

final report

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External Review of MLA Northern Beef Communication and Research Adoption Program 2009

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Abstract

This external review pertains to Communication and Research Adoption Program of MLA's Northern Beef Program. The review assesses the achievements and performance of the program over the years ended June 2007 to 2009. The review was undertaken to assist MLA with the future development and deployment of resources towards extension and communication activities that deliver benefits to northern beef producers.

The review found that the program had substantially achieved its goals and had met a large proportion of the performance criteria set for the three year period. Also, the investment in the program over the three years of \$ 1.24 million (present value of costs in 2008/09 \$ terms using a discount rate of 5%) was estimated to have produced a benefit cost ratio of 2.6 to 1 and a net present value at \$ 2 million.

A set of recommendations for any future investment in the program is included in the review report including an evaluation framework for consideration in any future investment.

Executive Summary

Rationale

This review is part of MLA's evaluation and continuous improvement strategy whereby regular assessments are performed of past investments for both accountability purposes and for identifying where changes can be made in order to improve future performance.

Objectives

The review presents an assessment of the investment in the communications and adoption activities of MLA's northern beef program. It assesses the contribution of the investment to achieving the objectives of the northern beef program as well as its performance against the criteria and targets set for the period 2007 to 2009. Another objective of the review is to assess the adequacy of the information currently collected for the program and its components and to identify how such may be improved for the future.

Results and Achievements

The review combines an economic impact evaluation of the program investment with an assessment of achievements and performance. The key outputs are:

- An assessment of the impact of the program on the northern beef industry.
- A cost-benefit analysis of the program's investment.
- An assessment of the program achievements against its Key Performance Indicators (KPIs).
- An assessment of the contributions made, and constraints faced, by the different program components.
- Identification of opportunities for further investment and improvement.
- An evaluation framework for future monitoring and measuring.

Assessment of program performance

- The northern beef industry has performed positively in the period being reviewed with increasing cattle numbers and positive productivity growth. While this is positive for the adoption program investment, it can not be inferred that the program has been the key driver of aggregate performance due to a range of variables and the relatively small size of the investment.
- The program has raised awareness of the various opportunities open to northern beef producers to gain new information and become involved with a range of learning and support activities that open up management possibilities and options for their enterprises.
- The Beef up forums were a key feature of the program's activities during the past three years. These 34 forums, spread across three years and three jurisdictions, involved 1,892 producers; this constitutes about 20% of the all northern beef producers.

Benefits

- The recorded involvement of northern beef producers in various MLA program components is likely to have had an influence on management practice and farm profitability of some northern beef producers. However, independent evidence to support such relationships is not strong and further effort needs to be made in future programs to collect and assemble relevant data that demonstrate such an impact.
- Some producers have positioned themselves with increased capacity to change practices and increase incomes and system sustainability by undertaking training and via contact with other program components.

- Others producers moved forward into a position of greater awareness of learning opportunities available.
- Some consultants and advisers were also better informed as a result of a number of the program components.

When and how producers and industry can benefit

Some northern beef producers have benefited from the MLA investment over the past three years from direct involvement in training courses, forums and demonstration sites. Other producers have benefited from the array of information promulgated by different forms of media.

This knowledge has influenced a range of management practices and decisions on some of these producer units. In addition, capacity to improve decision making has likely been enhanced for another set of producers where circumstances (financial, personal or climate) may have inhibited improvements to date. It is likely therefore that both short and long term benefits are linked to the program.

While the program accounted for about 1% of the total northern beef investment by MLA in 2006/07, this increased to about 13% in 2007/08, with the majority of the budget being invested predominantly in research. The program has increased the application of knowledge and has been critical to the objective of maximising returns from investment in scientific and applied research. This review has increased accountability though producers and government being able to see application and value in the varied uses of their financial contributions to MLA via levies and matching grants.

The program appears to have covered the varied types of industry structures from size of unit through to a range of producer locations throughout the three northern jurisdictions.

Conclusions

1. The MLA and other investment in the program for the past three years has been effective and has benefited northern beef producers through building capacity to change as well as directly stimulating the adoption of improved practices and decision making. The outcomes of past R&D investment by MLA and others without this investment would have been significantly less positive, so important is communication and encouragement of interest in change and providing readily accessible information and pathways to accommodate such desires.
2. The review has found that the program had substantially achieved its goals and had met a significant proportion of the performance criteria set for the three year period. Also, given the assumptions made, the MLA investment in the program over the three years of \$1.24 million (present value of costs in 2008/09 \$ terms using a discount rate of 5%) was estimated to have produced a benefit cost ratio of 2.6 to one and a net present value of \$2 million. While the results of the cost-benefit analysis were positive, confidence in these results would be higher if improved information on impacts had been able to be assembled.
3. The results of the cost effectiveness analysis suggested that offering the training courses was one of the more cost effective components funded but again data deficiencies hindered the credibility of this analysis.
4. The current Northern Beef Strategic Plan and Adoption Program Plans were only partly helpful in providing a framework for evaluation. Baseline information for evaluation of progress is lacking at a range of levels, there were too many KPIs and no principal set that appear more important than others, and many KPI s were not measured or measurable. It was also

questioned whether the adoption component of the northern beef program should have a separate planning document, rather than being only an integrated strategy of the northern beef program. Having said this, the integration at an operational level appears efficient and effective. However, the northern beef program as a whole needs to have a clearly defined planning, operational and budget structure without strong horizontal alignments that have reduced the effectiveness of information assembly and reporting in the past.

5. A set of recommendations for any future investment in the program is included in the review report including an evaluation framework for consideration in any future investment.

Recommendations

It is recommended that MLA:

1. Continue to invest in adoption and communication activities in the northern beef program.
2. Briefly review and document the completed PIRDS program in order to document the lessons learnt.
3. The objective of raising awareness of MLA programs and information access needs to be consolidated in favour of capacity building, with greater priority given to formally addressing constraints and the measurements of impacts and benefits.
4. Discard the formal planning for the subprogram and incorporate such activities into the Northern Beef Program Strategic and Operational plans.
5. Continue with the business analyses approaches being developed (COP and benchmarking).
6. Simplify and reduce the number of KPIs and ensure that the KPIs defined can be measured and a measurement method is defined, dates for targets clearly specified, a commitment made and a budget available to ensure such measurements are made.
7. Align M&E of adoption and communication vertically with northern beef R&D rather than horizontally across LPI or some other broader livestock program within MLA.
8. Encourage further follow up surveys to exit surveys for Beef Up forum attendees.
9. Consider, in conjunction with state agencies, assisting with some coordination of the follow up activities regarding planning and implementation of GLM courses.
10. Give attention to a number of potential activities that would build up an improved profile of northern beef producers.
11. Give further attention to developing an M&E framework at three levels for the northern beef program:
 - (a) the first level is improved description of industry structure, performance and practices.
 - (b) the second level is in the area of financial business performance that can be used for both component evaluation as well as for precipitating an increased rate of change through benchmarking and case studies of successful journeys, setting research priorities and providing entry points to capacity building.
 - (c) the third is at the level of recording and measuring the participation, and adoption, nature and impact of management changes precipitated by MLA activities.
12. Explore the wider use of case studies in the second level.
13. Consider, in conjunction with the state agencies, the potential for a wider northern beef program that encompasses the four organisations with regard to planning, but with particular attention to an M&E Framework

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1 Background

The northern beef industry spans three Australian states/territories and encompasses a wide range of land types and property sizes. There is also a wide range of production systems geared to differing end points such as slaughter, growing out, fattening or preparing for feedlotting, and live export. Over 80% of the northern beef herd is in Queensland, about 13% in the Northern Territory, and 5% in the north of Western Australia. A small proportion of properties (43%) hold a large proportion of the cattle (92%).

The Northern Beef Program

Meat and Livestock Australia (MLA) operates the Northern Beef Program (NBP) as part of its national livestock production research and development investment. The NBP has three principal subprograms:

1. Improving environmental health,
2. Improving productivity, and
3. Enhancing communication and adoption.

The Communication and Research Adoption Subprogram

The NBP communication and adoption subprogram focuses on:

1. Information access,
2. Participatory learning, and
3. Monitoring and evaluation.

The subprogram targets all beef producer types in the north and is aimed at increasing productivity, environmental sustainability and short and long-term profitability across the industry through delivering relevant technical and management information to producers and encouraging management practice change where appropriate.

The NBP Strategic Plan

The current Strategic Plan for the NBP (MLA, undated 1) is part of, and aligned with, MLA's Livestock Research and Development Strategic Plan 2006-2011 (MLA, undated 2). The NBP Strategic Plan provides the priorities and direction for the NBP investment over this five year period.

A key goal of the NBP program is “to influence producers’ motivation, exploration and adoption of improved management practices.....”. The overall strategic objective of the Communication and Research Adoption Subprogram is to increase producer knowledge, skills and confidence by 10% by 2011 by investing in:

- Access to information through various mechanisms.
- Opportunities for participatory learning for producers to increase their skills through MLA directed workshops, genetics advisory services, *EDGENetwork*[®] and producer research support.

Principal Components of the Program

There are a number of components/activities in the subprogram, with the four major current components being Beef Up forums, Producer Demonstration Sites (PDS), *EDGENetwork*[®] courses and the Frontier Magazine.

'Beef Up' forums commenced in the northern beef industry in calendar 2007, with a pilot program funded earlier in 2006. These forums are one day forums held at various producer locations in northern Australia each year.

Producer Demonstration Sites are a way in which producer groups can improve their knowledge, awareness and profitability through group initiated research activities. The scheme represents a way for producers to demonstrate, develop and adopt priority research technologies and findings from northern beef program supported research.

EDGENetwork[®] through, its structured learning workshops, provides a vehicle for communicating the outcomes of past R&D investment to meat and livestock producers so that they can improve their profitability and sustainability.

Frontier Magazine is a magazine produced quarterly consisting of a series of articles containing information of practical benefit to northern beef producers.

Partnerships

Most of the program components are delivered with partners, predominantly Queensland Primary Industries and Fisheries, the Western Australian Department of Agriculture and Food, and the Northern Territory Department of Primary Industry and Mines.

Purposes of the Review

This review is to assess whether MLA and its partners' investments in the various components of the program over the past three years has been rewarding and has impacted on and benefited producers in the northern beef industry across the various jurisdictions.

Another purpose of the review is to assess the adequacy of the outcome and impact information currently collected via the program components and to identify how such may be improved for the future from the viewpoint of better assessing impacts of future investment. In recent times, monitoring and measuring the impacts of MLA investment has become a more important strategy aligned with MLA's continuous improvement strategy.

This review also sought to identify aspects of the program where changes could provide greater impact in the future.

2 Project Objectives

The objectives of the review are:

1. To identify and implement an appropriate methodology to enable an estimation of industry impact of the program. This will include an assessment of the program's impact against the key management practice changes that impact on productivity, profitability and sustainability of the Australian beef industry on a national and state delivery basis.
2. To determine the benefits and contribution of the individual program components to achieving industry impact and outcomes.
3. To conduct a cost-benefit analysis that will establish the return on total investment (i.e. for MLA and delivery partners) from the programs.
4. To identify key limitations or barriers that may be restricting the level of - and/or ability to adequately measure - industry impact achieved.
5. To recommend and prioritise changes to the operational, managerial, branding, delivery and strategic structure of the program that will improve the outcomes and impact in the event of further investment.
6. To provide benchmarks and practical (measurable and relevant) key performance indicators (KPIs) to guide future program initiatives.
7. To develop a monitoring and evaluation framework for the program to measure industry impact, outcomes and attribution accurately and efficiently.

3 Review Activities

The approach in this review follows evaluation guidelines that are now well entrenched within the Australian primary industry research, development and extension sector. From here on the 'Communication and Research Adoption Subprogram' is referred to simply as the 'program'.

