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Kimberley and Pilbara RD&E Program: Phase 1

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Abstract

A research, development and extension (RD&E) program has been developed by Meat and Livestock Australia and the Department of Agriculture and Food, Western Australia which aims to address the sub-optimal production and financial performance of Kimberley and Pilbara cattle businesses. The need for accurate data on management practices and production and financial performance for the regions was addressed by conducting a pastoral industry survey and establishing two producer benchmarking groups. The analyses of the survey results and the producer group data were used to identify issues which are constraining the financial and environmental sustainability of the industry. Recommended RD&E strategies include targeting improved financial and herd performance, lessening the dependence on the Indonesian live export market, improved genetics, promoting the importance of grazing land management and managing the impacts of failed growing seasons in the Pilbara.

Executive Summary

The Kimberley and Pilbara RD&E Program was funded by Meat and Livestock Australia and the Department of Agriculture and Food WA in response to reported sub-optimal production and financial performance of cattle businesses in the two regions. The first phase of the program addressed the need for accurate data on management practices, production and financial performance. This information was obtained in two ways:

- An industry wide survey to gain a better understanding of current management practices and industry performance. This survey also provided a baseline for assessing the success of future activities; and
- Establishment of two producer groups, one in the Kimberley and one in the Pilbara, which undertook production and financial benchmarking to identify the current issues and limitations common to businesses in each group.

The information gathered from these two sources identified issues constraining the productivity and profitability of the Kimberley and Pilbara cattle industry and identified opportunities for targeted RD&E. Issues identified as priorities for the northern WA cattle industry were:

1. poor financial performance,
2. poor herd productivity, driven by
 - a. low herd fertility
 - b. high breeder mortality rate
 - c. low herd turn off,
3. a lack of market strategies for surplus females and 'out-of-spec' cattle,
4. the regions' dependence on the Indonesian live export market,
5. high frequency and impact of failed growing seasons in the Pilbara.

Opportunities identified as priorities for the northern WA cattle industry were:

1. opportunities to improve herd genetics to target fertility, productivity and alternative market acceptance,
2. the importance of appropriate grazing land management strategies for optimal production and herd performance, including optimising turn-off weights for the Indonesian live export market.

Recommendations for research, development and extension activities to address these priorities include targeting improved financial and herd management, lessening the dependence on the Indonesian live export market, improved genetics, promoting the importance of grazing land management and managing the impacts of failed growing seasons in the Pilbara.

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1. Background

Between 2008 and 2010, a number of studies on the West Australian northern beef industry revealed that the Kimberley and Pilbara industries were performing below their potential (Niethe and Quirk 2008, Holmes et al 2010, McCosker et al 2010). It was suggested by the authors of these reports that a combination of issues such as poor breeder performance, high death rates and limited market opportunities were responsible for this sub-optimal production and financial performance. In response, the Department of Agriculture and Food, Western Australia (DAFWA) and Meat and Livestock Australia (MLA) developed a research, development and extension (RD&E) program to assist the industry to achieve improved performance. An initial priority was the need for accurate data on management practices, production and financial performance. This information was to be obtained in two ways:

- Establishing and working with two producer groups, one in the Kimberley and one in the Pilbara, to undertake production and financial benchmarking with the aim of identifying the current issues and limitations common to businesses in the group, and
- Carrying out an industry wide survey to gain a better understanding of current management practices and industry performance. This survey would also provide a baseline for assessing the success of future activities.

This report incorporates the results from both the producer group benchmarking and the industry survey, and identifies the key issues limiting the sustainability of the beef industry in the Kimberley and Pilbara regions.

2. Project Objectives

The objectives of the Kimberley and Pilbara RD&E program Phase 1 project were:

1. Benchmark current and historical property level production and financial performance of:
 - i. at least eight Kimberley properties; and
 - ii. at least an additional five Pilbara properties to join the three existing properties that have previously been analysed (total eight properties).
2. Complete a census of industry management practices and performance for the Kimberley and Pilbara regions.
3. Identify for each of the Kimberley and Pilbara producer groups/regions priority business development and management issues for investigation in Phase 2 of the Program.
4. Develop and implement a Communication Plan for the Kimberley and Pilbara RD&E Program that creates linkages between all activities including Producer Demonstration Sites (PDS) and Beef Up forums.
5. Develop and implement an Evaluation Plan that enables monitoring and measurement of the impact of Program activities.

3. Methodology

The Kimberley and Pilbara RD&E Program: Phase 1 project consisted of two activities, conducting a Pastoral Industry Survey of the two regions and the establishment of two beef producer groups one in each region.

The Pastoral Industry Survey was designed to provide a snapshot of management practices being implemented by as many businesses as possible at the time of the survey. This provided an overview of the current strategies, attitudes and producer estimates of herd performance of the northern beef industry.

The beef producer groups were established to provide a detailed analysis of the financial performance of a select number of businesses. The producer group data were subjected to far more rigorous interrogation than that of the survey respondents, and as such are considered more accurate.

3.1 The Pastoral Industry Survey of the Kimberley and Pilbara regions

The survey of pastoral businesses was conducted between July and December 2010 via face to face interviews with producers in the Kimberley and Pilbara regions. The survey team interviewed representatives from 77 businesses from the two regions, which represents more than 60% of commercial cattle enterprises. The remaining businesses in the regions were not surveyed either because they could not be contacted or no suitable time for completing the survey interview could be arranged. A small number of businesses declined to participate in the survey. The survey covered topics of business ownership and management, production and herd management, grazing and land management, and extension and training.

The 60% of producers surveyed were considered representative of the industry as a whole. Survey responses covered a wide range of business classes (privately-owned, corporate, indigenous etc), with variation both within and between districts.

3.2 Producer Groups

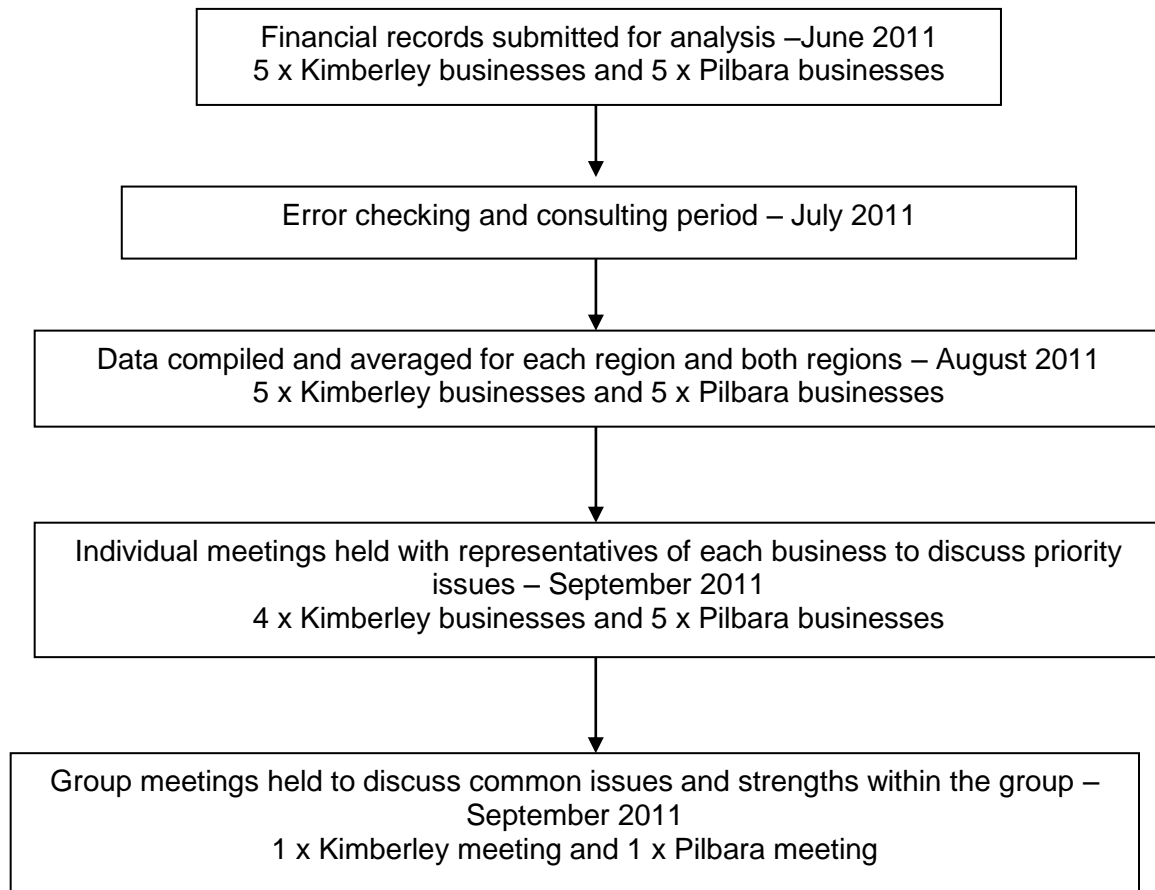
The establishment of two producer groups and associated benchmarking had two aims. The first was to gain a better understanding of how Kimberley and Pilbara cattle businesses operate and perform both financially and in terms of production indices. The second was to support groups of motivated producers to critically examine their businesses and to identify strengths and issues that affect the sustainability of both their businesses and the industry as a whole. Holmes & Co were engaged to conduct the data analysis and to facilitate the running of the producer groups.

The intention was to have two groups with eight businesses in each region. However, despite the best effort of all involved, the groups were only able to secure the engagement of five businesses in each region (Table 1). The group members in each region expressed a strong desire to continue with the process for the next two years despite the increased running costs of a smaller group and uncertain support from DAFWA or MLA. Since the completion of the first round of meetings two more Kimberley businesses have expressed interest in joining the group.

Table 1: Criteria considered necessary for a robust, representative producer group

Criteria	Kimberley	Pilbara
Geographic spread to ensure a range of rainfall and land system distributions was represented	Dominated by West Kimberley businesses	Achieved
Depth and integrity of financial records to ensure sufficient data were available for analysis	Achieved	Achieved
Operating scale representative of the full range present in each region	Achieved	Achieved
A positive, enthusiastic approach to the study with a naturally enquiring mind	Achieved	Achieved
Co-operators should command peer respect within respective regions to ensure project outcomes are credible	Achieved	Achieved

Participants in the groups were required to submit financial records for 2007/08, 2008/09 and 2009/10 for financial and production benchmarking analysis. The analysis was conducted in accordance with the following schedule:



As the membership of the groups fell below the nominated target, the viability of continuing was discussed at the group meetings. All members felt the process was beneficial and all wished to continue to meet. A venue and date for the next meeting was decided.

3.3 Communication and Evaluation Plans

A workshop to develop evaluation and communications plans for the first phase of the Kimberley and Pilbara research, development and extension program was held on 15 April 2010 with representatives from MLA and the Department of Agriculture and Food, Western Australia (DAFWA). A Communications Plan (Table 3) and a Monitoring and Evaluation Strategy (Table 2) were submitted to MLA by DAFWA on 16 June 2010. An updated work plan is being developed to incorporate activities to address the priority issues identified in this report.

