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R8145 – FINAL REPORT

Modern energy – impact on micro-enterprise

Appendix 3
Summary Reports – Quantitative Findings from Pre and Post Electrification Surveys

In collaboration with

INTEGRATED ENERGY SOLUTIONS
Impacting poverty through Energy

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APPENDIX 3A: MFULENI (WESTERN CAPE – URBAN)

The project urban site selected for the research was a community called Mfuleni in Cape Town, South Africa, with the actual area receiving electricity called Phase Five.

Presented below are actual results extracted from the pre-electrification, post-electrification year one and post-electrification year two quantitative surveys, following extensive spreadsheet based analysis. All the tables presented in the text have been extracted directly from the file "Quantitative Analysis Mfuleni ver Report.xls" (although listed as an Appendix to this report, this file is only available in electronic format as it is not suitable for printing).

3A 1. MFULENI SWEEP RESULTS

For the sample area, Mfuleni Phase Four the number of properties surveyed is shown in the following table. Of the 538 properties, only 492 were recorded as occupied during the Pre Electrification survey. These 46 properties, which were mostly occupied by the post survey, were excluded from the subsequent sample base to provide an equal sample basis pre and post electrification.

	Final	Post	Pre
Non enterprise properties	**426**	**428**	**445**
Total properties Occupied	**492**	**492**	**492**
Total excluded properties	**46**	**46**	**46**
Total properties Surveyed	**538**	**538**	**538**

The following three tables reflect the actual number of Micro Enterprises (ME) by type that were identified from the *sweep surveys*. Please note these numbers and the actual enterprise type were checked and corrected during the quantitative interviews undertaken by the senior researchers. A number of comments are made on the data.

Enterprise numbers identified during the sweep Pre Elec			
Enterprise type	**# from sweep**	**% of enterprises**	**% of total properties**
Clothing Seller	2	4.26%	0.41%
Creche	1	2.13%	0.20%
Fruits and Vegetable	4	8.51%	0.81%
Hardware	3	6.38%	0.61%
Meat seller	6	12.77%	1.22%
Medicine	1	2.13%	0.20%
Paraffin seller	3	6.38%	0.61%
Phone Service	1	2.13%	0.20%
Photo Framing	1	2.13%	0.20%
Sewing	4	8.51%	0.81%
Shabeen	4	8.51%	0.81%
Spaza - Big	3	6.38%	0.61%
Spaza - Small	3	6.38%	0.61%
Tuck shop	9	19.15%	1.83%
Xhosa beer seller	2	4.26%	0.41%
Total Enterprise	**47**	100.00%	9.55%

Comments on the **Pre sweep data** include:

- In 9.6% of the households an enterprise was found.
- Of particular note, 1 out of every 10 households is trying to make some additional income from micro-enterprise activity.
- 'Tuckshops' and Spaza shops accounted for ~32% of the total enterprise activity.

Enterprise numbers identified during the sweep Post Year One			
Enterprise type	**# from sweep**	**% of enterprises**	**% of total properties**
Braai Meat Take away	2	3.23%	0.41%
Cash Loans	1	1.61%	0.20%
Clothing Seller	2	3.23%	0.41%
Fruits and Vegetable	3	4.84%	0.61%
Hairdressor	3	4.84%	0.61%
Hardware	1	1.61%	0.20%
Meat seller	11	17.74%	2.24%
Medicine	3	4.84%	0.61%
Phone Service	1	1.61%	0.20%
Sewing	8	12.90%	1.63%
Shabeen	7	11.29%	1.42%
Spaza - Big	4	6.45%	0.81%
Spaza - Small	4	6.45%	0.81%
Tuck shop	11	17.74%	2.24%
Xhosa beer seller	1	1.61%	0.20%
Total Enterprise	**62**	100.00%	12.60%

Comments on the **Post Year One sweep data** include:

- In 12.6 % of the households an enterprise was found.
- Now 1 out of every 7.9 households were supporting themselves totally, or trying to make some additional income, from micro-enterprise activity.
- Tuckshops and Spaza shops accounted for ~31% of total enterprise activity, a similar proportion to the previous year.

