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## **Meat and Livestock Australia**

### **Ex Post Evaluation of Program 2.3 - Developing New Markets & Products**

#### **Cost Benefit Analysis Report**

July 2011



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## Abbreviations used in the Report

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<b>CBR</b>	Cost Benefit Ratio
<b>cwt</b>	Carcass weight – generally at the abattoir scales on a body to Ausmeat trim.
<b>EBIT</b>	Earnings Before Interest and Tax
<b>AOP</b>	Annual Operating Plan (MLA)
<b>POS</b>	Point of Sale
<b>MDC</b>	MLA Donor Company Limited
<b>PIP</b>	Plant Initiated Project
<b>PIIP</b>	Partners in Innovation Program
<b>PIPP</b>	Plant Initiated Project Program
<b>RMI</b>	Red Meat Innovation
<b>VARM</b>	Value Added Red Meat
<b>RDC</b>	Research & Development Corporations
<b>SKU</b>	Stock Keeping Unit
<b>CBN</b>	Creative Butcher Network
<b>POS</b>	Point Of Sale



## Executive Summary

- ▶ This report is the ex-post evaluation of the MLA program 2.3 developing new markets & products. The report considers the benefits arising from co-investment in projects by industry and Government in the development of red meat value added products over the period from 1998 - 2015. These benefits are determined as being those arising from the investment made by MLA and its partners over the period 1998 – 2008
- ▶ The initial approach to determine the cost/benefit of the program was based on the using the Council of Rural Research & Development Corporation Chairs, *Guidelines for Evaluation*, 2009 which was developed by ACIL Tasman to facilitate a consolidated rural industries cost/benefit outcome using this standard model. After testing the response of the program adoption data using this generic model of sector wide on-farm adoption GHD concluded that it was not suitable for the evaluation of this sort of program because of the highly targeted commercialisation pathway that had been developed for its research outputs. At a meeting between MLA and GHD the limitations of the generic RDC model were discussed and the decision was taken to develop an alternative cost/benefit model that was more suited to this type of program and the available evidence of adoption and associated sales data.
- ▶ Relevant projects were selected from the MLA projects database and the project files downloaded for review. The projects were then separated into outcome clusters as suggested in CRRDCC guidelines above.

The outcome cluster grouping used for the projects is as follows:

1. Creative Butcher Network & Retail Technology Development
  2. Shelf Stable Technology Development
  3. Value Added Products (including Woolworth's Sizzle Steak)
  4. Meat Strip Alignment (MSAT)
  5. Functional Foods
  6. Advanced Meat Recovery
- ▶ Cluster Groups 1, 2 & 3 above are considered to be projects that have generated outputs that have been developed to a point where either the outcomes are available to processors or they have aided in the development of new products with evidence of a clear pathway to market and consequently have provided measurable outcomes from the work.
  - ▶ The additional industry benefit arising from these first three clusters is estimated to range between **4.99 to 11.06** times the total cost of the entire program including estimated costs incurred by processors & value adders who had adopted these program outputs.
  - ▶ These adoption costs include the costs of the budgeted PIIP & PIPP projects as well as an allocation of projects funded by MLA that were the precursors of the relevant PIIP & PIPP projects via which the new value added products were taken to the consumer. It is important to note that the post project implementation costs incurred by the industry partners (often in-kind costs at least 2 to 3 times more than the cash cost of the industry partner share of the partnership project) are not included in the base calculation of this cost/benefit.



- ▶ Both the shelf stable technology development and the Sizzle Steak outcomes have both increased the price of the same cuts used for other retail products suggesting the possibility of a benefit distribution in the form of higher livestock prices up the supply chain arising from sale of these cuts value added products. These immediate price benefits have been included in the benefits attributed to these projects, but the secondary effects of increased demand for other substitute cuts has not been assessed.
- ▶ There have also been additional spill over benefits generated by the shelf stable technology development for other industry sectors (in particular rice). Insufficient data is available to be able to quantify this impact in financial terms and therefore these benefits, whilst very real, have not been assessed in this evaluation.
- ▶ In its consideration of the counterfactual for each of these outcomes, GHD interviewed the managers of the partner companies involved in the development of the value added barbeque range (e.g. Sizzle Steak) and a variety of shelf stable products. In each case the view was that it was likely that the research outputs would have been created anyway 'without' investment by MLA because they were being driven by a commercial imperative to develop new products in order for these companies to grow. The need for companies supplying to consumers to innovate and develop products is not in question, however value adders being 'secondary processors' have a choice of where to invest in new products and also a decision to make on the available options for protein component of the project (chicken, pork, tofu etc.). The support provided by MLA ensures that the new product activity includes a focus on red meat as the primary protein source for the new product development thereby providing direct benefit to the red meat industry.
- ▶ In each case the involvement of MLA was considered to have brought forward these developments, provided structure, support and delivery as well as providing confidence to other parties involved in championing the new product development projects and subsequently bringing products to market.



## 1. Introduction

This report is an ex-post evaluation of the MLA program 2.3 developing new markets & products. The reported work has adopted a bottom up approach to the evaluation of this program, in order to articulate the industry and social benefits arising from co-investment by Industry and Government in the development and launch of new value added products over the period from 1998 - 2015. These benefits are determined as being those arising from the investment made by MLA and its partners over the period 1998 – 2008.

The initial approach to determine the cost/benefit of the program was based on the using the Council of Rural Research & Development Corporation Chairs, *Guidelines for Evaluation*, 2009 which was developed by ACIL Tasman to facilitate a consolidated rural industries cost/benefit outcome using this standard model. After testing the response of the program adoption data using this generic model of sector wide on-farm adoption GHD concluded that it was not suitable for the evaluation of this sort of program because of the highly targeted commercialisation pathway that had been developed for its research outputs. At a meeting between MLA and GHD the limitations of the generic RDC model were discussed and the decision was taken to develop an alternative cost/benefit model that was more suited to this type of program and the available evidence of adoption and associated sales data.

The report is made up of three main sections for this evaluation:

- ▶ The background and context for the review including the selection of projects for review
- ▶ The derivation of the cost benefit outcomes including the methodology underlying the model
- ▶ Commentary on other factors and the context of the outcomes of the work including lessons learnt from the research and development.





## 2. Background – Value Adding Program

Changing population demographics, expanding menu choices, meals eaten out of the home and time poor working families have led to the need for processors and value adders to adapt to changing market conditions whilst still maintaining margins and profitability. Competing non-red meat protein sources (chicken, pork etc) face the same challenges and are also continuing to adapt at the same time, although for some proteins and market niches this is easier than for others.

The MLA program 2.3, Developing New Markets and Products is part of the MLA strategic plan 2007 – 2011 included in the group of programs supporting the strategic imperative of growing red meat demand.

MLA program 2.3 has been preceded by previous programs/projects (refer *Table 1* below) that all contributed to the development of prototype technologies and concepts to a point where they can be ‘commercial ready’ and then further developed in partnership with industry to provide value added products to consumers.

Time Frame	Program Name	Sub Programs
1999/00 to 2001/2	1. Building demand for our products	1.4.1 and 1.4.2 Product and merchandising innovation
1999/00 to 2001/02	CSIRO Strategic research	STR024, STR.025 Fibre alignment (pre MSAT)
2002/03 to 2005/06	1. Building demand for our products	1.4.1 Red Meat innovation
2006/07 to 2007/08	1. Growing demand	1.5.1 Red Meat product innovation
2001/02 to 2008/09	PIIP and PIPP	Approx 30 value added products

*Table 1* MLA Programs related to the projects in program 2.3 – Developing New Markets & Products

Through the life of this program of investment MLA was seeking to assist the industry to:

- ▶ Identify new market opportunities for value added products
- ▶ Expand demand for low value cuts and by-products, (i.e. capture some of the unrealised value of the carcass)
- ▶ Attract convenience driven buyers with good quality low cost red meat offerings; premium buyers with enhanced taste and indulgence propositions; health driven buyers with nutritionally enhanced concepts and products
- ▶ Develop advanced technology platforms to provide the red meat industry with a competitive advantage through value adding.



As these industry programs and projects address the entire range of these issues and predate the development of Partnership Projects. The proportion of these pre-commercial industry funds allocated to the cluster of PIIP and PIPP projects that subsequently commercialised these research prototypes and concepts has been estimated as a proportion of the total funds expended on these pre-commercial projects. Whilst this methodology is based on a lot of expert judgement and 'reality tested' assumptions the determination of cost/benefit ratios for each of the outcome cluster groupings has been done in a consistent manner and confidence in these results is supported by sensitivity analysis of key variables contributing to estimate of the benefits arising.



## 3. Scope of the Evaluation

### 3.1 Scope of Work

The scope of work for this project is to carry out an ex-post evaluation to articulate the industry and social benefits arising from co-investments by industry and Government in the development and launch of new value added products over the period 1998 – 2015. These benefits will be those arising from the investment made by MLA and its partners over the period 1998 – 2008.<sup>1</sup>

### 3.2 Underlying Key Assumptions in Program 2.3 Development

In the assessing of the outcomes of the program and the associated benefits arising from MLA and partner investments in the development of added value products the following assumptions were considered as an integral part of the review process.

1. The key target beneficiaries for the outcomes of this investment are not only producers, but rather all parts of the red meat supply chain including; retail, foodservice and export channels.
2. The MLA Partners in Innovation and Plant Initiated Projects Programs (PIIP & PIPP) are the enabling mechanisms for the partnerships between MLA and the processing, value adding, retail, foodservice and export sectors; that are necessary to bring research prototypes and concepts to market.

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<sup>1</sup> This work is described in MLA document 2.3 RFP\_Dec09\_vfinal.doc



### 3.3 Allocation of MLA funds to program outcome clusters

Prior to the initiation of the PIPP and PIIP projects, reviewed in this analysis, there were a number of pre-commercial “Industry” funded projects that were completed (Note: “Industry” funded projects are those with no cash contribution from specific commercial partner enterprises).. These industry funded projects typically provided research prototypes and concepts that further developed by industry partners to the new product development via the relevant PIPP and PIIP projects.

These “Industry” funded project costs have been allocated across the outcome cluster groups of PIPP and PIIP projects as outlined in *Table 2* below.

In the total costs for each of the outcome clusters identified in this program is the sum of the proportion of industry funds allocated (outlined in *Table 2*) and the total partnership project expenditures including the cash contribution by the specific enterprises participating in the project.

These “Industry” costs have not been included in the calculation of the cost benefit ratio for the partner companies involved in the PIPP and PIIP projects.

The allocation of projects to outcome cluster groups for this assessment is outlined in section 6 of this document.

The funds have been allowed for in the year in which they were expended and were allocated to each outcome cluster as follows<sup>2</sup>:

*Table 2 Program 2.3 industry funded project costs (funds expended prior to the initiation of follow-on PIPP and PIIP projects)<sup>3</sup>*

MLA Program Costs	1999	2000	2001	2002	2003	2004	2005	2006	2007	Total	
Creative Butcher/Retail Technology			\$51,000	\$60,000	\$200,000	\$250,000				\$561,000	
Shelf stable Value added	\$496,000	\$30,000		\$100,000	\$50,000	\$25,000		\$600,000	\$700,000	\$955,000	\$2,856,000
Meat Strip Alignment (MSAT)	\$578,000	\$477,000	\$386,500	\$200,000	\$250,000	\$200,000	\$200,000	\$190,000			\$2,481,500
Functional Foods				\$100,000	\$50,000	\$50,000					\$200,000
Advanced Meat Recovery											0
<b>Total</b>	<b>\$1,074,000</b>	<b>\$507,000</b>	<b>\$437,500</b>	<b>\$510,000</b>	<b>\$525,000</b>	<b>\$500,000</b>	<b>\$800,000</b>	<b>\$890,000</b>	<b>\$955,000</b>	<b>\$6,198,500</b>	
Unallocated RMI AOP Funds	\$2,097,000	\$1,598,000	\$901,000	\$790,000	\$300,000	\$302,000	\$400,000	\$380,000	\$760,000	\$7,528,000	
<b>Total RMI AOP budget</b>	<b>\$3,171,000</b>	<b>\$2,105,000</b>	<b>\$1,338,500</b>	<b>\$1,300,000</b>	<b>\$825,000</b>	<b>\$802,000</b>	<b>\$1,200,000</b>	<b>\$1,270,000</b>	<b>\$1,715,000</b>	<b>\$13,726,500</b>	

<sup>2</sup> Data provided in Excel spreadsheet – LA\_allocation\_25\_02\_10.xls attached to e mail dated 25/02/2010 and data is a combination of AOP budget figures and SAP financial records since 2005-06

<sup>3</sup> The proportional allocation of costs from the pre-commercial “industry” funded projects been calculated by MLA staff for this cost benefit analysis and has been used as provided



### 3.4 Funding of Partnership Projects

The following table lists the 40 partnership projects that were selected from the MLA projects database and considered for evaluation of this program. The 7 projects in the highlighted (grey) rows either did not proceed or were terminated prior to completion (17.5% of total) and have not been included in the evaluation results. The costs associated with these projects are also excluded from the calculations of costs and benefits. Not all of the remaining 33 projects have been included in the review as they were not considered as relevant to the outcome cluster grouping of projects. Typically groupings are on the basis of similar project outputs or projects where the ultimate outcomes are derived as the consequence of a number of sequential projects outputs.

Modified VAMP Listing to Add Project Actual Costs as Found in MLA Documents & Financial Records <sup>1</sup> (2000 – 2008)			
	Project code	Project Description	Budget
1	PSHIP.077	Shelf Stable Lamb	\$399,600
2	P.PIP.0136	Meat Strip Alignment	\$497,618
3	P.PIP.0144	Development of MSAT Research Samples for the Japanese Market	\$48,282
4	P.PSH.0173	Retail Technology trial site rollout	\$1,174,884
5	P.PSH.0199	Project Multiple Choice - MQF	\$0
6	P.PSH.0200	Effect of shipping practice on quality of frozen manufacturing beef	\$244,000
7	P.PSH.0217	TMM spiral grinding	\$29,255
8	P.PSH.0300	Smartsnack	\$187,000
9	P.PSH.0310	Beef topside phosphate free injection	\$118,800
10	P.PSH.0338	Sizzle steak	\$958,902
11	P.PSH.0342	KFF1 - RMI & VA - Technical R&D	\$350,460
12	P.PSH.0343	KFF1 - RMI & VA - Opportunity identification	\$78,540
13	P.PSH.0344	KFF1 - RMI & VA - Consumer research	\$143,000
14	P.PSH.0345	KFF1 - RMI & VA - Capability building	\$289,000
15	P.PSH.0346	KFF1 - RMI & VA - Supply chain study	\$15,400
16	P.PSH.0407	CAR4 Development of microwave roast beef product	\$137,000
17	P.PSH.0432	NCMC9 Development of 3 new products	\$0
18	P.PSH.0452	NCMC10 - Chilled Beef Shank Cutting – Osso Bucco	\$27,540
19	P.PSH.0522	NSI1 - Chilled Beef Shank Cutting – Osso Bucco – Stage 2	\$519,782
20	PSHIP.049	BBQ Range Project	\$441,220
21	PSHIP.053	AJ Bush New Retail_COMP	\$379,515
22	PSHIP.069	Beef Retailing Concept	\$326,452
23	PSHIP.085	Stapletons Retail concept	\$296,063
24	PSHIP.092	Hunter valley burgers	\$125,587
25	PSHIP.097	IFA - Pilot plant partnership	\$92,680
26	PSHIP.103	IFA Turnkey	\$688,200
27	PSHIP.108	Hans Project Logic	\$349,765
28	PSHIP.108-2	Hans Phase II	\$0
29	PSHIP.109	IFA Roast Beef	\$68,000
30	PSHIP.111	IFA Corned beef	\$74,000
31	PSHIP.137	Nature Beef curry	\$60,000



32	PSHIP.138	Mariani - Beef Ribs	\$53,500
33	PSHIP.139	Mariani - Beef Flaps	\$58,500
34	PSHIP.163	OBE IFA products	\$161,568
35	PSHIP.166	Cook chill plates	\$138,000
36	PSHIP.182	B&J Shredded meat	\$274,300
37	PIP.046	Advanced Meat recovery	\$22,520
38	PIP.046.1	Advanced Meat recovery - II	\$54,837
39	PIP.048	Cargill - AMR	\$122,200
40	PIP.061	FoodPartners Pepperoni	\$203,822
		<b>TOTAL</b>	<b>\$8,406,670<sup>2</sup></b>

*Table 3 Projects for review - note shaded projects not started or terminated*

1. The project budgets above have been provided by MLA AOP budgets and SAP financial system (Note - SAP figures only since 2005-06) and broadly correlate with information sourced from hard copy project files recalled from archive. The budgeted amounts above are those that have been used in the determination of the cost/benefits for the projects.
2. This total figure the cost of the 7 projects in the highlighted (grey) rows either did not proceed or were terminated prior to completion.

