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Sheepmeat Industry Strategic Plan (SISP)

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Abbreviations and Glossary

ABARES	Australian Bureau of Agricultural and Resource Economics and Sciences
ABS	Australian Bureau of Statistics
BCA	Benefit Cost Analysis
CWT	Carcase Weight
FIP	Feedbase Investment Plan
GFC	Global Financial Crisis
GICA	Goat Industry Council of Australia
GVP	Gross Value of Production
KPI	Key Performance Indicator
LPI	Livestock Production Innovation
MLA	Meat and Livestock Australia
MSA	Meat Standards Australia
RD&E	Research, Development & Extension
SCA	Sheepmeat Council of Australia
SISP	Sheepmeat Industry Strategic Plan

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Naturally all errors and omissions remain the responsibility of the authors.

Executive Summary

This document is a report on progress toward meeting a range of Sheepmeat Industry Strategic Plan (SISP) performance indicators and a benefit cost analysis of the Plan.

Review of seventeen important SISP KPIs using a 'traffic light' analysis indicates that six are likely to be achieved; six are possible and five are either unlikely to be achieved or require a major data collection effort before determination. Themes addressing sheepmeat Quality and Animal Health are least likely to have been delivered or have insufficient data to make an objective determination.

Investment in the SISP mid-way through its implementation has been assumed to produce a number of benefits, only two of these benefits have been valued (increased carcase weight and increased weaning rate).

A total investment in the SISP, including co-investor contributions of $279.23 million (in present value terms) has been assumed to produce gross benefits of $641.16 million (in present value terms) providing a net present value of $361.94 million and a benefit cost ratio of 2.3:1 (over 30 years, using a 7% discount rate). The internal rate of return on funds invested is estimated at 17.9%.

The results of this analysis inform a planned review of the SISP in July 2012.

1 Introduction

1.1 Study Purpose

This document is a report on progress toward meeting a range of Sheepmeat Industry Strategic Plan (SISP) performance indicators and a benefit cost analysis (BCA) of the Strategy. It was prepared by AgEconPlus and Meat and Livestock Australia (MLA) between March and July 2012.

1.2 Study Background and Approach

The SISP provides a blueprint for investment in the sheepmeat industry for the period 2010 to 2015. The SISP Vision is *Australia is the leading supplier of premium lamb and sheepmeat to the world.* The plan is organised into seven strategic themes that target sustainability and profitability. Within each theme there are strategies, stakeholder responsibilities and key performance indicators (KPIs). The Overarching KPI is: *A 25% increase in gross value of production (farm gate) between 2010 and 2015.*

The study required review of SISP KPIs, selection of a subset of the most measurable and meaningful indicators; quantification of the industry impact when these indicators are delivered and use of progress towards indicator delivery to inform a benefit cost analysis. The benefit cost analysis was completed at the whole plan level. Case studies were also completed on selected themes. Cost data was extracted by MLA from SISP project records.

Both KPI review and BCA benefited from data and analysis completed as part of the SISP mid-term review. The mid-term review was managed by Maria Thompson, AgSTAR Projects.

2 Selection of SISP KPIs for Quantification

The SISP includes almost one hundred potentially measurable actions that could be classed as a plan KPI. From this long list of indicators a subset were selected for review and possible quantification. Rationale for selecting a KPI included:

- Consideration of a measurable indicator for each of the seven SISP themes.
- Relevance to both lamb and mutton where this was possible.
- The potential for achievement to deliver a meaningful outcome for sheepmeat producers (e.g. increase in carcase weight).
- Indicators with a high attribution potential – i.e. a change in the KPI is more likely to be in response to SISP investment than say a change in seasonal conditions or commodity markets.
- The existence of independent time series data available for the pre plan period and at regular intervals during the SISP and after its completion. For this reason indicators that could be populated with ABARES farm survey information or ABS statistics were preferred.
- KPIs that are relevant to the completion of a BCA.

The following SISP KPIs were considered for analysis.