Table 2: Kimberley and Pilbara RD&E Phase 1 Communication Plan

Strategy	Target audience	Timing	Outputs and tactics	Budget	Responsibility
General Awareness Program					
To increase producer awareness of the project learning opportunities and promote key messages	All Kimberley and Pilbara producers	Three issues per year	Pastoral Memo articles providing information and lists of events related to the project in each issue of the Northern Rangelands Pastoral Memo	\$1,500/yr	DAFWA
		31 December 2010	Planned communication and marketing campaign developed and implemented for project activities including PDS's and Producers Groups to ensure wide industry knowledge	\$1,000	DAFWA
		2011 - 2013	Learning activities conducted on site at PDS sites, including facilitated discussions	\$3,000/yr	DAFWA
Marketing and Communication materials					
Develop communication and marketing materials that promote and inform producers about all elements of the project	All Kimberley and Pilbara producers	Three issues per year	Use of promotional advertising in the Pastoral Memo	Nil	DAFWA
			Create increased awareness of the Kimberley/Pilbara project through Beef Up forums	?	MLA
			Marketing and advertising campaign for Beef Up forums to include fax outs, radio, brochure distribution, Frontier	?	MLA
Media Relations Program					
Develop a media relations plan to support Kimberley/Pilbara events and activities	All Kimberley and Pilbara producers	31 December 2010	Media release story ideas to be identified. Story ideas compiled into media plan for sign off by MLA	\$1,000	DAFWA
		As required but at least every three months	Notify the local rural ABC radio of project activities	Nil	DAFWA
		Ongoing	Media outcomes monitored through MLA's media monitoring service	?	MLA
		Commencing in 2011	Provide two articles per year for Feedback and Frontier magazines (along with DAFWA publications) on project activities such as the census and producer groups.	\$800/yr	DAFWA
Linking to other MLA activities					
Existing MLA and DAFWA activities to link with the Kimberley/Pilbara program	All Kimberley and Pilbara producers	31 December 2010	Define a plan of how participants in the Kimberley/Pilbara project can link into EDGE ^{network} ® courses	\$500	DAFWA
Industry survey			One per year – all producers	?	MLA

Table 3: Kimberley and Pilbara RD&E Phase 1 Monitoring and Evaluation Plan

	Metric/KPI	Survey	Pastoral Memo	Annual field days	Case studies	NGS workshops	Best Prac demo	Rangeland mgt. courses	PDSs	Producer groups	Tool	Frequency	Who
Program impact	Achieving increases in beef production by 5% per year for the next five years	✓	✓	✓	✓	✓✓	✓✓	✓✓	✓✓✓	✓✓✓	Economic indicators including improvements in operating margin (which incorporates price received and COP).	Ex ante and ex post	DAFWA
Level A	Program awareness	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓	MLA KPI Survey	Annually	MLA
	Satisfaction	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓	Feedback sheets (80%) of participants	All events	DAFWA
	Building confidence	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓			
	Providing value	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓	Follow up evaluation (10-30% participants)	Sample of events (six months post activity)	DAFWA
	Learned something new	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓			
	Affirmed existing knowledge and practices	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓			
	Intention to change	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓		
Level B	Building knowledge and skills	✓	✓	✓✓	✓✓	✓✓	✓✓	✓✓✓	✓✓✓	✓✓✓	Skills audit with all group participants of rangeland mgt. courses, PDSs and Producer groups	Ex ante and ex post	DAFWA
Level C	Facilitated practice change and adoption	✓	✓	✓✓	✓	✓	✓✓	✓✓✓	✓✓✓	✓✓✓	Skills audit and practice change record with all group participants of rangeland mgt. courses, PDSs and Producer groups	Ex ante and ex post	DAFWA
	Longitudinal measure of programs supporting practice change	✓	✓	✓	✓	✓✓	✓✓	✓✓	✓✓✓	✓✓✓	MLA KPI Survey	Annually	MLA

✓ Indicates the level to which the activity is designed to specifically measure and achieve the KPI

4 Results and Discussion

The findings of the Pastoral Industry Survey have been published in a separate report, Pastoral industry survey of the Kimberley and Pilbara-WA, 2010, by Dray et al (2011). The survey covered topics of business ownership and management, production and herd management, grazing and land management, and extension and training. The results for the individual aspects covered in the survey are presented in the report.

The benchmarking information collected for individual businesses in each region were collated and averaged to present the average business performance for the groups. The summary of the business performance is presented as a series of financial statements; an income statement (Table 4), cashflow statement (Table 5) and balance sheet (Table 6). The information in these three statements provides a snapshot of the financial health of the business, but does not necessarily identify the causes of outperformance or underperformance. Some of the more important observations from these three tables are:

The difference in earnings before interest and tax (EBIT) between the regions is mostly a function of the difference in inventory change (cattle sales and other sales) in the period and is therefore not a result of differing or expenses. (Table 4) Total operating expenses are similar for the two regions.

Table 4: Pilbara and Kimberley Business Income statement. A more detailed version of this table can be found in the Appendix (Table 28) that contains a breakdown of the expenses.

	PILBARA	KIMBERLEY	AVERAGE
SALES	\$960,454	\$1,115,243	\$1,037,848
Cattle	\$903,210	\$1,055,655	\$979,433
Other	\$57,244	\$59,588	\$58,416
INVENTORY CHANGE	\$156,129	(\$22,519)	\$66,805
GROSS PROFIT	\$1,116,583	\$1,092,724	\$1,104,653
ENTERPRISE EXPENSES	\$255,151	\$315,407	\$285,279
Beef	\$255,151	\$315,407	\$285,279
Other	\$0	\$0	\$0
GROSS MARGIN	\$861,432	\$777,317	\$819,374
OVERHEAD EXPENSES	\$650,907	\$728,622	\$689,764
EARNINGS BEFORE INT & TAX	\$210,525	\$48,695	\$129,610
INTEREST/LEASE LAND	\$96,430	\$217,348	\$156,889
PROFIT AFTER INTEREST	\$114,095	(\$168,653)	(\$27,279)

Both regions are not generating enough cashflow after capital expenditure to pay interest on debt (Table 5). Capital expenditure is included before the consideration of financing capacity, because unless it is maintained, the business will ultimately fail.

Table 5: Pilbara and Kimberley Whole Business Cashflow Statement. A more detailed version of this table can be found in the Appendix (Table 29) that contains a breakdown of the expenses.

	PILBARA	KIMBERLEY	AVERAGE
SALES	\$960,454	\$1,115,243	\$1,037,848
Cattle	\$903,210	\$1,055,655	\$979,433
Other	\$57,244	\$59,588	\$58,416
PURCHASES	\$68,034	\$36,112	\$52,073
ENTERPRISE EXPENSES	\$255,151	\$315,407	\$285,279
Beef	\$255,151	\$315,407	\$285,279
Other	\$0	\$0	\$0
OVERHEAD EXPENSES	\$518,958	\$604,171	\$561,564
TOTAL EXPENSES	\$774,109	\$919,578	\$846,843
CAPITAL EXPENDITURE	\$61,130	\$90,386	\$75,758
CASHFLOW BEFORE INT & TAX	\$57,181	\$69,167	\$63,174

The balance sheets in both regions are quite different in a number of areas (Table 6). The investment in land and infrastructure in the Pilbara is almost half that of the Kimberley, to run a similar number of cattle. This is a function of difference in land values between the two regions. The absolute debt in the Kimberley is more than double that of the Pilbara, but the overall equity% in the Kimberley is 10% higher. This difference in equity levels is simply a function of the higher land and infrastructure value and is potentially misleading on its own because the capacity to service debt needs to be considered as well. Tables 4 and 5 show that the Kimberley has less capacity to service debt than the Pilbara despite having a stronger balance sheet.

Table 6: Pilbara and Kimberley Balance Sheet

	PILBARA	KIMBERLEY	AVERAGE
ASSETS			
Cash and Cash Equivalents	\$56,319	\$145,569	\$100,944
Fodder/Grain on Hand	\$2,505	\$2,051	\$2,278
Livestock	\$4,327,127	\$4,531,727	\$4,429,427
Plant & Equipment	\$517,080	\$563,070	\$540,075
Land & Infrastructure	\$4,972,666	\$8,315,102	\$6,643,884
TOTAL ASSETS	\$9,875,698	\$13,557,518	\$11,716,608
LIABILITIES			
Overdraft	\$325,519	\$250,507	\$288,013
Term Loans	\$410,967	\$1,880,152	\$1,145,560
Other Loans	\$203,256	\$0	\$101,628
TOTAL LIABILITIES	\$939,742	\$2,130,659	\$1,535,201
NET ASSETS	\$8,935,956	\$11,426,859	\$10,181,407
EQUITY %	79%	89%	84%

The data presented in the three financial statements above show that the businesses economic performance is problematic for these businesses from a long term sustainability perspective. For any business having cash available to fund operations is their primary consideration and businesses in both regions have insufficient cash to fully fund all their requirements going forward. The balance sheet (Table 6) shows that the average liabilities for the two regions are \$1.5 million and therefore the annual interest bill will be approximately \$120,000 at current interest rates. The cash flow statement (Table 5) shows that only \$63,000 in cash is available to pay the interest, any tax applicable and the annual provisioning for future liabilities such as succession and retirement. Therefore it appears, from the available data, that businesses in the two regions are not economically sustainable in the long term.

To be economic sustainability in the long term, any business, in any industry, anywhere must have a total business return that exceed the after-tax cost of debt (McCosker et al. 2010). The total business return is calculated by adding the annual appreciation or depreciation in total asset values, at market value, to the return on assets. Annual appreciation or depreciation in total asset will dominate the sum in the long term. The cost of debt is the de facto cost of capital but, because the interest component of debt is tax deductible, the cost of debt should be looked at on an after-tax basis. Wealth creation in Australian agriculture is more about land ownership than the activities that take place on the land. Provided the cash flows from ownership activities can fully fund the cost of ownership, the asset value and equity of the business will increase over time. The results for the businesses in the two regions for total business return are unsustainable. Average total business return is 0.9% and 1.5% for the Kimberley and Pilbara respectively while the average after tax cost of debt is 6.4% for the Kimberley and 5.8% for the Pilbara (Figure 1).