## 4. Background and Context of Program 2.3 Developing New Markets and Products

### 4.1 Program 2.3 – Developing New Markets & Products in a Wider Framework

Program 2.3 Developing New Markets and Products is an objective of the MLA strategic imperative 2: Growing Demand for the period 2007 – 2011 and is related to four other objectives that assist the industry in growing the demand for red meat. The framework of the MLA strategy is illustrated in the strategy map 2007 – 2011 below (*Figure 1*).

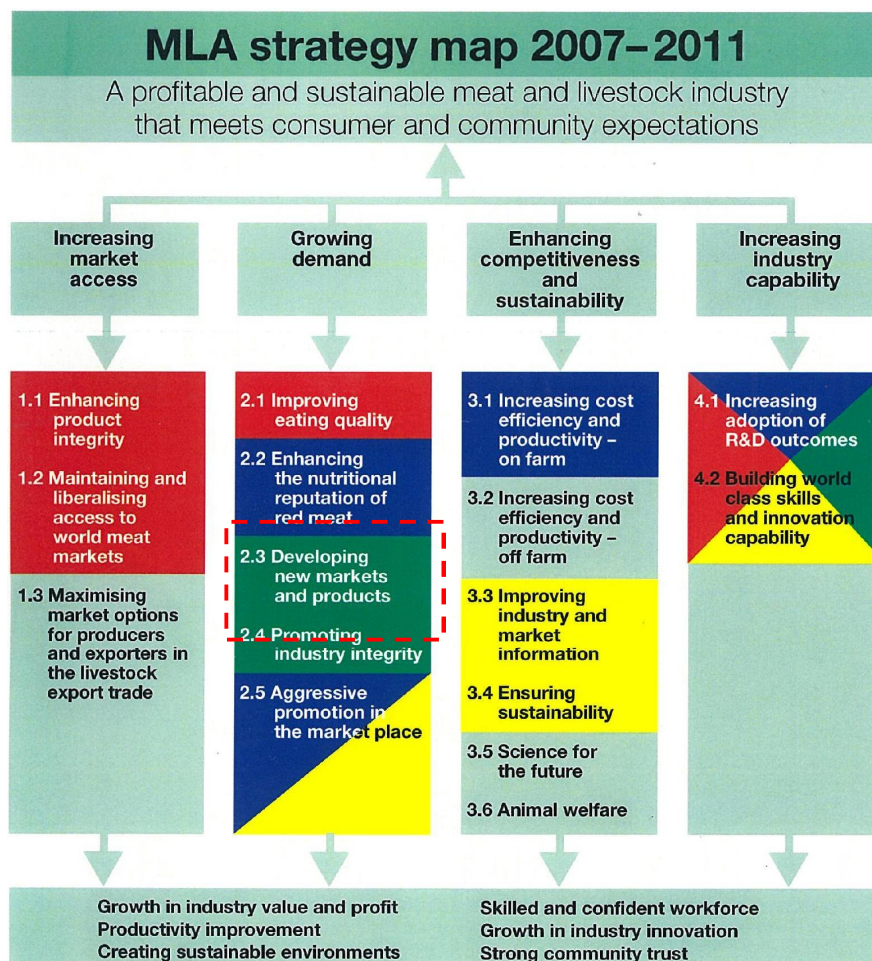


Figure 1 MLA Strategy Map 2007 – 2011

### 4.2 Program 2.3 Objective

In a highly competitive global market and with increasing competition from alternative proteins and meal solutions the red meat industry provided support for this program to develop new value-added products to better meet contemporary consumer demands. It was considered that extra carcass value will only be achieved if products meet consumer needs and aspirations across the whole continuum from new simple meal ideas at one end to high value pharmaceutical ingredients at the other.



The program objective was to work with industry (involving all parts of the supply chain in retail, foodservice and export channels) to develop and launch new products into existing markets and to assist in opening and developing new markets for value-added products

To achieve these objectives it was considered that the program would need to:

- ▶ Satisfy high levels of end-user and consumer satisfaction and confidence
- ▶ Grow business in new markets and outlets
- ▶ Capture unrealised value from the carcasses.

### **4.3 MLA aims**

Over the life of the program MLA looked to:

- ▶ Assist industry to identify new market opportunities for value-added products
- ▶ Expand demand for low value cuts and by-products to better capture unrealised value from the carcass
- ▶ Attract convenience-driven buyers with new quick and easy meal options; value-driven buyers with low cost, but good quality meat offerings; premium buyers with enhanced taste and indulgence propositions; and health-driven buyers with nutritionally enhanced concepts and products
- ▶ Develop advanced technologies which can provide the industry with a competitive advantage in the area of value-adding

Markets and consumers are considered to be constantly evolving, with ever-changing meal alternatives and new supply options. While building loyalty with current customers remains the first priority, winning new customers and new consumers are essential elements for a successful and secure industry.

### **4.4 Program Measures**

At the inception of the program, MLA saw the following as measures of success for the program.

- ▶ New value added meat and ingredients achieve greater end-user adoption and market success.
- ▶ Improved industry capability leading to increased profitability from value-added meat products.

While this evaluation considers these measures of program success it is essentially focused on determining the costs of achieving the outcomes claimed by the program and estimate the scale of additional industry benefits returned from the work.





## 5. Cost Benefit Analysis Process

### 5.1 Rationale for the approach to this Cost Benefit Analysis

This cost benefit analysis project was initiated on the basis of using the template developed by ACIL Tasman on behalf of the CRRDCC. Initial application of the template demonstrated that, while it is suitable for evaluation of agricultural RD&E, the model produced results that were a non-sense in the context of project outputs being commercialised by processors and value adders. (Essentially adoption by a single enterprise with a view to taking a consumer product to market) Consequently, the sensitivity of the CRRDCC spread sheet model outputs to minor adjustments to the input data suggested that the available adoption and sales data would need to be carefully filtered and adjusted to produce realistic outputs from the model, with an attendant significant margin for error. After discussion with MLA regarding these issues and the suitability of the model, it was agreed that an alternative model would need to be developed for this evaluation due to a lack of confidence in outputs from the CRRDCC model...

The influence of the following factors on the results addressed in preparation for this analysis are:

- ▶ Identification of both the net public and private benefits arising
- ▶ Issues and actions that impact the delivery of the outcomes
- ▶ A test of the counterfactual case. (i.e. what the outcome would have been without MLA intervention).

### 5.2 The Counterfactual and Attribution

#### 5.2.1 Counterfactual

Testing of the counterfactual can be difficult particularly when the contribution of MLA is part of an ongoing process and/or business/market development.

To consider the counterfactual the following questions were addressed:

- ▶ Would the R & D have been undertaken and/or would the benefits have been gained in the absence of MLA involvement?
- ▶ Has the MLA investment brought forward the benefit?

For this review the counterfactuals have been considered only for the programs/projects that have produced a positive outcome with consideration provided at the outcome cluster level although the contribution of outputs from specific projects were also assessed during consultation interviews with industry partners.

#### 5.2.2 Attribution

#### 5.2.3 Attribution by Project Partner

The completion of a project that takes products and processes to commercialisation often benefits not only the companies that complete the projects but also the industry as a whole (and often associated/supporting industries). In the case of MDC projects the projects are co funded



by MLA and an industry partner and consequently it would be reasonable to attribute industry benefit on the basis of project contribution.

Once the amount of benefits arising from the program outcomes and the counterfactual case had been determined then the resulting net benefits would be apportioned on the same basis as the amount of funding contributed by the project partners. That is if the funding organisation has contributed 50% of a project's cost, then 50% of the benefits can be claimed.

However, this may not always be the case. In some instances the weighting of benefits is different to the split of contributions due to other factors that may include:

- ▶ Valuable intellectual property that may not be available without the involvement of the party that owns it;
- ▶ The project outcome may be contingent on imported technology; and
- ▶ The level and importance of in-kind contributions to the project from other organisations.

The funding for the projects in program 2.3 has been from a variety of sources including:

- ▶ MLA projects and programs that have completed basic research prior to projects being developed in the MDC project framework;
- ▶ Co contribution of projects under the MDC framework (MLA and industry partner); and
- ▶ In kind contributions by the industry partner to take products or processes to market.

The complexity of these funding arrangements makes the attribution of benefit on the basis of funding sources impractical and in the consideration of the projects in program 2.3 GHD has adopted a simplified model.

An assessed return from changes in industry pricing relationships has been included in the CBR calculations for

- ▶ Overall CBR for program 2.3
- ▶ The individual projects/project groups including the prior MLA program costs
- ▶ The individual projects/project groups excluding the prior MLA program costs

For the calculation of CBR for the partner companies the industry benefit has been excluded since this is a non-financial return and is not considered as a factor in the decision process of the company to proceed with a development project.

#### **5.2.4 Attribution of Industry Benefit to Projects**

In considering the attribution of industry benefit for program 2.3 we have considered the benefits that have accrued to industry through the change in pricing structure for individual cuts and/or products on the basis of change in relation to the general movement in industry pricing.

For shelf stable product we have considered the relative change in pricing for lamb shanks and apportioned benefit on the basis of other market activities taking place at the same time. For the sizzle steak product we have assessed the relative change in market pricing attributable to the cut used for the product (outside flats). GHD were not aware of any other industry projects or market factors that would have affected the relative pricing for this primal. The sensitivity of the CBR outcomes to the attributions is included in section 10 of this report.



## 5.3 Cost Benefit Analysis Methodology

### 5.3.1 Introduction

The methodology for the cost benefit analysis has largely been desktop based using data and files provided by MLA. The projects were then categorised into outcome cluster groups for assessment and modelling. Following the development of the initial model outputs selected processors and value adders were interviewed as the basis for a “reality check” of the assumptions made in relation to the benefits of the projects and the arguments for the assumptions supporting the counterfactual scenario.

### 5.3.2 Methodology

A significant amount of project data was collected in raw files and used to develop a table in MS Excel for each of the projects, their contracted costs and their projected benefits (where available). Financial data on the actual costs of projects was also provided by MLA to compare with the file data collated by GHD. Other reports and previous reviews were provided by MLA in order to place these projects and the current evaluation into context.

While a significant number of projects are registered by MLA not all projects were completed or necessarily started and these projects were identified with the assistance of MLA staff and culled from the data sets (refer *Table 3*). Projects that had a negative or neutral outcome, but still fitted into the outcome cluster grouping criteria, were not removed from the data set so as to allow realistic view to be developed for the whole of the investment made in the program.

Projects were then placed into six outcome cluster groups each reflecting the achievement of a different common product/technology or required outcome.

While these costs and outcome data were being confirmed a model was constructed to assess the costs and benefits at each level of investment; a project, cluster grouping and

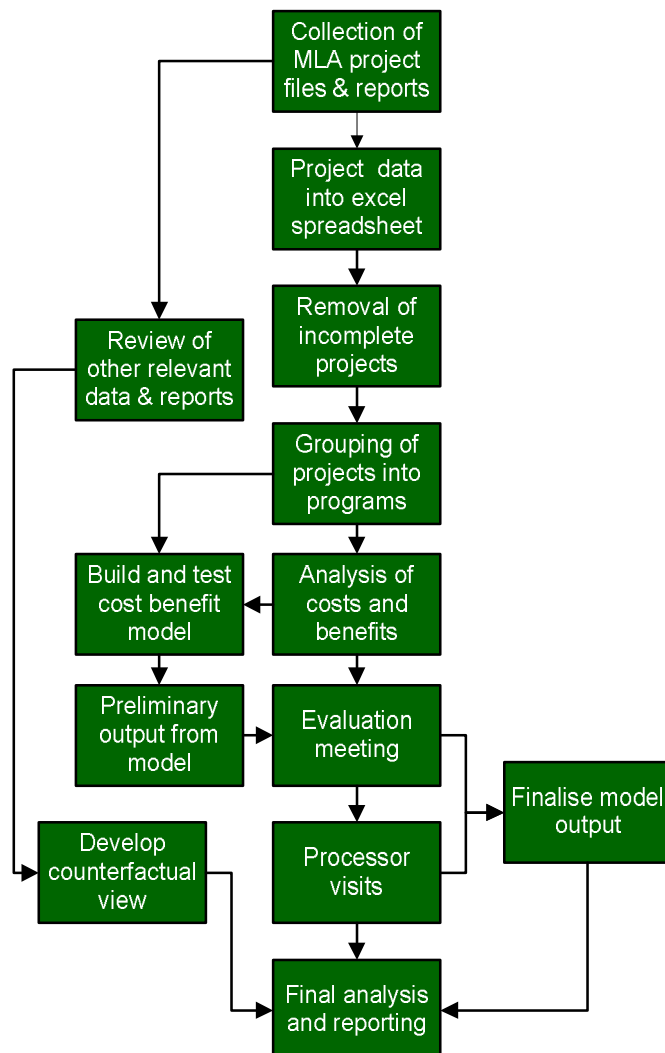


Figure 2 Methodology for the CBR project



whole of program.

A meeting with MLA staff identified issues that required further discussion with partner processor and value adders to form a balanced view of the outcomes for the projects and derive a cost/benefit that reflected an accurate view on the return on investment on the program for the red meat industry. This consultation process also provided a context for the dialogue regarding assumptions used in counterfactual scenarios and other spill over returns to the industry as a result of the projects.

This final report has been developed following consultation with the partner processors/value adders and the finalised outputs from the model.



## 6. Selection of Projects for Assessment

Projects were selected from the MLA projects database and the project files downloaded for review. The projects were then separated into outcome clusters related to specific programs of work to allow the cost benefit ratios to be estimated at this level. Projects where funds had not been allocated or projects where there were allocated funds but these funds had not been expended were discarded.

The outcome cluster grouping of the projects is as follows:

1. Creative Butcher Network & Retail Technology Development
2. Shelf Stable Development
3. Value Added Products
4. Meat Strip Alignment (MSAT)
5. Functional Foods
6. Advanced Meat Recovery

Projects Groups 1, 2 & 3 are considered to be projects that have been developed to a point where either they are available in or they have aided in the development of new products that have been offered to consumers.

### 6.1 Creative Butcher Network & Retail Technology Development

The Creative Butcher network initiative and the retail technology development have been grouped together since the programs are essentially complementary.