Table 2.1 SISP KPIs Reviewed

Strategic Theme or Overarching Goal	Key Performance Indicator
Overarching Goal	1. 25% increase in the gross value of production (farm gate) of lamb and sheepmeat between 2010 and 2015
Meeting demand / production	2. Increase carcase weights by an average of 0.5 kg per annum by 2015 3. Increase weaning rates by 2% per annum by 2015 4. Increase ewe numbers to 45 million by 2015 (KPI revised and deleted May 2012) 5. Improve lamb forecasting accuracy by reducing the difference between predicted and actual production at national, regional and sectoral level to be within 5% by 2012
Quality	6. Increase lean market yield by 20% in 42% of lambs whilst maintaining or improving eating quality by 2014
Environment	7. Increase sown perennial pastures by 5% compared to 2001 8. Commercial release new pig specific bait by 2012 9. Commercial release of a new wild dog and fox control by 2012
Consumers, product integrity and market	10. Consumer expenditure on lamb in the domestic market to increase $300 million by 2015
Welfare	11. Ensure the Animal Welfare Standards and Guidelines implementation process achieves nationally consistent livestock welfare regulatory outcomes by 2012
Health	12. Reduce morbidity and mortality due to endemic disease by 20% by 2015 by the initiation and promotion of national and regional programs 13. Reduce weaner mortality 10% by 2013 14. Reduce cost of parasites and their management by 5% by December 2013
People and relationships	15. Review existing approaches to labour services for small to medium farmers and explore new innovative approaches by 2012 16. Hold biennial lamb industry conventions commencing 2012 17. Hold SISP review in 2012.

3 KPI Base and Progress Forecast

Indicator base data, pre the SISP, and forecast changes post the SISP are presented in this chapter.

3.1 Gross Value of Production Change

Indicator: *'25% increase in the gross value of production (farm gate) of lamb and sheepmeat between 2010 and 2015'*.

Data source: ABARES (undated) Excel file provided by MLA (Project Manager Evaluation 13 June 2012). The gross value of production is the value placed on recorded production at the wholesale prices realised in the market place. The point of measurement can vary between commodities. Generally the market place is the metropolitan market in each state and territory. However, where commodities are consumed locally or where they become raw material for a secondary industry, these points are presumed to be the market place. Prices used in these calculations do not include the GST. Data also excludes the value of sheep skins. Note the indicator is specified as a farm gate value and GVP estimates are provided carcase dressed weight.

Base Case Estimate: Under the base case (i.e. no SISP in place) Australian sheepmeat GVP has increased at an average rate of 4% per annum while lamb GVP has increased at 11% per annum. At base case rates of growth the sheepmeat industry will be valued at $555.3 million (25% increase on ten year average) and the lamb industry at $1,772.4 million (25% increase on ten year average) by 2015.

Table 3.1 Gross Value of Production Sheep and Lambs ($' million and % increase)

Year	Sheep	Lambs
2001	367.6 (n/a)	776.5 (n/a)
2002	544.5 (48%)	1,181.4 (52%)
2003	467.7 (-14%)	1,160.9 (-2%)
2004	454.2 (-3%)	1,318.1 (14%)
2005	417.8 (-8%)	1,327.0 (1%)
2006	443.6 (6%)	1,377.6 (4%)
2007	380.0 (-14%)	1,387.2 (1%)
2008	400.1(5%)	1,481.4 (7%)
2009	427.8 (7%)	1,725.3 (16%)
2010	498.5 (17%)	1,831.8 (6%)
2011	484.5 (-3%)	2,029.4 (11%)
Average	**444.2 (4%)**	**1,417.9 (11%)**

Source: ABARES (undated spreadsheet from MLA)

Impact if SISP Achieved: To achieve the SISP KPI, sheepmeat GVP will need to grow at an average of 5% per annum while lamb GVP will comfortable achieve the overarching KPI at current rates of growth.

3.2 Carcase Weight Change

Indicator: '*Increase carcase weights by an average of 0.5 kg per annum by 2015*'.

Data source: ABARES (June 2011) Australian Lamb: Financial Performance of Slaughter Lamb Producing Farms 2008-09 to 2010-11, Table 1 page 2.