Enterprise numbers identified during the sweep Post Year Two			
Enterprise type	**# from sweep**	**% of enterprises**	**% of total properties**
Basket making	1	1.52%	0.20%
Bead work	1	1.52%	0.20%
Braai Meat	5	7.58%	1.02%
Cash Loans	1	1.52%	0.20%
Creche	1	1.52%	0.20%
Fruits and Vegetable	3	4.55%	0.61%
Hairdressor	4	6.06%	0.81%
Hardware	2	3.03%	0.41%
Meat seller	13	19.70%	2.64%
Medicine	3	4.55%	0.61%
Phone Service	2	3.03%	0.41%
Photo framing	1	1.52%	0.20%
Sewing	4	6.06%	0.81%
Shabeen	7	10.61%	1.42%
Shoe repair	1	1.52%	0.20%
Spaza - Big	3	4.55%	0.61%
Spaza - Small	5	7.58%	1.02%
Tuck shop	7	10.61%	1.42%
TV repairs	1	1.52%	0.20%
Xhosa beer seller	1	1.52%	0.20%
Total Enterprise	**66**	100.00%	13.41%

Comments on the **Post Year Two sweep data** include:

- In 13.4 % of the households an enterprise was found.
- Now 1 out of every 7.5 households were supporting themselves totally, or trying to make some additional income, from micro-enterprise activity.
- The proportion of total enterprise activity represented by 'tuckshops' and Spaza shops fell significantly in the year 2 post-electrification survey to ~23%.

Sweep accuracy:

Additional work was undertaken during the quantitative interviews to improve the accuracy of the sweep data. This involved specifically findings and visiting all ME's recorded during the sweep and checking that the business was currently operational and that the type classification was correct. All required changes were made to the dataset in the spreadsheet prior to any data processing.

3A 2. MFULENI ENTERPRISE TYPE ANALYSIS

From the corrected sweep data an analysis have been completed on the description, change and nature of the micro enterprise evident in the community.

3A 2.1 Micro enterprise description

Basket making - urban
- Hand weaving of baskets such as shopping baskets, bread servers and other basket products. Woven by hand to standard designs.
- Classified as a manufacturing

Beadwork
- Hand making of small and large mats from beads (plastic, glass, natural materials) of different colours
- Classified as a manufacturing

Braai Meat / Take away
- Provision of cooked meat, frequently offal, from kerbside stalls. Many of these are located at busy intersections and at the traffic circle.
- Meat commonly cooked on open braai's
- Classified as a retailer

Cash Loans
- Very small scale business operated by a single male providing small cash loans.
- Classified as a service industry

Clothing sellers
- These business operators, mainly women, by clothes from off site manufacturers. Suppliers from as far away as Kwa Zulu Natal and the Eastern Cape. Products sold include clothing for children and adults and blankets.
- Each clothes seller will have a list of customers often selling on credit with monthly or weekly payments. Some of these businesses also sell door to door.
- They provide severe competition for the sewing businesses described later.
- Classified as retailers.

Crèche
- Involves the care of young children while parents are away at work. Those parents running a business within the community usually tend to keep young children with them.
- Business run either from an existing home or a separate premises on the plot. Containers are popular for this purpose.
- Classified as a service business.

Fruit and vegetables
- These are dedicated fruit and vegetable vendors, often kerbside businesses selling to passing trade.
- Classified as retailers.

Hairdresser
- Conventional hairdressing salons providing a full range of women's and men's hairdressing services. Some also retail hair products, shampoos etc.
- Classified as a service provider.

Hardware

- Shops or front rooms of homes selling a modest range of nails, screws, tools, paint and other hardware products. They also usually carry a small stock of materials for building and maintaining shacks such as timber, waterproof sheeting and galvanized iron.
- Classified as retailers.

Meat seller

- These businesses sell a variety of fresh meat including chickens and low cost offal. They buy the meat either fresh or frozen and clean it and prepare it in small quantities. Chickens are often traded live.
- Credit often an important feature for customers.
- Classified as retailers.