The retail technology development (0173) and roll out were solely funded by MLA and used to deliver point of sale (POS) support to butchers. The project aimed to demonstrate the value of data collection and analysis when integrated with normal POS functions.

Creative butcher workshops were developed and promoted by MLA from 2000 – 2003 to facilitate butchers developing and selling Value Added Red Meats (VARM). As a result of these workshops, MLA distributed kits with over 100 new value added product recipes and preparation methods to over 500 Creative Butchers.

At the time of project commencement there were no systems with enhanced point of sale (POS) functions that met the needs of independent retail butchers. The MLA Creative Butcher and retail technology projects developed POS systems to the point where MLA support in the market was no longer necessary and the systems are now commercially available and supported.

The Creative Butcher Network was co-funded by individual participants and this project has continued as a butcher network called the Red Meat Networking Club which now boasts more than 1500 active members and has only limited on-going funding from MLA domestic marketing funds (2.4 Aggressive promotion in the domestic market).



Project Number	Creative Butcher Network & Retail Technology Development
0173	Retail Technology Trial Site Rollout
053	A J Bush Retail Development
069	Beef Retailing Concept
085	Stapleton's Retail Concept

Table 4 Retail oriented projects selected for review

## 6.2 Shelf Stable Development

The development of shelf stable technology is considered to be a platform technology applicable across a range of products for MLA as well as offering spillovers to the wider food industry. The development of shelf stable technology may also be considered as a value added development from the perspective that the packed products are generally based on lower value cuts which achieve a higher price on the supermarket shelf due to the ease of cooking, the benefits of the shelf stable packaging and sauces along with other ingredients allows consumers with low levels of cooking skills to move meals closer to a restaurant experience. The development of this enabling technology platform allows not only for the range of consumer products but also allows the use of an alternative non-temperature critical supply chain outside of the conventional red meat chilled/frozen supply relationships. Consequently we have reviewed the following projects as a stand-alone program with their own costs and benefits to stakeholders.

Project Number	Shelf Stable Development Projects
077	Shelf Stable Lamb
097	IFA Pilot Plant Partnership
103	IFA Turkey
109	IFA Roast Beef
111	IFA Corned Beef
138	Mariani Beef Ribs
139	Mariani Beef Flaps
137	Natures Beef Curry
163	OBE IFA Products

Table 5 Shelf stable projects selected for review

## 6.3 Value Added Products

The underlying principle for the development of value added products is to use a low value cut and increase the return to all stakeholders in the supply chain by creating a new product that has a higher value to the consumer than the additional cost incurred in the use of the ingredients and the manufacturing costs for the new product. The nature of value added products delivered into



the market, where product life cycles require ongoing refreshment of product ranges generally means that the responsibility for new product development rests with the processing/manufacturing companies.

In the past, the limited vertical integration of the supply chain in Australia by processing companies and the dominance of supermarket branding at a retail level have conspired to constrain development of value added products in the red meat industry. This does not mean however that supermarkets do not have added value products in the retail cabinet, only that they control the supply and branding of the products. The two main supermarket chains in Australia operate a partially integrated model that controls the supply chain (often from farm to retail) although most commonly without ownership of the companies at each stage of the supply chain.

The move from a decentralised model of de-boning and cutting carcasses/bodies in store has also changed the drivers at a retail level. Retailers are now able to select raw materials on a by cut basis rather than being constrained to having to also dispose of the rest of the carcass at a lower value thereby dragging down the value of all cuts to an average across the carcass.

For the supermarkets primal meat cuts (all species) are sourced from both an integrated supply/processing chain and selected boxed product from the wider market allowing supply to be matched to market requirements without the need to develop mechanisms to dispose of less popular (or less profitable) cuts (by adding value to lower value cuts). This changes the drivers at retail away from the need to maximise the return from the carcass/body to one that seeks to maximise the profit from the sale of meat products.

A consumer focus and the ability of the retail butcher to select primal cuts as required to match demand does not incentivise the development of value added products unless the value adding development will drive significantly larger returns from the retail business.

The meat industry however needs to address the issue of demand reduction for lower value cuts and the need to profitably dispose of lower value cuts, while maintaining or improving the margin derived from processing the livestock.

The focus of projects in this program 2.3 was to address this issue with processors and value adders to demonstrate the options and potential revenues that may be created by the development of added value products at a processor level.

Consequently these projects while being evaluated for an economic return on investment, also provide value with the demonstration of the type of products and margins that may be achieved by meat processors.

Project Number	Value Added Products
049	B&J BBQ Range
0338	Sizzle Steak
182	B&J Shredded Meat
061	Food Partners Fermented Pepperoni Development for Pizza Hut
166	Cook Chill Plates
0342	KFF1-RMI and VA Technical R&D



Project Number	Value Added Products
0343	KFF1-RMI and VA Opportunity Identification
0344	KFF1-RMI and VA Consumer Research
0345	KFF1-RMI and VA Capability Building
0346	KFF1-RMI and VA Supply Chain Study
092	Hunter Valley Burgers

Table 6 Value added projects selected for review

#### 6.4 Meat Strip Alignment (MSAT)

The meat strip alignment program used a different, technology driven, approach to increasing the value of cheaper cuts of meat. The market concept for the alignment of meat fibres and the pressure moulding of products is based on the premise that there is a consumer demand for cheaper 'higher value' oriented cuts that are tender and juicy etc. MSAT technology offered a means to provide an improved eating quality with reformed meat if it was possible for the meat strips to be aligned within the chub of meat. The chub could be frozen, then sliced into steak like slices and either grilled or further diced for casserole. While the technology worked quite well for lamb it was less successful for beef.

However, with this project the assessment of the market and the drivers for these types of products did not adequately address other side effects of this process, most notably with respect to odour and appearance associated with the finished product when cooked.

Project Number	Meat Strip Alignment (MSAT)
0136	Meat Strip Alignment Technology
0144	Development of MSAT Research Samples for the Japanese Market
0217	TMM Spiral Grinding

Table 7 MSAT projects included in the review

#### 6.5 Functional Foods

Developments in overseas markets and in other product categories (most notably dairy) suggest that there is a consumer demand/preference for functional foods. However, in Australia this incipient consumer demand has not materialised in relation to red meat products with the conventional view that consumers already perceive meat to be a healthy, a clean product and are not overly concerned with the need for additional nutritional benefits. To a degree the promotion of red meat products to consumers emphasises this point. Consequently the opportunity for functional foods is more easily identified in the development of added value or processed foods.

One opportunity developed by MLA and Hans Smallgoods was processed omega 3 enriched red meat smallgoods. These products were based on clinical trials that had demonstrated that tuna





oil may be inserted in an encapsulated form into a red meat product and that it will be absorbed into the body contributing to the intake of long chain polyunsaturated fatty acids.

While the Hans product was marketed with the increased functionality claims on the packaging, (Hans Omega 3) the additional value of the product to the processor is too difficult to determine (and may in fact be nil) since the market price is set by related products and price points in a competitive market segment. The driver for the development of this product may also be considered to be related to growing market share and product differentiation rather than added value. The amount of red meat in the Hans product is so small that its success (or otherwise) would not affect the returns to red meat processors for the cuts used.

Project Number	Functional Foods
108	Hans Project Logic (Hans Omega 3 product)
0300	Smartsnack (Added fibre meat product)

Table 8 Functional food projects reviewed

## 6.6 Advanced Meat Recovery (AMR)

The projects relating to the demonstration of Advanced Meat Recovery (AMR) systems were planned to identify the advantages of this method of recovering any remaining muscle tissue additional to the more conventional Mechanically Separated Meat (MSM) recovery systems which also include high levels of calcium which is quality measure to assess the amount of bone content in the final product.

While the projects showed the quality benefits of the process there is at present no discrimination in end product classification (in either the Australian Food Standards Code or for the US market in the Handbook of Australian Meat) for the products from the two different processes and consequently there is no price benefit for AMR process.

In the Australian industry the current best practice for recovery of residual meat protein from boning room waste is either via the Mechanically Separated Meat (MSM) process or by default the production of meat and bone meal. MSM is a low value meat product and has inherent problems in product applications arising from the side-effects of processing which include; high calcium levels, high micro-organism count, poor protein functionality and inclusion of bone marrow (e.g. possible SRM). AMR product suffers none of the same inherent problems of MSM, and in the US it sells at a considerable premium to MSM due to its official classification as "meat"<sup>4</sup>.

Until the regulatory framework changes to reflect the differences in the attributes of the MSM and AMR products the financial benefits from these projects are unlikely to be realised.

<sup>4</sup> PIP Proposal Evaluation Form dated 2 April 2002



Project Number	Advanced Meat Recovery
046	Determination of the Regulatory and Financial Barriers to the application of Advance Meat Recovery Systems in Australian Red Meat Industry
048	Cargill AMR
0200	Effect of shipping practice on quality of frozen beef
046.1	Addressing the regulatory, financial and marketing issues for AMR

*Table 9 AMR projects reviewed*

## 7. Results of the Cost Benefit Analysis

The review of the outcome clusters listed in section 6, are considered to be representative of the scope and outcomes of 2.3 Developing new markets & products. Each of these clusters address different aspects of the retail end of the supply chain and although the available evidence of outcomes for each cluster indicates that only 3 groups show a positive outcome and the other 3 projects not returning any financial outcome is not indicative of failure of the program as a holistic approach to MLA's the objectives in this area. The expenditure of AOP funds (refer *Table 2 Program 2.3 industry funded project costs (funds expended prior to the initiation of follow-on PIPP and PIIP projects)*)

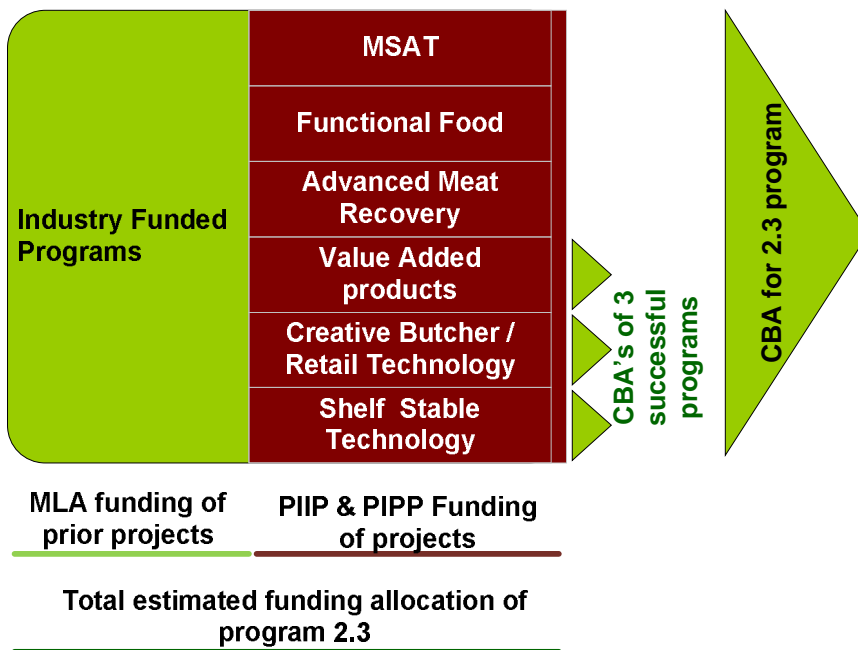


Figure 3 CBA program integrated cost structure

### 7.1 Definition of CBA Levels in This Report

The assessment of the Cost/Benefit of the Research & Development work in program 2.3 has been carried out on four levels.

#### 1. Whole of Program View

The Cost Benefit Ratio (CBR) calculated for the total 2.3 program (including all 6 project groups) incorporates all project costs. i.e. all the costs of all the projects – whatever the source industry and partner company. At this level of assessment the total costs of the program, successful and unsuccessful projects and all the costs of pre-commercial research are included in the cost input into the CBA model. The benefits derived from the successful projects (those for which there is evidence of a sales revenue return) are then set against these total costs in order to determine the cost/benefit ratio for program 2.3.



Breaking this cost/benefit down further into its component outcome clusters provides a more granular view of where MLA stakeholders share the gains from commercialisation of R&D outputs.

2. **CBR for only projects where there is evidence of generating sales revenue**

The total costs include funds expended through the MDC on the successful outcome cluster groups, **including** pre-commercial industry program costs expended prior to setting up PIPP & PIIP projects. For this calculation the cost of all unsuccessful outcome clusters (nil benefit) are excluded as well as the pre-commercial industry funds allocated to these clusters. This measure indicates the return to the investors from outcome clusters that were successful. i.e. the industry return on the new technology.

3. **CBR for only projects where there is evidence of generating sales revenue but excluding pre-commercial industry expenditure**

The total costs include only funds expended by the MDC on the individual successful outcome cluster groups, **excluding** pre-commercial industry program costs expended prior to setting up PIPP & PIIP projects. This measure indicates the return to an industry investor from taking forward a research output where the initial proof of concept has already been demonstrated.

4. **CBR for industry partner company costs only**

The total costs include the partner company funds only, as noted in MLA project files – these are the cash contribution costs expended by the partner companies and indicates the return on investment for companies collaborating with MLA on R & D projects. This measure represents the company view of the project as a return on their cash investment. Here the benefits to the wider industry are excluded with only the benefits directly flowing to the company included. It is important to note that this CBR is likely to be an over-estimate because often in-kind costs are at least 2 to 3 times more than the cash cost of the industry partner share of the partnership project

On the basis of these funds expended and the estimated benefits accruing to the industry GHD have derived the following draft cost benefit ratios for the 2.3 program (*Table 10*).



**Table 10** Cost benefit ratios for program 2.3

Discount Rate 5%	1	2
Cost Benefit Ratios	Total Program	CBR range for project with program costs and subsequent PIIP & PIPP costs
MSAT		N/A
Functional Foods	CBR range between	N/A
Advanced Meat Recovery	4.99 to 11.06	N/A
Value added products	IRR range between	3.43 to 11.07
Creative Butcher / Retail Technology	41.71% to 53.62%	19.4 to 19.4
Shelf Stable Technology		59.1 to 188.70

**Table 11** Cost benefit ratios using a discount rate of 7%

Discount Rate 7%	1	2
Cost Benefit Ratios	Total Program	CBR range for project with program costs and subsequent PIIP & PIPP costs
MSAT		N/A
Functional Foods	CBR range between	N/A
Advanced Meat Recovery	4.52 to 9.87	N/A
Value added products	IRR range between	3.42 to 9.57
Creative Butcher / Retail Technology	41.63% to 53.69%	19.07 to 19.07
Shelf Stable Technology		59.4 to 163.73

**Notes:**

1. Total program costs (CBR) includes all program costs expended by MLA and industry partners including those funds not allocated to specific projects (see **Table 2**). CBR assessments in column 2 include only those MLA program costs as allocated in **Table 2** and PIIP & PIPP costs.
2. All benefit calculations, which include industry funds, include benefits to the industry as well as the direct partner company benefits.
3. The CBR range is derived from the assessed benefit arising from the completion of all the projects, (high value). The low benefit is the assessed low level return derived for minimum attribution of industry benefit for the shelf stable and value add projects. (refer section 10).
4. N/A indicates incomplete projects or nil financial benefits arising from the work.
5. Primary means of determining Cost Benefit Ratio is from the use of a model developed by GHD.
6. The model generally uses a market-backed approach to the assessment of benefits.  
i.e. an assessment is made of the net added value of a development and then the benefits assessed on the basis of market uptake / development



7. Provision has been made in the model to adjust some of the variables in the model including:
  - a. Growth in markets.
  - b. In-kind contributions of partner companies.
  - c. Discount rate is set at 5%.
  - d. CPI growth to 2015 is set on trend of the last ten years.
8. The industry/total benefit noted for the shelf stable program is driven by a significant increase in the wholesale price of lamb shanks (after allowing for the general increase in the price of lamb overall), whereas the size of the partner company has limited the cost/benefit to the company, although still a positive return.