Base Case Estimate: Under the base case (i.e. no SISP in place) the Australian lamb industry has achieved an annual average increase in carcase weight of 0.21 kg per annum, lifting average carcase weight from 19.7 kg in 2001 to 21.6 kg in 2010. In the absence of the SISP it is assumed that this average increase is maintained resulting in an average lamb carcase weight of 22.65 kg by 2015.

Table 3.2 Average slaughter weight of lambs slaughtered 2001 to 2010 (kg per head)

Year	Kg/head	Annual Increase (kg)
2001	19.7	
2002	19.8	0.1
2003	20.1	0.3
2004	20.4	0.3
2005	20.6	0.2
2006	20.5	-0.1
2007	20.8	0.3
2008	20.4	-0.4
2009	20.7	0.3
2010	21.6	0.9
	Average increase	**0.21**

Source: ABARES June 2011

Impact if SISP Achieved: If the SISP KPI is to be achieved the average increase in lamb carcase weight will need to be greater than the 0.21 kg per annum achieved under the base case. Forecast increase in carcase weight 2010 to 2015 'with' and 'without' the SISP is shown in Table 3.3.

Table 3.3 Increase in slaughter weight with and without the SISP (kg per head)

Year	'Without' SISP increase in slaughter weight	'Without' SISP Slaughter Weight	'With' SISP increase in slaughter weight	'With' SISP Slaughter Weight
2011	0.21	21.81	0.21	21.81
2012	0.21	22.02	0.28	22.09
2013	0.21	22.23	0.36	22.45
2014	0.21	22.44	0.43	22.88
2015	0.21	22.65	0.50	23.38

Source: AgEconPlus analysis

Average slaughter weight will be 23.38 kg with the SISP KPI realised compared to 22.65 kg without SISP investment in 2015.

Conclusion on KPI: Important indicator for the strategic plan, measurement includes an allowance for increases due to non SISP factors (investment counterfactual). Include data from this indicator in the benefit cost analysis.

3.3 Weaning Rate Change

Indicator: *'Increase weaning rates by 2% per annum by 2015'*.

Data source: ABARES (June 2011) Australian Lamb: Financial Performance of Slaughter Lamb Producing Farms 2008-09 to 2010-11, Table 4, page 7 provides data for 2008-09 to 2010-11. Previous issues of this publication were sourced to develop a time series and data has not always been reported on a like for like basis. Note time series may also be available from the ABS.

Base Case Estimate: Under the based case (i.e. no SISP in place) Slaughter Lamb Producers have achieved an annual average weaning rate of 89% over the period 2001-02 to 2010-11 and there is no trend in annual data i.e. weaning rate was the same in 2010-11 as it was in 2001-02.

Table 3.4 Average weaning rate for slaughter lamb producers 2001 to 2010 (%)

Year	Weaning rate (%)	Annual Increase
2001-02	93	
2002-03	94	1
2003-04	87	-7
2004-05	92	5
2005-06	N/a	N/a
2006-07	85	-4
2007-08	86	1
2008-09	87	1
2009-10	88	1
2010-11	93	5
Average	**89**	**0**

Source: ABARES June 2011, ABARES similar publications 2010 to 2002

Impact if SISP Achieved: If the SISP KPI is to be achieved an average annual increase in weaning rate will need to occur between 2011 and 2015. Forecast increase in weaning rate 'with' and 'without' the SISP is shown in the table.

Table 3.5 Increase in weaning rate with and without the SISP (%)

Year	'Without' SISP increase in weaning rate	'With' SISP increase in weaning rate
2011	89	89
2012	89	89
2013	89	90
2014	89	90
2015	89	91

Source: AgEconPlus analysis

Average weaning rate will increase from 89% to 91% by 2015.

Conclusion on KPI: Important indicator for the strategic plan, no trend in this indicator apparent at the current time. Include data from this indicator in the benefit cost analysis.

3.4 Ewe Numbers

Indicator: '*Increase ewe numbers to 45 million by 2015*'.