Medicine

- The mainstay of these businesses is the making up of various 'medicines' in quantities and then bottling and selling to end users. Ingredients are bought off site and either mixed with water or 'boiled up' to create the final product.
- The products are a mixture of traditional remedies and patent over the counter remedies such as aspirin, cold remedies and so froth. No prescription medicines are handled.
- Classified as retailers.

Paraffin seller

- Buys paraffin in semi bulk and onward sells in small bottles or other available containers.
- Classified as retailers.

Phone service

- This is a Vodaphone franchised outlet operating under the Vodaphone brand name in a purpose fitted container. This particular phone service is owned by an entrepreneur who lives off site in Khayelitsha who employs a manager to operate the business on a daily basis for a salary.
- The business essentially consists of selling phone access and time on a number of phone booths set up in the container where customers can make phone calls. They also sell airtime for cell phones.
- Classified as a service provider.

Photo framing

- Conventional photo framing with either fixed or assembled frames.
- Classified as a service provider.

Sewing

- These businesses make garments and other household soft furnishings, Dresses, wedding gowns and clothes for special occasions are an important element of this business. Traditional costumes that are made to measure.
- Very similar to bespoke tailoring in many cases where clients will choose materials, design the garment with the seamstress, attend for a series of fittings.
- Credit and part payments are a frequent feature.
- Strong competition from the ready-made garment sellers in the community.
- Classified as manufacturing

Shabeens

- These are simple beer and entertainment establishments. They sell the branded beers (Castle of SA Breweries especially popular), cigarettes and in some cases food. Loud music and fires in the winter add to the attraction and 'escape' from the harsher realities that surround them.
- Credit a major feature of this trade.
- Bias towards male customers although women also customers.
- Classified as retailers.

Spaza

- Nearest role model is a ‘grocery shop’ selling food, household detergents, matches, candles, cigarettes, cold drinks, ice cream etc. The operators buy in bulk from offsite wholesalers such as Macro. Transport or access to transport a key element in the more successful Spaza’s.
- Provision of credit to customers is a major feature of this trade.
- Some of the Spaza’s are substantial business operations with the operators being highly competent business people.
- Highly competitive retailing activity.
- Classified as retailers.

Shoe repairs

- Shoe and footwear repairs. Similar to traditional cobbler.
- Classified as a service provider.

Tuckshop

- These are extremely small, often secondary activities for households where a member has other work; selling snacks, biscuits and sweets, mainly to local children for a few cents. Products can also include ice lollies and cups of cool drink.
- They often buy their few products from the larger Spaza’s in the community unless they have access to transport to buy off site or have a family member regularly travelling offsite to work.
- These businesses come and go and are often extremely vulnerable.
- Classified as retailers.

TV repairs

- Repair of TV sets and radios, either working at home or in the appliance owners’ home. Refurbishment of broken TVs for sale.
- Classified as a service provider.

Xhosa Beer seller

- Specialised type of Shabeen or beer hall. They make the Xhosa beer from the necessary ingredients, brewing it in large plastic containers on site. They then sell the beer in available plastic containers. They also operate a tavern on site where the beer can be enjoyed together with music.
- Classified as a manufacturer.

3A 2.2 Change in Micro Enterprise numbers

The following table presents a delta change in the numbers of enterprise by type and overall figures from the just before electrification until the year later (Delta change Year 1), between the first and second year of electrification (Delta Change Year 2) and between the pre-energisation and the end of second year of electrification (Delta Change year 1 & 2):