The information used to determine the benefits from the program 2.3 have been drawn from a number of sources including:

- ▶ Project files provided by MLA
- ▶ Interviews with participating companies (Beak & Johnston and EasyFoods)
- ▶ Industry information files (generally published by MLA).

In each case the source of the information used in the determination of the benefits has been referenced in the document footnotes.

## **7.2 Direct Data from MLA Files and Participant Interviews.**

The following data is that collected from MLA files or from surveys (in the case of the Creative Butchers program) or interview, (in the case of Beak & Johnston and Easy Foods).

### **7.2.1 Creative Butchers/Retail Technology Initiatives**

There were two elements to the Creative Butchers/Retail Technology initiative:

- ▶ A collaborative product development and capability building initiative (the Creative Butchers Program) and
- ▶ A retail technology project to provide product ideas to consumers at point of sale.

The creative butcher program has been subject to a number of surveys to determine the benefits of the program. The following *Table 12* has been derived using data from this research<sup>5</sup> to assess the overall additional income to butchers arising from improvement in value added sales and gross margins as a result of their participation in the project.

The development of retail technology was also subject to follow up reports to determine the impact on independent retail butchers and it was positively received, typical comments from a participant are as follows:... *“on evaluating the POS system at our Hurstville store, after the first phase of piloting, the development of a smarter management tool for the retail butcher industry is well on its way and having a major impact on the way we manage, display and market our business....”* and *“... we are extremely optimistic on the future of retailing with a smart*

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<sup>5</sup> MLA commissioned report - Calculating Impact of Creative Butcher Program RMIPD.008C



*management system that will provide many key benefits to improve the way we think and implement our business*<sup>6</sup>

While savings were identified with the use of POS technology it is not possible to calculate these as a wider saving to the business; particularly when savings are less than one labour unit. Since the implementation of the MLA development integrated POS systems are now commercially available to butchers from other sources therefore limiting the level of future benefits that may have resulted from the retail technology project. Consequently GHD have not included any benefits from the retail technology projects, but have included the benefits from the Creative Butcher program that MLA has promoted (and still supports through the Red Meat Networking Club funded as part of objective 2.4 Aggressive promotion in the domestic market) for on-going capability building in value adding on a wider industry scale.

Evidence of increase sales revenue relating to the outputs of the Creative Butchers program from two reports published following completion of the program (RMIPD.008C - 2004 & RMICS.002 – 2006) have been included in *Table 10* and *Table 12* below.

The benefits claimed by MLA in these reports are generally noted as increased sales of VARM product in Creative Butcher shops. (This information is generally reported as percentages as survey participants were reluctant to disclose actual cashflows because of the commercial-in-confidence nature of this information).

The benefits claimed in the following tables have been calculated based on the increased margins on the additional VARM sales. This approach nets out the cost of materials used in the preparation of the products.

The gross margin in *Table 13* (2006) assumes that the fixed costs such as rent, power etc have already been accounted for in the reported level of sales prior to participation in the Creative Butchers program. The labour used in the preparation of the VARM products has been assumed to have been available in store anyway, (i.e. no new hires are required for the preparation of the VARM product) as labour costs are considered to be constant for a given range of turnover. (i.e. step change labour / turnover curve).

### Creative Butchers Program – 2004 Review

Calculating Impact of Creative Butcher Program RMIPD.008C

Feedback MLA Marketing	Values of Shops		
	Low	High	Average
Average Sales per week	\$10,000	\$25,000	\$17,500
Average Yearly Sales	\$500,000	\$1,250,000	\$875,000
Feedback from Creative Butcher Survey			
Average VA sales per store	20%	25%	23%
Average yearly Sales of VA products	\$117,000		

<sup>6</sup> Extracted for letter from A J Bush Pty Ltd to MLA dated 02/02/2003.



Creative Butchers Program – 2004 Review			
Creative Butcher Members	510	153	
Number indicating VA increase	30%		
Sales increase	Low 11%	High 20%	Average 16%
Average Increase in VA sales	\$80,600		
Averaged increased sales in 30% of Creative Butcher members per annum		\$12,331,800	
Calculation for Value of Value Add of Creative Butchers Program			
EBIT on VARM 50% higher than other product		15%	\$4,830
<b>Increase in value from VA in Creative Butcher program 2004</b>			<b>\$2,463,300</b>

Table 12 Estimate of benefits from Creative Butcher program 2004<sup>7</sup>

<sup>7</sup> MLA commissioned report - Calculating Impact of Creative Butcher Program RMIPD.008C





Data ex MLA Report RMICS.002 - April 2006		
Average Sales per week per store	Medium Size business	\$7,500
Average Yearly Sales per store		\$375,000
Increase VARM sales per store		16%
Increased yearly Sales of VARM products	Per store	\$60,000
Creative Butcher Members	510	
Per cent of butchers with increased sales	78%	
Creative Butchers with increased sales	398	
Increased VARM sales per annum		\$23,868,000
Increase in gross margin	20%	
<b>Annual benefit for Creative Butchers from VARM product sales</b>	<b>2006</b>	<b>\$4,773,600</b>

Table 13 Estimate of benefits from Creative Butchers program – April 2006<sup>8</sup>

The Creative Butchers program is likely to have had at least additional two spill over industry benefits that have not been included in this analysis:

- ▶ The in-store development of non red meat value added products (e.g. pork & chicken).
- ▶ The increase in the “copy-cat” preparation of value added products in non-Creative Butcher program stores.

There are likely to be a range of factors that will impact on the returns from VARM in the spill over benefits including demographics, seasonality, competitor activity etc. None of these potential spill over benefits have been able to be quantified and the financial benefits have not been included in this assessment.

The RMICS.002<sup>9</sup> report says that in the survey returns from processors supplying these retailers that there was no reported change in demand or pricing of the lower value cuts promoted in the program (although they were considered to provide alternative route to market than would otherwise be the case). Consequently there is no direct evidence that the Creative Butcher program had contributed to increased distribution of benefits back up the supply chain to producers.

<sup>8</sup> Information drawn from MLA report RMICS.002, Measuring and Communicating the Value of the Creative Butcher Workshops. Dated 07 April 2006

<sup>9</sup> Information drawn from MLA report RMICS.002, Measuring and Communicating the Value of the Creative Butcher Workshops. Dated 07 April 2006



## 7.2.2 Shelf Stable Product

The development of shelf stable technology had, in the first instance, largely been focused on a lamb shank product and the value added opportunity to what was previously a relatively low value cut. EasyFoods now manufacture product for the UK market in a processing plant in Belgium using largely New Zealand product and is therefore no longer providing any additional benefits directly to supply chains in Australia. However, there are now a number of new processors value adding these and other similar products in Australia (including Enjoyo Meals, Sunrice, Heinz, Hormel, San Remo) and GHD have therefore used the value add from these products in the assessment of benefit arising to these processors.

From an industry perspective there has been a significant increase in the demand (and hence the price) of lamb shanks since the development of the shelf stable platform technology.

It can be argued that the success of lamb shanks developed in a food service context, (EasyFoods initially were selling the product into English public houses as the basis for 'pub meals') where time spent in cooking ovens is at a premium, and sales were critically dependent upon the lamb shanks being cooked and ready to reheat for serving in a very short time. The alternative cooking process to deliver a juicy, tender product is approximately a 4 hour slow cook.

The development of shelf stable technology in this sector was therefore a critical intervention in the successful transformation of lamb shanks into a "fashion demand" product and follow-on impact on its wider acceptance at retail for consumers.

While the EasyFoods product was not targeted at the supermarket outlets (and is still not sold at retail) other products (from other processors) manufactured using the same technology platform are now available in supermarkets catering for retail consumers.

Because it is not necessary to generate very large demand change in a market with a limited product supply to promote increased pricing of the product - a large measure of the increase in value of lamb shanks has been attributed to this project.

The benefits attributable to the development of shelf stable technology have been derived from two sources of evidence which are confirmed by increased sales revenue:

### 7.2.2.1 Increase in Wholesale Pricing of Cuts

The estimated value add to the industry is reflected in the increase in the wholesale price of lamb shanks. While the product processed directly via the shelf stable technology platform has not been large the consumer uptake of the product has been significant with other processors of lamb shanks supplying product through to retail markets.

Therefore, the overall impact of the development and the technology can be assessed by the change in the wholesale price of lamb shanks.

Number of lambs slaughtered in Australia 2009 was 21,273,000 (ABS stats) (this was a relatively low slaughter compared to previous years)

During the period 2001 to 2009 the lamb price index has risen from 200 to 270 (ABS Stats), reported wholesale price change of \$3.00 to \$5.25/kg (information provided by EasyFoods Mr P Grogan) over the same period and at 1.2 kg of lamb shanks per animal (AUSMEAT classification 5030) provides an net annual price improvement for lamb shanks of \$30.6 million for the industry.



### 7.2.2.2 Indirect Effects of the Shelf Stable Program

There have been significant spill over benefits from the development of this technology platform, the most prominent example being in shelf stable cooked rice products and pasta meal solutions.

Products are now available at retail from a number of companies including Enjoyo Meals, Sunrice, Heinz, Hormel, San Remo and others, GHD have no information of the sales, costs or margins for these products and therefore it is not possible to fully account for the spill over benefits associated with the shelf stable component. Therefore no assessment of this spill over benefit has been included in the development of these cost/benefit calculations.

### 7.2.3 Value Added Range of Red Meat Products

The value added range of meat products has generally been treated in two development streams, the value added BBQ range and the sizzle steak development both with Beak & Johnston. Both of these programs have identifiable products in the market but with differing benefits.

Table 14 Proposal estimate of value add return for B & J range<sup>10</sup>

Product	Red Meat Cost Into B & J	Predicted Value Add - %	Value Add / Kg
Mr. Beak's Malay Satay Lamb Kebabs Diced Lamb	\$8.10	17.15%	\$1.19
Mr. Beak's Tandoori Lamb Riblets Lamb breast riblets	\$7.44	61.48%	\$2.83
Mr. Beak's Cajun Lamb Chops Lamb forequarter chops	\$7.75	68.20%	\$3.14
Mr. Beak's Tenderfresh Lamb Burgers - Lamb Mince	\$5.30	6.12%	\$0.31
Mr. Beak's Hot & Spicy Beef Kebabs - Diced Beef	\$8.10	-15.68%	-\$1.51
Mr. Beak's Texas BBQ Beef Steak - Oyster Blade	\$7.75	55.24%	\$2.76
Mr. Beak's Tenderfresh Beef Burgers – 85CL Mince	\$5.30	25.44%	\$1.07
<b>Average Change in Value</b>		<b>31.13%</b>	<b>\$1.40</b>
<b>Planned volume of sales Tonnes / PA</b>	<b>1,800</b>	<b>Value Add</b>	<b>\$2,098,273</b>

While the products above were listed in the original development proposal<sup>11</sup> for the added value program the outcomes of the projects have not generally contained information to establish the likely financial outcomes for the projects.

The majority of the value added products listed have not immediately been a success in the market and therefore any benefits for B & J have not been quantified. However a derived product that was not part of the proposed value add products range has been developed using the same methodology has been a moderate success selling in the region of 300 tonnes pa.<sup>12</sup>

The sizzle steak product, however, has been a retail success and is selling in the region of 1,500 tonnes pa. While the sizzle steak retails at approximately \$13.00 per kg showing a \$2.50 to \$3.50<sup>13</sup> gross margin advantage over the alternative uses for the primal cut. The project has

<sup>10</sup> Derived from MLA project agreement PSHIP.049

<sup>11</sup> PSHIP.049

<sup>12</sup> Discussion with David Beak at B&J 30/07/2010

<sup>13</sup> Product retails at \$4.99 per 385g pack pricing at 12.96 per kg. Allowing a 25% mark up for retail bought in product provides an approximate wholesale price for the product of \$10.37 per KG. Comparing this with the alternative use of the primal at \$7.33 /kg (MLA report Sizzle Steak – Final Report p psh 0338 30May2009 (final).doc - provides for a value add of \$3.04/kg (gross) at 1,500 tonnes pa allows a \$4.5 million pa gross margin for the processor.



also demonstrated the benefits of a collaborative approach to product development. In interview (refer section 8.1.2) David Beak highlighted the benefits of retailer involvement providing a view of the environment and the requirements for the retail product while the involvement of MLA provided confidence for Woolworths to be involved, with the project while also providing project support and direction.

There has also been an additional benefit to the industry generated by the demand for outside flats. This increase in price is identified as a result of the demand for the raw materials generated by this product. The benefit has been calculated on the basis of estimated domestic beef consumption only. There is also a spill over effect into substitute cuts, however this has not been quantified and no allowance for any benefit has been included.

The average cwt of beef animals in Australia is 263 kg<sup>14</sup> with domestic beef consumption in 2009 recorded at 738,000 tonnes.<sup>15</sup> This provides an estimated 2.8 million cattle equivalents as domestic consumption. The average weight of outside flats are 10.0 kg/body (3.8% to 4.0% cwt). 2.8 million head by 10.0 kg/body by \$0.25 = \$7.0 million pa net benefit to the industry.

There has been a spill over effect from the sizzle steak product into pork (new in 2010) and while there will be some attributable benefit from this development no allowance for this benefit has been made in the determination of benefits from the projects.

### 7.3 Summary of Costs and Benefits

The following table is a summary of the information in this section (7) benefits and sections 3.3 & 3.4 funds expended.

Table 15 Summary of funds expended on projects

Industry Funded Projects	Project Groups	PIPP & PIIP Projects
\$13,726,500 Total RMI AOP Budget including allocated funds to projects and unallocated funds <sup>16</sup>	MSAT	\$940,632
	Functional Foods	\$593,486
	Advanced Meat Recovery	\$240,521
	Creative Butcher Network	\$1,258,207
	Shelf Stable Product	\$865,825
	Value Added Products	\$1,138,730
	Total	\$5,037,401
<b>Total funds expended</b>	<b>\$18,736,901. Costs incurred in the year funds expended</b>	
<b>Funds expended in 2008 dollars</b>	<b>\$23,288,204 At 5% discount rate</b>	<b>\$20,859,337 At 7% discount rate</b>

<sup>14</sup> (MLA Australian Cattle Industry Overview August 2010)

<sup>15</sup> (MLA website data)

<sup>16</sup> During the CBA analysis funds expended on MLA industry funded projects were allocated to project groups (by MLA) to provide an overall project group cost. In this process not all funds were allocated to project groups, however the remaining funds were expended on RMI 2.3 projects and have therefore been included in the total industry funds expended on RMI 2.3.