Data source: ABS Agricultural Commodities, Australia Catalogue number 71210.0 various editions.

Base Case Estimate: Under the base case (i.e. no SISP in place) Australian ewe numbers that have been in decline since the wool price crash of the late 1980s, bottomed in 2009. ABARES (March 2011) forecast a modest recovery in ewe numbers – 45 million in 2015 based on underlying supply and demand.

Table 3.6 Total sheep and breeding ewes one year and over 2001 to 2010 ('000)

Year	Total Australian Sheep	Breeding ewes
2001	110,928	47,012
2002	106,166	45,813
2003	99,252	43,741
2004	101,288	43,772
2005	101,125	46,147
2006	91,028	48,605
2007	85,711	46,431
2008	76,938	45,411
2009	72,740	40,867
2010	68,085	42,265

Source: ABS Agricultural Commodities Australia Catalogue number 7121.0 (various editions)

Impact if SISP Achieved: The SISP KPI target of an Australian flock with 45 million ewes is consistent with the ABARES forecast.

Conclusion on KPI: Given the trend toward increasing breeding ewe numbers under the base case it would be difficult to attribute an increase in ewe numbers to 45 million by 2015 to the SISP. No increase in ewe numbers attributable to the SISP is assumed. An annual increase in turnoff due to increased weaning rates (0.4% pa) is modelled.

Note: this KPI was revised and deleted in May 2012.

3.5 Industry Forecasting

Indicator: '*Improve lamb forecasting accuracy by reducing the difference between predicted and actual production at national, regional and sectoral level to be within 5% by 2012'*.

Data source: An excerpt from an MLA forecasting report showing 5-year accuracy, at the national level, to be within 3.5% of actual (provided 15 May 2012).

Conclusion on KPI: KPI achieved. Data not relevant to the benefit cost analysis.

3.6 Lean Meat Yield

Indicator: '*Increase lean market yield by 20% in 42% of lambs whilst maintaining or improving eating quality by 2014'*.

Data source: This indicator is associated with the 'quality' theme and therefore the key component may be 'maintaining or improving eating quality'. Data may be available through MSA.

Conclusion on KPI: KPI quantification based on increased market yield may risk double counting the SISP benefit associated with increased carcase weights. Changes in this indicator are not included in the benefit cost analysis.

3.7 Area of Sown Pastures

Indicator: *'Increase sown perennial pastures by 5% (compared to 2001)'*.

Data source: Both the MLA Feedbase Investment Plan (FIP) January 2011 (page 126) and ABS (Cat No 7121.0) provide data on 'land area sown to pastures and grasses'. These data can be broken up into either livestock and pasture zone or states so that northern Australian pasture investments, relevant only to cattle can be excluded.

Base Case Estimate: In 2001 the area sown to pastures and grasses in southern pastoral zones totalled approximately 20.94 million hectares. By 2009 it had decreased to 15.42 million hectares (FIP January 2011). There are problems with these data given drought induced declines in sowing (Project Manager, Pastures & Resource Management MLA, May 2012).

Impact if SISP Achieved: An increase in sown pasture area of approximately 5.52 million hectares would have implications for lamb turnoff and a significant increase would be expected (Note, not all of the additional sown pasture would be used for lamb production. For example dairy is highly dependent on sown pasture).

Conclusion on KPI: there is scope for double counting with other MLA investments (e.g. MLA Feedbase Investment Plan) if increased pasture area and resultant increased lamb turnoff is included in the benefit cost analysis. Changes in this KPI are not included in the analysis.

3.8 New Pig Bait

Indicator: *'Commercial release new pig specific bait by 2012'*.

Data source: Advice supplied by Project Manager, Pastures & Resource Management MLA, May 2012. Commercial release of HOGGONE is anticipated in late 2013 or early 2014. Shortly after a HOGGONE econobait, a bite-sized bait for use in HOGHOPPER's, and a nitrite concentrate for addition to grain will also be registered. In the meantime graziers can use PIGOUT with or without the HOGHOPPER.