The review activities have included:

- (i) Identification of the resource investment in the program measured by the actual resources (cash and in-kind, by year) that have been contributed by MLA and its range of partners in the program.
- (ii) Compilation of contextual information on the NBP before and during the review period.
- (iii) Description of each component of the program and identification of the outputs from each program component.
- (iv) Assessment of the extent to which key performance indicators for the program have been achieved, with supporting evidence where available.
- (v) Identification of the outcomes and impacts of the investment, particularly in relation to the application of knowledge of the key drivers of profitability of northern beef producers.
- (vi) Description of the economic, environmental and social benefits from the investment.

(vii) Identification of both information constraints that have affected the review as well as constraints that may be hindering research adoption.

(viii) Identification and estimation, where possible, of criteria that can be used in comparing the effectiveness and efficiency of program components.

(ix) A cost-benefit analysis for the investment including valuation of selected benefits.

(x) After consultation with MLA and state agency personnel, consideration of the future directions of the program with a focus on strategy, structure, management, operations and branding and delivery and identification where change may provide a more rapid level of impact.

(xi) Based on potential future investment, the development of a monitoring and evaluation framework that will improve the delivery of information relevant to assessing the performance of the program at the end of the next round of investment.

4 Program Investment and Components

The following section provides an account of the resources invested in the program as well as a description of the component activities that were funded from the resources identified.

4.1 Resources Applied

The review refers to the investment by MLA and associated partners for the three years ending June 2007 to June 2009. Both financial resources and in-kind resources are included.

Tables 4.1 and 4.2 present estimates of the resources invested in the program over the specified period.

Table 4.1: MLA Investment in the Program for Years Ending 30 June 2007 to 2009 (nominal \$)

Component	Year ended 30 June			Total
	2007	2008	2009	
EDGE ^{network} [®]	34,479	56,410	40,823	131,712
Sponsorship (a)	0	0	103,547	103,547
Web communication	0	13,850	30,000	43,850
Beef Up forums	5,600	179,091	223,945	408,636
Frontier Magazine	0	131,558	111,637	243,195
Producer Demonstration Sites	39,797	17,239	160,096	217,132
TOTAL for Communication and Adoption Research Subprogram	79,876	398,148	670,048	1,148,072
Total for Northern Beef Program (b)	6,700,000	5,300,000	5,300,000	17,300,000
Adoption Program as % total	1.2	7.5	12.6	6.6

(a) Includes funding for conferences and field day type events as well as supporting researchers to attend conferences in the northern beef region

(b) Includes \$1 m per annum for 2008 and 2009 for climate change and animal health

Source: MLA, 2009

Table 4.2: Northern Territory Investment in the Program for Years Ending 30 June 2007 to 2009 (nominal \$)

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2009**

Component	Year ended 30 June			
	2007	2008	2009	Total
EDGE <i>network</i> [®] (a) (b)	180,000	420,000	420,000	1,020,000
Beef Up forums (b)	10,440	10,440	10,440	31,320
Frontier Magazine (b)	2,610	2,610	2,610	7,830
Producer Demonstration Sites (b)	26,100	26,100	26,100	78,300
TOTAL	219,150	459,150	459,150	1,137,450

Source: Neil MacDonald, Northern Territory Department of Primary Industry, Fisheries and Mines

- (a) External funds from Landcare groups to employ follow-up extension personnel for GLM workshops
- (b) Time valued at salary of \$80,000; 1.5 times salary to provide for overheads gives \$120,000 per annum; weekly rate is therefore 150,000/46 (allows for 4 weeks annual leave and 2 weeks public holidays) = \$2,609. Daily rate to recover is therefore \$2,609/5 = \$522.

Table 4.3: Western Australia Investment in the Program for Years Ending 30 June 2007 to 2009 (nominal \$)

Component	Year ended 30 June			
	2007	2008	2009	Total
EDGE <i>network</i> [®] (a) (b)	120,000	120,000	120,000	360,000
Beef Up forums (b)	7,830	0	7,830	15,660
Frontier Magazine (b)	1,570	1,570	1,570	4,710
Producer Demonstration Sites (b)	0	0	24,000	24,000
TOTAL	129,400	121,570	153,400	404,370

Source: Michael Jeffery, Western Australia Department of Agriculture

- (a) External funds to employ follow-up extension personnel for GLM workshops
- (b) Time valued at salary of \$80,000; 1.5 times salary to include overheads gives \$120,000 per annum; weekly rate is therefore 120,000/46 (allows for 4 weeks annual leave and 2 weeks public holidays) = \$2,609. Daily rate to recover is therefore \$2,609/5 = \$522.

Table 4.4: Queensland Investment in the Program for Years Ending 30th June 2007 to 2009 (nominal \$)

Component	Year ended 30 th June			
	2007	2008	2009	Total
EDGE <i>network</i> [®]	751,175	1,052,151	843,489	2,646,815
Beef Up forums	78,591	104,793	108,983	292,367
Frontier Magazine	3,875	4,030	4,190	12,095
Producer Demonstration Sites	0	82,003	120,810	202,813
TOTAL	833,641	1,242,977	1,077,472	3,154,090

Source: Paul Hickey, Principal Coordinator (External Funding) QPIF, DEEDI.

Estimate achieved by identifying direct "base-line salary plus on-cost" contributions, applying a multiplier of 1.5 and summing the results. This approximately translates to applying a departmental sanctioned in-kind multiplier of 2.85 to base-line salaries.

It should be noted that the contributions reported above have been estimated using different methods; MLA estimates include cash contributions (and presumably no overheads), NT and WA estimates are made with a conservative overhead multiplier, and QPI&F has used a full overhead multiplier.

4.2 Brief Description of Program Investments

Beef Up Forums

The 'Beef Up' forums commenced in 2007 following an earlier pilot program. The events are one day forums held at various producer locations in northern Australia each year and aimed at raising awareness of the support services of MLA and other agencies with the ultimate goal of increasing profitability of producers. Discussions focus on the key profit drivers of beef businesses, including reproductive performance, liveweight gains and grazing land management. A major purpose of the forums is to stimulate producers into undertaking other extension and training activities such as PDS projects and *EDGEnetwork*[®] workshops.

***EDGEnetwork*[®]**

EDGEnetwork[®] has been one of several methods of extension employed by MLA as part of its RD&E program since 2000. This component is a series of structured learning workshops delivered to meat and livestock producers in all states of Australia through various arrangements with state and private sector agencies. *EDGEnetwork*[®] provides a vehicle for communicating the outcomes of past R&D investment to producers so that they can improve their profitability and sustainability.

Courses available to northern beef producers include:

- Nutrition EDGE
- Breeding EGDE
- Marketing EDGE
- The Selling EDGE
- Grazing Land Management (GLM)
- Working in Groups
- National Livestock Identification Scheme (NLIS)

PIRDS/PDSs

The MLA Producer Initiated R&D (PIRD) investments commenced in 1993 and have continued to 2007 after which such initiatives have been replaced with producer demonstration sites (PDS). The objective of the PIRD program was to support new ideas from producer groups to improve their knowledge, awareness and profitability through group initiated research activities. Many PIRDS were not completed; one potential reason for this is that they were not facilitated.

PDSs address more fully the target management practices defined by the program and have less restrictive funding guidelines compared to PIRDS. Also QPIF have input to PDS where they were not encouraged to be involved with PIRDS, the PIRDS being positioned as being solely producer driven.

Frontier Magazine

Frontier Magazine commenced publication in May 2006 after interest was expressed by northern beef producers for a similar type of magazine to Prograzier that was produced and distributed by MLA in the south. The role of Frontier is to help raise producer awareness of, and interest in, key R&D outcomes, to encourage producers to seek further information/training, and to influence their management practices.

Other Components

Other components include the Feedback magazine and miscellaneous publications (e.g. Leucaena book and various CDs). A cost of production calculator is under development for the NBP, and the MLA website for northern beef is being upgraded.

Other components included funding for conferences and field day type events as well as supporting researchers to attend conferences in the northern beef region.

5 Industry Context and Performance

In order to provide a context for the current assessment, some statistical data relevant to the northern beef industry observed over past years were assembled. The main features of these trends and other data are described here.

The more detailed supporting data appear in Appendix 1. The areas covered in Appendix 1 include:

- Farm and cattle numbers
- Branding and turnoff rates
- Australian beef prices
- Live cattle exports from Northern Australia
- Farm financial performance

5.1 Number of Beef Cattle Farms

The average number of northern beef cattle farms for the seven years ending June 2002 to 2008 is reported as 10,707. The average area operated for the three years ending June 2007 to June 2009 is 31,872 ha. Only one per cent of all beef cattle were located on 24% of the number of farms, whereas 42% of beef cattle were located on less than 4 per cent of farms.

5.2 Northern Beef Cattle Numbers

In the year ending March 2008, 83% of northern beef cattle were located in Queensland, with 12% in the Northern Territory and 5% in the north of Western Australia. Northern beef cattle numbers increased steadily from 13.0 million in 2003 to 14.7 million in 2008.

5.3 Branding and Turnoff Rates for Northern Beef

The branding rates and turnoff rates for Queensland, Northern Territory, and Pilbara beef enterprises over the period 1996/97 to 2007/08 showed little or no trend. Unfortunately, data for a number of years were not available. Turnoff rates also showed no trend.

5.4 Beef Prices

Since the year ended June 2000, beef cattle prices in Queensland have shown a slight upward trend in nominal \$ terms. However, since 2005 there has been a downward trend in prices in real terms.

5.5 Live Cattle Exports from Northern Australia

Drum and Gunning-Trant (2008) state that more than 80% of total live cattle exports have been sourced from northern Australia. Also they report that 75% of large beef properties in the northern region were either partially or substantially reliant on receipts from live export cattle over the period studied.

5.6 Farm Financial Performance

The average farm cash income of northern beef cattle farms for the three years ending June 2009 was positive for all farms but farm business profit was positive for only the large (1,600-5,400 head) and very large (>5,400 head) farms.

5.7 Productivity

ABARE (2009) reports the productivity growth in the northern beef industry has averaged 1.2% per annum from the year ending June 1978 to June 2007. Most growth has come from strong productivity growth in the 1990s but productivity growth is also continuing due to increasing outputs. ABARE report factors of importance are improved pest and disease control, higher fertility rates, increased turnoff rates and increased use of *bos indicus* cattle types.

An investigation into northern beef production systems with regard to key productivity, business profits and business resilience is currently being undertaken by the program. This is to provide a baseline to monitor future performance of the northern beef industry.

Climate impacts tend to mask both total factor productivity changes and individual output performance variables. Simple models may be able to take annual climate parameters into account to more meaningfully interpret annual variation in slaughter numbers, branding rates, turnoff rates and reproductive performance (if relationships between these factors and seasonal climate are known).

5.8 Conclusion

It can be concluded from the above information that the northern beef industry has performed positively in the period being reviewed, at least for the larger farms. Cattle numbers on farms have increased over the past five years as have live cattle exports, but prices for cattle in real terms have declined. It is not clear from the data presented whether the increase in cattle numbers has been on the larger or smaller farms or both. Branding rates appear to have fallen over the past decade in all jurisdictions.

However, while it can be assumed from the limited data available that productivity growth has continued which would be positive for the program investment, the assessment in the following chapter will show that it can not necessarily be inferred that the program has driven productivity growth and its components. Further, it may be expected that any productivity growth in the period of review is more likely to be the result of investment in earlier years and that the current investment under review may well impact on industry performance in the future.