Mfuleni Business changes - opened or closed analysis

Change in business type and number

Enterprise type	# Pre Survey		# Post Year One Survey		# Post Year Two Survey		Delta change Year 1	Delta change Year 2	Delta change Year 1 & 2
Basket making	0	0%	0	0%	1	2%	0	1	1
Bead work	0	0%	0	0%	1	2%	0	1	1
Braai Meat Take away	0	0%	2	3%	5	8%	2	3	5
Cash Loans	0	0%	1	2%	1	2%	1	0	1
Clothing Seller	2	4%	2	3%	0	0%	0	-2	-2
Creche	1	2%	0	0%	1	2%	-1	1	0
Fruits and Vegetable	4	9%	3	5%	3	5%	-1	0	-1
Hairdressor	0	0%	3	5%	4	6%	3	1	4
Hardware	3	6%	1	2%	2	3%	-2	1	-1
Meat seller	6	13%	11	18%	13	20%	5	2	7
Medicine	1	2%	3	5%	3	5%	2	0	2
Paraffin seller	3	6%	0	0%	0	0%	-3	0	-3
Phone Service	1	2%	1	2%	2	3%	0	1	1
Photo Framing	1	2%	0	0%	1	2%	-1	1	0
Sewing	4	9%	8	13%	4	6%	4	-4	0
Shabeen	4	9%	7	11%	7	11%	3	0	3
Shoe repair	0	0%	0	0%	1	2%	0	1	1
Spaza - Big	3	6%	4	6%	3	5%	1	-1	0
Spaza - Small	3	6%	4	6%	5	8%	1	1	2
Tuck shop	9	19%	11	18%	7	11%	2	-4	-2
TV repairs	0	0%	0	0%	1	2%	0	1	1
Xhosa beer seller	2	4%	1	2%	1	2%	-1	0	-1
Total Enterprise	**47**	100%	**62**	100%	**66**	100%	**15**	**4**	**19**
				Change			**32%**	**6%**	**40%**

Comments are:

- Greatest failure in enterprise type is for the paraffin seller! Here as expected the market for paraffin has contracted directly as a result of the introduction of electricity in the community households.
- From the pre electrification to year 1 there was an increase overall of 15 businesses and then from year 1 to year 2 a further 4 giving an overall increase of 19 businesses representing a 40% increase across the whole period.
- Greatest gains from pre electrification to year 1 are for meat sellers, tuckshops and spaza's, with all three directly related to the availability of working refrigerators and freezers. This allows for the cooling of drinks, holding of frozen ice creams, meat etc. Some businesses (picture framing and crèche) closed through the death of one operator and the other moving to another area.
- Between year 1 and year 2 the greatest gains in new businesses were with meat sellers, hairdressers, TV repairs, shoe repairs and an additional phone service.
- “Tuck shops” and spaza shops (big and small) account for 31%, 30% and 24% of the enterprise activity in each of the three surveys, respectively, and therefore as a percentage these enterprise types had decreased as others increased.
- Similarly the combined number of Tuck shops, Spaza, meat sellers and Fruit/Veg sellers accounted for 53%, 53% and 49% of the enterprise activity in each of the three surveys, respectively.
- Most businesses tend to follow the owner. Little evidence of businesses being bought or sold, or being plot specific. Apart from the larger well-established Spaza shops, Shabeens and hairdressers many of the smaller businesses are ‘survivalist’ in nature, and are often operated in an ad hoc manner (when a need for income generation arises).
- The closure of a traditional Xhosa beer seller whilst two more Shabeens opened owed something to competition and the greater availability of cold beer with electric fridges. Xhosa beer is consumed at ambient temperatures.

- The cash loan provider, a male, had moved to Mfuleni since the pre survey so brought his business with him.
- Several of the existing businesses in the pre and post survey had become more commercially robust with the coming of electricity. Examples include electric versus manual sewing machines, cooling for meat sellers, Shabeens and Spaza's and electric appliances for the hairdressers.
- Hardware had declined largely due to this area becoming more complete and consolidated in terms of shack construction. Many dwellers are now also building small formal block constructed homes with blocks, cement and other materials obtained from suppliers outside Mfuleni.

3A 2.3 Sectoral analysis of Enterprise type

From the data an understanding of the sectoral division (retail, service, manufacture) of the various businesses can by gained.