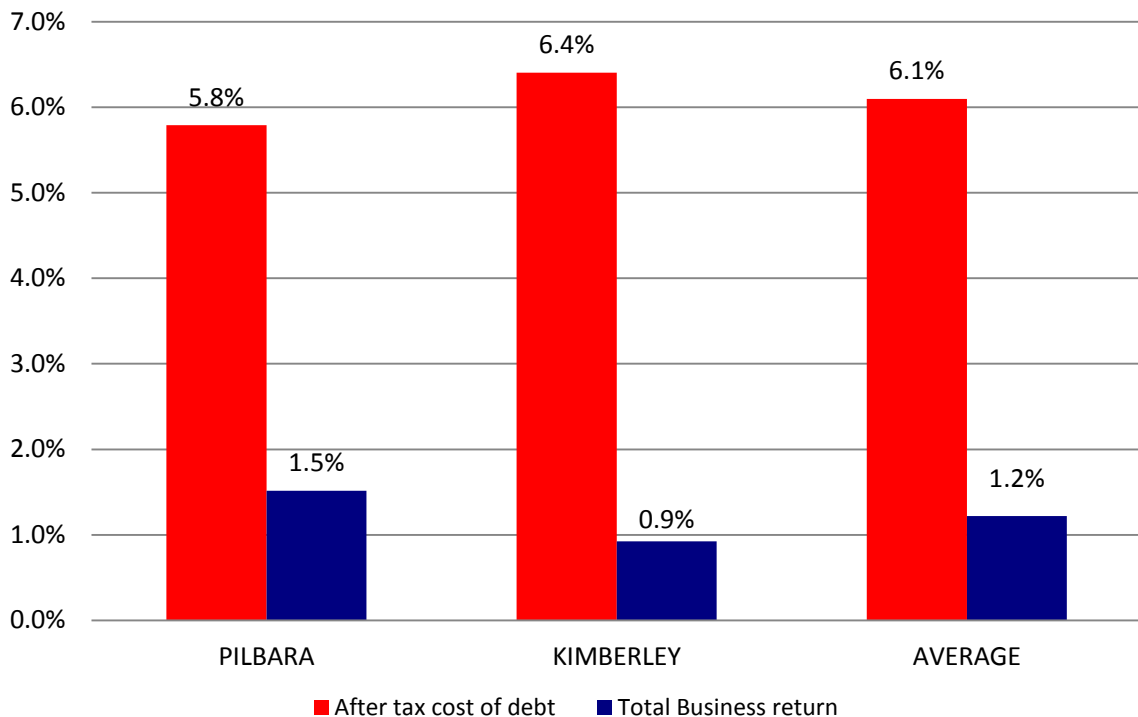


Figure 1: Kimberley and Pilbara economic sustainability - comparison of after tax cost of debt and total business return

The non-financial aspects of the benchmarking data show some interesting differences between the businesses in the two regions (Table 7). These differences may shed light on some of the variations in the financial performance of businesses in the region. Two of the more interesting differences are:

- A much higher effective area relative to gross area in the Kimberley than the Pilbara. This is a function of geography and land systems, but has operational implications that have a significant impact on financial performance.
- A much lower long term average rainfall in the Pilbara and much greater seasonal variability and therefore greater climate risk than the Kimberley region.

Table 7: Pilbara and Kimberley Whole Business Key Performance Indicators

	PILBARA	KIMBERLEY	AVERAGE
LAND & LIVESTOCK			
Total Area (Sq Km)	2,695	2,797	2,746
Effective Area (Sq Km)	1,687	2,193	1,940
Total AE	12,349	14,617	13,483
Total Cattle	9,474	10,406	9,940
Rainfall (Annual)	287	604	446
EQUITY			
Total Assets (\$/AE)	\$822	\$1,396	\$1,109
Land Value (\$/AE)	\$416	\$1,002	\$709
Total Liabilities (\$/AE)	\$141	\$135	\$138
Equity (\$/AE)	\$681	\$1,260	\$971
FINANCIAL			
Gross Cost of Debt	8.3%	9.1%	8.7%
After Tax Cost of Debt	5.8%	6.4%	6.1%
Return to Assets Managed*	1.5%	0.3%	0.9%
Capital Value Change	0.0%	0.7%	0.3%
Total Business Return	1.5%	0.9%	1.2%
Capex % Total Assets (Average)	1%	1%	1%

* In business where land is leased, value of leased land is capitalised

Although capital expenditure is accounted for in the cash flow statement, the capital expenditure as a percentage of total asset value is an important benchmark. Rangeland beef businesses are capital intensive and capital hungry. Big plant and equipment items like prime movers, graders and loaders need replacing, fences and waters need replacement over time and there is, or should be, frequent investment in new technology. The details of capital expenditure are shown in Table 8. To keep rangeland beef businesses operational and efficient in the long term, capital expenditure should average about 2% of capital value per annum. In other words, on average, the business replaces itself every 50 years. Table 7 shows that the average on this measure for each region is only 1%, half what it needs to be. This suggests that infrastructure and equipment on Kimberley and Pilbara is not being replaced and upgraded adequately.

Table 8: Kimberley and Pilbara capital expenditure breakdown

	PILBARA	KIMBERLEY	AVERAGE
Land & Infrastructure	\$20,166	\$48,435	\$34,301
Farm & Private Vehicles	\$15,823	\$23,583	\$19,703
Plant & Equipment	\$25,141	\$18,367	\$21,754
Total	\$61,130	\$90,386	\$75,758

Many, if not most beef businesses in these Kimberley and Pilbara regions are living off eroding equity and have been doing so for some time. This is a slippery slope. As a general statement, the average farm business anywhere in Australia cannot afford to let equity slip below around 85% for too long (McCosker et al. 2010). Below 85% equity it is not that banks will be concerned but that the average business performance does not provide sufficient surplus cash for all the other funding requirements, after 15% debt has been serviced even at the interest only level (Holmes et al. 2010).

Kimberley and Pilbara beef businesses not only have weak business performance and cash flows, their equity average is 84% (Table 6). This situation is unsustainable in the long term and if not addressed, equity will eventually erode to the point where a forced sale is mandated by the bank. This process can take anything up to 60 years to reach the end point. The process is slow and insidious and can be delayed by off farm income, rising land prices in nominal terms and a prolonged run of favourable conditions. Nevertheless, it is relentless if the business fails to meet the minimum standards described here.

In summary, the data presented show that Kimberley and Pilbara beef businesses:

- Can only just cover operational expenses from income.
- Are not maintaining operational efficiency with adequate capital expenditure.
- Cannot fund finance costs including bank interest.
- Pay no tax.
- Have no capacity to retire debt principal.
- Do not meet their cost of capital.
- Have no capacity to fund future liabilities.

Breeding Herds

To provide an indication of the performance of the breeder herd of properties in the Kimberley and Pilbara whole business performance is broken down to a per adult equivalent (AE) basis. This allows direct comparisons to be made between businesses, years and regions. An AE is defined as a 450kg non reproductive beast at maintenance and every class of cattle within the herd can be converted to a multiple or a fraction of an AE. Detail on the performance of breeding herds in the two regions is shown in Tables 9 and 10.

The bigger differences between the regional figures in Table 9 are a function of:

- Geography and the productivity of the natural resource base.
- The Pilbara produces a lot of beef that heads south to Perth for further finishing or direct slaughter. This changes freight associated with selling costs.

Table 9: Kimberley and Pilbara beef herd income statement (per AE). A more detailed version of this table can be found in the Appendix (Table 30) that contains a breakdown of the expenses.

	PILBARA	KIMBERLEY	AVERAGE
GROSS SALES	\$110.40	\$72.56	\$91.48
INVENTORY CHANGE	(\$0.83)	\$10.44	\$4.80
INCOME	\$109.56	\$83.00	\$96.28
ENTERPRISE EXPENSES	\$34.87	\$22.81	\$28.84
GROSS MARGIN	\$74.70	\$60.18	\$67.44
OVERHEAD EXPENSES	\$65.73	\$62.53	\$64.13
EARNINGS BEFORE INT & TAX	\$8.97	(\$2.35)	\$3.31

The key figure in Table 9 is EBIT/AE. It is this number that has to be above a certain threshold for the business to be viable. Table 7 shows the Pilbara EBIT/AE is \$8.97, the Kimberley (\$2.35) and the average \$3.31. EBIT/AE needs to exceed \$40 as an absolute target for any beef business. The justification for this target is as follows: Assuming a herd size of around 13,500 AE, an EBIT/AE of \$40 would result in a whole business EBIT of \$540,000. The average interest liability in the Kimberley and Pilbara regions is \$120,000, which would leave \$420,000 before tax. After tax, this would be close to \$294,000. When the real and necessary annual capital expenditure of \$150,000 is deducted from this, the balance is \$144,000. For family businesses where succession is an issue, annual provisioning for this and independent retirement is necessary and generally, this provisioning will be around \$50,000 per annum, minimum. This would leave a balance of \$94,000. If all of this was allocated to debt principal repayment, the debt would take 16 years to retire. Clearly \$40 EBIT/AE is the minimum requirement which will increase for smaller herds and decrease for larger herds as economies of scale are a factor. All other herd specific key performance indicators (KPI's) are derived from, or contribute to EBIT/AE and provide diagnostic information on either absolute expenses or kilograms produced.

Table 10: Kimberley and Pilbara beef herd key performance indicators

	PILBARA	KIMBERLEY	AVERAGE
Price Received/Kg Beef	\$1.46	\$1.43	\$1.44
Cost Production/Kg Beef	\$1.11	\$1.33	\$1.22
Operating Margin/Kg Beef	\$0.35	\$0.10	\$0.23
Gross \$/Head Sold	\$469	\$435	\$452
Ann Avg Stocking Rate (AE/Sq Km)	6.4	5.6	6.0
Kg Beef/AE	91.2	77.4	84.3
Kg Beef/Head Sold	323	306	314
AE/Labour Unit	1,534	2,198	1,866
Natural Increase %	58.1%	50.5%	54.3%
Mortality Rate	5.4%	9.4%	7.4%
Enterprise Size (Annual Avg AE)	12,285	14,617	13,451

If absolute expenses are an issue, they are almost always related to poor labour efficiency. Labour related expenses have far reaching impacts throughout the cost structure of the business because too many staff generally means too many other

material things that either depreciate or cost something to operate, like motor vehicles and motor bikes. This is why labour efficiency is considered a major KPI. The current Holmes & Co benchmark in this area is that one full-time labour unit should be able to manage 2,300AE. This equates to 800 breeders and all followers. Although this benchmark is threatening to many businesses, it is based on what the top 20% throughout Australia are achieving (McCosker et al. 2010) and is therefore do-able, provided there are no serious constraints imposed by the geography of the property. Labour efficiency can be optimised by simplifying the production system and eliminating non-productive practices. As well, labour saving infrastructure, like stock laneway systems, is very important.

Uncompetitive cost of production is almost always a function of too few kilograms of beef being produced. Labour efficiency aside, around 80% of the operating expenses of a northern beef business are fixed and are unresponsive to cost reduction. The remaining discretionary expenses are generally related to the herd and, as many of these have some productivity implications, any attempt at reduction is generally counter-productive. The emphasis therefore should be on the kilograms produced, rather than the cost of producing them. It is almost impossible to achieve \$40 EBIT/AE unless the cost of production is less than \$1/Kg liveweight.

The most important KPI in Table 10 is the operating margin/kg, that is, the difference between the cost of production and the price received per kilogram. Evidence for this is shown in Figure 2 where the operating margin explains 42% of the difference in EBIT/AE over time. The most important contributor to the operating margin is cost of production. From the data in Table 8, the cost of production is uncompetitive in both regions and the main reason for this is too few kilograms of beef are being produced and sold. The low fertility and the low liveweight of live export sale cattle are the major causes. All of these KPI's also explain the slightly superior performance of the Pilbara relative to the Kimberley.