6 Assessment of Performance

6.1 Introduction

The key evaluation questions are:

1. What have been the important outputs and outcomes of the program investment? Has the investment made a difference to northern beef production and benefited northern beef producers?
2. Have the key program objectives, targets and practice management changes identified in planning documents been addressed and measured by the program?
3. Can the component investments be ranked according to their cost effectiveness in delivering impacts? Should there be a different balance between component investments?
4. Have barriers to adoption and benefit capture been identified for each program component and for the program as a whole? Can changes be made in the program and /or components to address these identified barriers?
5. Have benchmarks and measures of key variables been derived and reported to guide and measure future progress?
6. Where can the largest impacts be made in future? Are there new components that should be funded or improvements made to existing components?
7. What will be the best set of Key Performance Indicators (KPIs) to use in future and what data should be collected differently to that now collected?

Assessing the program requires some reference to what was provided in planning documents. To this end the Northern Beef Strategic Plan and the Northern Beef Extension and Communication Plan 2007-2009 are both identified as planning documents to assist with evaluation questions (particularly questions 2 and 5).

6.2 Program Outputs and Outcomes

Available information on outputs and outcomes over the three years July 2006 to June 2009 is provided in Tables 6.1 and 6.2.

Table 6.1: Information on Program Outputs for the period July 2006 to June 2009

Component	Outputs
Beef Up Forums	<p>1. A total of 34 Beef Up forums with 1,892 producers held across Queensland, Northern Territory and Western Australia in the years ending June 2007, 2008 and 2009.</p> <p>2. This comprises 10 forums run in 2007, with producer participation numbering 722; in 2008 there were 12 forums covering 687 producers and in 2009, 12 forums were held with 483 producers participating.</p> <p>3. For further information on Beef Up forums see Appendix 1.</p>
EDGE <i>network</i> [®]	<p>1. Earlier records show that 10,970 participants attended EDGE<i>network</i>[®] courses in the six years to June 2006. Courses</p>

	<p>delivered by EDGE^{network}® from 2000 up to June 2006 that had been popular with northern beef producers include:</p> <ul style="list-style-type: none"> • Nutrition EDGE (1,086 attendees), an average of 181 attendees per annum • Grazing Land Management (781 attendees), an average of 130 attendees per annum • Breeding EDGE <p>2. The number of participants in EDGE^{network}® courses directly relevant to the NBP in each of the years ending June 2006, 2007, 2008, and 2009 were: 2006: 39 2007: 407 2008: 343 2009: 47 The removal of the Australian Government subsidy significantly affected numbers in 2008/09.</p> <p>3. The most popular courses in this three year period (July 2006 to June 2009) for Northern Beef Producers were: (i) Grazing Land Management 485 (236, 202, and 47 in each of the three years); for the first two years this was an increase over numbers in the period before the three years commenced. (ii) Nutrition Edge: 259 (140, 119, and 0 for each of the three years); this was somewhat lower than in the period before the three years commenced (iii) Breeding Edge 53 (31, 22, and 0 for each of the three years).</p>
PIRDS/PDSs	<p>One or two PIRDS are still operating but the activity will soon be phase out completely</p> <p>About 12 PDSs are currently running in the program. Establishment has been 2007: 4 initiated 2008: 4 initiated 2009: 4 initiated</p> <p>An additional set of 14 Queensland PDS with MLA funding will be delivered by QPIF by 31st July 2012.</p>
Frontier Magazine	<p>Current circulation in early 2008 was about 9,400. Currently, the circulation is about 10,000.</p>
Tips and Tools and other publications	<p>1. No new Tips and Tools resources specifically for the NBP have been published over the three year period. 2. Some NBP publications have been reprinted (e.g. Grazing Land Management: Sustainable and Productive Natural Resource Management). 3. Some new publications relevant to the NBP have been produced (but not specifically orientated to NBP) and some older publications updated or reprinted (e.g. in the areas of climate change and beef cattle nutrition).</p>

Information on the rating and usefulness of the particular northern beef program components was generally undertaken via exit surveys, for example, for Beef Up forums and EDGenetwork® courses. Both activities were rated highly by participants and feedback on specific aspects of the presentations over time was used to improve structure and delivery of these activities.

Table 6.2 Information on Program Outcomes over the Period July 2006 to June 2009

Component	Outcomes and Impacts
Beef Up Forums	<p>1. The Axiom surveys in 2007 and 2008 showed that the awareness of Beef up forums among northern beef producers increased from 37% in 2007 to 44% in 2008.</p> <p>2. Of forum producer participants in 2007, 46% surveyed stated they had changed management practices as a result of the forum attended (Axiom Research, 2007). Over 60% of participants indicated they would attend further training while over 50% indicated that they would make changes from what they had heard.</p> <p>3. One of the key objectives of Beef Up was to increase the awareness of project information produced and being produced and encourage additional learning and training activities. While exit surveys at forums have measured learning assessment from the forum itself and asked questions regarding the intention to change practices, there appeared little emphasis on the intentions to pursue learning or training activities, the latter being optionally identified by participants as a potential outcome of the forums. This issue could be dealt with by posing a specific question in the exit survey.</p> <p>4. Of the 33 forums held in the three year period, three were in the Northern Territory, four in Western Australia and 28 in Queensland. A forum in Munduburra was held as a pilot in June 2006 and made up the 34th Forum held.</p> <p>5. Of the 34 forums held 1,892 producers were in attendance. The number of producers completing evaluation forms was 1,182; this was 62% of producers attending.</p> <p>6. Over 90% of producers completing forms reported they had learnt something from the forum and 60% of producers consistently indicated they planned to make changes in management due to the forum.</p> <p>7. However, a lower proportion of producers stated they intended to undertake training activity as a result of the forum, but this was not in response to a direct question.</p> <p>8. A very useful post-forum evaluation activity of 30 interviews was conducted by telephone contact with the Munduburra (pilot forum) attendees 3 months after the forum was held. Almost 50% of participants surveyed had undertaken or planned to undertake formal training as a result of attending the Beef Up forum. Interest in formal training expressed included the areas of nutrition, grazing land</p>

	<p>management and marketing. Also, the number of participants indicating that they would like to change their management practices fell by only 10% between when asked in the forum exit survey and the later telephone survey.</p> <p>9. A second post-forum evaluation was undertaken in early 2008 consisting of 55 interviews of forum participants at least six months after they attended one of 12 Beef Up forums during 2007. Of these respondents, 52% had indicated they had intended to make changes to their management following the forum. Of these 46% had already implemented management changes and a further 50% planned to implement the changes in the next 12 months. A total of 22% of the respondents had already undertaken some training as a result of the forums with a further 37% indicating they would or possibly would undertake further training in the next 12 months. This second post evaluation survey also affirmed the usefulness and high regard held by producers regarding the forums.</p> <p>10. This longitudinal survey approach to affirming impact is most worthwhile and should be continued. It not only strengthens the confidence in the information provided in the exit surveys but also can lead to extension to further information from the respondents to define more clearly the financial benefits from the management and training changes. This potential extension is described in more detail later.</p>
<p>EDGE<i>network</i>[®]</p>	<p>1. Hassall and Associates (2004) undertook a review of EDGE<i>network</i>[®] with a focus on the impact and management arrangements. The review concluded that there had been a greater uptake of R&D findings due to EDGE<i>network</i>[®] workshops, particularly regarding improvements in pastures, stocking rates and selection of breeding stock. These improvements had been translated into increases in farm cash income. Producers consulted in the review indicated a 4% to 5.5% increase in productivity in the short term, with productivity increases up to 12% in the long term.</p> <p>2. Surveys had reported changes in management practices of northern beef producers as a result of attending the GLM course (73%) (Solutions Marketing and Research, 2004) or from attending MLA courses in general (65%) (Axiom Research, 2005).</p> <p>3. Awareness of EDGE courses among northern beef producers remained around the 50% level between 2005 and 2008.</p> <p>4. GLM remained the most popular course but EDGE course support fell away dramatically in 2008 and 2009 due largely to the withdrawal of the FarmBis subsidy by the Australian Government and the interruption of federal funding to the NRM regional groups who had traditionally sponsored many attendees.</p>

<p>External Evaluation of one Grazing Land Management (GLM) initiative</p>	<p>1. The following is a summary of the <i>Desert Channels Queensland Evaluation of GLM</i></p> <p>2. This QPIF program delivered under EDGE<i>network</i>[®] was assessed as building the capacity of land managers to develop sustainable grazing management systems on a property-wide scale. The GLM workshop series begins by mapping infrastructure and land types, followed by the identification of key grazing management issues, then theory and practice in land condition assessment and monitoring. The integrated program covers all components of land management for delivery to the landholders to promote sustainable land use. An external review of the GLM and Savanna Plan programs was undertaken in 2008.</p> <p>3. A major conclusion of the external review, based on a survey of 39 participants, was that these programs were delivering significant NRM benefits at the property, sub catchment and regional scales. Approximately half of the GLM participants had applied for funding to support their plan or project.</p> <p>4. In terms of practice change, 74% of participants had a plan post the GLM training; 64% stressed they had changed grazing practices as a result of attending the GLM course, and 67% of respondents were using the ABCD land condition framework. Two of the recommendations emanating from the review stressed the need for post-GLM support and the development of case studies from GLM training to link in with promotion of programs by QPIF and regional bodies.</p>
<p>PIRDS/PDSs</p>	<p>No evaluation of the PIRDS program has been undertaken despite it being discontinued. It would be a useful exercise to document internally the reasons for the discontinuation in order to guide future planning in such activities, this being consistent with the continuous improvement strategy adopted by MLA.</p> <p>It is too early to assess the outputs and outcomes of the PDS investment but the intention is to increase the number of PDS in the years ahead and increase QPIF involvement in a new set of PDS investment.</p>
<p>Frontier Magazine</p>	<p>A survey in 2007 (Taverner Research, 2007) reported that most readers rated the magazine as good or excellent. The majority of readers (86%) felt that the magazine was useful or very useful. Articles on pasture management and breeding /weaning practices were mentioned in particular.</p> <p>Just under half of Frontier readers had implemented a key action after reading Frontier; most commonly mentioned were seeking more information on land management and nutrition, changes to grazing management, early weaning and cattle management (Taverner Research, 2007).</p>

6.3 Addressing Objectives and Targets

Two planning documents are referred to in assessing the program's performance against its stated plans, performance indicators and targets. These are the Northern Beef Program Strategic Plan 2006-2011 and the Northern Beef Extension and Communication Plan 2007-2009.

Northern Beef Strategic Plan

MLA planned to allocate 20-24% of the NBP budget to the Communication and Research Adoption Program. However, according to Table 4.1, only 1.2% to 12.6% of the NBP budget was expended on the communication and adoption research subprogram in each of the three years.

Within this allocation, a guide was that increasing access to information was to be allocated 6-9% of the NBP budget (Beef Up, Tips and Tools, Frontier), enhancing producer capacity through participatory learning some 12-14% (EDGE and PDS), and monitoring and evaluation 2-4%.

Table 6.3 shows the performance against these targets based on the three year total budget actually expended and the last year of the budget (2008/09). The components allocated to each function are also shown.

Table 6.3 Budget Allocations: Planned versus Actual (%)

Objective	Components included	Target allocation (% of NBP budget)	Adjusted target (% communications budget)	Actual based on 3 years total (%)	Actual based on 2008/09 year (%)
Access to information	Beef Up, Frontier, Web	6-9	32	61	55
Enhancing capacity	EDGE, PDS	12-14	55	30	30
Monitoring and evaluation	Includes contribution to Axiom Survey	2-4	13	9 (a)	15 (a)

The table shows that a far higher proportion of the budget than originally planned has been expended on improving access to information as opposed to enhancing capacity. This has probably been due to the increased attention given to Beef Up to what was originally planned, and the decrease in demand for EDGE training due to the withdrawal of the government subsidy and the slow build up of the PDS investment. Also, the assignment of such activities such as Beef Up to only the one target may be misleading as Beef Up, according to the exit and follow up surveys, has motivated practice change directly without necessarily just instigating course attendance as originally envisaged.