Base Case Estimate: Data on the impact of pig predation on lambs not currently available but believed to be significant.

Impact if SISP Achieved: Significant economic and animal welfare gain possible if new bait more effective than current control options.

Conclusion on KPI: there is scope for a significant economic benefit if reliable base case data on the costs of pig predation can be sourced.

3.9 New Wild Dog and Fox Control

Indicator: *'Commercial release of a new wild dog and fox control by 2012'*.

Data source: Advice supplied by Project Manager, Pastures & Resource Management MLA, May 2012. Commercial release of the DOGABATE and FOXECUTE products is anticipated for late 2013.

Base Case Estimate: Data on the impact of wild dogs and foxes not currently available to this study but believed to be significant.

Impact if SISP Achieved: Significant economic and animal welfare gain possible if new wild dog and fox bait more effective than current control options.

Conclusion on KPI: there is scope for a significant economic benefit is reliable base case data on the costs of wild dog and fox predation can be sourced.

3.10 Consumer Expenditure

Indicator: *'Consumer expenditure on lamb in the domestic market to increase $300 million by 2015'*.

Data source: MLA Publication 'Australian Red Meat 2000-2010 A turbulent decade – a vibrant industry' using a combination of MLA, ABARES, ABS and DAFF data.

Base Case Estimate: Data for the base case period 2001 to 2010 is shown in the table. On average domestic retail expenditure on lamb has increased $84 million per annum.

Table 3.7 Australian expenditure on lamb in the domestic market 2001 to 2010 ($' million)

Year	Expenditure	Annual Increase
2001	1,368	
2002	1,524	156
2003	1,592	68
2004	1,692	100
2005	1,705	13
2006	1,921	216
2007	2,065	144
2008	2,032	-33
2009	2,234	202
2010	2,194	-40
2011 (p)	2,209	15
	Average increase	**84**

Source: MLA 2011

Impact if SISP Achieved: An increase in the domestic retail value of lamb of $300 million by 2015 is somewhat less than the long term trend which would be a $420 million increase by 2015 (i.e. $84 million per annum for five years).

Conclusion on KPI: Increased consumer expenditure on lamb in the domestic market, is a cross check on benefits already quantified as a result of SISP investments. Factors influencing domestic demand for lamb since 2001 were identified by MLA as price, competition from pork and poultry, changes in export demand, supply and the GFC.

3.11 Animal Welfare

Indicator: *'Ensure the Animal Welfare Standards and Guidelines implementation process achieves nationally consistent livestock welfare regulatory outcomes by 2012'*.

Data source: The mid-term review of the SISP identified 'average progress' with this KPI.

Base Case Estimate: Non quantitative estimate – either achieved or not.

Impact if SISP Achieved: Nationally consistent welfare regulations may have implications for the cost of production in some Australian jurisdictions.

Conclusion on KPI: Not readily quantified in a benefit cost analysis framework.

3.12 Mortality and Morbidity

Indicator: *'Reduce morbidity and mortality due to endemic disease by 20% by 2015 by the initiation and promotion of national and regional programs*'

Indicator: *'Reduce average weaner mortalities by 10% by December 2013*'

Data source: Nothing appropriate in the ABARES Farm Survey data. Behrendt *et al* (2010) concluded that weaner mortality often exceeds 6% and that less than 5% was possible. Dr Alex Ball, MLA (personal communication 15 May 2012) reported data showing weaner mortality rates of 14.3% and noted that there are few published targets for sheep mortality in Australia.

Weaner data provided by ABS on a Statistical Division basis Australia wide for 2008 and 2009 (provided MLA Project Manager Evaluation 15 May 2012) shows average weaner mortality of 4.4% and 4.6%.

Base Case Estimate: A base case estimate for weaner deaths of 4.5%, the average of 2008 and 2009 ABS estimates, is used. There is no trend in this data i.e. in the absence of the SISP weaner deaths are likely to remain at or around 4.5% nationally. No adult sheep mortality or morbidity data identified.