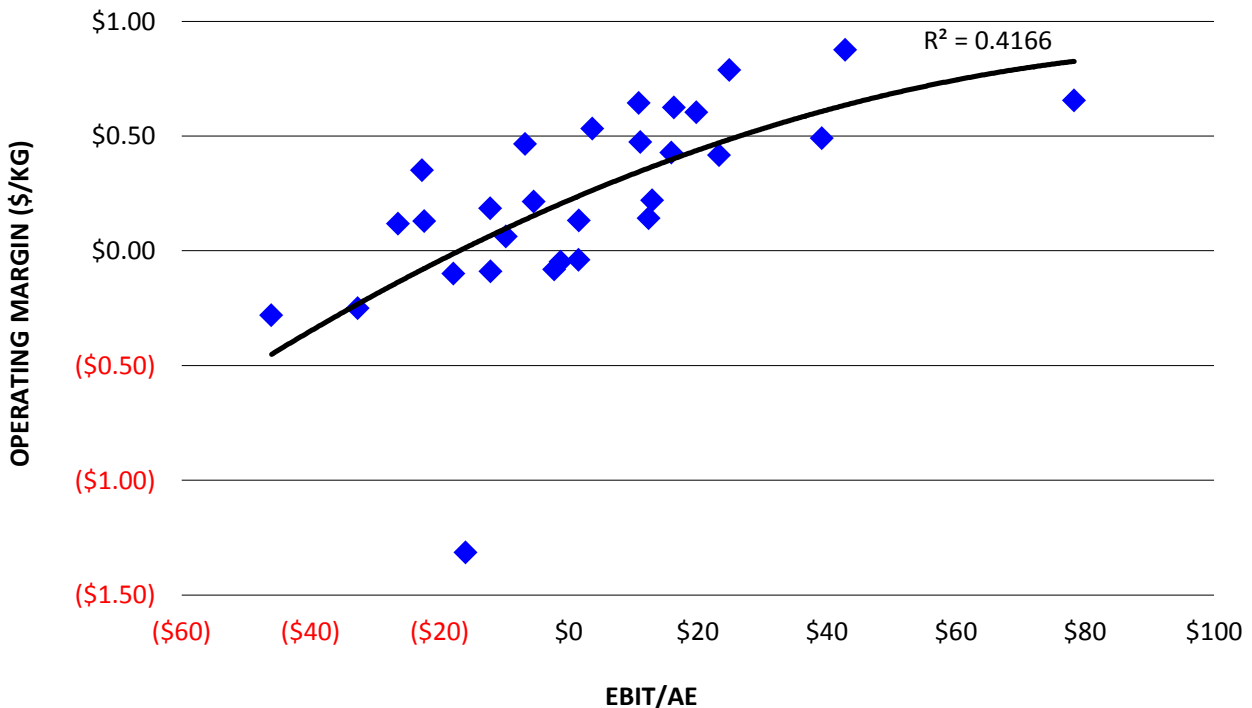


Figure 2: Kimberley and Pilbara EBIT/AE and operating margin regression

Some care needs to be taken when interpreting the fertility related KPI's in Table 10. Weaning % and mortality % data are difficult to collect accurately. Weaning % can be inflated by cleanskins that missed muster from the year before and there is always a reasonable level of uncertainty as to how many cows were mated to produce those weaners. Mortality % is always the balancing item in the livestock trading account and is therefore a derived figure.

The fertility related data in Table 10 should therefore be regarded as a guide only. As more accurate data are collected over time, it is likely that the mortality % will increase. It is important to state all this, because these KPI's are used as assumptions in defining the main findings. Weaning % is most likely to be the most accurate fertility KPI in Table 10.

Longer Term Pilbara Data

Historical benchmarking data from the Pilbara from the previous DAFWA study (Holmes et al. 2010) were added to the current data to provide eight years of data and these are presented in Tables 11, 12 and 13. The last three years in this data series include the two new businesses. There are two reasons why these longer term data are of interest:

1. It takes at least eight years of data to get an accurate fix on the performance of a rangeland beef business because business performance is more volatile. If the average of the eight years in Tables 11, 12 and 13 is compared to the average of the three years in Tables 4, 9 and 10, the overall performance is inferior in the longer term in every case.
2. The longer term data highlight the high level of volatility in business performance in the Pilbara, almost all of which is a function of climate risk. This was identified in the previous DAFWA study and can be summarised as follows. The latitude of the region places it on the boundary between the summer dominant and uniform rainfall zones in terms of effective rainfall. Because of the latitude, failed wet seasons are more frequent than the Kimberley region. A failed wet season is the equivalent of a mini drought. The west Pilbara (Yarraloola, 100yr data) can expect a failed wet season every 4th year statistically and the east Pilbara (Warrawagine, 100yr data) every 6th year statistically. The underlying assumption used here is that when less than half the growing season rainfall has been received, the season has failed.

The critical issue here is the magnitude of the financial consequences of the season failure. Also the recovery time from such an event is important, because if it exceeds the frequency, it is a permanent constraint. An overview of this can be seen in Figure 3. The second form of climate risk is flooding from severe cyclone activity. This has not been analysed in depth for two reasons. Firstly, it is a property specific event, depending on proximity to the coast, local drainage and infrastructure present in high risk zones. Suffice it to say that businesses affected by this form of climate risk suffer loss and reduced business performance through damage to infrastructure, loss of cattle and fewer grazing days on flooded country from overlying water and mud. The extent to which additional pasture growth compensates for this after the flood has passed, is unclear. However, in the broad scheme of things, cyclone and severe rain depression damage is likely to be a lesser risk for the region than failed wet season risk.

Table 11: Pilbara Long Term Whole Business Income Statement

	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	Average
SALES	\$1,586,115	\$1,023,784	\$1,622,985	\$1,038,662	\$1,255,313	\$814,756	\$867,532	\$1,199,073	\$1,176,027
Cattle	\$1,571,560	\$993,165	\$1,573,591	\$975,288	\$1,126,307	\$777,481	\$810,446	\$1,121,702	\$1,118,693
Other	\$14,555	\$30,619	\$49,394	\$63,374	\$129,006	\$37,275	\$57,086	\$77,371	\$57,335
INVENTORY CHANGE	(\$598,674)	(\$465,157)	(\$171,312)	(\$180,158)	\$425,999	\$372,927	\$239,508	(\$144,048)	(\$65,114)
GROSS PROFIT	\$987,442	\$558,626	\$1,451,673	\$858,504	\$1,681,312	\$1,187,683	\$1,107,040	\$1,055,025	\$1,110,913
ENTERPRISE EXPENSES	\$370,941	\$206,293	\$247,961	\$167,732	\$219,829	\$185,957	\$242,259	\$337,237	\$247,276
Beef	\$370,941	\$206,293	\$247,961	\$167,732	\$219,829	\$185,957	\$242,259	\$337,237	\$247,276
Other	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
GROSS MARGIN	\$616,500	\$352,334	\$1,203,712	\$690,772	\$1,461,483	\$1,001,726	\$864,781	\$717,788	\$863,637
OVERHEAD EXPENSES									
Administration	\$29,953	\$35,266	\$30,353	\$32,042	\$39,266	\$35,657	\$31,802	\$32,910	\$33,406
Chemicals	\$0	\$0	\$0	\$0	\$0	\$965	\$921	\$617	\$313
Contract Services	\$0	\$0	\$0	\$0	\$0	\$770	\$3,362	\$1,284	\$677
Depreciation	\$59,406	\$66,300	\$59,594	\$58,568	\$63,118	\$73,441	\$76,025	\$73,481	\$66,241
Electricity & Gas	\$0	\$271	\$183	\$0	\$0	\$1,147	\$7,209	\$15,494	\$3,038
Fertiliser	\$0	\$0	\$0	\$0	\$0	\$14,702	\$0	\$0	\$1,838
Fuel & Lubricants	\$89,722	\$45,547	\$136,931	\$71,022	\$96,692	\$104,213	\$118,701	\$115,077	\$97,238
Insurance	\$12,778	\$12,966	\$12,468	\$16,157	\$18,700	\$15,297	\$12,233	\$21,086	\$15,211
Irrigation	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Landcare	\$0	\$678	\$65	\$222	\$107	\$712	\$3,427	\$5,723	\$1,367
Lime/Gypsum	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Materials	\$3,978	\$4,795	\$3,116	\$4,062	\$3,618	\$2,873	\$3,263	\$2,656	\$3,545
M/Vehicle Expenses	\$118,948	\$80,202	\$108,463	\$79,542	\$52,041	\$51,376	\$42,090	\$44,173	\$72,104
Rates & Rents	\$9,670	\$9,682	\$11,871	\$13,789	\$12,499	\$12,147	\$14,203	\$21,753	\$13,202
R & M General	\$95,483	\$135,908	\$104,745	\$103,014	\$101,524	\$56,911	\$44,703	\$46,313	\$86,075
Seed	\$0	\$0	\$0	\$0	\$0	\$1,578	\$2,105	\$0	\$460
Wages	\$282,019	\$244,415	\$309,687	\$266,604	\$352,792	\$179,950	\$238,060	\$249,412	\$265,367
Wages (Owner)	\$21,667	\$26,000	\$26,000	\$29,000	\$29,000	\$66,500	\$53,200	\$53,200	\$38,071
	\$723,624	\$662,030	\$803,475	\$674,021	\$769,357	\$618,238	\$651,304	\$683,178	\$698,153
EARNINGS BEFORE INT & TAX	(\$107,123)	(\$309,696)	\$400,237	\$16,751	\$692,127	\$383,488	\$213,477	\$34,610	\$165,484
INTEREST/LEASE LAND	\$29,121	\$48,566	\$59,982	\$51,973	\$54,615	\$108,513	\$94,818	\$85,958	\$66,693
PROFIT AFTER INTEREST	(\$136,245)	(\$358,262)	\$340,255	(\$35,223)	\$637,512	\$274,974	\$118,659	(\$51,348)	\$98,790