Key Research Areas (KRAs), together with their objectives, desired outputs and outcomes, and program targets as expressed in the plan are shown in Table 6.4.

Table 6.4: Overview of 2006-2011 NBP KRAs, Objectives, Desired Outputs and Outcomes and Targets as Applied to Communication and Adoption

Key Research Area	Objective	Desired Outputs and Outcomes	Program Targets
Access to information (6% - 9% of NBP budget)	Increase producer access to information	Increased producer access to information	<ol style="list-style-type: none"> 1. Producer information forums piloted and 15 forums delivered 2. 5-8 Tips and Tools produced per annum from relevant projects 3. NBP project information available from MLA website 4. 3-4 editions of Northern Frontier Publication produced annually 5. 30% increase in awareness of key management practices
Producer capacity (12% - 14% of NBP budget)	Enhance producer capacity	Enhanced producer capacity through participatory learning	<ol style="list-style-type: none"> 1. 20% increase in producers completing <i>EDGEnetwork</i>[®] training 2. 50 relevant producer demonstration sites (PDS) established 3. 10% increase in adoption of key management practices
Monitoring and evaluation (2% - 4% of NBP budget)	Improve monitoring and evaluation	<p>Improved project monitoring and evaluation</p> <p>Ongoing industry support and project evaluation through NBP Industry Committee involvement</p>	<ol style="list-style-type: none"> 1. Economic cost-benefit analysis of NBP portfolio 2. Four NBIC meetings per year

Source: MLA Northern Beef Program Strategic Plan 2006-2011

Assessing even intermediate progress against these targets is difficult as there is no reference to time periods. However, it can be assumed that the targets refer to a five year period.

An assessment of the progress toward objectives and to meeting these targets is summarised in Table 6.5.

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Table 6.5: Progress Towards Meeting Objectives and Targets in NBP Strategic Plan

Program Targets	Progress
1. Producer information forums piloted and 15 forums delivered	Beef Up Forums were piloted and 33 forums delivered from July 2006 to June 2009 so surpassing the target of 15 for the five year period
2. 5-8 Tips and Tools produced per annum form relevant projects	Not achieved as there were no new Tips and Tools for Northern Beef produced in the 3 years. This was because MLA is moving away from hard copy material due to costs and the increased availability of access to electronic media such as web delivery. However, Tips and Tool material is available on the MLA web site but, relevant material is not found under the Northern Beef banner to facilitate easy access.
3. NBP project information available from MLA website	http://www.mla.com.au/TopicHierarchy/IndustryPrograms/NorthernBeef/Default.htm Accessed 23 July 2009 Progress has been made with development of relevant project information on the MLA web site. An impressive scope of information and detail is available, especially R&D project information and including Wambiana, Pigeon Hole and Cash Cow projects. Also, there is a good description and example presentations of Beef Up forums. But there is no mention of EDGE ^{network} [®] and other training courses such as those offered by Rangelands Australia or by private consultants. Also, more information could be available regarding Feedback, Frontier and the entire range of NBP products including an index of Tips and Tools particularly relevant to Northern Beef.
4. 3-4 editions of Northern Frontier Publication produced annually	Frontier commenced in May 2006 and approximately four copies per annum have been published since that time.
5. 30% increase in awareness of key management practices	In order to assess any increase in awareness of key management practices, such practices need definition. Up to date data on awareness or adoption of key management practices was not available. The Axiom survey could be used to monitor such awareness practices but only a modest number could be monitored regularly. The Axiom survey appears more orientated now towards awareness and impact of the MLA program and its components, rather than reporting on changes in industry practices as a whole.
6. 20% increase in producers completing EDGENetwork training	The numbers of attendees at EDGE ^{network} [®] courses for each of the three years show that this 20% target has not been met. With the year ending June 2006 as base, annual numbers in 2007 increased 2%, fell 16% in 2008 and by 86% in 2009.
7. 50 relevant producer demonstration sites (PDS) established	With PDS development ongoing for two years about 14 have so far been established. However, over the next two years, there may well be another 14 established under a QPIF contract, leaving a remaining target of 22 to be developed if the original target is to be met.

<p>8. 10% increase in adoption of key management practices</p>	<p>There is no singular list of key management practices defined in the strategic plan for northern beef. Three potentially relevant lists that have been sourced are:</p> <ol style="list-style-type: none"> 1. 23 key messages and 25 best practice indicators are listed in a document covering Beef Business Management, Beefing up Liveweight Gain, Beefing up Reproductive Performance and Grazing Land Management. 2. The “top ten northern beef management practices“ with associated sub strategies appear in another document developed by the Northern Beef Management Team but this does not appear in any planning documents. 3. A set of key management practices related to aspirational targets for each of productivity and environmental foci were specified and measured in the MLA Management Practices survey for northern beef producers (specialist and mixed) in 2005 (ABARE, 2006). <p>However, a fourth set of target management practices and adoption benchmarks, with data for July 2005 as a baseline, appear in the Northern Beef Extension and Communication Plan (See later). These include a set of 16 target management practices under headings of business management, genetics, marketing, grazing management and pasture utilisation.</p> <p>One list of key management practices needs to be developed/adopted, together with a strategy for data to be collected under the AXIOM or ABARE surveys.</p>
<p>9. Economic cost-benefit analysis of NBP portfolio</p>	<p>This target has been met as per this report.</p>
<p>10. Four NBIC meetings per year</p>	<p>This target has been met, with some meetings conducted by telephone.</p>

Northern Beef Extension and Communication Plan 2007- 2009

This operational plan (MLA, 2007) provides a framework and strategy for raising awareness and motivation for producers to undertake learning activities with the ultimate goal of building capacity to change and increasing the overall level of adoption of target management practices. The plan identifies performance criteria that can be used to measure the progress made in applying the various communication and learning components of the program. A quarterly evaluation report was to compile the results of all evaluations to ensure a process of continual improvement is achieved. No quarterly report has been sighted and it is believed that such reporting developed into an ‘as required’ basis.

The Extension and Communication plan reports that in 2004-05 there were 17,996 northern beef producers and all producers (both MLA members and non-MLA members) constitute the target audience for MLA. The overall goal is “Australian red meat producers operating profitable, sustainable businesses, which are aware of and manage the key drivers of productivity and profitability to adapt to change”. This number of about 18,000 is different to that in Table 5.1 from ABARE where the number is closer to 11,000. This difference is probably due to the minimal size definition of a northern beef farm, where ABS statistics probably include small hobby farms and the ABARE data exclude producers that have a minimal financial turnover. Even with the ABARE sample, 25% of the 11,000 farms hold only 1% of the cattle. As hobby farms pay the beef levy,

MLA may understandably include them in their definition. It would be helpful to standardise on the ABARE definition.

Aspirational targets

The aspirational targets set by LPI and relevant to the northern beef program and expressed in the communication plan, together with comments on their achievement or otherwise, follow:

1. Increase weaning rate by 5%. This was not achieved by the industry according to the branding rate figures in Table 5.3 and therefore any attempt at some positive attribution to the program is irrelevant. However, the Axiom survey reported in 2008 that the average weaning rate among course/program participants rose from 69 to 71% as a result of the MLA program. It is also possible that the industry branding rate may have declined even further without the investment, although there is no evidence to support this.
2. Reduce age at sale. This parameter has not been measured and is very difficult to report on.
3. Increase awareness of the key environmental risks and encourage relevant management practices by 20% and increase the knowledge, skills and confidence of producers by 10%. ABARE measured these in 2005 via producers self rating of knowledge skills and confidence to reduce cost of production (53-61%) and to improve environmental management (63- 73%) (ABARE, 2006). This gave a baseline and therefore there is a need to ask this question again, preferably in an ABARE survey if pursuit of measuring this target is continued.
4. At least 65% of producers as a result of their participation in learning activities will change at least one practice. The exit and follow up surveys for EDGE courses and Beef Up suggest that this target was probably reached.

The key performance indicators listed in the plan are presented in Table 6.6.

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Table 6.6: Key Performance Indicators (KPIs) for the Program

Objective	Goal	KPI Area	KPI	Target	How measured
Raise awareness	Build and maintain awareness of the key profit drivers in northern beef production	Awareness of key profit drivers	1. Awareness of key profit drivers	12% of producers by June 2008 and 14% by June 2009	No results reported in Axiom (2006, 2007, and 2008)
			2. Awareness of environmental risks and relevant management practices	8% of producers by June 2008 and 10% by June 2009	No results reported in Axiom (2006, 2007, and 2008)
			3. Awareness of best practice key animal welfare procedures	4% by June 2008 and 7% by June 2009	No results reported in Axiom (2006, 2007, and 2008)
			4. Number of new NBP concise project summaries (Tips and Tools) to be added to website	16 by June 2008 and 20 by June 2009	Project summaries available but no new Tips and Tools
			5. Project database developed	Initiated by June 2008 and completed by June 2009	Initiated, and to be completed soon
			6. Number of Frontier Magazines published	7 editions by June 2008 and 11 editions by June 2009	Achieved
Engage producers	Build confidence and capacity to change	Confidence and capacity through learning	7. Producers completing EDGENetwork courses	10% increase annually	2007 showed an increase of 2% over 2006 but after that there was negative growth
			8. Producer demonstration sites established	10 by June 2008 and 20 by June 2009	Probably 8 by June 2008 & 12 by June 2009

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			9. Beef Up Forums held	15 by June 2008 and 22 by June 2009	Both targets exceeded
			10. NBPIC meetings held for industry input and program monitoring	6 by June 2008 and 9 by June 2009	Achieved
Adoption	Increase adoption of target best management practices	Adoption	11. Increase in producers adopting target management practices	4% increase by June 2008 and 10% increase by June 2009	Not possible to aggregate. See Table 6.4.

Source: MLA Northern Beef Extension and Communication Plan 2007-2009

One observation regarding Table 6.6 is whether measurement against these targets was in fact intended. If so, measuring such indicators on awareness and adoption each year would require questions in the AXIOM survey where changes for each year may well be difficult to interpret.

Table 6.7 presents some baseline data for some previous target management practices. No updated information is available at the industry level.

Table 6.7: Progress in Addressing Target Management Practices
(Percentage of Northern Beef Population)

Area	Level in 2005 (AXIOM)	Level in 2005/06 (ABARE)
Calculate cost of production in c/kg	53%	48%
Participate in farm benchmarking	17%	17%
Use a specialist advisor (other than an accountant) at least once per year	17%	45%
Have a defined breeding objective	33%	69%
Use EBVs or index values in sire selection or purchase	38%	37%
Have a documented cross breeding program	27%	n.a.
Marketing plan for the business	32%	31%
Have documented customer specs	38%	n.a.
Weigh cattle to monitor growth	52%	45%
Sell finished cattle	66%	62%
Have received carcass feedback	72%	n.a.
Have changed management practices as a result of carcass feedback	52%	69%
Routinely assess the digestibility of feed	35%	55%
Use NIRS technology	11%	4%

Have a defined utilisation target for each paddock (utilise % of pasture growth)	38%	46%
Consider the SOI or other – seasonal climate forecasts when making stocking rate or other decisions	22%	n.a.

Tables 6.6 and 6.7 illustrate where KPI and time targets have been defined/set. However, in many cases, information to measure progress has not been collected.

Overall Assessment

There were significant deviations from the planned budget allocations. This deviation demonstrated the difficulty of assigning outcomes a priori regarding awareness and capacity building to specific program initiatives. It may be more meaningful to assign budget allocations directly to specific program components, but with the expected outcomes of each component in mind.

The objectives in the NBP Strategic Plan for Northern Beef were largely followed and many of the targets met. Of the ten targets in the plan, five were considered met or will be met. These were associated with Beef Up, the website, Frontier, the economic analysis and the NBIC meetings. Two targets were considered not met. These were Tips and Tools and *EDGEnetwork*[®]. Three targets were not able to be assessed with any confidence due to lack of data. These were the PDS targets which possibly could be met, and the awareness and adoption of key management practices where multiple lists of key management practices were defined but where appropriate and detailed measurements were sparse.

