of cattle farming businesses that operate in more than one jurisdiction and how many cattle are likely to be affected? Please provide percentage estimates for various combinations of states and territories.

Public consultation question 3: Do you have evidence of jurisdictional differences in welfare standards for cattle that result in the need to use multiple farming practices within the same farming business? If so, does this result in higher costs to farmers? How much are these additional costs?

Public consultation question 4: Do you know of other differences in current state or territory welfare standards for cattle; and if so, what are these?

Public consultation question 5: Do you believe that the net benefits achieved under option A, including welfare benefits and reduction in excess regulatory burden, are justified?

Public consultation question 6: Do you believe that the net benefits achieved under option B, including welfare benefits and reduction in excess regulatory burden, are justified?

Public consultation question 7: Do you believe that the benefits achieved under Variation C1 of Option B, including welfare benefits of pain relief with spaying and reduction in excess regulatory burden, are justified?

Public consultation question 8: Do you believe that the benefits achieved under Variation C2 of Option B, including welfare benefits of banning flank spaying and webbing and reduction in excess regulatory burden, are justified?

Public consultation question 9: Do you believe that the benefits achieved under Variation C3 of Option B, including welfare benefits of banning tethering and reduction in excess regulatory burden, are justified?

Public consultation question 10: Do you believe that the benefits achieved under Variation C4 of Option B, including welfare benefits of banning the use of dogs on calves and reduction in excess regulatory burden, are justified?

Public consultation question 11: Do you believe that the benefits achieved under Variation C5 of Option B, including welfare benefits of banning caustic dehorning and reduction in excess regulatory burden, are justified?

Public consultation question 12: Do you believe that the benefits achieved under Variation C6 of Option B, including welfare benefits of banning induction of early calving except for veterinary requirements and reduction in excess regulatory burden, are justified?

Public consultation question 13: Do you believe that the benefits achieved under Variation C7 of Option B, including welfare benefits of banning electro-immobilisation and reduction in excess regulatory burden, are justified?

Public consultation question 14: Do you know the number or percentage of dogs requiring training or any information under proposed standard S5.4 to improve the estimation of costs?

Public consultation question 15: Do you know the number or percentage of dogs requiring muzzling proposed standard S5.5, or any information to improve the estimation of costs?

Public consultation question 16: Do you know the number or percentage of cattle tethered and requiring exercise under proposed standard S5.6 or any information to improve the estimation of costs?

Public consultation question 17: Do you know the number or percentage of cattle subject to electro-immobilisation, the number of farmhands requiring training under proposed standard S5.7 or any information to improve the estimation of training costs?

Public consultation question 18: Do you know the number or percentage of cattle requiring pain relief for castration under proposed standard S6.2; or any information to improve the estimation of costs?

Public consultation question 19: Do you know the number or percentage of cattle requiring pain relief under for dehorning under proposed standard S6.4; or any information to improve the estimation of costs?

Public consultation question 20: Do you know the number or percentage of calves are currently being dehorned using caustic chemicals that would benefit from the conditions

specified under proposed standard S6.5? Do you have any information to improve the estimation of costs?

Public consultation question 21: Do you know the number or percentage of businesses that would otherwise choose to apply caustic chemicals under the aforementioned conditions in the proposed standard S6.5 – and that are currently unable to do so? What would the typical cost savings be per calf?

Public consultation question 22: Do you know the number or percentage of farm hands requiring training for spaying under proposed standard S6.7; or any information to improve the estimation of costs?

Public consultation question 23: Do you know the number or percentage of cattle requiring pain relief under proposed standard S6.8 for spaying or any information to improve the estimation of costs?

Public consultation question 24: Do you know the number or percentage of cattle affected under proposed standard S6.9 to ban vaginal spreaders for small or immature cattle; or any information to improve the estimation of costs?

Public consultation question 25: Do you know the number or percentage of cattle inspections required under proposed standard S7.2 for the inspection of calving cows, additional costs or any information to improve the estimation of costs?

Public consultation question 26: Do you know the number or percentage of cattle affected under proposed standard S8.4 to improve hygiene or any information to improve the estimation of costs?

Public consultation question 27: Do you know the number or percentage of dairy cattle that are adversely affected by heat stress? Do you have any other information to improve the estimation of costs under the proposed standard S9.2?

Public consultation question 28 Do you know the number or percentage of cattle affected under proposed standard S9.3 to severely limit tail docking to treat injury or disease, or any information to improve the estimation of costs?

Public consultation question 29: Do you know the number or percentage of cattle that are adversely affected by poor diet in feed lots? Do you have any other information to improve the estimation of costs under the proposed standard S10.2?

Public consultation question 30: Do you know the number or percentage of feedlots affected under proposed standard S10.2 for feed record keeping or any information to improve the estimation of costs?

Public consultation question 31: Do you know the number or percentage of cattle in unaccredited feedlots that are affected by adverse welfare outcomes due to not being fed fresh feed each day as required under proposed standard S10.3?

Public consultation question 32: Do you know the number or percentage of feedlots affected under proposed standard S10.4 to conduct heat risk assessments or any information to improve the estimation of costs?

Public consultation question 33: Do you know the number or percentage of cattle affected under proposed standard S11.5 for humane killing; or any information to improve the estimation of costs?

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On behalf of:
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