Table 12: Pilbara Long Term Beef Herd Income Statement

	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	Average
GROSS SALES	\$146.68	\$107.44	\$143.91	\$140.56	\$119.70	\$99.13	\$92.08	\$139.98	\$123.68
INVENTORY CHANGE	(\$77.71)	(\$32.46)	(\$27.11)	(\$43.61)	\$28.41	\$10.02	\$22.26	(\$34.77)	(\$19.37)
INCOME	\$68.97	\$74.98	\$116.80	\$96.95	\$148.11	\$109.15	\$114.33	\$105.21	\$104.31
ENTERPRISE EXPENSES									
A/Health & Breeding	\$3.10	\$1.99	\$3.63	\$1.74	\$3.36	\$2.53	\$2.75	\$2.79	\$2.74
Contract Services	\$5.17	\$3.42	\$5.31	\$6.59	\$10.22	\$6.21	\$4.20	\$6.09	\$5.90
Freight	\$3.40	\$6.66	\$0.03	\$3.04	\$0.75	\$0.00	\$2.97	\$6.91	\$2.97
Insurance	\$0.00	\$0.00	\$0.14	\$0.00	\$0.00	\$0.04	\$0.03	\$0.02	\$0.03
Materials	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.02	\$0.01	\$0.00
Selling Costs: Stock	\$25.67	\$17.43	\$18.69	\$19.70	\$14.29	\$12.79	\$16.19	\$25.14	\$18.74
Supplementary Feed	\$10.23	\$4.34	\$4.14	\$1.79	\$2.29	\$3.84	\$4.38	\$7.67	\$4.83
	\$47.58	\$33.85	\$31.93	\$32.86	\$30.91	\$25.41	\$30.55	\$48.64	\$35.22
GROSS MARGIN	\$21.39	\$41.13	\$84.87	\$64.09	\$117.20	\$83.74	\$83.79	\$56.57	\$69.10
OVERHEAD EXPENSES									
Administration	\$2.89	\$4.39	\$3.04	\$3.68	\$3.09	\$3.55	\$3.20	\$2.83	\$3.33
Chemicals	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.11	\$0.11	\$0.07	\$0.04
Contract Services	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.09	\$0.39	\$0.14	\$0.08
Depreciation	\$8.29	\$8.89	\$7.48	\$7.69	\$7.56	\$8.19	\$7.61	\$6.86	\$7.82
Electricity & Gas	\$0.00	\$0.09	\$0.05	\$0.00	\$0.00	\$0.13	\$0.29	\$0.52	\$0.14
Fertiliser	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$1.74	\$0.00	\$0.00	\$0.22
Fuel & Lubricants	\$5.99	\$4.69	\$9.61	\$7.48	\$7.59	\$8.87	\$9.68	\$9.51	\$7.93
Insurance	\$1.59	\$1.81	\$1.36	\$2.09	\$2.47	\$1.35	\$0.88	\$1.02	\$1.57
Irrigation	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Landcare	\$0.00	\$0.03	\$0.00	\$0.01	\$0.00	\$0.02	\$0.33	\$0.55	\$0.12
Lime/Gypsum	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Materials	\$0.44	\$0.51	\$0.32	\$0.63	\$0.48	\$0.30	\$0.31	\$0.21	\$0.40
M/Vehicle Expenses	\$7.12	\$5.67	\$8.58	\$4.80	\$3.67	\$4.42	\$4.07	\$5.19	\$5.44
Rates & Rents	\$1.21	\$1.17	\$1.51	\$1.87	\$1.53	\$1.40	\$1.68	\$3.17	\$1.69
R & M General	\$7.36	\$8.59	\$7.40	\$8.17	\$5.56	\$4.06	\$3.42	\$3.85	\$6.05
Seed	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.19	\$0.24	\$0.00	\$0.05
Wages	\$22.83	\$24.62	\$30.17	\$32.57	\$32.48	\$20.17	\$24.36	\$25.32	\$26.57
Wages (Owner)	\$4.81	\$7.59	\$6.79	\$8.06	\$8.16	\$10.70	\$8.18	\$7.89	\$7.77
	\$62.54	\$68.06	\$76.33	\$77.05	\$72.61	\$65.31	\$64.75	\$67.12	\$69.22
EARNINGS BEFORE INT & TAX	(\$41.14)	(\$26.92)	\$8.54	(\$12.96)	\$44.59	\$18.43	\$19.04	(\$10.55)	(\$0.12)

Table 13: Pilbara Long Term Beef Herd Key Performance Indicators

	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	Average
Price Received/Kg Beef	\$1.28	\$1.25	\$1.45	\$1.53	\$1.72	\$1.42	\$1.49	\$1.45	\$1.45
Cost Production/Kg Beef	\$1.61	\$1.31	\$1.39	\$1.60	\$1.10	\$0.99	\$1.03	\$1.29	\$1.29
Operating Margin/Kg Beef	(\$0.34)	(\$0.06)	\$0.06	(\$0.07)	\$0.62	\$0.43	\$0.46	\$0.15	\$0.16
Gross \$/Head Sold	\$332	\$383	\$422	\$421	\$562	\$457	\$499	\$452	\$441
Ann Avg Stocking Rate (AE/Sq Km)	5.6	5.1	5.1	5.3	5.3	6.3	6.3	6.5	5.7
Kg Beef/AE	76.7	80.0	94.1	65.7	101.8	91.4	94.4	87.7	86.5
Kg Beef/Head Sold	261	307	294	275	327	320	335	313	304
AE/Labour Unit	1,251	1,025	991	1,032	1,087	1,559	1,539	1,504	1,248
% Female Sales	NA	NA	NA	NA	NA	33.2%	29.3%	38.5%	33.6%
Natural Increase %	60.6%	44.1%	73.6%	32.3%	59.6%	56.2%	57.0%	61.2%	55.6%
Mortality Rate	5.1%	4.3%	3.9%	2.5%	2.5%	4.7%	4.9%	6.6%	4.3%
Enterprise Size (Annual Avg AE)	11,463	10,630	10,250	10,966	10,841	11,686	12,278	12,892	11,376

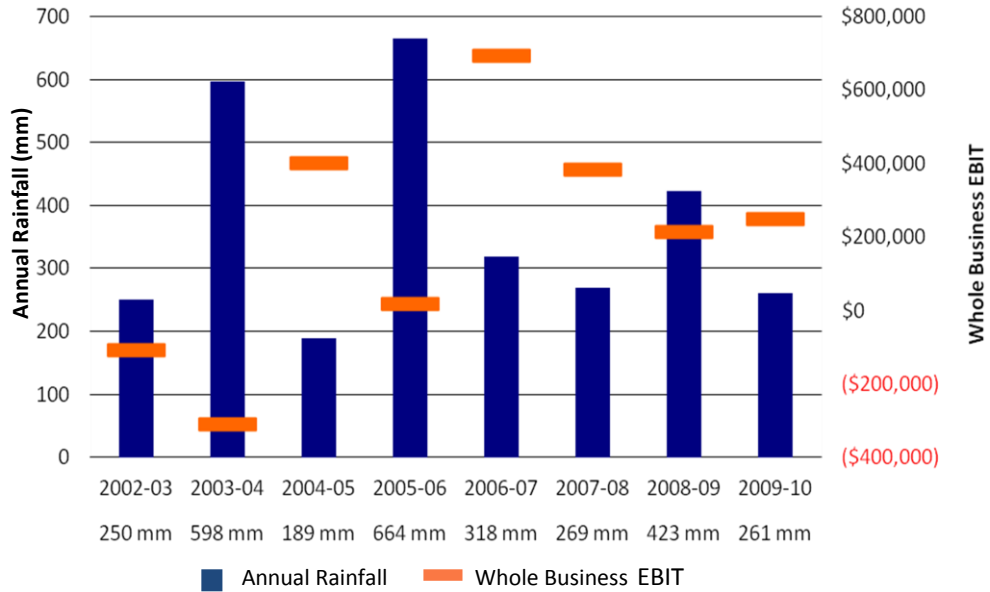


Figure 3: Pilbara annual rainfall and whole business EBIT

Key Findings

The key findings of the producer group benchmarking were:

- Many Kimberley and Pilbara beef businesses are not economically sustainable and equity will eventually decline below a workable level unless action is taken. The reasons behind this assessment of economic sustainability include:
 - Poor labour efficiency,
 - Inadequate capital expenditure, and,
 - Insufficient provisioning for future liabilities such as drought contingency and succession.
- The beef herds are generally poorly productive, the main reasons being:
 - Fertility is low, but has the capacity to improve by up to 20%.
 - Annual herd death rates are probably understated and need to be reduced to below 5%.
 - Too few kilograms of beef are being produced and sold, resulting in an uncompetitive cost of production.
- Alternative markets should be examined to reduce the reliance on the live export trade.
- Management strategies need to be devised such that live export cattle are embarked for export as close as possible to the 350kg liveweight limit.
- Management strategies need to be devised to capture the full benefit of sale of surplus females, particularly as herd fertility improves.
- The genetic makeup of the herds needs to change to improve fertility, productivity and end product acceptance in other markets.
- A plan to manage the risk of a failed season in the Pilbara is a major priority.

While the outlook for the Kimberley and Pilbara pastoral industry may appear bleak, a combined analysis of the production group data and Pastoral Industry Survey has identified several key RD&E areas that have the potential to deliver significant benefits. The commitment, dedication and desire of producer group participants to engage in the process and seek to improve their business performance is encouraging and deserves support.

4.1 Priority Issues

The objective of this project was to identify issues constraining the productivity and profitability of the Kimberley and Pilbara cattle industry and to identify opportunities for targeted RD&E. Issues identified as priorities for the northern WA cattle industry were:

1. poor financial performance,
2. poor herd productivity, driven by
 - a. low herd fertility
 - b. high breeder mortality rate
 - c. low herd turn off,
3. a lack of market strategies for surplus females and 'out-of-spec' cattle
4. the regions' dependence on the Indonesian live export market,
5. high frequency and impact of failed growing seasons in the Pilbara.

Opportunities identified as priorities for the northern WA cattle industry were:

1. opportunities to improve herd management and genetics to target fertility, productivity and alternative market acceptance,
2. the importance of appropriate grazing land management strategies for optimal production and herd performance, including optimising turn-off weights for the Indonesian live export market.

The issues identified in this work (Table 14) are by no means new and most, if not all, have been identified in previous broad scale studies. However, the detailed nature of this current work lends significant weight to the importance of these issues at the regional level.

Table 14: Major economic constraints and opportunities within the regions

Region	Issues	Opportunities
Kimberley and Pilbara	Poor financial performance	<ul style="list-style-type: none"> • Awareness of current enterprise and performance key profit drivers • Improved business decision making and enterprise performance • Increasing labour efficiency
	Poor herd productivity driven by: <ul style="list-style-type: none"> • Low herd fertility • High breeder mortality rate and • Low herd turn-off 	<ul style="list-style-type: none"> • Creating industry awareness of importance of GLM for optimal production and herd performance • Opportunities to improve herd management and genetics to target fertility and productivity • Strategies to achieve turn off weights as close to 350 kg as possible • Strategies to maximise cull female turn off
	Dependence on the Indonesian live export market	<ul style="list-style-type: none"> • Opportunities to improve herd genetics to target alternative market acceptance • Investigate alternative market options for cattle not appropriate for the Indonesian market
Pilbara only	High frequency and impact of failed growing seasons in the Pilbara	<ul style="list-style-type: none"> • Better position industry to deal with failed seasons

4.2 Poor Financial Performance

The financial situation of the northern Australian cattle industry has been well documented over the last two years. McCosker et al. (2010) suggested that 50% of Queensland producers had spent more than they had earned in six of the last seven years and that average return on assets (ROA) was between 0.3 and 2%. The current benchmarking study suggests that the average ROA for the Kimberley and Pilbara groups was 0.3% and 1.5% respectively for the three year period. The best performing Kimberley business had a return of 1.4% over the period although average ROA ranged from 0.1% to 0.8% for the three year period. Only two Pilbara businesses performed above this average, with ROA for the three year period ranging from 0.4% to 2.5%. As with many cattle businesses in northern Australia, Kimberley and Pilbara businesses are surviving due to long term asset appreciation as business returns fail to meet the after tax cost of debt.