The 11 KPIs in the Communication Plan overlapped to some extent with those in the Strategic Plan.

Of the 11, four are considered met (those associated with the data base, Frontier, NBIC meetings and Beef Up), three not met (those associated with *EDGEnetwork*[®], PDSs and Tips and Tools) and four indeterminate due to data deficiencies (those associated with awareness of profit drivers, environmental best practices, and animal welfare practices and the increase in adoption of best management practices).

6.4 Component Cost-Effectiveness

An attempt has been made to compare the cost effectiveness of the individual component investments in the program. Sufficient information was not available to draw conclusions with any high level of confidence, but the exercise is useful as it identifies where information is lacking and uses best bet assumptions and produces indicative results. As some investment components were aimed at different objectives along the awareness, access, learning, adoption, and impact pathway, the framework used is somewhat subjective but does draw on information from the past three years. The cost effectiveness analysis applies to the components of *EDGEnetwork*[®], Beef Up, PDS and Frontier.

The assumptions used in assessing relative cost-effectiveness are shown in Table 6.8 for one year of investment in the different components.

Table 6.8: Assumptions Regarding Impact of Components

Component	Number of producers potentially influenced	Proportion assumed making management changes due to component (%)	Proportion of effective management changes (%)	Indirect impact (%)
Frontier	9,400 (4 editions per year sent to 9,400 producers)	5%	20%	Industry/MLA communication benefit also; assumed led to 1% of those attending EDGE ^{network} ® courses
Beef Up	483 producers (12 forums held)	60%	50%	Assumed this led to 10% of those attending EDGE ^{network} ® courses
EDGE ^{network} ®	47 (10 producers at 4 courses)	70%	60%	Improved future decision making capacity
PDS	300 (5 core producers and 20 others per site at 12 sites)	60%	50%	

The cost of achieving a practice change through each of program components is estimated in Tables 6.9 and 6.10.

Table 6.9: Cost Effectiveness for Different Components Based on Cost per Management Practice Change in 2008/09

Component	Total MLA Cost in 2008/09 (\$)	Number of Management Changes Attributed to Component	Cost to MLA per Management Practice Change (\$)
Frontier	111,637	$9400 \times 5\% \times 20\% + 1\% \text{ of } 47 = 94$	1,188
Beef Up	223,945	$483 \times 60\% \times 50\% + 10\% \text{ of } 47 = 150$	1,493
EDGE ^{network} ®	40,823	$47 \times 70\% \times 60\% \times 89\% = 18$	2,268
PDS	160,096	$300 \times 60\% \times 50\% = 76$	2,052

Table 6.10: Cost Effectiveness for Different Components Based on Cost per Management Practice Change in Three Years

Component	Total MLA Cost in three years 2007-2009 (\$)	Number of Management Changes Attributed to Component	Cost to MLA per Management Practice Change (\$)
Frontier	243,195	3 x 9400 x 5% x 20% + 3% of 797 = 306	795
Beef Up	408,636	1892 x 60% X 50% + 10% of 797 = 648	631
EDGE ^{network} [®]	131,712	797 x 70% x 60% x 87% = 291	453
PDS	217,132	600 x 60% x 50% = 180	1,206

Such an analysis is indicative and its value is questionable. Data to make credible assumptions were scarce for most of the activities. The results show the rankings of cost effectiveness change between the two tables so the result depends on which cost periods are assumed. Further, the tables above are constructed only with the MLA costs included. Another approach would be to include the costs of the partners.

What the approach does illustrate is the lack of validated comparative data on adoption and impact of the different components. Another useful observation is the assumed linkage between the components with both Frontier and Beef Up leading to increased numbers in EDGE courses. The major implications emerging from this attempt are:

- (i) more information is required on the impact on adoption due to the different components; this implies further information needs to be sought on follow-ups to the various components.
- (ii) there are likely to be different levels of effectiveness of a management practice change depending on which activity has predominantly stimulated the change.
- (iii) some activities are likely to lead to other activities and some activities may be complementary to others.

Revision of Emphasis

The objective of raising awareness and improving access to programs has been an important part of the NBP for the past five years. However, continuation of the emphasis on these objectives needs further scrutiny. The Axiom survey has established that the awareness of MLA and its northern beef program has reached a high level, hence questioning whether effort at this stage needs to be maintained.

6.5 Barriers to Adoption

While there is not one principal barrier to adoption of improved management practices in the northern beef industry, major constraints include the producer's capacity to change given seasonal uncertainty, profit uncertainty, access to capital, apathy and the allocation of time to think, plan, and learn. MLA and other agencies need to work within these constraints and ameliorate them wherever possible through multiple approaches and strategies to engage and assist producers given that a broad one-on-one extension effort is no longer considered cost effective.

New technology

It has been mooted that new technology for northern beef producers is being developed only at the margin with no large recent technology developments. If this principle is accepted, the implication is that more resources possibly should be allocated to R&D to invest in such potential technological developments rather than to continue to allocate to communication and adoption. However, it is generally agreed that the extent of application of existing technology is not high and that extension is critical to raise such adoption.

Apathy

A large proportion of producers appear simply to be uninterested in learning or changing management. It is not known what proportion of this group could improve it they could be engaged, but it is suspected that the proportion would be large. Improved segmentation of the industry to target particular sectors of the industry could assist in this regard. Even so, the difficulty in engagement process would remain.

Capacity to deliver effectively

The capacity to deliver effectively with relevant material and activities that are presented to capture the attention of producers is obviously a potential barrier to stimulating learning and providing the confidence to follow an adoption pathway. It is understood that this constraint has existed in the past but is being rectified.

Producer capacity to change

There are various factors that affect the capacity to change by individual producers, including access to capital, time pressures from current levels of operational demands, the impacts of drought, profit variability, and the management life cycle on family farms. This last factor appears to explain some degree of the apathy observed as identified in the Axiom Surveys. Also, interest in succession planning appeared high in the Beef Up forums.

Understanding implications and impact

Accommodating different interests and situations in delivering programs is obviously of key importance to stimulating change.

Other issues identified associated with constraining adoption included:

- Distances to be travelled to activities in remote areas
- Time priorities of producers
- Rapid changes in ownership and management (particularly in parts of the NT and WA).
- A lack of Departmental staff who understand the different regions and localities
- Live export from the far north as a constraint to adoption of improved genetics

6.6 Opportunities for Improvements

Several opportunities for improvement to the program are described in Table 6.11.

Table 6.11 Some Opportunities for Improvement

Category	Opportunity
Raising Awareness	<p>1. The focus could shift away from increasing awareness due to the existing level of awareness of MLA program components being quite high.</p> <p>2. Demonstrating usefulness and benefits would be of higher priority than awareness. This could be followed by building capacity to change through integrated components that address individual constraints to change and adaptation of management practices that accommodate individual circumstances.</p> <p>3. Beef up is currently the central information delivery component for the MLA program - this should be continued as it appears to have been successful with regard to raising awareness as well as stimulating some changes. Improvements to this component have been made over the past three years and the component should be continued, perhaps with some reduction in annual forum numbers. It is unclear however whether its impact has been as originally intended, that is, to raise awareness of other courses and programs. If annual forum numbers are reduced, the budget released could be used to follow up groups of producers expressing the intention to change management practices, both to raise the chances of success and to provide case studies and information that can be used to track the impact of changes.</p> <p>4. The Frontier magazine appears to have been successful in raising awareness.</p>
Communications	<p>1. A needs survey could be carried out to assess the content and delivery of information and its value to producers.</p> <p>2. The idea of Tips and Tools being delivered mainly via the web rather than hard copy is supported, but there is a need for a more comprehensive and accessible set of information available on the northern beef web site e.g. list of Tips and Tools that are relevant to northern beef.</p> <p>3. Integration of forums and training courses with web delivery, particularly regarding follow up and feedback, could be assessed.</p> <p>4. A stronger focus could be given to web-based delivery facilitating easier access to information. This could be effected in cooperation with the DPIS to avoid duplication, for example, QPI&F have a target of delivering 50% of services on line by 2012 and hence are targeting younger producers.</p> <p>5. Listing of where one-on-one support could be obtained for particular assistance could be considered (a list of private consultants servicing the beef industry).</p>

<p>Partnering and delivery channels</p>	<ol style="list-style-type: none"> 1. Partnerships with DPIs could be further developed into one northern beef program consisting of all three states agencies and MLA. This program could have a single strategic plan and planning and evaluation activities would be rationalised. Priorities could be set by NABRC. As all agencies would have a need to demonstrate to their levy payers or governments where their resources have been expended, badging by individual partners would continue. MLA could play an independent non-political coordinating role. Such a change would need to be considered in the context of the wider national RD&E collaborative framework being advanced by the states; however, this initiative will involve RD& E areas other than beef. 2. Opinions varied as to the best way to deliver the program to indigenous groups; while delivery needed to be different in some respects, the content and messages were seen to be similar. Another view was that the cultural aspects of indigenous land management may need to be considered if delivery was to be effective. It is suggested that the approach, content and delivery methods could be reviewed by MLA as to whether changes were required (e.g. courses integrating indigenous land management issues into beef cattle businesses). 3. Integration could be increased with Regional Groups, particularly in the area of off-farm impact of beef production. Also, the joint RDC program on mixed enterprises is entering a second phase (after Grain and Graze) with two Queensland regions involved. The MLA MBP program could interact more strongly than it did with the first phase of Grain and Graze. 4. It is recognised that one on one mentoring, especially after completing training or making changes after being involved in a PDS, is highly desirable but can not be supported financially by levy payers or government. Hence, the sources of private technical and financial planning assistance should be identified and promoted by MLA as a potential option. 5. MLA could consider establishing a service that producers can contact for advice as to where to go for one on one advice or additional information 6. In one jurisdiction, MLA research projects provided the opportunity for field work and extension delivery by state agency personnel.
<p>Building Capacity: Education, Training and Technology in Action</p>	<ol style="list-style-type: none"> 1. Developing skills of producers in terms of understanding profit drivers, cost of production and how to evaluate options for change in economic, environmental and social terms should be a high activity in the future. MLA therefore should continue with the Cost of Production initiative as it should prove an effective system integrating tool. 2. Measuring and benchmarking is required in order to understand performance variability and to provide information for evaluation of program components. However, there is a need to adopt a longitudinal approach to gradually build up pictures of change. Benchmarking was identified as a key area for the future by the Northern Territory agency

	<p>3. New courses in EDGE (profit drivers workshop) and continuing the development of the Cost of Production module should accommodate this pursuit and be linked to a whole of business framework, including capacity to change and succession planning. This should allow a more integrated approach to farm planning and decision making. Progress is being made in this pursuit already through a current project on developing a financial and business management training workshop for northern beef producers.</p> <p>4. Training is also required for extension and research personnel as well as program managers and coordinators in the different jurisdictions, to ensure there are enough people well trained to deliver in these areas in the future.</p> <p>5. Follow-up to GLM training is valuable in terms of improving the formal part of the course and providing information on impact, case studies etc. Assistance and integration by MLA of the follow-up activities across the three jurisdictions could be valuable.</p> <p>6. Integration could also provide examples of various situations relevant to individual PDS demonstrations. In other words capacity building in the next three years should build a higher level of integration between the components and focus on capacity to change in different ways through examples of overcoming constraints, and planning and evaluation of change.</p>
Pricing	<p>1. Producers pay a small fee for forums, more for EDGE workshops and nothing for Frontier magazine or Tropical beef services.</p> <p>2. While each of these pricing policies appear reasonable on its own, it could be worth considering a standardised pricing policy (for example, a fixed proportion of the actual cost of providing the component).</p>

6.7 The Evaluation Questions

The key evaluation questions and some summary responses are provided in Table 6.12.