Mfuleni Pre versus Post Electrification analysis by sector									
Enterprise sector	**# Pre Survey**		**# Post Year One Survey**		**# Post Year Two Survey**		**Delta change Year 1**	**Delta change Year 2**	**Delta change Year 1 & 2**
Retail	37	79%	43	69%	40	61%	6	-3	3
Manufacture	7	15%	9	15%	8	12%	2	-1	1
Service	3	6%	10	16%	18	27%	7	8	15
Retail	37		43		40		16%	-7%	8%
Manufacture	7		9		8		29%	-11%	14%
Service	3		10		18		233%	80%	500%
Total Enterprise	**47**		**62**		**66**		**32%**	**6%**	**40%**

- Complete over emphasis on retailer businesses. Essentially providing a service of local sales, helping customers over come the need to travel to other areas and for transportation of goods home. This also facilitates one cycle of the expenditure through the community before reaching the wholesalers external to the community. Some of the larger Spaza's act as wholesalers supplying small quantities of goods for some of the Tuckshops. However they are not classified as wholesalers since this is not their primary business.
- Much of the retailing is based on credit and very small affordable quantities. The retailing is generally a very personal business where the the business operator knows the majority of their customers, their circumstances and credit record
- Manufacturing is not present in the community to any significant extent and was confined to:
  - a small number of sewing businesses each operating with a single sewing machine
  - xhosa beer making
  - one lady providing a photo-framing service *(pre-electrification survey and re-appearing in year 2 – husband of the original ME owner who had died)*
  - one instance of beadwork (with one / several ladies helping occasionally, and basket-making *(appearing in post-electrification year 2 only)*
- A number of businesses present in the pre-energisation survey had closed by the year 1 survey. By the year 2 survey, more of the previously recorded businesses (both from the pre-energisation and newly recorded in the year 1 survey) had closed. A high level of churn is evident in the micro business landscape of the community. An important consequence of electrification was the closure of three paraffin sellers.
- The provision of electricity has enabled the use of many different appliances / equipment as the basis for establishing / growing micro-enterprise and has helped to increase the types of business operating in the community:

  - refrigeration of cool drinks and ice lollies for spazas and tuckshops
  - hairdryers, curlers and electric kettles for hairdressers
  - electric sewing machines for sewing
  - refrigeration and freezers for meat sellers
  - electric welding and rubbing up machines for the shoe repairer
  - soldering irons and measuring meters for TV repairs

3A 2.4 Closed / Opened business analysis – Totals (sweep data)

Given the significantly large number of businesses that had opened and closed between (and even during) each of the survey, this deserves special comment.

The following table shows the number of businesses of each type that existed within the survey boundary in each of the three years. Importantly this uses the finalized sweep data (i.e. checked and corrected during the quantitative survey phase) and examines all properties where a micro-enterprise was recorded. This differs from the data used in Section 2.6, which focused on interviewed micro-enterprises, in that a greater number of individual properties are captured.