The following table shows the benefits accrued in the model with benefits extended to 2015 on the basis of growth of 5% and a discount rate at 5% (Table 16), and 7% (Table 17)

Table 16 Assessed benefits from program 2.3 (at 5% discount)

All amounts in 2008 dollars	Low value sensitivity CBR scenario	Assessed CBR
Creative Butcher / Retail Technology	\$38,567,466	\$38,567,466
Shelf Stable Product	\$65,254,019	\$181,476,942
Value Added Products	\$13,466,615	\$37,746,485
<b>Assessed benefit in 2008 dollars</b>	<b>\$116,288,101</b>	<b>\$257,654,216</b>
<b>Net Impact in 2008 dollars (benefits less costs)</b>	<b>\$92,999,896</b>	<b>\$234,366,011</b>

Table 17 Assessed benefits from program 2.3 (at 7% discount)

All amounts in 2008 dollars	Low value sensitivity CBR scenario	Assessed CBR
Creative Butcher / Retail Technology	\$31,088,290	\$31,088,290
Shelf Stable Product	\$52,804,280	\$145,572,974
Value Added Products	\$10,488,722	\$29,310,835
<b>Assessed benefit in 2008 dollars</b>	<b>\$94,381,343</b>	<b>\$205,927,099</b>
<b>Net Impact in 2008 dollars (benefits less costs)</b>	<b>\$73,752,005</b>	<b>\$185,067,762</b>



## 8. Industry Partner Interviews

The successes of two of the three successful outcome clusters were the direct consequence of partnerships with value adding processor companies who took the outputs of the industry funded research and developed consumer products. Both of these companies were interviewed in order to assess ultimate commercial outcome of the partnerships compared to their initial expectations. The type and focus of the support provided by MLA was different in the case of each company.

- ▶ The added value product range developed in partnership with **Beak & Johnston** (B&J) were product-line extensions to the BBQ range based on using existing plant and processes to manufacture new red meat products.
- ▶ The partnership with **EasyFoods** provided for the development of a process and methods for the manufacture of new products for sale into a completely different market segment/channel compared to the prevailing chilled / frozen disposal options.

### 8.1 Beak & Johnston

#### 8.1.1 Company / Market

Beak and Johnston is a second level processor taking primal cuts from processors and converting them into retail ready (modified atmosphere) and food service cuts for a range of customers. B & J have produced a limited BBQ range of value added products, the highest profile of which has been the barbeque pork ribs (under their own brand)

MLA agreed with B&J to provide support funding for a wide variety of red meat based retail products with mixed success but there was one stand out product in the BBQ range: the Sizzle Steak which was supported by Woolworths as the retail channel for the product.

#### 8.1.2 Sizzle Steak

Sizzle steak has been a significant success for both B&J and Woolworths having being rolled out nationally upon its release and subsequently meeting all projected sales volume targets:

- ▶ The product is still exclusive to Woolworths in Australia
- ▶ The product is known to be one of the highest gross margin SKU's across all species in the meat cabinet

B&J are now looking at developing other markets for the very thin sliced product/process to further develop the product range:

- ▶ There are reports of significant interest from supermarkets in Asia for up to 25 tonnes per week of product, and
- ▶ There is consideration of further use as a pizza topping with interest reported by at least one of the Australian pizza chains and is also an opportunity to market the product (pre-cooked) into Japan for the same use.

Claimed industry outcomes of the product development partnership have been confirmed by observing a shift in the relevant indicators, including



- ▶ The measure of demand for primal cuts is reflected in the change in relative price of the primal cuts where outside flats have increased in price by 25 cents/kg across the industry. Historically outside flats were up to 40 cents per kg cheaper than topsides, however this spread has now been reduced to 10 to 12 cent/kg which appears to be a consistent trend that is likely to be maintained.
- ▶ On the basis of the forecast volume of cuts available for sale from equivalent domestic beef slaughter<sup>17</sup> in Australia the changing price for this primal cut provides an estimated increase in revenue in the supply chain of over \$7.0 million per annum.

### 8.1.3 Project Performance and Outcomes

- ▶ Experience gained through the development process of the BBQ range of products have been valuable for the further development of value added products in the B&J BBQ range and although the initial launch of some BBQ products have not been successful this has not meant that products have been abandoned entirely and may be revisited as market conditions become more favourable.
- ▶ Experience gained in the process of developing the BBQ range and the sizzle steak in particular are relevant to other projects:
  - Using MLA in a partnering project provided structure and deliverables to the project providing a framework for success
  - The involvement of MLA in the project provided the additional confidence necessary for Woolworths to commit to the project
  - The involvement of the retailer (and buy in by the staff) provided a source of valuable input, support and advice and national platform for promotion and launch would likely result in a quicker return on investment.
  - There is an advantage for entry into the retail market if consumers have experienced the product in QSR (Quick Service Retail) and it is likely that some of the development range (such as shredded beef) may be re-introduced after acceptance in QSR.
  - Getting the product to market and to economically sustainable volumes requires significant input into a full product development and launch process (including; pack sizing, packaging development, marketing of the product etc). It is important to note that the company in-kind contribution these projects to take it all the way to market is often more than 3 times the total initial cash cost to develop the prototype/concept for the new added value product

### 8.1.4 Counterfactual and Attribution - Discussion

At the time of the initiation of the partnership to develop a range value added red meat products Beak & Johnston were already in the value adding business although not creating the red meat products proposed in the project.

There are two interdependent counterfactual questions to be addressed in this evaluation;

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<sup>17</sup> Not all beef animals slaughtered in Australia are exclusively processed for domestic or export markets. Average cwt of animals in Australia is 263kg (MLA Australian Cattle Industry Overview August 2010) Domestic beef consumption 2009 738,000 tonnes (MLA website data). This provides an estimated 2.8 million cattle equivalents as domestic consumption. Average outside flat 10 kg /body (3.8%cwt). 2.8 million by 10.0 by 0.25 = \$7.0 million pa





1. *Would the R&D have been undertaken and/or would the benefits have been gained in the absence of MLA involvement? and*
2. *Has the involvement of MLA brought forward the benefit?*

These questions posed to B&J in order to understand the contribution of MLA programs to the development of added value products in this market.

- ▶ Given the profile and history of the company it is likely that B&J would have undertaken product development anyway in order to extend its range of products. It is less certain that the product development would have been using red meat or that the product acceptance in the market would have been as strong; if it had succeeded at all. Without the support of MLA it is unlikely that B&J would have been as committed to new product development and more cautious in planning its development knowing the risks failure are high because only 1 in 10 new products make it to market in this segment.
- ▶ The support and involvement of MLA in the project reinforced the necessary confidence of Woolworths to commit to supporting the product and access to this channel greatly increased the likelihood of successful sales outcomes in the market.
- ▶ The involvement of MLA and the rigor of the project partnership framework brought the product to market quicker and given the target market (BBQ product) enabling B&J to meet seasonal peak demand which was also an important factor in the success of the Sizzle Steak product.

## **8.2 Easy Foods – Shelf Stable Product**

### **8.2.1 Company / Market**

Easy Foods is company set up to manufacture shelf stable products. The original shelf stable partnership project was undertaken in collaboration with Innovative Foods Australia (IFA). This one partner in this entity has since evolved a new company called Easy Food Pty Ltd. Present indications are that this company has a capital value of between \$15 to \$20 million and is now positioned itself with the ability to grow significantly larger as its product range grows and the company enters new markets.

Another partner to the initial collaboration also created a separate brand off the same technology platform called Enjoyo (now owned by San Remo). This acquisition has allowed San Remo to enter the market with its own shelf stable products although the benefits of this development are not able to be captured and therefore these outcomes have not been included in the results reported for this technology development. However, the Enjoyo business is now a major driver for the observed demand for lamb shanks and other meat products added its range of shelf stable meals. In contrast to products produced by Easy Foods, the Enjoyo meals are primarily available in supermarkets, which is partly a consequence of the pre-existing profile of San Remo with retailers as an established supplier.

To date EasyFoods has had more sales success in the UK, particularly in the supermarket sector and more generally in the food service area (particularly in the food service sector in the UK). The dimensions of the retail market structure in Australia and the reluctance of pubs and food service channels to use the product have limited market growth for the Easy Foods product in





Australia. This is in stark contrast to observed growth of an established retail brand such as SunRice.

### 8.2.2 Shelf Stable Lamb Shanks

Initial interest in a lamb shank-in-sauce product originated from an enquiry made in 2001 to Tatiara Meat Company from a food service company based in the UK, although this original request was made for a frozen product. The development of a shelf stable product was explored as an option and samples processed using the prototype processing technology at the Barton Institute of Technology were developed and shipped by air to the UK retailer. The customer feedback on this first shipment was positive and provided the impetus to further product development. While the prototype samples had been successfully manufactured and delivered to the client the product was still at a very early stage of development and needed further work. Key issues were variability in flavour profile and storage stability that needed to be resolved in order to develop a manufacturing process that was robust and safe enough to provide products for both local and overseas markets.

MLA partnered with IFA on a number of projects that were necessary to develop this technology and by association a range of products of which is the most well-known is the lamb shank-in-sauce shelf stable product. This product has a significant market share in the UK and since the initial success of this project the shelf stable technology has been developed to include a wider range of products. A significant advantage for the shelf stable product, and one of the key enablers to its early adoption, is its import product classification by the EU which allows it to avoid tariff costs when imported into the UK which is estimated to be worth in the region of \$1.8 million pa.

The success of this export product is also thought to have contributed to the observed increase in the wholesale price of lamb shanks on the domestic market. It is unclear what proportion of the observed price increase is attributable to the additional demand for lamb shanks as exported shelf stable lamb shanks. Other key enablers for the rapid, wide-spread adoption of the product by the UK food service sector are; the significant reduction in preparation time relative traditional slow cooking methods, convenience of a pre-cooked product in a pouch, and the low skills base required in plating and preparation. This seems to be a case where a product that is based on a raw material in limited supply would not have to have a dominant share of this supply in order to result a disproportionately significant increase in price. This is the case observed in the Australian domestic market whereas over the period covered by this evaluation (2001 to 2009) the wholesale price of lamb shanks has increased from \$3.00 per KG to \$5.50 per kg<sup>18</sup> generating an additional return to the industry supply chain of \$ 30 million<sup>19</sup> (in 2009 dollars). Whilst it is clear that this development will have made a contribution to the observed changes in the wholesale price not all of the estimated industry benefits can be attributed to this outcome cluster.

Since early the 2000's there has been some significant restructuring and acquisitions of the partner entities originally engaged in the development of the shelf stable technology and the associated products. As a consequence, there are now several companies involved in the supply

<sup>18</sup> Comment provided at interview (4<sup>th</sup> August 2010) with Mr Paul Grogan Managing Director of Easy Foods Pty Ltd

<sup>19</sup> Number of lambs slaughtered in Australia 2009 was 21,273,000 (ABS stats) (this was a relatively low slaughter compared to previous years) During the period 2001 to 2009 the lamb price index has risen from 200 to 270 (ABS Stats), Reported price change of \$3.00 to \$5.25/kg (Mr Grogan) over the same period and 1.2kg of lamb shanks per animal (Ausmeat classification 5030) provides an annual price improvement of \$30.6 million for the industry.



of shelf stable products in the Australian market, including; Easy Foods, Enjoyo (San Remo), Mariano Foods, Oakfield and SunRice. However, importantly, due to the rising cost of the raw materials and associated supply chain costs the original shank-in-sauce product for the UK market is now being manufactured in Belgium, by EasyFoods, from shanks sourced from New Zealand.

It is obvious that the observed growth in the Australian market for shelf stable product can in part be attributed to the development of the process by MLA and its industry partners and some allowance for this spillover benefit has been included in the evaluation of this outcome cluster as follows..

### **8.3 Wider Use of Shelf Stable Technology**

The shelf stable technology development is a platform technology and consequently it is a process that is able to be used to manufacture a wider range of products than just those using red meat ingredients. The most prominent example in the Australian market is the precooked range of SunRice products

The causal relationships between the benefit stream claimed by this outcome cluster and the observed shifts in price and volumes of product sold and secondary effects these shifts have been very difficult to establish.

The observed increase in the price of lamb shanks, given that supply has increased slightly over the period, means that is the consequence of increased demand, some of which has been due to food fashion and some due to the availability of new products such as those from EasyFoods, whose product sales are also partly driven by the same food fashion demand. Similarly drivers for the observed increase in raw material prices is not limited to domestic supply effects as Australia does not control the global supply of this product. This is evident from the current substitution of lamb shanks from NZ in the Easy Food manufactured in the EU.

This environment of constrained raw material supply stimulates market opportunities for new products based on other raw materials that are coming on line including beef ribs-in-sauce, etc. This shows that continuing new product development will continue to return benefits to the red meat industry. For EasyFoods the development of ready-to-eat diet meals an emerging market opportunity, with supply contracts with major retail chains/brands, such as; Kate Morgan, Tony Ferguson, Terry White and the Boots (UK) chemists this year. As most of these meals are not red meat based, the level of spill over return to the industry difficult to assess and consequently while these developments are considered a significant part of the spill over benefits no benefits have been included in the cost/benefit calculation and results reported in this evaluation.

#### **8.3.1 Counterfactual and Attribution of MLA Input - Discussion**

In the consultation interview with EasyFoods the Managing Director Paul Grogan the likelihood that IFA would have invested in the necessary R&D to take the products to market was debated.

There are two interdependent counterfactual questions that were used to stimulate this discussion;

1. *Would the R&D have been undertaken and/or would the benefits have been gained in the absence of MLA involvement? and*
2. *Has the involvement of MLA brought forward the benefit?*



These two questions were raised with EasyFoods to determine the impact of MLA programs in the development of added value products in the market.

- ▶ The view of EasyFoods is that without MLA funding the project would still have been undertaken, but the rigor of the MLA partnership process along with the associated funding provided the impetus to start and complete the development of the technology. This view may be partly influenced by the events that occurred subsequent to commencing a partnership with MLA support and the resultant success of the products and technology in the market. In entrepreneurially driven technology start-ups such as IFA, development funds are normally very tight and availability of matching dollar support from MLA would have had a strong influence on how the scarce funds were allocated in this project. Similarly the structured project management approach and the discipline imposed by the need to meet milestone timeframes and events in order to secure payment of funds drove the completion of the partnership projects in a timely manner. An otherwise smaller scale project 'without' MLA funding and with the development work being undertaken in isolation would probably have limited and/or delayed the observed wide-spread adoption of the technology.
- ▶ The partnership funding provided for building the product development of facilities (at Warrigal) was a core part of all of the projects. This facility was available for the development of a number of products, not just those for EasyFoods but also a number of other companies with other product ideas, leading to a more rapid, wide-spread adoption of the technology.

It is difficult to assess the impact that the partnership projects has had in bringing forward the development of this technology because MLA involvement provides more than just matching research funds because it is also available to provide technical advice, support for the financial management of the project, confidence for other third parties to support the project and a structure to support timely delivery of project outputs. Consequently the contribution of MLA is considered to have been significant in bringing forward and enhancing the delivery of the benefits arising from the outcome cluster albeit the extent of this contribution unknown.



## 9. Counterfactuals

### 9.1 Introduction

While the cost/benefit analysis evaluates what has happened as a result of the project the counterfactual considers what was likely to happen 'without' MLA investment in the project or otherwise in the absence of the project.

The key questions that need to be answered to establish the counterfactual case are:

- ▶ *Would the R & D have been undertaken or the benefits gained in the absence of research funding?*
- ▶ *Has the research funding brought forward the benefit?*

Where there is demonstrated market failure then it is considered that nothing happened or will happen in the absence of the contribution by MLA because private investors would not be able to capture sufficient returns from the investment of their own funds in the same.