Table 6.12 Response to Evaluation Questions Proposed Earlier

Evaluation Question	Summary Response
What have been the important outputs and outcomes of the program investment? Has the investment made a difference to northern beef production and benefited northern beef producers?	About 3,000 northern beef producers have been involved across the different program components of EDGE courses, Beef Up forums and PDS. Exit and some follow up surveys have indicated that a serious number have changed practices as a result. It can be assumed that these changes have been beneficial to northern beef producers but evidence is insufficient to be confident in this conclusion.
Have the key program objectives, targets and practice management changes identified in planning documents been addressed and measured by the program?	The objectives and changes identified in planning documents generally have been addressed but measurements of progress are patchy and have not been effectively pursued, partly due to the many planning documents, KPIs and management practice changes as well as a lack of priority given to M&E.
Can the component investments be ranked according to their cost effectiveness in delivering impacts? Should there be a different balance between component investments?	They can be ranked, but the results presented here should be considered inconclusive due to the lack of change and impact data available. Without further clarity in this respect, no suggestions are made as to how the balance between components investments should be altered.
Have barriers to adoption and benefit capture been identified for each program component and for the program as a whole? Can changes be made in the program and /or components to address these identified barriers?	Many and varied barriers to adoption exist and many are recognised by the program. The three year investment has not attempted to identify such barriers explicitly except via the AXIOM surveys. A higher level of profiling of northern beef producers would be helpful in this regard so that various entry points to stimulate different groups of producers may be identified and different strategies tried.
Have benchmarks and measures of key variables been derived and reported to guide and measure future progress? Where can the largest impacts be made in future? Are there new components that should be funded or improvements made to existing components?	The program has started to move in this direction and address this pathway. Modelling cost of production, strengthening ABARE and other surveys, and integration with private benchmarking groups are initiatives that need to be strengthened. This may assist in identifying entry points to stimulate change as well as provide improved data series to monitor progress.
What will be the best set of Key Performance Indicators (KPIs) to use in future and what data should be collected differently to that now collected?	KPIs are required at industry level to monitor industry progress. These do not appear to be assembled in a regular or meaningful way at present although some ABARE data exist. KPIs are also required at the MLA component level; some of this latter data is compiled now within components but needs to be extended to follow-up regarding the changes actually made and the financial impacts of such change.

7 Cost Benefit Analysis

As with the cost effectiveness analysis, the cost-benefit analysis has been constrained in its accuracy due to the lack of data on the impact of the potential changes that have been reported. However, the analysis gives an indication of potential industry impact given the assumptions made. The cost benefit analysis has been undertaken with both total costs of the program over the three years as well as those for MLA only. Part of the total benefits from the total investment has been attributed to MLA from its relative cost contribution to the program.

Investment criteria estimated include Net Present Value, Benefit-Cost Ratio and Internal Rate of Return. Some sensitivity analyses have been carried out for the most important assumptions.

7.1 Investments

Investment Costs

The financial investment made by MLA and others over each of the three years appeared in Tables 4.1, 4.2, 4.3 and 4.4. These investments are summarised in Table 7.1.

Table 7.1: Investment in MLA Northern Beef Communication and Adoption Program (nominal \$)

Year ending June	MLA	QPIF	NT	WA	Total
2007	78,876	833,641	219,150	129,400	1,261,067
2008	398,148	1,242,977	459,150	121,570	2,100,275
2009	670,048	1,077,472	459,150	153,400	2,360,070
Total	1,148,072	3,154,090	1,137,450	404,370	5,721,412

7.2 Benefits

It is assumed that the principal benefits will come from changes being stimulated in the past three years by *EDGEnetwork*[®], Frontier, Beef Up and the PDS. For each component estimates were made of:

- The number of producer enterprises in contact with the various components, along with assumptions about the proportion of intentions that are translated into actions.
- Only a proportion of the impact of the management change is attributed to the specific program component. This is assumed despite data emanating from exit or follow-up questions that refer to “the direct result of attending the course/forum”. It is assumed that practice change decisions are complex in their scope and timing and are usually the result of a number of factors that build on the existing frameworks and state of mind. This proportion is taken as 50% and is assumed the same irrespective of what component is assumed to instigate the management change.
- The proportion of those making changes that result in financial benefits.
- The average net cash income over the three years (2007 to 2009) for northern beef producers was \$91,901 per farm (ABARE, 2009). It is assumed the average ‘practice change’, by decreasing costs or raising gross revenue will generate an additional average 7.5% gain (about \$6,892) in annual net cash income.

Summary of Assumptions

A summary of all assumptions made is given in Table 7.2

Table 7.2: Assumptions for the Valuation of Benefits

Variable	Value	Source
EDGE[®]network		
Number of producers attending training in the three years ending June 2007, 2008 and 2009	797	Table 6.1
Number of enterprises represented	80% of attendees	Agtrans Research
Number of enterprises intending to change	70%	Agtrans Research based on earlier discussions with Col Paton
Number of enterprises intending to change that actually change management practices	50%	Agtrans Research
Attribution of change to the MLA component	50%	Agtrans Research
Increase in net cash income change	7.5%	Agtrans Research
Year of first benefits	Two years after attending course	Agtrans Research
Cost to business attending	\$2,000	Based on earlier conversations with Col Paton.
BEEF UP		
Number of producers attending	1,892	Table 6.1
Number of enterprises represented	80% of producers attending	Agtrans Research
Number of enterprises intending to change	50%	Agtrans Research
Number of enterprises intending actually changing management practices	50%	Agtrans Research
Attribution of change to the MLA component	50%	Agtrans Research
Net cash income change	5%	Agtrans Research
Year of first benefits	Two years after attending forum	Agtrans Research
FRONTIER MAGAZINE		
Number of enterprises receiving	9,400	Table 6.1
Number of enterprises intending to change	20%	Agtrans Research
Number of enterprises intending that actually change management practices	10%	Agtrans Research
Attribution of change to the MLA component	50%	Agtrans Research
Net cash income change	2.5%	Agtrans Research

Year of first benefits	Two years after receiving Frontier	Agtrans Research
PRODUCER DEMONSTRATION SITES		
Number of enterprises attending	300	Agtrans Research
Number of enterprises intending to change	60%	Agtrans Research
Number of enterprises intending that actually change	50%	Agtrans Research
Attribution of change to the MLA component	50%	Agtrans Research
Net cash income change	5%	Agtrans Research
Year of first benefits	Two years after attending the PDS	Agtrans Research
Cost to business attending	\$1,000	Agtrans Research
GENERAL		
Average Annual Farm Cash Income for Queensland Beef Properties (2004/05 to 20008/09)	\$91,091 per annum	ABARE (2009)

Results

All past costs and benefits were expressed in 2008/09 dollar terms using the CPI. All benefits after 2008/09 were expressed in 2008/09 dollar terms. All costs and benefits were discounted or compounded to 2008/09 using a discount rate of 5%. The discount rate of 5% was selected in line with the guidelines of the standardised evaluation process adopted by the Committee of Chairs of the Rural R&D Corporations (RDCs). The standard analysis ran for 20 years from the first year of investment (2006/07).

Investment criteria of Net Present Value (NPV), Benefit-Cost Ratio (B/C Ratio) and Internal Rate of Return (IRR) were estimated. The NPV is the difference between the Present Value of Benefits (PVB) and the Present Value of Costs (PVC). Present values are the sum of discounted streams of benefits and/or costs. The B/C Ratio is the ratio of the PVB to the PVC. The IRR is the discount rate that would equate the PVB and the PVC, thus making the NPV zero and the B/C ratio 1:1.

Results are presented for the total investment in the program as well as for MLA alone. The attribution of the total benefits stream to MLA is based on the proportion of total costs over the three years in 2008/09 \$ terms that has been contributed by MLA (estimated at just under 20%). The estimates of the investment criteria are reported in Table 7.3.

Table 7.3: Investment Criteria for Investment in Communication and Adoption Subprogram for Northern Beef
(discount rate 5%, 20 year benefit horizon)

Criterion	Total Investment	MLA Investment
Present value of benefits (m\$)	16.63	3.27
Present value of costs (m\$)	6.58	1.24
Net present value (m\$)	10.05	2.03
Benefit cost ratio	2.53	2.63
Internal rate of return (%)	13.8	14.9

Sensitivity of the investment criteria to the discount rate used and income change impacts are reported in Tables 7.4 and 7.5.

Table 7.4: Sensitivity of Investment Criteria to the Discount Rate
(Total Investment)

Criterion	0%	5% (Base)	10%
Present value of benefits (m\$)	28.00	16.63	10.17
Present value of costs (m\$)	6.32	6.58	6.85
Net present value (m\$)	21.68	10.05	3.32
Benefit cost ratio	4.43	2.53	1.49

Table 7.5: Sensitivity of Investment Criteria to Assumption on Income Increase
(Total Investment, 5% discount rate)

Criterion	Half Base	Base: (Between 2.5% and 7.5% for different components)	Double Base
Present value of benefits (m\$)	6.74	16.63	36.40
Present value of costs (m\$)	6.58	6.58	6.58
Net present value (m\$)	0.16	10.05	29.82
Benefit cost ratio	1.02	2.53	5.53
Internal rate of return (%)	5.2	13.8	24.9

8 Monitoring and Evaluation Framework

Introduction

The following provides some comments on the current Monitoring and Evaluation (M&E) Framework for the Adoption and Communication program, as well as some principles that may be taken into account in developing an improved M&E framework for the Program.

Current Structure and Planning Documents

1. The existing planning documents that drive the program are too many and not focused on the northern beef program as a whole. The strategic plan for northern beef was driven to a large extent by the former dominant LPI structure which attempted to integrate across all red meat livestock production systems. While this assisted some monitoring and reporting of on-farm investment (versus marketing and processing), in the opinion of the authors it did not allow the adoption program for northern beef to be as closely and vertically integrated into the Northern Beef Program. The LPI planning dominance was not particularly meaningful in a number of respects, and therefore drove some information collection which was not meaningful. A good example of this is the Axiom survey where questions commence at the LPI level and then try and accommodate the northern beef and other program levels. It would have been better to commence with what is needed by each program and then aggregate to the LPI level where common ground existed.

2. Baseline information for evaluation of progress is lacking at a range of levels. All that is available at the broad industry level (northern beef) is the ABARE survey data. In particular, survey data on industry management practices has not been assembled consistently in form or time. It is difficult to construct any consistent time series data to assess changes at the industry level.

3. A minor detail, but still important to evaluation efforts, is that some planning documents are not dated and years are not consistently specified as being calendar or financial.

4. There are too many KPIs and no principal set that appear more important than others. Some performance indicators and targets set are not measurable or meaningful e.g. "The overall strategic objective of the Communication and Research Adoption Subprogram is to increase producer knowledge, skills and confidence by 10% by 2010 by investing in.....". The question is whether knowledge, skills and confidence increases can be measured together, is the 10% an increase in aggregate or for each individual term? How KPIs and targets are to be measured is an essential component of defining KPIs and targets.

5. It is questionable whether the northern beef communication and research adoption subprogram should have a separate planning document, rather than being integrated into the strategy and strategic plan of the northern beef program. Having said this, the integration at an operational level appears to be operating efficiently and effectively.

Top Down Approaches to M&E

Monitoring in a contextual or Top Down manner is an essential part of an M&E Framework. While it is recognised that such information usually can not provide cause and effect relationships, it is useful in its own right as broad indicators of trends, not only for MLA but also for other agencies operating in the northern beef environment. Some information that could be monitored has been presented earlier in Section 5. Such information would not be difficult or costly to assemble and could be extended as needs arise and kept updated.