Impact if SISP Achieved: A 10% reduction in weaner mortalities would produce important profit and animal welfare outcomes. A target of 4% weaner losses is suggested.

Conclusion on KPI: The weaner mortality KPI will be 'stretch' to achieve.

3.13 Parasites

Indicator: *'Reduce cost of parasites and their management by 5% by December 2013*'.

Data source: Changes in the cost of 'Livestock Materials' is an indicator that can be provided for specialist lamb producers from the ABARES Farm Survey (special data run required). Reporting changes in the cost of 'livestock materials' is unlikely to provide relevant insight.

Base Case Estimate: Data not available.

Impact if SISP Achieved: Reduction in a reasonably important cost of production.

Conclusion on KPI: Poor correlation between changes in the cost of parasite control as a result of SISP investment and the estimate provided by ABARES. An alternative data source such as industry survey or an agreed DPI gross margin needs to be developed.

3.14 Labour, People and Relationships

Indicator: *'Review existing approaches to labour services for small to medium farmers and explore new innovative approaches by 2012'*.

Indicator: *'Hold biennial lamb industry conventions commencing 2012'*.

Indicator: *'Review progress against SISP in an industry workshop to be held in February 2012 (will be held in July 2012)'*.

Data source: Data on labour saving is not available. Progress toward biennial convention has been made and the review of SISP progress will take place in July 2012.

Conclusion on KPI: KPIs are unlikely to be quantifiable in a benefit cost analysis framework.

3.15 Summary

The most useful KPIs for completing a SISP benefit cost analysis are:

- Carcase weight change (above trend increase)
- Weaning rate change (measured annual increase)

4 Impact on the Sheepmeat Industry if KPIs are realised

4.1 Potential Benefit to Industry of SISP Delivery

If the two most important key performance indicators associated with the SISP are delivered in full there are substantial benefits to the Sheepmeat industry – see tables below.

Table 4.1 Potential Impact on Sheepmeat Industry if KPI Realised – Increase Carcase Weight

Year	Net Increase in slaughter weight attributable to SISP (kg/head)	Value of Additional Production ($/kg cwt)	Australian ewe flock (head)	Weaning rate (%)	Value of Carcase weight increase ($)
2011	0.00	5.0	42,300,000	89%	0
2012	0.07	5.0	42,600,000	89%	13,269,900
2013	0.15	5.0	43,000,000	89%	28,702,500
2014	0.22	5.0	44,000,000	89%	43,076,000
2015	0.29	5.0	45,000,000	89%	58,072,500

Source: AgEconPlus analysis

Table 4.2 Potential Impact on Sheepmeat Industry if KPI Realised – Increased Weaning %

Year	Increase in weaning rate as a result of SISP (%)	Australian ewe flock (head)	Value of Additional Production ($/head cwt)	Value of Additional Lambs Sold ($)
2011	0%	42,300,000	109.05	0
2012	0%	42,600,000	109.05	0
2013	1%	43,000,000	109.05	46,891,500
2014	1%	44,000,000	109.05	47,982,000
2015	2%	45,000,000	109.05	98,145,000

Source: AgEconPlus analysis

The SISP has the potential to deliver more than $150 million per annum in producer benefits - $58 million through increased carcase weights and $98 million through additional lambs weaned.

Data is not available on actual progress achieved since SISP implemented commenced in 2011 and assumptions on gain delivered in carcase weight and weaning percentage were therefore required.

4.2 Progress toward Meeting KPIs – 'Traffic Light' Results

In the absence of data to estimate KPIs in 2012, the SISP halfway point, a qualitative 'traffic light' system was adopted – KPI likely to have been achieved (**GREEN**); possible (**ORANGE**); and unlikely to have been achieved (**RED**). Results and commentary are provided in Table 4.3.

Table 4.3 SISP KPI Delivery – 'Traffic Light' Analysis

Strategic Theme or Overarching Goal	Key Performance Indicator	Traffic Light	Comment
Overarching Goal	1. 25% increase in the gross value of production (farm gate) of lamb and sheepmeat between 2010 and 2015	**GREEN**	Overarching goal was realistic and achievable (especially given favourable seasonal conditions from 2010 to 2012). Attribution to the SISP is somewhat tentative.