On this basis three of the project groups are not considered in the assessment of the counterfactual case, as they are considered not to have developed to a point of being capable of achieving a return in the market because there was only limited or no evidence of a sustained increase in sales of red meat.. These outcome cluster groupings are:

- ▶ MSAT
- ▶ Functional foods
- ▶ Advanced meat recovery

The outcome clusters that are considered to have had generated an additional industry benefit because of evidence of additional sales of red meat and therefore are able to be assessed are:

- ▶ Creative butcher network and Retail technology development
- ▶ Shelf stable products
- ▶ Value added products

Certain industry funded pre-commercial products/projects develop into partnership projects on the basis of the results promoted by MLA. These prototypes and technology concepts are intended to be developed into partnership projects at a later date. This is the case of many of the projects included in this evaluation and in particular developments such as MSAT (even though unsuccessful in the market) are in this category. Consequently assessment of the impact of MLA support at the industry partnership stage of development on balance favours the eventual development of the product/technology as the risk has been reduced and better framed by the earlier work (funded by industry through MLA). Where MLA provides particular benefit at the partnership stage is in bringing forward the developments, providing intellectual property relating to earlier work, reducing development risk, bringing structure and resources to the delivery of the project and providing increased confidence and reduced risk for third parties involved in the delivery of the projects.



## **9.2 Counterfactual Scenarios by Outcome Cluster Grouping**

### **9.2.1 Creative Butcher Network and Retail Technology Development**

The Creative Butcher's Network and the development of POS retail technology have been combined for the assessment of cost benefit since the data on file from surveys completed for MLA do not identify these benefits separately. However the focus of each of these prototypes/concepts target different desired outcomes. Therefore each has been considered in isolation during the development of these counterfactual scenarios.

#### *9.2.1.1 Creative Butcher Network*

The development of the Creative Butchers Network (CBN) involved a number of workshops, training, competitions and the development of retail POS materials as a means to develop the value adding and merchandising capability of staff in independent retail butcher shops. This initiative was attempting to leverage the growing profile of independent retail businesses and their increasing desire to drive sales growth by establishing red meat value adding as a point of difference compared to supermarket retailers. By definition the CBN is a cooperative venture in need of a co-ordinating and supporting organising resource. In the case of CBN the network has evolved from the initial membership of 500 and grown into the Red Meat Networking Club which now has more than 1500 active members still with limited ongoing support from MLA.

The initial effort required to establish the CBN and the ongoing resource commitment necessary to support the network, in the absence of any financial reward, means that it unlikely that the CBN would have developed 'without' MLA investment. Consequently it is considered that MLA contributions were essential to the project, which continues to generate positive returns for the industry.

The continued operation the CBN albeit with a different name is also a successful outcome for MLA in the testing of a collaborative independent retailer model.

#### *9.2.1.2 Retail Technology Development*

Back in the early 2000's, point of sale systems for red meat (that did more than just operate as a cash register) were generally not available to independent retail butchers in Australia. However, since the initial investment by MLA other pilot POS systems have been developed by commercial suppliers that are comparable to the POS equipment developed in this project. The subsequent development of retail POS systems by a range of vendors indicates that this development was likely to occur in the absence of industry projects funded by MLA. However, it seems likely that the initial funding provided by MLA stimulated awareness and demonstrated the market need for these POS systems. Therefore, the MLA investment has brought forward the now wide-spread adoption of POS systems by independent retail butchers.

### **9.2.2 Shelf Stable Products**

It is considered that the development of shelf stable products was likely to have proceeded without the MLA funding and involvement, although in the absence of MLA involvement the project may have delivered different, less beneficial, outcomes.

The primary driver for the initial projects and subsequent development of new products was an initial enquiry from the UK for a frozen product that was considered as suitable for the shelf stable packaging format.



Once the idea was formed the technical issues needed to be resolved to allow consistent delivery of product to the customer. At this point the involvement of MLA was accepted by all parties to have been significant contribution to the successful development of the technology and the resulting growth in product sales; not only for the new products directly linked to the partnership projects (primarily lamb shanks) but also to the wider spill over effects across the shelf stable food processing sector (e.g. Enjoyo meals, SunRice etc)

### **9.2.3 Value added products**

The development of value added red meat products were carried out in partnership with companies that already had some experience in value adding to meat products and consequently some interest in developing value added products from red meat.

Value adding processors have the option to choose from a variety of protein sources as ingredients for their value added products. Consequently, the involvement of MLA in promoting the development of red meat value add products, means that it is catalyst for new product development that may not have happened otherwise and/or it is facilitating the bringing forward of these VARM products into production.

As part of this development program MLA was looking to develop the innovation and value adding capability of the red meat industry at the processor level where it is thought that there is a significant opportunity to generate benefits via increased sales revenue and thereby returning greater value through increased utilisation of the whole carcass.



## 10. Sensitivity Analysis

### 10.1 Introduction

The following sensitivity analysis has been carried out for a range on input/output variables outlined below. The outputs of the analysis are based on:

- ▶ A discount rate of 5%
- ▶ The Total Program CBR's are based on the total RMI AOP costs for the 2.3 program.
- ▶ The projects with program costs are based on including the allocated MLA program costs (refer Table 2 only and do not include the unallocated costs associated with the 2.3 program (refer Table 2.

The sensitivity analysis for the Added Value Program 2.3 has considered three key variables for the value adding program:

#### 1. Attribution:

The benefits derived from a successful project are:

- a. Those that accrue to the company (increased sales, profit, market share etc.)
- b. Those that accrue to the wider industry in the form of higher prices, market access, new products etc.

In the case of the industry benefit it is often difficult to define the accurate assessment of the wider benefit since projects rarely are implemented in an environment where nothing else is changing. Consequently attribution is often partial based on an assessment of market impact and consideration of other trends and activities in the market.

#### 2. In Kind Contribution:

The additional resources provided by the company to bring implement the outcomes of the project. Typically these costs are market based (packaging, product launch etc.) and are part of the innovation to market process. (Refer section 12).

#### 3. MLA contribution to the project:

The funding mechanism for the Meat Donor Company projects are funded generally 50/50 by MLA and the partner company. In this part of the analysis consideration is given to the impact of changing the funding ratio.

### 10.2 Attribution

#### 10.2.1 Attribution Shelf Stable Products

Attribution from the development of the shelf stable product and in particular the development of the lamb shank product is considered to have contributed to a rise in the price of lamb shanks relative to the increase in lamb prices over the development period. The initial assessment attributed 54% of this relative increase to the shelf stable product. In this analysis the change in CBR is considered for 40%, 30% 20% and 10% attribution of industry benefit. Although there is a reduction in CBR as attribution is decreased the return on the investment in research remains positive; even at only 10% attribution. In this analysis only the attribution of the shelf stable



product has been changed. The CBR for the company involved with the project remains unchanged since the calculation of CBR at this level excludes industry attribution.

**Table 18** Change in attribution for shelf stable product

Discount rate	5.00%	Base model attribution at 54% benefit from shelf stable \$30 million pa		
MLA contribution	50.00%			
Partner in kind contribution	0.00%			
Market growth for product benefits	5.00%			
Cost Benefit Ratios	Total Program	Project with program costs	Project without program costs	Partner Company Costs only
MSAT		N/A	N/A	N/A
Functional Foods		N/A	N/A	N/A
Advanced Meat Recovery	11.06	N/A	N/A	N/A
Value added products		11.07	37.93	120.23
Creative Butcher / Retail Technology		22.08	31.40	62.80
Shelf Stable Technology		188.70	196.00	15.59
Discount rate	5.00%	Model attribution at 40% benefit from shelf stable \$23 million pa		
MLA contribution	50.00%			
Partner in kind contribution	0.00%			
Market growth for product benefits	5.00%			
Cost Benefit Ratios	Total Program	Project with program costs	Project without program costs	Partner Company Costs only
MSAT		N/A	N/A	N/A
Functional Foods		N/A	N/A	N/A
Advanced Meat Recovery	9.46	N/A	N/A	N/A
Value added products		11.07	37.93	120.23
Creative Butcher / Retail Technology		22.08	31.40	62.80
Shelf Stable Technology		149.94	155.91	15.59
Discount rate	5.00%	Model attribution at 30% benefit from shelf stable \$17 million pa		
MLA contribution	50.00%			
Partner in kind contribution	0.00%			
Market growth for product benefits	5.00%			
Cost Benefit Ratios	Total Program	Project with program costs	Project without program costs	Partner Company Costs only
MSAT		N/A	N/A	N/A
Functional Foods		N/A	N/A	N/A
Advanced Meat Recovery	8.32	N/A	N/A	N/A
Value added products		11.07	37.93	120.23
Creative Butcher / Retail Technology		22.08	31.40	62.80
Shelf Stable Technology		122.25	127.27	15.59





Discount rate	5.00%	Model attribution at 20% benefit from shelf stable		
MLA contribution	50.00%	\$11.5 million pa		
Partner in kind contribution	0.00%			
Market growth for product benefits	5.00%			
Cost Benefit Ratios	Total Program	Project with program costs	Project without program costs	Partner Company Costs only
MSAT		N/A	N/A	N/A
Functional Foods		N/A	N/A	N/A
Advanced Meat Recovery	7.18	N/A	N/A	N/A
Value added products		11.07	37.93	120.23
Creative Butcher / Retail Technology		22.08	31.40	62.80
Shelf Stable Technology		94.56	98.64	15.59
Discount rate	5.00%	Model attribution at 10% benefit from shelf stable		
MLA contribution	50.00%	\$5.7 million pa		
Partner in kind contribution	0.00%			
Market growth for product benefits	5.00%			
Cost Benefit Ratios	Total Program	Project with program costs	Project without program costs	Partner Company Costs only
MSAT		N/A	N/A	N/A
Functional Foods		N/A	N/A	N/A
Advanced Meat Recovery	6.04	N/A	N/A	N/A
Value added products		11.07	37.93	120.23
Creative Butcher / Retail Technology		22.08	31.40	62.80
Shelf Stable Technology		66.86	70.00	15.59

### 10.2.2 Attribution Value Added Products

The most successful product in the value added program was the sizzle steak from Beak & Johnston. In this instance it was assessed that the development and success of the product had created increased demand for outside flats increasing the price of the primal by 25 cents/kg relative to market movement in the pricing of beef primal cuts.

In considering the sensitivity of the result with a variance in this input to the CBR the following table reduces the primal pricing in 5 cents per kg steps down to 5 cents per kg. In each instance the return in investment for the value added program remains positive, although with all program costs included for the B&J projects this has reduced to a CBR of 3.95 at only 5 cents attribution.



**Table 19** Variance in attribution for value add products

Discount rate	5.00%	Industry Attribution to 25 cents/kg then \$7.0 million pa benefit		
MLA contribution	50.00%			
Partner in kind contribution	0.00%			
Market growth for product benefits	5.00%			
				Partner
Cost Benefit Ratios	Total Program	Project with program costs	Project without program costs	Company Costs only
MSAT		N/A	N/A	N/A
Functional Foods		N/A	N/A	N/A
Advanced Meat Recovery	11.06	N/A	N/A	N/A
Value added products		11.07	37.93	120.23
Creative Butcher / Retail Technology		22.08	31.40	62.80
Shelf Stable Technology		181.70	196.00	15.59
Discount rate	5.00%	Change industry Attribution to 20 cents/kg then \$5.6 million pa benefit		
MLA contribution	50.00%			
Partner in kind contribution	0.00%			
Market growth for product benefits	5.00%			
				Partner
Cost Benefit Ratios	Total Program	Project with program costs	Project without program costs	Company Costs only
MSAT		N/A	N/A	N/A
Functional Foods		N/A	N/A	N/A
Advanced Meat Recovery	10.8	N/A	N/A	N/A
Value added products		9.29	31.83	120.23
Creative Butcher / Retail Technology		22.08	31.40	62.80
Shelf Stable Technology		188.70	196.00	15.59
Discount rate	5.00%	Change Industry Attribution to 15 cents per kg then \$4.2 million pa benefit		
MLA contribution	50.00%			
Partner in kind contribution	0.00%			
Market growth for product benefits	5.00%			
				Partner
Cost Benefit Ratios	Total Program	Project with program costs	Project without program costs	Company Costs only
MSAT		N/A	N/A	N/A
Functional Foods		N/A	N/A	N/A
Advanced Meat Recovery	10.54	N/A	N/A	N/A
Value added products		7.51	25.73	120.23
Creative Butcher / Retail Technology		22.08	31.40	62.80
Shelf Stable Technology		188.70	196.00	15.59



Discount rate	5.00%	Change Industry Attribution to 10 cents per kg then \$2.8 million pa benefit		
MLA contribution	50.00%			
Partner in kind contribution	0.00%			
Market growth for product benefits	5.00%			
Cost Benefit Ratios	Total Program	Project with program costs	Project without program costs	Partner Company Costs only
MSAT		N/A	N/A	N/A
Functional Foods		N/A	N/A	N/A
Advanced Meat Recovery	10.28	N/A	N/A	N/A
Value added products		5.73	19.63	120.23
Creative Butcher / Retail Technology		22.08	31.40	62.80
Shelf Stable Technology		188.70	196.00	15.59
Discount rate	5.00%	Change Industry Attribution to 5 cents per kg then \$1.4 million pa benefit		
MLA contribution	50.00%			
Partner in kind contribution	0.00%			
Market growth for product benefits	5.00%			
Cost Benefit Ratios	Total Program	Project with program costs	Project without program costs	Partner Company Costs only
MSAT		N/A	N/A	N/A
Functional Foods		N/A	N/A	N/A
Advanced Meat Recovery	10.02	N/A	N/A	N/A
Value added products		3.95	13.53	120.23
Creative Butcher / Retail Technology		22.08	31.40	62.80
Shelf Stable Technology		188.70	196.00	15.59

### 10.2.3 CBR for Combined Variance in Attribution

#### Tables

**Table 18** and **Table 19** show the sensitivity for when various levels of attribution are applied to the shelf stable and value add projects. In each case all other inputs to the analysis remain unchanged. In the following table the worst case scenario (above) for each of the projects has been combined to provide a low range level for the program 2.3 CBR. Shelf stable attribution is set at 10% of the possible calculated maximum and the relative increased value of outside flats as a result of the value add program is calculated at 5 cents per kilogram.



Discount rate	5.00%			
MLA contribution	50.00%			
Partner in kind contribution	0.00%			
Market growth for product benefits	5.00%			
Cost Benefit Ratios				Partner
	Total Program	Project with program costs	Project without program costs	Company Costs only
MSAT		N/A	N/A	N/A
Functional Foods		N/A	N/A	N/A
Advanced Meat Recovery		N/A	N/A	N/A
Value added products	4.99	3.95	13.53	120.23
Creative Butcher / Retail Technology		22.08	31.40	62.80
Shelf Stable Technology		66.86	70.00	15.59

*Table 20 Low range attribution for shelf stable and value add projects*

### 10.3 In Kind Contribution

At the completion of a successful partner project there remains a significant amount of work (and cost) to take the product to market and provide the partner company with a return on their investment. This in kind contribution is incurred on a number of items such as marketing, packaging design and development, point of sale materials etc.

This has been assessed as an additional percentage deducted from the benefits accrued by the company from the successful participation in the development project.

Under the present MDC funding model the company and MLA each provide the funds on a 50/50 basis. In kind contribution has been assessed on the basis of additional cost to the company's contribution to MDC, consequently a 100% additional contribution for in kind costs is equivalent to the amount of funds the partner company provides to MDC. The contribution has been calculated from 0% to 200% in 50% steps. In kind contribution has been included for all measures of CBR.

Even with a 200% in kind contribution by the participating companies the CBR for the research investment is very positive.