Labour efficiency is a function of herd size and the number of full time equivalent employees (FTE) a business utilises. In northern Australia the optimum number of cattle for one FTE to manage, according to Holmes & Co benchmarking experience, is 2,300 AE. If an FTE is managing less than 2,300 AE labour usage is inefficient. If an FTE is managing more than 2,300 AE other areas of the business such as repairs and maintenance may suffer, as the work load becomes too great for employees to manage.

While on average Kimberley businesses appear to be operating close to the optimum labour efficiency (2,198 AE/FTE) the benchmarking data revealed that individual enterprises were not utilising labour efficiently. In the Kimberley, labour efficiency ranged from 1,069 AE/FTE to 3,632 AE/FTE. In the Pilbara, labour efficiency is below the optimum with a range of 923

AE/FTE to 2,299 AE/FTE, averaging 1,534 AE/FTE. While labour efficiency appears to be a bigger issue for the Pilbara, investigating opportunities for improving labour efficiency would be beneficial for both regions.

To be sustainable in the long term businesses need to be able to make provision for both planned and unplanned future costs. Planned costs such as retirement of the current generation or education costs for children need to be covered by business returns and set aside annually so that the cost is spread over time and does not cripple the business at the point in time that they are incurred. Financial reserves for unplanned costs such as drought management or unexpected opportunities for capital purchases (i.e. the purchase of a neighbouring property) also need to be built up. At present, the average Kimberley and Pilbara business is not generating sufficient profits to have any surplus cash to set aside for either of these purposes. Consequently, when unplanned expenses occur, overdrafts increase leading to ongoing financial difficulty.

Improved understanding of business management and financial skills by Kimberley and Pilbara producers is an imperative if the issues associated with poor financial performance are to be addressed. Forty percent of survey respondents indicated that business management skills were a priority learning area. Although business management was considered the fourth most important area for further learning (Table 15), four of the five main constraints affecting profitability effectively fall under this topic, suggesting there is significant scope for extension in this area (Table 16). The fifth constraint, poor herd reproductive rates, is a function of all the other topics identified as priority learning areas.

Table 15: Priority learning areas identified by survey respondents

Priority learning area	Number	Percentage
Animal health and nutrition	48	62
Breeder herd management	40	52
Grazing land management	35	45
Business management	31	40

The MLA developed business management training course for northern beef producers, BusinessEdge, was very well received in Broome (West Kimberley) when the pilot was run in June 2010. Of the 13 businesses that attended, 85% indicated that they had either made or changed management decisions relating to their businesses as a result of the course. The BusinessEdge package would be well received if rolled out in the two regions and is likely to lead to positive changes to business management practices. The course would have much greater impact if accompanied by a structured follow up plan.

Table 16: Main economic constraint affecting profitability of Kimberley and Pilbara cattle enterprises, as rated by survey respondents

Main economic constraint	Number	Percentage
Lack of alternative markets	63	82
Cost of inputs	51	66
Cost of infrastructure	37	48
Cost of labour	23	30
Poor reproductive rates	17	22

4.3 Poor herd productivity

Herd productivity is the result of the combination of management practices, seasonal conditions and herd genetics. Management practices such as heifer selection and management, breeder management and culling all contribute to the fertility of a herd.

The analysis of herd production data collected for the producer group benchmarking revealed that, on average, the productivity of the Kimberley and Pilbara cattle herds is poor. Over the three year period of benchmarking, weaning rate (natural increase) was on average 50.5% in the Kimberley and 54.3% in the Pilbara. The annual herd mortality rate for the period averaged 9.4% and 5.4% respectively for the Kimberley and Pilbara.

Further evidence of poor herd productivity in the two regions is low herd turn off figures (kg beef produced/AE). According to Holmes & Co benchmarking in rangeland areas, to be financially sustainable, cattle businesses need to be producing at least 100kg of beef per adult equivalent. Kimberley and Pilbara businesses averaged 77kg and 91kg respectively. While all of this is negative, it is important to note that while the average may be below the sustainable benchmark, within the group individual businesses were meeting or exceeding these measures in both regions.

4.3.1 Reproductive rates

Sub-optimal reproductive rates were identified as one of the major constraints to the profitability of Kimberley and Pilbara cattle enterprises, both in the survey and the producer group benchmarking. Reproductive indices are always difficult to accurately assess due to factors such as differing definitions, difficulty in determining overall breeder numbers, and the difficulty of implementing clean musters. As such, there is some uncertainty surrounding the figures quoted in the survey. In the survey producers were asked to estimate weaning percentages for different classes of breeding stock. Estimates varied between regions and for different classes. Estimated weaning rates were lower in the Kimberley than in the Pilbara (64% and 66% respectively) and were lower for first lactation females than for other classes of breeders (Table 17).

In the benchmarking study, weaning rate is calculated from the stock numbers submitted for analysis. For the three year period covered by the study, the average weaning rate for the Kimberley region was 51%, and was 58% for the Pilbara. These figures suggest that producers in the survey may have overestimated weaning rates. The scoping study by Niethe and Quirk (2008) also supports this contention as its estimates of the overall weaning

rates for the Kimberley and Pilbara from herd modelling were approximately 60% and 62% respectively.

It is important to note that producer estimates of weaning rates for separate classes of females such as maiden heifers, first lactation heifers, breeders and aged cows differed (Table 17). There have been a number of projects across the Kimberley and Pilbara in the past that have attempted to estimate weaning rates, with significant variation in the results. These projects include the Pilbara and Kimberley Young Breeder project (Smith et al. 2010), the Cash Cow project (McCosker et al. 2011), a scoping study by Niethe and Quirk (2008) and the northern beef situation analysis (McCosker et al. 2010) (Table 16).

Table 17: Producer estimated weaning percentages for different classes of breeding stock from the Pastoral Industry Survey 2010

Estimated Weaning Rates				
	Maiden heifer	1st lactation	Breeders	Old cows
Kimberley 2008	65	59	67	67
Kimberley 2009	64	58	67	68
Average	64.5	58.5	67	67.5
Pilbara 2008	72	54	71	71
Pilbara 2009	68	54	70	66
Average	70	54	70.5	68.5

Table 18: Comparison of estimated weaning percentages by project, for the Kimberley and Pilbara regions

	Region	Industry Survey	Producer Group	Young Breeder	Cash Cow	Niethe and Quirk	Northern Situation Analysis
Maiden heifer	Kimberley	65					
	Pilbara	70		22 - 64			
1st lactation	Kimberley	59		10 - 86	17		
	Pilbara	54		44			
Breeders	Kimberley	67					
	Pilbara	68					
Old cows	Kimberley	71					
	Pilbara	69					
Herd	Kimberley	65	50			60	
	Pilbara	65	58			63	53

Significant gains in overall herd fertility in the Kimberley and Pilbara regions could be made by placing more emphasis on culling empty dry cows, weaner management and more attention to selection criteria for replacement bulls and females. Breeder culling criteria most commonly used by survey respondents were, in order of frequency, breeder age, temperament and pregnancy status.

4.3.2 Heifer management

The estimated weaning percentages that fell into the highest 10% of all survey responses were grouped to allow for more detailed analysis of what management practices may contribute to higher weaning rates. This group is subsequently referred to as the Top 10% (Table 19).

Table 19: Estimated weaning percentage for survey population compared with the Top 10% of producers

Conception rates	First mated heifers	First lactation females
Survey average	66	57
Top 10%	72	69

The majority of replacement heifer selection was conducted prior to joining, with 69% of Kimberley survey respondents and 82% of Pilbara respondents applying no further selection pressure based on post-joining information such as pregnancy status. Only three respondents in the Kimberley and one in the Pilbara selected heifers based on their ability to wean a first calf.

When selecting heifers, the top five traits considered by survey respondents were (in order)

- conformation,
- temperament,
- breed,
- fertility,
- colour.

Less important traits considered when selecting heifers included weight and polledness. It is unclear how fertility was determined as a selection trait, considering the majority of selection was conducted before a heifer is able to demonstrate whether or not she is particularly fertile. An extension package demonstrating the usefulness of objective measures and management systems to identify potential fertility could be timely.

Only 17% of respondents indicated they segregate heifers from the main breeding herd following first mating. A principle finding of the Young Breeder Project (Smith et al 2010) suggested that segregating replacement females, from the breeder herd until they weaned their first calf, provided the opportunity for preferential management significantly increasing re-conception rates. This assertion is supported by Pastoral Industry Survey data which demonstrate that 50% of the Top 10% implemented this management practice. Of these Top 10%, 80% fed phosphorus compared with a survey average of 28%. Other differences noted for the Top 10% were higher estimated live weights at first mating, greater use of vaccination protocols and higher levels of supplementation, both in the wet and dry seasons (Table 20)

Table 20: Management practices employed by Top 10% of survey respondents based on heifer conception and re-conception estimates, compared to the average of the survey population.

Heifer Segregation	Segregate until first mating	Segregate post first mating
Survey average	54%	17%
Top 10%	100%	50%
Liveweight at joining	Average liveweight	
Survey average	260kg	
Top 10%	300kg	
Vaccination	Heifers	Bulls
Survey average	16%	34%
Top 10%	30%	60%
Supplement	Dry season	Growing season
Survey average	75%	28%
Top 10%	80%	80%

4.3.3 High breeder mortality rate

In the absence of reliable data relating to mortality, female sales can be used as a surrogate measure. A static herd with an annual mortality rate of around 5% and a weaning percentage of around 70% should turn off approximately 46% females. Where female sales are significantly lower than 46% and the overall herd size is not increasing, either mortality rates are significantly higher, weaning percentages are significantly lower, or both.

High breeder mortality rates in the Kimberley and Pilbara regions reduce the overall herd productivity. Annual mortality rates of over 5% represent a significant cost to the business. Herd mortality rates calculated from the benchmarking data were 9.4% for the Kimberley group and 5.4% for the Pilbara group. Survey respondents' estimates of breeder mortality rates averaged 5.5% and 4.5%, respectively, for the Kimberley and Pilbara regions. This suggests that producer estimates of breeder mortality rates are inaccurate.

Niethe and Quirk (2008) used herd modelling and sales data to estimate mortality rates for both regions and estimated them to be approximately 9.5%. It is hoped that a MLA funded study into breeder mortality in northern Australian will provide a more accurate picture of the situation and improve producer appreciation of the magnitude of the issue.

4.3.4 Wet season supplementation

Kimberley respondents who fed wet season supplement reported significantly higher female turn off percentages in 2009 than those that did not (43.5% vs. 27.7%). This would suggest that businesses that supplemented breeders may have had higher survival and/or weaning rates than those that did not. As previously noted, female sale percentage can be used as a surrogate for mortality and weaning rates when reliable data is difficult to source.

Importantly, every Kimberley respondent that fed wet season phosphorus turned off cull cows in 2009. Of Kimberley respondents that did not feed wet season phosphorus, only 59% (17 out of 29) culled any cows. Of the three Pilbara producers who fed wet season phosphorus, all sold cull cows in 2009, while 70% of those who did not feed phosphorus also did not turn off any cull cows.