Meeting demand / production	2. Increase carcase weights by an average of 0.5 kg per annum by 2015	GREEN	An increase in carcase weight, over and above trend apparent in 2011 and this data will be available through MLA in 2015.
	3. Increase weaning rates by 2% per annum by 2015	ORANGE	Ambitious target but appropriate for analysis in the BCA.
	4. Increase ewe numbers to 45 million by 2015	GREEN	Increase in ewe numbers to 45 million is well on the way in 2012. However this increase is likely to be due to factors other than the SISP. Note: KPI has been deleted.
	5. Improve lamb forecasting accuracy to within 5% by 2012.	GREEN	KPI achieved – advice provided by MLA.
Quality	6. Increase lean market yield by 20% in 42% of lambs whilst maintaining or improving eating quality by 2014	RED	No data identified by either the SISP review or AgEconPlus to establish either a base case or analyse change.
Environment	7. Increase sown perennial pastures by 5% (compared to 2001)	ORANGE	Attribution to this plan is unclear.
	8. Commercial release new pig specific bait by 2012	ORANGE	Commercial release likely to occur before 2015
	9. Commercial release of a new wild dog and fox control by 2012	ORANGE	Commercial release likely to occur before 2015
Consumers, product integrity and market	10. Consumer expenditure on lamb in the domestic market to increase $300 million by 2015	GREEN	Lamb expenditure is 'on track' to achieve this KPI.
Welfare	11. Ensure the Animal Welfare Standards and Guidelines implementation process achieves nationally consistent livestock welfare regulatory outcomes by 2012	ORANGE	The mid-term review of the SISP identified 'average progress' with this KPI
Health	12. Reduce morbidity and mortality due to endemic disease by 20% by 2015 by the initiation and promotion of national and regional programs	RED	Data not available
	13. Reduce weaner mortality 10% by 2013	RED	Given that there is no baseline trend in weaner mortality, the estimate developed as part of this study may be too low. Furthermore, it is unlikely that a current weaner mortality rate of 4.6% will be reduced by 10% by 2013.
	14. Reduce cost of parasites and their management by 5% by December 2013	RED	Data not available.

People and relationships	15. Review approaches to labour services	RED	Data not available
	16. Hold biennial lamb industry conventions commencing 2012	ORANGE	Progress toward biennial lamb conference made
	17. Hold SISP review	GREEN	SISP review is underway and will be delivered 2012.

Themes addressing sheepmeat Quality and Animal Health are least likely to have been delivered in 2012, two years into SISP implementation.

5 Ex Poste Benefit Cost Analysis

Ex poste benefit cost analysis was completed in a standard benefit cost analysis framework (see CRRDC Guidelines 2009) and a real discount rate of 7% was applied. Sensitivity analysis was completed on key assumptions.

5.1 Cost of SISP Investment

The cost of SISP investment 2010 to 2015 was established with the assistance of MLA. MLA investments in the SISP include both Research and Marketing funds. MLA funds have been matched by research provider and other agency co-investment (Table 5.2).

Table 5.1 Cost of SISP Investment 2010 to 2015 – MLA and Co-Investors ($'000)

Strategic Theme	Funding Source	2010-11	2011-12	2012-13	2013-14	2014-15	Total
Meeting demand / production	MLA	3,699	3,699	3,699	3,699	3,699	18,495
	Co-investors	3,699	3,699	3,699	3,699	3,699	18,495
Quality	MLA	3,649	3,649	3,649	3,649	3,649	18,245
	Co-investors	3,649	3,649	3,649	3,649	3,649	18,245
Environment	MLA	1,473	1,473	1,473	1,473	1,473	7,365
	Co-investors	1,473	1,473	1,473	1,473	1,473	7,365
Consumers, product integrity and market	MLA	18,731	18,731	18,731	18,731	18,731	93,655
	Co-investors	18,731	18,731	18,731	18,731	18,731	93,655
Welfare	MLA	212	212	212	212	212	1,060
	Co-investors	212	212	212	212	212	1,060
Health	MLA	1,283	1,283	1,283	1,283	1,283	6,415
	Co-investors	1,283	1,283	1,283	1,283	1,283	6,415
People and relationships	MLA	2,776	2,776	2,776	2,776	2,776	13,880
	Co-investors	2,776	2,776	2,776	2,776	2,776	13,880
Total		**63,646**	**63,646**	**63,646**	**63,646**	**63,646**	**318,230**