This approach would also assist in standardising time series data on key sets of management practice indicators. ABARE and State agencies and to some extent MLA's Axiom survey have all assembled data on management practices at the broad level, but there appears little coordination between the initiatives. For example the NT Agency has surveyed NT producers in 2004 with the support of the NT Cattlemen's Association (Northern Territory Government, 2005). The survey was nearly a census in that it covered 71% of producers. The agency is considering repeating the survey in 2010. MLA should take interest in this intention, perhaps support it financially as it will pick up changes in management practices, and ensure it fits with any future northern beef monitoring framework. At a broader level, QPI&F has produced a valuable situation snapshot of the Queensland beef industry. However this does not address management practices but rather uses secondary data to report on variables such as production, prices, processing and trade (QPI&F, 2009).

The Axiom survey does not appear to report changes in industry practices over time. Recent efforts appropriately appear to have been focused on measuring awareness and practice change of specific component investments and now appear to be moving more towards profiling which needs to be supported.

However, the Axiom surveys have become more complex with the advent of the three tier population approach and results need simplifying and summarising and an implications section added. Reporting of LPI results as a whole do not seem particularly meaningful and at least a separate northern beef report would be more useful.

Bottom Up Approaches to M&E

Monitoring as a bottom up approach is being carried out by MLA with regard to most of the components in the program. Exit surveys of participants/attendees with some recent follow surveys are the major avenue for this pursuit.

While the recent follow-up surveys to a sample of Beef Up forum attendees should be welcomed, there is still a lack of information on what a particular type of change is worth to the producer – the additional benefits and the additional costs, both capital and operational. This may require some follow up on-farm visits to collect such information and validate the findings of change and its impact. There is also a need to identify the profile of the types of producers and enterprises who have said they have changed practices due to the activity; this could aid future targeting.

There is a need to do more follow-ups from the other components e.g. Edge courses etc. The follow up planning and implementation undertaken by the state agencies after the courses would be a prime source of information in this regard. Unless the state agencies have compiled information on the implications of this phase, particularly on impact, this constitutes a fracturing of the investment-impact relationship. MLA could take a significant role in monitoring the follow - up to the GLM investment in particular. The benefits could be in the form of case studies to attract other producers into the courses, contribution /interaction with modelling beef enterprises

in different locations, identifying key factor driving capacity and constraints to change, and assessing different needs in both courses and follow-up activities.

To assist profiling, it would be worth considering collecting information from current participants in activities geographically and by enterprise type. More information could be collected at workshops, courses and forums on these characteristics

Central Approaches to M&E

Between the top down and the bottom up approaches there is some middle ground that also could be covered. This is the business analysis approach being undertaken by QPIF with increasing investment noted by MLA (benchmarking and cost of production initiatives). Such activity can not only assist in providing an entry point to encourage practice change through stressing the bottom line, but also assist in understanding constraints, testing opportunities and helping set research priorities. If used in a monitoring context with different models for different regions and enterprise types, it can be used to help interpret top down statistics and both use and add value to the relationships and understanding generated/established from bottom up approaches.

While emphasis here needs to be on profitability, it may be necessary to accommodate specific new benefits and costs, although currently uncertain, into the profitability (and risk) equations, including greenhouse gases, carbon sequestration, costs of regrowth and provision of ecosystem services.

An M&E Framework

The overall framework needs to be addressed via the three approaches identified above.

With regard to MLA M&E, there is a need to simplify the approach to KPIs and targets. There is a need to select one set of KPIs that can be measured/estimated, and use them for an overall assessment, rather than the current approach which appears to involve many lists, but very little measurement. Performance indicators can be hard data or assessments based on the best information available including integrated assessments based on inputs from expert panels. The regional advisory panels could well make valuable inputs in this regard.

Two characteristics of the evaluation framework should be apparent: The first is the concept of time that will be built into the indicators; some will be early outputs and outcomes (e.g. effort /reward regarding participation) and others later stage outcomes (e.g. practice change, on-farm and off-farm impacts).

The second is the linkages between measurements at the MLA component level and the program level (e.g. standardising information/measures of participation or impact by component so they can be compared and aggregated across the MLA program).

Given possible future directions for the program, the simple logic of intended outputs from program components being translated into outcomes and outcomes contributing to desired benefits needs to be applied. This will allow a few performance indicators and targets to be developed, as well as the information and monitoring and measurement systems needed to service the indicators and targets. The tentative assumptions made in the cost effectiveness analysis and the cost benefit analysis in this review may provide an indication of the information required. The principal shortfall in the M&E data at present is the types of management changes occurring, to what extent the decision to change was prompted by the investment, and whether and to what extent the change has been profitable to both the short and long term.

There is also a need for MLA to address the scope of any future M&E plan. While not explicitly addressed with the agencies, it is likely that the three northern beef state agencies would support an integrated M&E plan for northern beef. Most currently have a minimal effort into M&E. For example, the Northern Territory DPI suffers from having only a small program and resources not sufficient to have a formalised M&E program. The Queensland Future Beef program is not strong in M&E. However, they are very interested in improving what they do and if it were part of a larger M&E effort their programs could gain considerably.

9 Conclusions and Recommendations

Conclusions

1. The MLA and other investment in the program for the past three years has been effective and has benefited northern beef producers through building capacity to change as well as directly stimulating the adoption of improved practices and decision making. The outcomes of past R&D investment by MLA and others without this investment would have been significantly less positive, so important is communication and encouragement of interest in change and providing readily accessible information and pathways to accommodate such desires.
2. The review has found that the program had substantially achieved its goals and had met a significant proportion of the performance criteria set for the three year period. Also, given the assumptions made, the MLA investment in the program over the three years of \$1.24 million (present value of costs in 2008/09 \$ terms using a discount rate of 5%) was estimated to have produced a benefit cost ratio of 2.6 to 1 and a net present value at \$ 2 million. While the results of the cost-benefit analysis were positive, the results would have greater credibility if improved information on impacts had been able to be assembled.
3. The results of the cost effectiveness analysis suggested that offering the training courses was one of the more cost effective components funded but again data deficiencies hindered the credibility of the results.
4. The current Northern Beef Strategic Plan and Adoption Program Plans were only partly helpful in providing a framework for evaluation. Baseline information for evaluation of progress is lacking at a range of levels, there were too many KPIs and no principal set that appear more important than others, and many KPI s were not measured or measurable. It was also questioned whether the adoption component of the northern beef program should have a separate planning document, rather than being only an integrated strategy of the northern beef program. Having said this, the integration at an operational level appears to be operating efficiently and effectively. However, the northern beef program as a whole needs to have a clearly defined planning, operational and budget structure without strong horizontal alignments that have reduced the effectiveness of information assembly and reporting in the past.
5. A set of recommendations for any future investment in the program is included in the review report including an evaluation framework for consideration in any future investment.

Recommendations

It is recommended that MLA:

1. Continue to invest in adoption and communication activities in the northern beef program.
2. Briefly review and document the completed PIRDS program in order to document the lessons learnt.
3. The objective of raising awareness of MLA programs and information access needs to be consolidated in favour of capacity building, with greater priority given to formally addressing constraints and the measurements of impacts and benefits.
4. Discard the formal planning for the subprogram and incorporate such activities into the Northern Beef Program Strategic and Operational plans.
5. Continue with the business analyses approaches being developed (COP and benchmarking).
6. Simplify and reduce the number of KPIs and ensure that the KPIs defined can be measured and a measurement method is defined, dates for targets clearly specified, a commitment made and a budget available to ensure such measurements are made.
7. Align M&E of adoption and communication vertically with northern beef R&D rather than horizontally across LPI or some other broader livestock program within MLA.
8. Encourage further follow up surveys to exit surveys for Beef Up forum attendees.
9. Consider, in conjunction with state agencies, assisting with some coordination of the follow up activities regarding planning and implementation of GLM courses.
10. Give attention to a number of potential activities that would build up an improved profile of northern beef producers.
11. Give further attention to developing an M&E framework at three levels for the northern beef program:
 - (a) the first level is improved description of industry structure, performance and practices.
 - (b) the second level is in the area of financial business performance that can be used for both component evaluation as well as for precipitating an increased rate of change through benchmarking and case studies of successful journeys, setting research priorities and providing entry points to capacity building.
 - (c) the third is at the level of recording and measuring the participation, and adoption, nature and impact of management changes precipitated by MLA activities.
12. Explore the wider use of case studies in the second level.
13. Consider, in conjunction with the state agencies, the potential for a wider northern beef program that encompasses the four organisations with regard to planning, but with particular attention to an M&E Framework

10 References

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11 Appendices

11.1 Appendix 1: Industry Context and Performance

In order to provide a context for the current assessment, some statistical trend data relevant to the northern beef industry observed over past years are presented. They include:

- Number of beef cattle farms
- Cattle numbers
- Branding and turnoff rates in the northern region
- Australian beef prices
- Live cattle exports from Northern Australia
- Farm financial performance
- Productivity

Data where available that refers to years prior to the year ended 30 June 2007 are presented in order to provide a perspective of change over the investment period.

11.1.1 Number of Beef Cattle Farms

The average number of northern beef cattle farms for the seven years ending June 2002 to 2008 is presented in Table A1. The average area operated for the three years ending June 2007 to June 2009 is also provided.

Table A1.1 Size Characteristics of Northern Beef Industry Farms

Number of cattle	Number of farms	Proportion of farms (%)	Proportion of Beef Cattle (%)	Area operated (ha)
<100	2,628	24.5	1	3,399
100-400	3,443	32.2	6	
400-800	1,396	13.0	6	16,206
800-1600	1,447	13.5	13	
1600-5400	1,395	13.0	31	54,198
>5400	398	3.7	42	256,699
Total or Average	10,707	100	100	31,872

Source: ABARE (2009)

11.1.2 Northern Beef Cattle Numbers

Table A1.2 and Figure A1.1 provide data on the number of cattle in the Australian northern beef industry over the period 2000/01 to 2008/09.

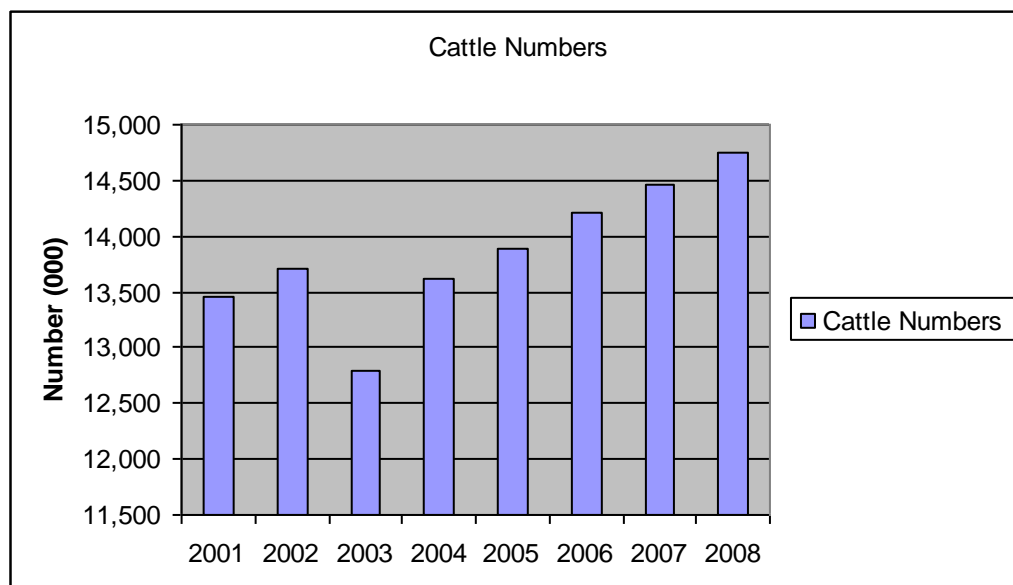
Table A1.2: Australian Northern Beef Industry Cattle Numbers

Year ending March	Number of Cattle (000)			
	QLD	NT	WA (a))	Total
2001	11,376	1,707	702	13,785
2002	11,544	1,777	694	14,015
2003	10,740	1,683	642	13,065
2004	11,500	1,730	691	13,921
2005	11,862	1,771	716	14,349
2006	11,548	1,798	789	14,135
2007	11,684	1,912	768	14,364
2008	12,181	1,824	740	14,745

Source: ABARE (2008)

(a) Pilbara and Kimberley only; ABS statistics for 2004/05 show there was 33% of the WA beef cattle herd in these two statistical divisions; this percentage has been applied to the total WA beef cattle numbers in other years to derive the northern industry number estimates for WA.