Respondents who supplemented in the dry had higher percentage female sales than those who did not. In both regions turn off rates were higher again for those who also fed wet season phosphorus (Table 21). Upper range female sales of 74%, 76% and 80% in the Table 21 are likely to represent one-off sales events and should not be considered an indication of mortality or weaning percentages.

Table 21: Percentage of female sales from respondents who fed wet season phosphorus compared with those that did not.

Average % female sales	% female sales			
	Wet season P		Dry season	
	Fed	Not fed	Fed	Not fed
Kimberley	43.5 (25 – 52)	27.7 (0 – 80)	37.9 (0 – 52)	23.1 (0 – 80)
Pilbara	55.8 (28 – 74)	42.6 (0 – 76)	45.3 (28 -76)	44.4 (0 -53)

Expenditure on wet season supplementation was lower than that on dry season supplementation in all areas, except for the West Kimberley where it was marginally higher (Table 22). The lower expenditure on wet season supplement in the North Kimberley and the West Pilbara regions suggests that it was not supplied in substantial amounts on the properties in these regions, and is therefore unlikely to have been very effective.

Table 22: Average cost of dry season and wet season supplementation by district.

	Average cost of dry season supplement (\$/head)	Average cost of wet season supplement (\$/head)
East Kimberley	11.88	9.19
North Kimberley	10.3	3.33
West Kimberley	9.35	9.63
East Pilbara	6.98	0
West Pilbara	14.92	2.50

The cost of feeding wet season supplement will vary depending on the product fed (loose mix, blocks, %P etc), the targeted consumption rate, the length of the feeding period and the cost of acquiring the supplement. One example of the estimated cost (2012 prices delivered Broome) of feeding phosphorus is as follows:

1 x tonne Kynophos (21% P)	\$1,300
Targeted consumption of 8g P/head/day	38g Kynophos/head/day
Feeding period of 100 days	3.8kg ynophos/head/wet season
Total cost	\$4.94/head/wet season

This cost will increase with the addition of 'condiments' e.g. salt, to Kynofos to attain target intakes. E.g. a commonly recommended mix of 50:50 Kynofos:Salt would cost around \$7.00/head to supply 8g P for 100 days.

Commonly used commercially available blocks are generally a more expensive if more convenient method of feeding wet season P with costs up to around \$20/head/wet season to supply P as indicated in the above examples.

The lower cost of wet season supplementation and the comparatively higher return per dollar spend compared with dry season supplementation suggests

that wet season supplementation should be the priority if available funds are limited.

4.4 The regions' dependence on the Indonesian live export market

Both the Kimberley and Pilbara regions are heavily reliant on live export to Indonesia. The 2010 enforcement of the 350 kg weight restriction has had a significant impact on the northern Australian cattle industry. This weight limit significantly reduced market opportunities for producers in North West Australia to turn off cull cows and heavy male animals. The impact was felt most strongly in the Kimberley, which had a higher reliance on that market for cull cows and out of spec cattle, but has also affected businesses in the Pilbara. The June 2011 suspension of the live cattle trade to Indonesia created a greater degree of uncertainty about this market, and has motivated producer interest in seeking alternative markets.

A total of 51,454 mature cows were turned off from surveyed properties in the Kimberley and Pilbara in 2009, with a median age of nine years in the Kimberley and eight years in the Pilbara. Of these, over 21,000 (17,500 from the Kimberley and 3,500 from the Pilbara) were sold into the live export market (Table 23) prior to the application of the 350kg liveweight limit. Unfortunately, complete sales figures for 2010 were unavailable at the time of the survey, but it is reasonable to assume that securing a viable market for cull cows is a vital step in securing the long term profitability of the northern beef industry. In order to achieve this, it is first necessary to ensure the northern producers are producing animals that are suitable for domestic markets. These may include the store market, PTIC cows or the domestic slaughter market. In order to meet the optimum requirements of the slaughter market cattle must weigh in excess of 420 kg. Specific management strategies may be required to ensure cull cows are able to reach this target.

Table 23: Survey respondents' cull cow sales for 2009

	Live export	Domestic market	Slaughter market	Total
Kimberley	17,545	20,837	2,618	40,550
Pilbara	3,640	6,046	719	10,904
Total	21,185	26,883	3,337	51,454

4.4.1 Spaying

Spaying cull cows was strongly related to the turn off of female animals. Kimberley respondents who spayed cull females had median female turn off of 38.7%. This is in contrast to Kimberley respondents that did not spay, and only averaged a female turn off of 9.8%. Of Kimberley respondents that did not spay cull cows (12), only three sold any females in 2009.

In the Pilbara the relationship between spaying cows and the percentage of females sold was less than in the Kimberley and was not strong. Respondents who did spay averaged approximately 44 % female turn off, while those that did not spay had an average female turn off of 43%. This higher female turn off in the Pilbara compared with the Kimberley may be due to closer proximity to southern WA markets than Kimberley enterprises. The significantly lower transport costs for Pilbara producers when compared with Kimberley producers' means that operations closer to southern markets may be able to accept the lower prices traditionally offered for cull females and still

remain viable. It is also important to note that unspayed Pilbara cattle were also on average significantly heavier than Kimberley cattle (Table 24).

In addition, approximately 30% of Pilbara businesses surveyed own a farm in the southern Agricultural region. This provides a location for cull cows to calve out, be fattened and sold. This can be seen in the numbers of animals going to the domestic market.

Eight of the 24 Kimberley respondents that did spay averaged cull cow turn off weights of 420 kg or over. These weight differences were not reflected in the Pilbara figures where unspayed cattle were marginally heavier than spayed animals (Table 24). In contrast, none of the Kimberley producers who did not spay females averaged turn off weights of over 420 kg. This could be a reflection of overall levels of herd management, rather than purely a consequence of spaying

Table 24: Turn off live weight comparison of spayed and non-spayed cull cows by region.

	Average weight (kg) - Spay			Average weight (kg) Non-spayed		
	Average	Median	Range	Average	Median	Range
Kimberley	403	400	342 - 450	366	375	300 - 414
Pilbara	424	440	300 - 500	431	450	350 - 500

4.4.2 Supplementation

Approximately 2,500 Kimberley cows fed wet season phosphorus were sold into the slaughter market in 2009 compared with 120 unsupplemented cows. However, respondents who reported feeding wet season phosphorus did not report higher turn off weights for cows. While only three respondents from the Pilbara fed wet season phosphorus as a standard management strategy, cows sold from these businesses were heavier than cows from un-supplemented herds in 2009 (Table 25).

Table 25: Turn off weights of cattle fed wet season phosphorus compared with weights of un-supplemented cattle.

Average of female sales	Weight (kg) - Fed			Weight (kg) - Not fed		
	Average	Median	Range	Average	Median	Range
Kimberley	397	400	350 - 432	400	400	300 – 450
Pilbara	462	460	400 - 500	414	425	288 – 500

The raw data suggest that heifers made up the majority of female sales in Kimberley unsupplemented herds. However, the result is likely skewed by a large one-off sale of 17,000 heifers. When this transaction is removed from the data set, heifer sales are significantly lower than mature cow sales in unsupplemented herds.

4.5 Opportunities for improving genetic makeup of the herd to target fertility, productivity and alternative market acceptance

The use of improved genetics and bull selection tools presents an opportunity for the northern WA industry to improve overall herd productivity. Currently, bulls are predominantly selected for characteristics such as temperament, structure and polledness, with fertility and carcass traits being only a minor consideration. Only 23% of producers in both regions use estimated breeding

values (EBV) when selecting bulls. EBVs and the use of bull breeding soundness evaluations (BBSE) are tools that are poorly understood and adopted by most producers. The majority of producers source bulls from studs and therefore an opportunity to seek more information and apply more objective selection pressure on bulls introduced to the herd should be possible.

If the potential for rangeland cattle to meet southern market specifications and be competitive is to be explored, the opportunities for changing the genetic makeup of the herd need to be examined. The predominant breeds in the Kimberley are Brahman and Brahman cross, which limits the opportunities for accessing southern markets and affects the potential price received. There are obvious reasons why producers in the Kimberley have focussed on Bos Indicus cattle, but the question as to whether there is potential for genetic selection that would allow for tropically adapted cattle that satisfy live export requirements and also meet domestic market specifications should be explored. This approach may also increase the potential for genetic improvement in herd fertility and productivity currently being confirmed from Beef CRC but not yet widely available from commercial Brahman stud breeders.

4.6 High frequency and impact of failed growing seasons in the Pilbara

Climate variability in the Pilbara region has a major impact on the production and financial performance of the region's beef industry. Analysis of 100 year rainfall records for the Pilbara region shows that statistically one year in every four in the west (Yarraloola station) and one year in six in the east (Warrawagine station) is likely to be a failed growing season. If the recovery time from these events is greater than their frequency, failed seasons will be a permanent constraint to productivity in the region. Developing a strategy to minimise the impact and recovery time from these events is essential and is recognised as a priority by the Pilbara group members.

4.7 The importance of grazing land management for optimal production and herd performance

Seventy-seven percent of respondents used some form of benchmark to assist in managing the natural resources of the business. The most common benchmark used was rainfall records (88%), followed by photo monitoring sites (63%) and DAFWA lease inspections (54%). Of those respondents who did not use benchmarks, 52% believe it would be a useful tool

The three most significant constraints to the environmental sustainability of a pastoral enterprise in the Kimberley and Pilbara all pertain to grazing land management (Table 26).

Table 26: The main constraints to environmental sustainability in the Kimberley and Pilbara regions.

Ranking	Constraint	
	Kimberley	Pilbara
1	Wild fire	Climate variability
2	Erosion	Erosion
3	Patch grazing	Patch grazing/Feral animals

At the time of the survey, all districts had businesses that had been owned and managed for less than four and two years respectively. This demonstrates there is an ongoing need for continuing extension of Grazing Land Management (GLM) principles to ensure new managers have access to information relevant to local conditions and can therefore make informed management decisions.

Effective GLM underpins the whole beef production enterprise. One of the greatest challenges faced by northern beef producers is to match the available feed with herd numbers in a variable climate. The difficulty in achieving this is compounded by limited turn-off options in poor seasons, particularly in the Kimberley. Therefore, the importance of understanding and being able to assess the long and short term carrying capacity of country cannot be underestimated.

The most common method of assessing feed availability (short term carrying capacity) was self-assessment of feed availability (65), followed by condition of stock (38) and monitoring sites (10). Issues associated with using stock condition to assess pasture availability is the lag time between pasture being over-utilised and cattle losing condition due to selective grazing. By the time cattle begin to slip, the damage to pastures is done. This concept is a major focus of the GLM workshop.

The GLM workshop was first delivered in the Kimberley in 2009 and was very successful. Of the 12 businesses that attended, 10 subsequently made changes to their management practices as a direct result of attending the workshop (Dray et al. 2010). GLM was also considered the third most important area for further learning. This will become increasingly relevant as northern producers move to increase the overall size of their herds.

On average, the survey respondents anticipate that carrying capacity will increase by 16% across all districts in five years. The greatest expected increase was in the North Kimberley where the managers surveyed expect their carrying capacity to increase on average by 23%. The smallest increase over the five year period was recorded in the West Pilbara where respondents estimated an average 10% increase. These increases are expected through the development of new water points and fencing (Table 27), allowing improved grazing distribution and more even utilisation of native pastures, rather than through pasture improvement which is rarely practical in WA due to pastoral lease conditions.