Source: MLA analysis, June 2012

Annual MLA investment in the SISP is approximately $31.8 million. Total investment over five years is forecast at $318 million.

5.2 Benefit Estimation

KPI review identified two major sheepmeat industry benefits likely to result from SISP investment – increased carcase weight and increased weaning percentage. At the SISP 'half way point' data is not available to quantify sheep producer benefits. In the absence of objective data realistic assumptions have been made using the KPI analysis. Assumptions are summarised in Table 5.2.

Table 5.2 Summary of Assumptions

Variable	Assumption	Source and comment
Net increase in carcase weight attributable to the SISP	0.5 kg per annum by 2015	SISP KPI is achieved but estimate modelled is after base case gain in carcase weights of 0.21kg per annum.
Year in which carcase weight increase commences	2012	Consultant assumption based on KPI review.
Value of additional production	$5/kg cwt	Average carcase weight value supplied by MLA.
Lamb population to which benefit is potentially applicable	38 million	Estimate changes over analysis period and is based on Australian ewe population and weaning rate data.
Increase in weaning rate as a result of SISP (%)	Increase weaning rates by 2% per annum by 2015	SISP KPI is achieved and estimated as a shift from an industry average weaning rate of 89% to 91% by 2015. After 215 these is no further gain attributable to the SISP.
Value of additional production ($/head cwt)	$109.05/head cwt	Based on carcase weight of 21.81 kg and an average carcase weight value of $5/kg supplied by MLA.
Adoption rate	50%	Consultant estimate based on review of the SISP
Probability of research success	80%	Consultant estimate based on review of SISP Key Performance Indicators

5.3 Summary of BCA Results including Sensitivity Testing

Benefit cost analysis results for the SISP using the data described in the tables above is summarised in Table 5.3.

Sensitivity testing will be completed following review of the draft report by MLA.

Table 5.3 Benefit Cost Analysis Results (Discount rate 7%, 30 years)

Criterion	Sensitivity Test	Core Assumptions
Present value of benefits ($' million)		641.16
Present value of costs ($' million)		279.23
Net present value ($' million)		361.94
Benefit cost ratio		2.3
Internal rate of return (%)		17.9

Only benefits from two SISP KPIs have been evaluated (increased carcase weight and increased weaning rate) against the total SISP cost that includes all MLA research and marketing funds along with 'cash and in-kind' co-investor contributions.

5.4 Case Study Analysis – selected SISP Themes

Case studies can be either analysed as standalone activities or integrated into the whole plan evaluation. With additional data or assumptions, possible case studies may include new pig, wild dog and fox baits; parasite control cost savings and the benefit of reduced mortality and morbidity.

Case studies to be selected following discussion with MLA.

6 KPI Review and Benefit Cost Analysis Conclusions

Review of seventeen important SISP KPIs using a 'traffic light' analysis indicates that six are likely to be achieved; six are probable and five are either unlikely to be achieved or require a major data collection effort for determination. Themes addressing sheepmeat Quality and animal Health are least likely to have been delivered two years into SISP implementation.

Investment in the SISP mid-way through its implementation has been assumed to produce a number of benefits, only two of these benefits have been valued (increased carcase weight and increased weaning rate). A total investment in the SISP, including co-investor contributions of $279.23 million (in present value terms) has been assumed to produce gross benefits of $641.16 million (in present value terms) providing a net present value of $361.94 million and a benefit cost ratio of 2.3:1 (over 30 years, using a 7% discount rate). The internal rate of return on funds invested is estimated at 17.9%.

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