**Table 21** *Variance in kind contribution*

		Base case no in kind contribution		
Discount rate	5.00%			
MLA contribution	50.00%			
Partner in kind contribution	0.00%			
Market growth for product benefits	5.00%			
	Total Program	Project with program costs	Project without program costs	Partner Company Costs only
Cost Benefit Ratios				
MSAT		N/A	N/A	N/A
Functional Foods		N/A	N/A	N/A
Advanced Meat Recovery	11.06	N/A	N/A	N/A
Value added products		11.07	37.93	120.23
Creative Butcher / Retail Technology		22.08	31.40	62.80
Shelf Stable Technology		181.70	196.00	15.59
		50% In kind Contribution from Company (+25% of MDC project cost)		
Discount rate	5.00%			
MLA contribution	50.00%			
Partner in kind contribution	50.00%			
Market growth for product benefits	5.00%			
	Total Program	Project with program costs	Project without program costs	Partner Company Costs only
Cost Benefit Ratios				
MSAT		N/A	N/A	N/A
Functional Foods		N/A	N/A	N/A
Advanced Meat Recovery	10.76	N/A	N/A	N/A
Value added products		11.06	37.68	118.25
Creative Butcher / Retail Technology		18.78	25.12	50.24
Shelf Stable Technology		181.70	195.88	12.47
		100% In kind Contribution from Company (+50% of MDC project cost)		
Discount rate	5.00%			
MLA contribution	50.00%			
Partner in kind contribution	100.00%			
Market growth for product benefits	5.00%			
	Total Program	Project with program costs	Project without program costs	Partner Company Costs only
Cost Benefit Ratios				
MSAT		N/A	N/A	N/A
Functional Foods		N/A	N/A	N/A
Advanced Meat Recovery	10.47	N/A	N/A	N/A
Value added products		11.06	37.43	116.27
Creative Butcher / Retail Technology		16.34	20.93	41.87
Shelf Stable Technology		181.70	195.75	10.39



		150% In kind Contribution from Company (+75% of MDC project cost)			
Discount rate	5.00%				
MLA contribution	50.00%				
Partner in kind contribution	150.00%				
Market growth for product benefits	5.00%				
		Total Program	Project with program costs	Project without program costs	Partner Company Costs only
Cost Benefit Ratios					
MSAT			N/A	N/A	N/A
Functional Foods			N/A	N/A	N/A
Advanced Meat Recovery		10.19	N/A	N/A	N/A
Value added products			11.05	37.18	114.28
Creative Butcher / Retail Technology			14.46	17.94	35.89
Shelf Stable Technology			188.70	195.63	8.91
		200% In kind Contribution from Company (+100% of MDC project cost)			
Discount rate	5.00%				
MLA contribution	50.00%				
Partner in kind contribution	200.00%				
Market growth for product benefits	5.00%				
		Total Program	Project with program costs	Project without program costs	Partner Company Costs only
Cost Benefit Ratios					
MSAT			N/A	N/A	N/A
Functional Foods			N/A	N/A	N/A
Advanced Meat Recovery		9.93	N/A	N/A	N/A
Value added products			11.04	36.93	112.30
Creative Butcher / Retail Technology			12.97	15.70	31.40
Shelf Stable Technology			188.70	195.50	7.80

### 10.3.1 Change in MLA Contribution

The MDC funding structure provides for each of the parties (MLA and industry partner) to contribute half of the project costs.

The following tables consider the impact of varying this arrangement on the outcomes of the project for the company.

The overall CBR for the project remain unchanged since the total project funding has not been altered (ie the company provides the funds to adjust for the change in MLA contribution). While the CBR for the companies reduces as the contribution by MLA is reduced the outcomes of the project remain positive even with only a 20% MLA contribution.

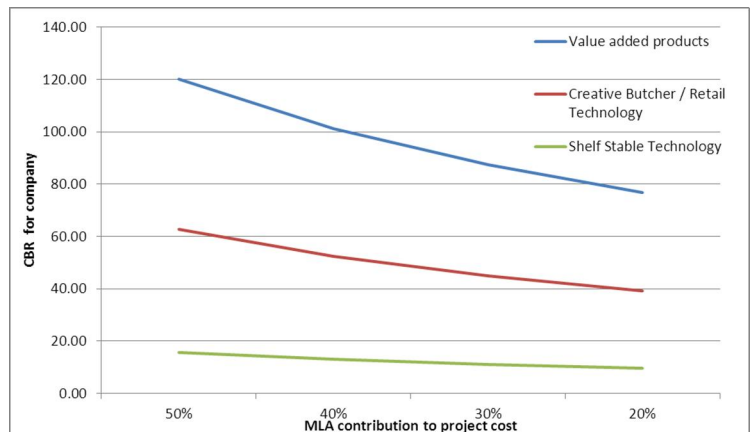


Figure 4 Change in company CBR in relation to MLA contribution



However projects with a lower return may become marginal as companies assess the investment in R & D against other priorities and development opportunities.

Table 22 Variance in MLA contribution

Discount rate	5%	This is the base case scenario used in the report sent to MLA and agreed for publication. Note in kind contributions included in Partner Company Costs only		
MLA contribution	50%			
Partner in kind contribution	0%			
Market growth for product benefits	5%			
Cost Benefit Ratios	Total Program	Project with program costs	Project without program costs	Partner Company Costs only
MSAT		N/A	N/A	N/A
Functional Foods		N/A	N/A	N/A
Advanced Meat Recovery		N/A	N/A	N/A
Value added products	11.06	11.07	37.93	120.23
Creative Butcher / Retail Technology		22.08	31.40	62.80
Shelf Stable Technology		188.70	196.00	15.59
Discount rate	5%	At 40% MLA contribution and 60% partner only affects the Partner CBR as total project costs unchanged		
MLA contribution	40%			
Partner in kind contribution	0%			
Market growth for product benefits	5%			
Cost Benefit Ratios	Total Program	Project with program costs	Project without program costs	Partner Company Costs only
MSAT		N/A	N/A	N/A
Functional Foods		N/A	N/A	N/A
Advanced Meat Recovery		N/A	N/A	N/A
Value added products	11.06	11.07	37.93	101.25
Creative Butcher / Retail Technology		22.08	31.40	52.33
Shelf Stable Technology		188.70	196.00	12.99
Discount rate	5%	At 30% MLA contribution and 70% partner only affects the Partner CBR as total project costs unchanged		
MLA contribution	30%			
Partner in kind contribution	0%			
Market growth for product benefits	5%			
Cost Benefit Ratios	Total Program	Project with program costs	Project without program costs	Partner Company Costs only
MSAT		N/A	N/A	N/A
Functional Foods		N/A	N/A	N/A
Advanced Meat Recovery		N/A	N/A	N/A
Value added products	11.06	11.07	37.93	87.44
Creative Butcher / Retail Technology		22.08	31.40	44.86
Shelf Stable Technology		188.70	196.00	11.14



Discount rate	5%	At 20% MLA contribution and 80% partner only affects the Partner CBR as total project costs unchanged		
MLA contribution	20%			
Partner in kind contribution	0%			
Market growth for product benefits	5%			
Cost Benefit Ratios	Total Program	Project with program costs	Project without program costs	Partner Company Costs only
MSAT		N/A	N/A	N/A
Functional Foods		N/A	N/A	N/A
Advanced Meat Recovery		N/A	N/A	N/A
Value added products	11.06	11.07	37.93	76.95
Creative Butcher / Retail Technology		22.08	31.40	39.25
Shelf Stable Technology		188.70	196.00	9.75





## 11. Program 2.3 Measures of Success

This ex-post evaluation of the MLA program 2.3, Developing New Markets & Products, highlights a number of aspects relating to the performance of research & development programs.

The approach to this evaluation considers the projects in program 2.3 from an economic benefit perspective, whereas not all R & D projects are undertaken for purely financial or economic benefit.

1. Typically projects may be seeking to develop platform technologies that will enable the future development of economically viable processes or products. The initial development of shelf stable technologies and MSAT may be considered to be in this category. Although the investment in MSAT has not shown an economic return at this stage the ultimate value of the developed technology may be found when making a contribution to future (as yet unknown) developments.
2. Projects may be undertaken to influence industry awareness and build capability or to demonstrate the possible application of different technologies that may be able to be used in follow on product development projects. Shelf stable products may be considered in this category, similarly the demonstration of advanced meat recovery.
3. Projects may be assessed to be failure either through product or process shortcomings or through failure to leverage perceived market needs (e.g. missing optimum price points, unexpected demand & supply shifts, competitor response, etc.). MSAT and functional foods are in this category.

### 11.1 Outcomes of the Program 2.3 Developing New Markets & Products

The MLA program 2.3 – Developing New Products has provided a positive return on investment as well as bringing forward the development of new products and technologies. These outcomes have provided the opportunity for the distribution of increased returns across the red meat supply chain and spill over benefits to the wider food processing industry.

1. The estimated industry benefit that is attributable to outcomes arising from program 2.3 is estimated at **23.33** times the total cost of investment by MLA and cash costs tracked by industry partners. It is important to note that these costs don't include any in-kind costs associated with the relevant partnership projects.
2. The sales of both the shelf stable and the Sizzle Steak products are very likely to have contributed to the observed increase in the domestic wholesale pricing of the cuts used to make these products and therefore proving the opportunity for distribution of benefits across the supply chain that is attributable to these value added projects. These benefits have been included in the total benefits attributed to the projects, but the secondary effects of increased demand for substitute cuts have not been assessed.
3. There have also been benefits generated by the development of shelf stable technology in other industry sectors (in particular rice) that have provided a wider socialisation of the project outcomes. Insufficient data is available to be able to



assess this impact in financial terms. Therefore, an estimate of these benefits have not been included in the financial assessment for this evaluation.

4. The counterfactual consideration for these projects indicates that while they would have been carried out at some stage; driven by an imperative to develop new products for processing companies to grow. The need for companies supplying to consumers to innovate and develop products is not in question, however as secondary processors these companies have a choice of where to invest in new products and choice on the protein component of the new products (chicken, pork, tofu etc). The support provided by MLA ensures that the product development process is focused on the use of red meat as the primary protein for the development thereby providing direct benefit to the red meat industry.
5. In each case the involvement of MLA was considered to have brought forward the observed outcomes, provided structure, support and delivery as well as providing confidence to third parties involved in the projects and subsequently providing the necessary channels for bringing the new products to market.

## 11.2 Evaluation of Projects

For projects and/or programs to be effectively evaluated, for the delivery of outcomes, a number of criteria need to be established prior or at the outset of the project:

### 1. **The outcomes that are expected on completion of the project or at a defined time following completion.**

As far as possible the definition of outcomes needs to be clearly related to the scope and methodology of the project which drive to delivering the objectives of undertaking the work. (outcomes do not necessarily need to be financial). Many of the projects reviewed in this evaluation considered global outcomes for projects based on ill defined or unreferenced data. The proposed outcome needs to be considered on the basis of what is achievable, particularly when considering the possible market outcomes arising from these projects. Many of the projects note the delivery of a report to be the outcome of a project (an ideal outcome for a researcher from a project is a report that recommends further research). Even non financial outcomes need to be defined, possibly in technical terms.

### 2. **The project KPI's or measures of success – project outcomes.**

Project outcomes (refer also 1. above) need to have clear project specific measures for evaluation defined at the start of the project.

### 3. **The process and /or methodology that will be used to measure the outcomes of the project/program.**

Defining the assessment methodology at the start of a project allows the methodology of the project and the reporting to be structured into the planning of the project enabling the project progress and completion assessment to be more easily completed.

### 4. **The timeframe lag for assessing project outcomes.**

Many of the projects supported by MLA have a long term benefit to the partner companies and the wider industry. This projected benefit is often the driver of disclosure holidays with partner projects, however the ramping up of project outcomes over time and the delayed adoption by industry support the view that part of the deliverables from any project should be a lagged assessment of potential benefits arising from the project..



### **11.3 Program 2.3 Project Commentary and Lessons Learnt**

The ex-post evaluation of program 2.3, Developing New Markets & Products, highlights a number of areas where lessons may be learnt from the selection, execution and delivery of the projects.

#### **11.3.1 Selection of Projects**

Program 2.3 was designed to enable the development of new products to enhance red meat industry outcomes in the market, largely from the development of new (preferably value added) products or technologies.

The review of the program highlights a number of areas where lessons may be learnt and future projects may be better structured to provide more beneficial outcomes.

##### **1. Understanding of costs of the supply chain, particularly where value is being added and also where costs are added.**

At a retail level the drivers and returns from the development of new products (including new packaging and other developments) are not necessarily those that relate directly to the product but may be driven by other processes or developments in the supply chain. Typical examples of this include centralised production of retail ready products costing more to process but providing larger savings by controlling the distribution of the product across the supply chain (net benefit). Similarly the level of processing of a shelf stable product enables non quota access for product into EU markets as well as providing the storage and logistical advantages of a shelf stable product

##### **2. There is a need to establish clear market outcome – products – service.**

Products can fit into a range of consumer market segments in a various classifications from victim to staple, impulse to business special to drive third party product sales. Understanding how new products fit into the market and the effect they will have on the whole market and various segments is essential. On average the amount spent on meat products in the market stays relatively stable week on week and the differences in the return for red meat is largely driven by the shift of spend between categories rather than growing the total market for all meat products (above natural growth in consumption through population expansion). Consequently there is a need to provide develop products that increase the return which then provides the opportunity for benefit distribution back down the supply chain as well as growing market share for red meat products. Shelf stable and added value products achieve this. This benefit needs to be achieved without adversely impacting the existing total mix of product in the market. It is counterproductive if a new product that adds value to a low cost cut is successful at the expense of a high value high return product which thereby lowers the total return from the sale of red meat to producers and processors in the supply chain.

##### **3. Understand the drivers of the target market.**

There is a need to understand the drivers of the target market(s) for new products. Supermarkets, retail butchers, institutions and hospitality all have different needs and drivers for the acceptance of new product or development concepts. While the visible differences are simple to recognise there other drivers of the business, driven both by the owners/operators and the consumers. For example hospitality, food service and institutional businesses may pay by the kilo of product consumed but they order the component parts of the meals as portions. Consequently a restaurateur will order steaks in packs of 5 (or 10) (portion controlled) to be able to track consumption and inventory by matching meals to number or packs used on any night. Fast food franchises reorder systems in store are often based on



the same principles using the count of product unit sales to determine reorder points. The same differences and drivers apply to other products and markets (see point 1 above)

**4. The need to be at the forefront of market trends (and food fashions)**

Most markets for food products are made up of staple products and novelty or niche products and while the mix of staple products will change over time the development of new products and the opportunity to increase returns (by increasing the value of low priced cuts) lies mainly in the market for niche/fashion products. Consequently it is difficult to achieve a better return from an improved steak, while lamb shanks in a sauce will sell at a price that provides a premium return (assisted by the use promoted by celebrity chefs and restaurants). There is a clear need for market intelligence outside of this program which is necessary to follow those markets, particularly in the areas that drive consumer trends.

**5. Understanding who will be the beneficiary of the research & development.**

The rationale behind R & D programs is often based on the premise of a beneficiary of the outcomes of the project. This rationale may be based on market research, perceived wisdom or the considered opinion of those promoting the project. However this may not be accurate and the determination of the beneficiaries of developments needs to be assessed, often with a holistic view of the markets and supply chain. For example the development of “beef bacon” (halal) targeted towards Muslim markets is of similar interest to dieters on the basis of its low fat content, with no loss of flavour (albeit artificial) without the additional cultural imperatives. Similarly the benefits of gas flushed packaging (extended shelf life) has been of little benefit to retailers who have maintained the three day shelf life cycle in store while gaining the returns from supply chain control and reduction in revenue yield loss in the traditional in-store butchery arrangement.