Table 27: The highest priorities for infrastructure development if no financial or labour restrictions were present and actual infrastructure development planned by survey respondents for the 12 months following the survey.

	Highest priority for unrestricted infrastructure development		Planned infrastructure development (12 months post survey)	
	Water points	Fencing	Water points	Fencing
Kimberley	51%	46%	63%	71%
Pilbara	31%	27%	43%	47%

The most common grazing strategy practiced was continuous grazing with 84% of respondents implementing this system. Sixty-two percent of respondents also implement some form of wet season spelling. Spelling regimes ranged from a simple wet season de-stock of key areas such as weaner and holding paddocks, to fully integrated spelling systems. Twenty-

three percent of respondents implemented a rotational grazing system with two producers practicing cell grazing at the time of the survey.

Patch grazing was identified as a major constraint to the environmental sustainability in both the Kimberley and Pilbara. Water point development and fencing (including paddock subdivision) is an important tool to address these issues.

Infrastructure development is also important in allowing for improved herd management options, leading to better reproductive and welfare outcomes. Tools to improve producer skills in infrastructure planning include GLM workshops and potentially property planning and mapping workshops.

5 Conclusions and Recommendations

The industry survey and producer group benchmarking results provide a contemporary snapshot of the Kimberley and Pilbara pastoral industry. Resurveying producers in future will provide an indication of change to industry practice and performance against the 2010 baseline. The continued involvement of DAFWA in the two producer groups in the regions will add to the depth of understanding of the issues affecting the sustainability of cattle businesses.

The key recommendations for addressing the issues identified are as follows:

5.1 Poor financial performance

Develop an extension project incorporating BusinessEdge workshops supported by a structured follow-up strategy for Kimberley and Pilbara producers.

Investigate labour saving strategies such as water point radio telemetry and quantify the financial benefit. A PDS is being developed to address the opportunity of radio telemetry.

5.2 Poor herd performance

The first step to addressing poor reproductive performance in the Kimberley and Pilbara is to improve awareness of the magnitude of the issue. The current MLA Breeder Mortality project should provide additional data on that aspect of herd productivity. A roll out of BusinessEdge could improve the appreciation and need for improved herd and business recording and therefore assist producers to quantify their herd's productivity. Developing a better understanding by producers of the benefits of appropriate supplementation and weaning practices may also lead to improved herd performance. PDSs demonstrating the benefits of phosphorus supplementation and twice year weaning in the Pilbara are being developed.

5.3 The regions' dependence on the Indonesian live export market

Identify alternative market opportunities for Kimberley and Pilbara cattle and what changes to preparation and genetics may be required to meet the specifications of these markets. Opportunities for cull cows and non-Indonesian specification cattle are a priority, along with strategies for delivering animals for the Indonesian market as close as possible to the weight limit. A PDS to investigate strategies to address shrinkage in cattle during transit is being developed.

5.4 Opportunities for improving genetic makeup of the herd to target fertility, productivity and alternative market acceptance,

Increasing awareness of the availability of improved genetics for northern herds and objective selection of bulls is the first step. This could involve running a bull selection/Breeding Edge workshop before the start of the bull buying season and extension of the findings of the Beef CRC. Further developments could include demonstration sites of on-property bull breeding with objective measurement and selective pressure for fertility (potentially with the use of the Remote Livestock Management System).

5.5 High frequency and impact of failed growing seasons in the Pilbara

Development of strategies for managing the risk and impact of a failed season is essential. There is enthusiasm from Pilbara producers to develop case studies on past management and the success or failure of these strategies. This could be complemented with modelling of the impact of different turn off and feeding scenarios. This information could be incorporated into the GLM package that is being developed for the region

5.6 The importance of grazing land management for optimal production and herd performance

Implement a co-ordinated program to re-introduce GLM to the Kimberley and build on past success. Strategies to achieve this include:

- Roll out of the one day Rangeland Management Course in the Kimberley. This will introduce core GLM concepts to Kimberley producers and generate interest in attending a full workshop. It will also allow staff to improve presenting skills and gain a better understanding of GLM principles and practices.
- Host a second follow-up day with past GLM graduates to assess what, if any, progress has been made. Identify issues hindering the implementation of practice change and work with other organisations (e.g. Rangelands NRM) to source funding and develop projects where appropriate
- Investigate options for related courses such as property management planning and mapping
- Investigate ways to deliver core GLM messages to those other than managers who influence decision making within the business (e.g. corporate accountants/business managers, partners/family of owner-managers)

6 References

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7 Appendix

Table 28: Expanded Version of Table 2 showing the breakdown of expenses

PILBARA / KIMBERLEY BUSINESS PERFORMANCE			
WHOLE BUSINESS INCOME STATEMENT			
	PILBARA	KIMBERLEY	AVERAGE
SALES	\$960,454	\$1,115,243	\$1,037,848
Cattle	\$903,210	\$1,055,655	\$979,433
Other	\$57,244	\$59,588	\$58,416
INVENTORY CHANGE	\$156,129	(\$22,519)	\$66,805
GROSS PROFIT	\$1,116,583	\$1,092,724	\$1,104,653
ENTERPRISE EXPENSES	\$255,151	\$315,407	\$285,279
Beef	\$255,151	\$315,407	\$285,279
Other	\$0	\$0	\$0
GROSS MARGIN	\$861,432	\$777,317	\$819,374
OVERHEAD EXPENSES			
Administration	\$33,456	\$32,935	\$33,195
Chemicals	\$834	\$0	\$417
Contract Services	\$1,805	\$0	\$903
Depreciation	\$74,316	\$55,251	\$64,784
Electricity & Gas	\$7,950	\$3,366	\$5,658
Fertiliser	\$4,901	\$8,968	\$6,934
Fuel & Lubricants	\$112,664	\$99,387	\$106,025
Insurance	\$16,205	\$36,240	\$26,223
Irrigation	\$0	\$0	\$0
Landcare	\$3,287	\$0	\$1,644
Lime/Gypsum	\$0	\$0	\$0
Materials	\$2,931	\$6,916	\$4,923
M/Vehicle Expenses	\$45,880	\$25,724	\$35,802
Rates & Rents	\$16,034	\$25,225	\$20,630
R & M General	\$49,309	\$122,189	\$85,749
Seed	\$1,228	\$738	\$983
Wages	\$222,474	\$242,483	\$232,479
Wages (Owner)	\$57,633	\$69,200	\$63,417
	\$650,907	\$728,622	\$689,764
EARNINGS BEFORE INT & TAX	\$210,525	\$48,695	\$129,610
INTEREST/LEASE LAND	\$96,430	\$217,348	\$156,889
PROFIT AFTER INTEREST	\$114,095	(\$168,653)	(\$27,279)

Table 29: Expanded Version of Table 3 showing the breakdown of expenses

PILBARA / KIMBERLEY BUSINESS PERFORMANCE			
WHOLE BUSINESS CASHFLOW STATEMENT			
	PILBARA	KIMBERLEY	AVERAGE
SALES	\$960,454	\$1,115,243	\$1,037,848
Cattle	\$903,210	\$1,055,655	\$979,433
Other	\$57,244	\$59,588	\$58,416
PURCHASES	\$68,034	\$36,112	\$52,073
ENTERPRISE EXPENSES	\$255,151	\$315,407	\$285,279
Beef	\$255,151	\$315,407	\$285,279
Other	\$0	\$0	\$0
OVERHEAD EXPENSES			
Administration	\$33,456	\$32,935	\$33,195
Chemicals	\$834	\$0	\$417
Contract Services	\$1,805	\$0	\$903
Electricity & Gas	\$7,950	\$3,366	\$5,658
Fertiliser	\$4,901	\$8,968	\$6,934
Fuel & Lubricants	\$112,664	\$99,387	\$106,025
Insurance	\$16,205	\$36,240	\$26,223
Irrigation	\$0	\$0	\$0
Landcare	\$3,287	\$0	\$1,644
Lime/Gypsum	\$0	\$0	\$0
Materials	\$2,931	\$6,916	\$4,923
M/Vehicle Expenses	\$45,880	\$25,724	\$35,802
Rates & Rents	\$16,034	\$25,225	\$20,630
R & M General	\$49,309	\$122,189	\$85,749
Seed	\$1,228	\$738	\$983
Wages	\$222,474	\$242,483	\$232,479
	\$518,958	\$604,171	\$561,564
TOTAL EXPENSES	\$774,109	\$919,578	\$846,843
CAPITAL EXPENDITURE	\$61,130	\$90,386	\$75,758
CASHFLOW BEFORE INT & TAX	\$57,181	\$69,167	\$63,174

Table 30: Expanded Version of Table 7 showing the breakdown of expenses

PILBARA / KIMBERLEY BEEF HERD PERFORMANCE			
BEEF HERD INCOME STATEMENT (PER AE)			
	PILBARA	KIMBERLEY	AVERAGE
GROSS SALES	\$110.40	\$72.56	\$91.48
INVENTORY CHANGE	(\$0.83)	\$10.44	\$4.80
INCOME	\$109.56	\$83.00	\$96.28
ENTERPRISE EXPENSES			
A/Health & Breeding	\$2.69	\$3.49	\$3.09
Contract Services	\$5.50	\$4.00	\$4.75
Freight	\$3.29	\$1.92	\$2.61
Insurance	\$0.03	\$0.00	\$0.02
Materials	\$0.01	\$0.05	\$0.03
Selling Costs: Stock	\$18.04	\$7.52	\$12.78
Supplementary Feed	\$5.30	\$5.83	\$5.56
	\$34.87	\$22.81	\$28.84
GROSS MARGIN	\$74.70	\$60.18	\$67.44
OVERHEAD EXPENSES			
Administration	\$3.19	\$3.00	\$3.10
Chemicals	\$0.10	\$0.00	\$0.05
Contract Services	\$0.20	\$0.00	\$0.10
Depreciation	\$7.56	\$5.27	\$6.41
Electricity & Gas	\$0.31	\$0.23	\$0.27
Fertiliser	\$0.58	\$0.80	\$0.69
Fuel & Lubricants	\$9.35	\$8.21	\$8.78
Insurance	\$1.09	\$2.51	\$1.80
Irrigation	\$0.00	\$0.00	\$0.00
Landcare	\$0.30	\$0.00	\$0.15
Lime/Gypsum	\$0.00	\$0.00	\$0.00
Materials	\$0.27	\$0.63	\$0.45
M/Vehicle Expenses	\$4.56	\$2.05	\$3.30
Rates & Rents	\$2.08	\$2.57	\$2.33
R & M General	\$3.78	\$10.63	\$7.21
Seed	\$0.14	\$0.07	\$0.10
Wages	\$23.28	\$14.86	\$19.07
Wages (Owner)	\$8.92	\$11.71	\$10.32
	\$65.73	\$62.53	\$64.13
EARNINGS BEFORE INT & TAX	\$8.97	(\$2.35)	\$3.31