Figure A1.1: Trend in Australian Northern Beef Cattle Numbers



11.1.3 Branding and Turnoff Rates for Northern Beef

Table A1.3 provides data on the branding rate for Queensland, Northern Territory (NT), and Pilbara (WA) beef enterprises over the period 1996/97 to 2007/08. Unfortunately, data for a number of years were not available.

Table A1.3: Northern Beef Branding Rate

Year ending June	Branding Rate (%)		
	Queensland	Northern Territory	Pilbara (NT)
1997	76	72	50
1998	71	73	73
1999	72	73	72
2000	78	70	84
2001	76	71	75
2002	75	71	72
2003	n.a.	n.a.	n.a.
2004	n.a.	n.a.	n.a.
2005	70	66	64
2006	71	53	60
2007	n.a.	n.a.	n.a.
2008	71	69	69

Source: ABARE, Agsurf (2009)

Table A1.4 provides the turnoff % for Queensland and Northern Territory. Turnoff is defined as the number of cattle sold per farm divided by the total cattle on hand at 30th June each year, expressed as a percentage.

Table A1.4: Northern Beef Turnoff Rates

Year ending June	Turnoff Rate (%)		
	Queensland	Northern Territory	Pilbara (WA)
2000	31.3	26.1	19.6
2001	33.9	18.3	23.2
2002	32.5	20.6	21.0
2003	33.5	18.1	17.7
2004	31.9	24.7	26.5
2005	33.6	21.0	28.5
2006	32.4	16.2	22.4
2007	29.4	14.7	21.2
2008	30.1	27.9	15.8

Source: Derived from ABARE, Agsurf (2009)

11.1.4 Beef Prices

Tables A1.5 and A1.6 and Figures A1.2 and A1.3 provide data on the saleyard prices for Queensland beef over the period.

Table A1.5: Saleyard Prices for Queensland Beef Cattle (nominal \$ terms)

Year ended June	Beef Prices (c/kg liveweight) (nominal terms)			
	Japan Ox	Korean Steer	Trade Steer	US Cow
2000	133	127	140	100
2001	156	146	161	118
2002	175	169	181	138
2003	161	147	155	117
2004	174	167	178	131
2005	185	183	196	142
2006	187	188	199	143
2007	184	176	180	131
2008	173	164	175	126
2009	178	173	175	133

Source: MLA Database

Table A1.6: Saleyard Prices for Queensland Beef Cattle (2008/09 \$ terms)

Year ended June	Beef Prices (c/kg liveweight) (2008/09 \$ terms)			
	Japan Ox	Korean Steer	Trade Steer	US Cow
2000	176	168	184	132
2001	195	182	200	147
2002	212	205	219	167
2003	190	173	183	138
2004	200	192	204	151
2005	207	206	220	159
2006	202	202	215	154
2007	195	186	190	138
2008	175	166	177	127
2009	178	173	175	133

Source: MLA Database

Figure A1.2: Queensland Beef Prices (nominal \$ terms)

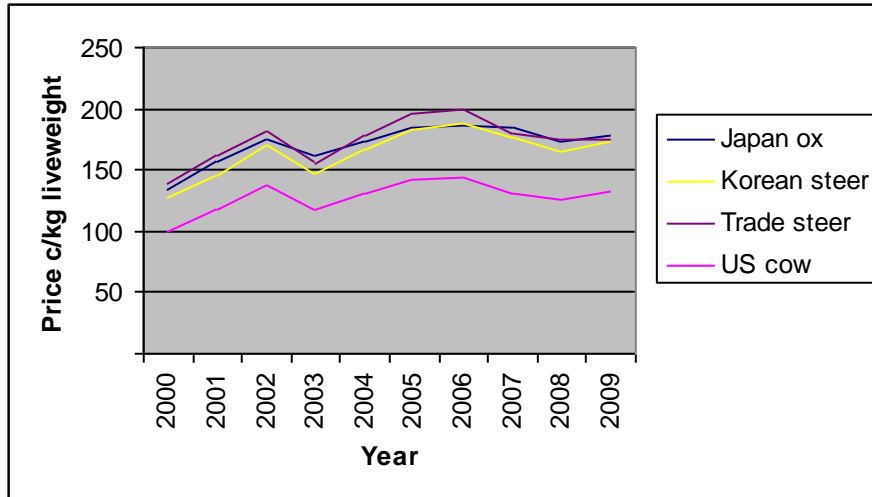
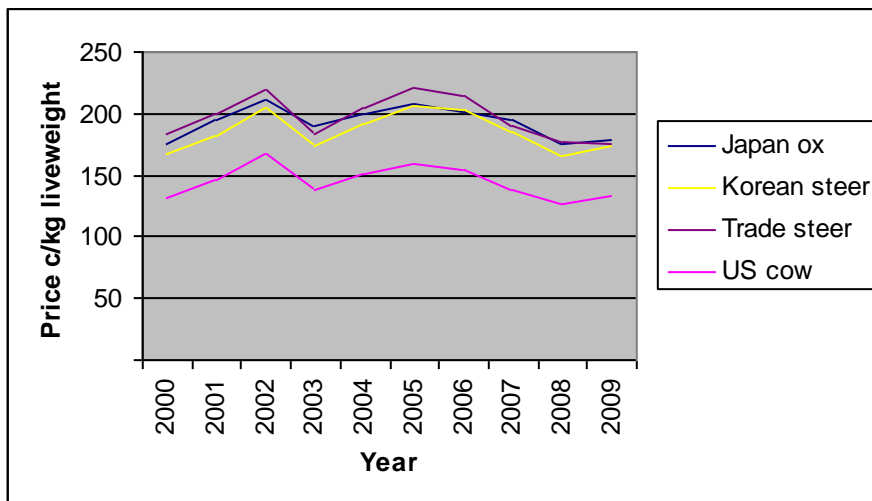


Figure A1.3: Queensland Beef Prices (2008/09 \$ terms)



11.1.5 Live Cattle Exports from Northern Australia

The State origins of live cattle exports are shown in Table A1.7.

Table A1.7: Live Cattle Exports by State

Year	Northern Territory	Queensland	Western Australia	Total from Northern Region	Total from Australia
1997	375,274	183,659	285,060	843,993	948,063
1998	191,418	76,865	260,350	528,653	621,121
1999	237,444	163,722	343,849	745,015	844,229
2000	303,941	187,308	323,248	814,497	895,982
2001	223,493	166,873	338,683	729,049	822,474
2002	306,309	236,895	315,410	858,614	971,880
2003	246,045	142,316	301,094	689,455	774,248
2004	197,975	67,421	275,823	541,219	637,748
2005	218,903	27,523	267,947	524,373	572,799
2006	246,158	32,558	315,198	593,914	634,314
2007	318,091	83,698	263,486	665,275	719,482
2008	388,178	112,439	303,206	803,823	868,359

Source of Data: Livecorp, 2009

11.1.6 Farm Financial Performance

The farm financial performance of northern beef cattle farms for the three years ending June 2009 is presented in Table A1.8. Small farms are defined as 100-400 head, medium as 400-1,600 head, large as 1,600 to 5,400 head and very large as greater than 5,400 head.

Table A1.8: Average Farm Financial Performance of Different Sized Northern Beef Farms for Years ending June 2007 to June 2009 (\$ per farm)

Year	Small	Medium	Large	Very Large	Average
Total cash receipts	177,237	429,206	1,069,066	4,568,927	682,522
Total cash costs	166,772	364,364	847,803	4,127,983	590,591
Farm cash income	10,468	64,841	221,263	440,945	91,901
Farm business profit	-62,065	-34,727	96,683	888,617	35,183

Source: ABARE (2009)

11.2 Appendix 2: Summary of Beef Up Forums

Location	Total Attendees	Producer Attendees	Evaluation forms from producers	Intention to make changes
Northern Territory				
1. Adelaide River	35	23	12	8
2. Katherine	-	-	-	-
3. Kidman Springs	70	18	13	3
Queensland				
4. Aramac	60	59	40	23
5. Atherton	91	84	44	10
6. Barcaldine	48	43	32	17
7. Biloela	207	160	88	44
8. Blackall	67	60	30	10
9. Boonah	91	89	46	12
10. Boulia	21	19	13	7
11. Bowen	62	40	30	16
12. Charleville	32	29	18	7
13. Clermont	34	33	28	10
14. Condamine	70	68	40	12
15. Emerald	81	56	45	21
16. Goondiwindi	58	54	39	21
17. Greenvale	36	35	30	12
18. Gympie	96	87	59	24
19. Hughenden	41	40	24	11
20. Injune	62	59	33	13
21. Julia Creek	15	13	13	4
22. Karumba	21	19	15	3
23. Mackay	31	27	18	11
24. Mundubbera	-	-	64	-
25. Murgon	87	77	51	26
26. St George	35	29	24	10
27. Toogoolawah	68	66	44	26
28. Warwick	95	91	53	26
29. Winton	26	25	20	15
Western Australia				
30. Dampier	43	39	22	8
31. Derby	32	31	20	8
32. Broome	-	-	-	-
Total		1473	995	418

11.3 Appendix 3: Summary of AXIOM Survey Results

Awareness of MLA Northern Beef Program and its Components (%)

Year	Awareness – Northern Beef Producers	Awareness of EDGE	Awareness of Beef Up	Awareness of GLM	Awareness of Nutrition EDGE	Not Aware of any MLA course/program
2005	67	49	-	26	31	31
2006	78	56	-	42	48	22
2007	84	53	37	35	27	16
2008	72	46	44	2	2	28

Management Practice Changes (for those attending MLA courses/programs in that year)

Year	Estimated proportion of participants intending to make management practice changes as a result of participation in, or attendance at, MLA program/course (%)	Specific Components	
		Proportion of participants in EDGE in that year who had changed management practices due to EDGE	Proportion of participants in Beef Up in that year who had changed management practices due to Beef Up
2005	64	-	-
2006	49	49	-
2007	65	55	46
2008	57	42	36

11.4 Appendix 4: Questions to DPIs

Questions discussed with personnel in QLD, NT and WA Agencies.

The DPI Program

Q1: What are the central components and themes of your DPI program for northern beef?

Q2: What are the Key Message Areas delivered by your state agency to northern beef producers? e.g. Cost of production, Use of breeding values, target market requirements, pasture and land management, weaning rates

Q3: Grazing Land Management workshops – Has the expansion to more regions in last three years been effective and rewarding? Has there been increasing or decreasing attendance?

Q4: Does your DPI program have a strong Monitoring and Evaluation component?

Relationship with MLA

Q5: How do you view your relationship with MLA? Complementary? Competitive?

Q6: Is the partnership with MLA working well?

Q7: Can you see areas where the partnership structure or relationship could improve in the future? If so, why should it change and how?

Constraints

Q8: What do you consider to be the major constraint to improving productivity and profitability of northern beef producers, particularly with regard to communication, training and encouragement of continuous improvement?

Opportunities for Future

Q9: What do you see as the most important opportunities for your agency to increase northern beef productivity in the next five years?