**6. Development of platform technologies**

Collegiate or socialised research & development produces better outcomes when the funds are directed to speculative research and the development of platform technologies. The closer to market the R & D the more certain the project outcomes, the more dependent on the immediate market conditions for success and the more short term the life of the development. This is highlighted by the development life cycle of shelf stable products where the technology is able to be used for a range of products (including outside the red meat industry) whereas the development of alternate value added products (e.g. B&J BBQ product range) have a shorter life cycle and provide only limited long term benefit to the industry. In this context the added value projects reviewed in this program were instigated with the justification that the program was a demonstration project and a means to shape industry opinion on the benefits of directing development towards producing consumer oriented products. However while the financial benefits (in terms of added value to the ingredients) may be able to be estimated the influence on industry direction may be more difficult to assess in the short to medium term.

**7. The limitations of a technology looking for a product or outcome.**

Many developments and technologies are shown to have useable outcomes at the initial R&D stages, however not all developments are suitable for development to market. It is not unusual for researchers (and others) to see potential positive outcomes in the market that are largely overstated or non-existent. This generally arises from a lack of understanding of the markets by researchers, a misunderstanding of supply chain issues or a simple overstatement of the benefits of the development or perceived future demand from consumers. To a degree the MSAT partly falls into this category where there was a perception derived from limited



industry intelligence that older people would increasingly look to purchase a cheaper, tender product at a reasonable price. This assumption of perceived demand was based on a number of untested factors and increased the risk of the project to the point where further product trials and sensory testing revealed other shortcomings in the cooked product that were sufficient to halt any further investment. However while the project demonstrated that the initial assumption about demand in the target markets for the finished products was unfounded the IP generated during the research phase of the MSAT development is still valid and may ultimately benefit future projects.

#### **11.4 Management and Reporting of Projects**

In carrying out the review of program 2.3 Developing New Markets & Products it was often difficult in locating files containing meaningful (financial or cost) data and in this respect the value of many of the projects could be improved with a change in the reporting requirements. In the reporting of milestones and project outcomes the reports focus on the deliverables of the projects (e.g. milestones met, task completed etc.) without providing adequate data on the deliverable outcomes of the project (actual change in yield, benefits to industry, change in supply chain costs etc). In looking to assess the benefits in the project files it seems that whilst there are estimates of benefit included in the ex-ante submission for project funds but these tend to be generalised rather than specific and never updated at the end of the project or after an implementation period. Such ex-post review data may provide metrics to better assess which future projects are to be funded on the basis past experience of likely cost / benefit outcomes.

## 12. Project Funding, Development Risks and Sharing of Cost

The catchcry of “*Innovate or Die*” while a simplistic slogan for the complex issues of maintaining and growing businesses in the face of a constantly changing environment and evolving consumer demands it also is an underlying imperative for not only companies but also whole industries. Over many decades the rural industries in Australia have invested in meeting the challenge of remaining relevant and efficient in the market and this too is typical of the red meat industry. Over the last century Australia has moved from shipping beef quarters and whole lambs to the market to specific (bone in/bone out) dressed cuts, finished consumer goods (such as shelf stable products to retail and food service) and centrally packed retail ready product.

Typically these changes have also driven/been driven by changes to the supply chain as shown in *Figure 5 below*.

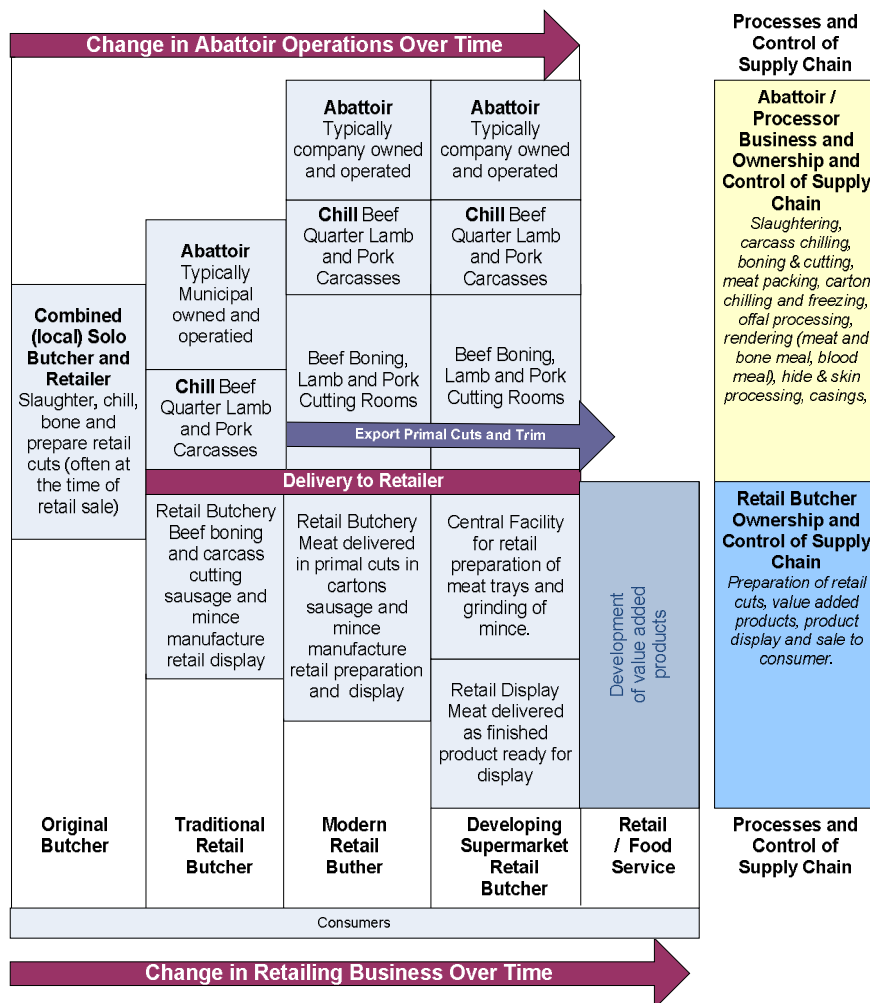


Figure 5 Changing meat supply chain and industry structure over time

This development of products in the market and the refining and changing of the supply chain has not been a linear process and has required and continues to require investment in innovation and development.

Consumers rarely directly inform processors on their requirements and needs, there is little *spontaneous demand* for specific new products or convenience of service and often negative market signals are also drivers of innovation in product development as much as innovative ideas for the industry.

Success/failure signals also may only come after products are tested in the market which is demonstrated by the market risk curve shown in *Figure 7* where the costs are normally borne by the processing companies.

Consequently the meat industry along with other innovators experiences a proportion of projects that fail to develop to the point of becoming consumer products.

In this area Industry funding is essential to ensure that a sufficient flow of raw ideas and concepts enter into the development cycle (*funnel*) to ensure sufficient successful outcomes to maintain industry competitiveness.

*Not all products resulting from successful projects are directed to the retail consumer. In this section of the document the description of a product may be a new form of packaging or the development of a process robot. The customers/consumers may be farmers, meat processors small goods manufacturers, supermarkets etc. In this context a product is an outcome from research that is made available to the market for purchase by a user or consumer. The benefit to the industry may be in cost reduction, entry into new markets, improved hygiene. Consequently a product is considered relevant if it maintains or enhances the competitive position of the industry and/or its stakeholders.*

### The product development funnel

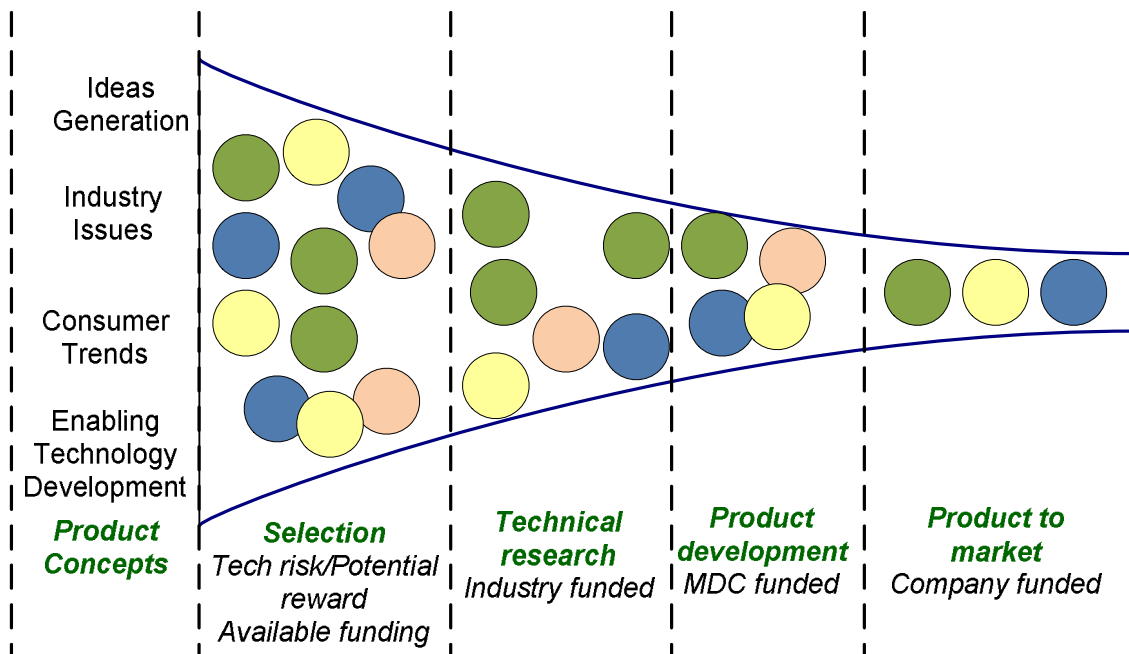


Figure 6 Development funnel of ideas competing to become consumer products

However it is in this early stage area that consumer focused companies are unlikely to be investors in research and development.



The projects reviewed in this analysis have been supported, to a greater or lesser extent, from a mix of funding sources to develop products and processes and bring them to the market.

The willingness of companies (rather than industry bodies or research organisations) to invest in early stage research is limited due to the (statistically) high risk (of failure) profile and the ill defined future benefits. While the cost of development up to proof of concept is often relatively low (on a per product or process basis) the high number of ideas that fail multiplies the cost of development at this stage. Unless it is perceived by a company that there is significant intellectual property or (market dominating) competitive advantage to be gained a company is unlikely to invest at this early stage. With many options available to private companies to invest to grow a business (typically by increasing production or extending existing products) it is often difficult to mount a convincing case for investment in early stage (or blue sky) research.

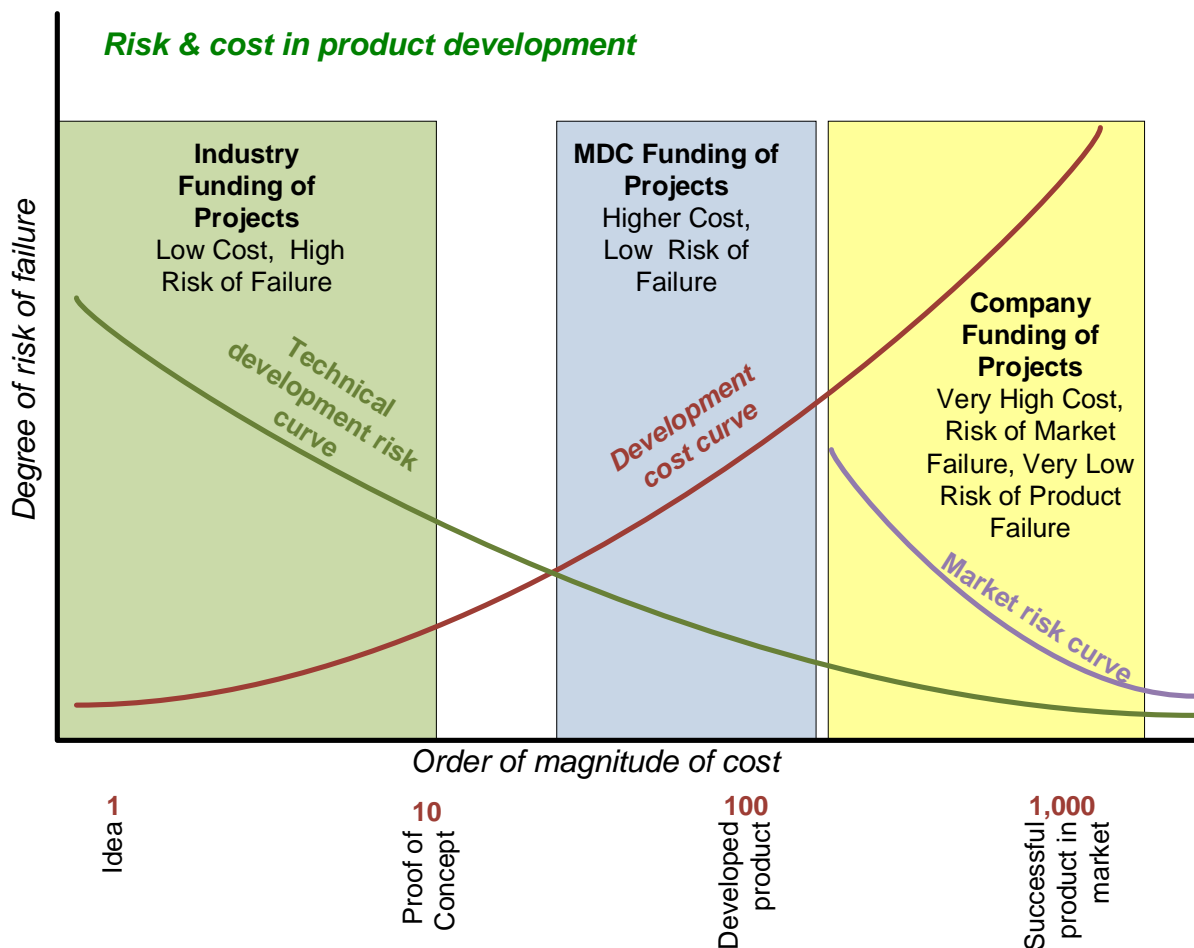


Figure 7 Risk/cost curves for organisations involved in research and development





In the red meat industry this early stage research investor role is undertaken by MLA; typically with the mix of successful outcomes expected at this stage. Without this investment by MLA in innovation in the red meat industry, investment in the development of the industry on a range of initiatives (from automation to hygiene to new products) would be significantly reduced. This would not only be to the detriment of the red meat industry but also the wider rural industries, arising from the spillover effects often associated with positive research outcomes. Typically this is in the area of developments of early stage (and in the case of MLA MDC research) and the collegiate nature of the intellectual property. Consequently there are now a number of (non red meat) shelf stable products in supermarkets; including rice products with reportedly 18 or more retort style production lines now set up in Australia. Similarly from the Beak & Johnston range Sizzle Pork has now been developed using the same technology and supply chain established in the initial project. In the reverse manner the drive to automation and robotics in the pork industry (particularly in Europe) has had a spill over effect into the red meat industry providing input into processes on what is a related but more variable product.

*While not all research meets the original market focused outcomes hoped for at the start of the research project the assessment of the outcomes is not necessarily a black and white process. Outcomes may indicate a need for further research having identified areas at variance to expectations or an outcome that while positive shows little application in the commercial market (MSAT is in this category), outcomes that prove a negative result but lead to other areas of research etc. Consequently while the financial filter that is applied to project outcomes in terms of marketability may indicate lack of success; other criteria provide a wider assessment criterion for the assessment of R&D project outcomes.*



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