Stand	Type Pre	Type Year 1	Type Year 2	Pre	Y1	Y2
1		Spaza small			1	
2		Tuckshop	Tuckshop		1	1
3	Shebeen	Shabeen	Shabeen	1	1	1
4			TV repairs			1
5	Clothing Seller			1		
6		Sewing	Sewing		1	1
7			Braai Meat			1
8	Fruit & Veg	Fruit & Veg	Fruit & Veg	1	1	1
9		Tuckshop	Tuckshop		1	1
10	Spaza Small			1		
11			Braai Meat			1
12			Fruit & Veg			1
13	Fruit & Veg			1		
14	Spaza Big	Spaza Big	Spaza Big	1	1	1
15		Meat seller	Meat seller		1	1
16	Sewing	Sewing		1	1	
17	Meat seller	Meat seller		1	1	
18			Sewing			1
19		Meat seller	Meat seller		1	1
20			Hairdresser			1
21		Tuckshop			1	
22		Tuckshop			1	
23	Fruit & Veg			1		
24		Hairdresser			1	
25		Sewing	Sewing		1	1
26		Spaza Big			1	
27			Spaza Small			1
28			Shabeen			1
29			Hairdresser			1
30	Tuck shop	Tuckshop		1	1	
31			Spaza Small			1
32		Spaza small			1	
33		Meat seller			1	
34			Hardware			1
35	Spaza Small			1		
36	Tuck shop			1		
37	Meat seller			1		
38			Meat seller			1
39			Creche			1
40	Paraffin seller			1		
41			Tuckshop			1
42		Shabeen	Shabeen		1	1
43	Spaza Big	Spaza Big		1	1	
44			Spaza Small			1
45	Shebeen	Shabeen	Shabeen	1	1	1
46			Meat seller			1
47		Hairdresser	Hairdresser		1	1
48	Hardware			1		
49	Hardware			1		
50		Tuckshop			1	
51	Meat seller			1		
52	Meat seller		Meat seller	1		1
53			Tuckshop			1
54		Tuckshop	Tuckshop		1	1
55		Braai Meat	Braai meat		1	1
56			Braai meat			1
57	Meat seller	Meat seller	Meat seller	1	1	1
58	Shebeen	Shabeen	Shabeen	1	1	1
59	Spaza Big	Spaza Big		1	1	
60		Cash loans	Cash Loans		1	1
61			Bead work			1
62	Meat seller			1		
63		Meat seller	Meat seller		1	1
64	Paraffin seller			1		
65	Xhosa beer seller			1		
66			Meat seller			1
67		Medicine	Medicine		1	1
68	Tuck shop			1		
69		Meat seller	Meat seller		1	1
70	Tuck shop			1		
71		Sewing			1	
72		Medicine	Medicine		1	1
73		Medicine	Medicine		1	1
74	Medicine			1		
75		Friut & Veg	Fruit & Veg		1	1
76		Tuckshop			1	
77		Hairdresser	Hairdresser		1	1
78		Meat seller			1	
79		Tuckshop	Tuckshop		1	1
80		Tuckshop	Tuckshop		1	1
81	Shebeen	Shabeen	Shabeen	1	1	1
82			Hardware			1
83	Paraffin seller			1		
84		Meat seller			1	
85			Meat seller			1
86	Fruit & Veg	Friut & Veg		1	1	
87			Meat seller			1
88		Tuckshop			1	
89	Tuck shop			1		
90		Shabeen			1	
91		Meat seller	Meat seller		1	1
92	Tuck shop			1		
93		Shabeen	Shabeen		1	1
94	Spaza Small	Spaza small	Spaza Small	1	1	1
95	Hardware			1		
96		Clothes seller			1	
97			Braai Meat			1
98	Sewing			1		
99		Sewing	Sewing		1	1
100	Clothing Seller	Clothes seller		1	1	
101		Hardware	Basket making		1	1
102	Tuck shop			1		
103		Sewing			1	
104		Spaza small			1	
105			Spaza Big			1
106		Meat seller			1	
107			Meat seller			1
108	Creche			1		
109	Tuck shop			1		
110			Spaza Small			1
111	Photo Framing		Photo framing	1		1
112	Sewing	Sewing		1	1	
113	Sewing	Sewing		1	1	
114	Tuck shop			1		
115	Phone Service	Phone Shop	Phone Shop	1	1	1
116			Shoe repair			1
117	Xhosa beer seller	Xhosa Beer	Xhosa beer	1	1	1
118			Spaza Big			1
119			Phone Shop			1
120		Braai Meat			1	

The following table summarises the above data, and clearly demonstrates that a high level of business closure occurred but that this was offset by an even larger number of businesses being opened.

Analysis of businessed opened and closed		
Measure	**#**	**%**
Open Pre Electrification	47	
Closed Post Year one	28	60%
Opened Post year one	43	
Closing balance Post Year One	62	
Closed Post Year Two (from Pre)	9	15%
Closed Post Year Two (from Post)	19	31%
Opened Post year Two	32	
Closing balance Post Year One	66	

Comments are:

- 28 of the businesses present during the pre-electrification survey were found to have closed by the post electrification (year 1) survey, representing 60% of the total micro-enterprise activity.
- A further 9 of the original businesses had closed by the post-electrification (year 2) survey.
- Out of the 47 businesses recorded during the pre-electrification sweep survey, only 21% (10 businesses) remained 2 years later.
- Similarly 19 of the 43 new businesses first recorded in the Year 1 post-electrification had closed by the Year 2 post-electrification survey, i.e. 44% of the newly established businesses had closed within a year.
- The data clearly indicates a significant number of businesses opening up and then closing with then further businesses being started. This churn is particularly notable among the very small and survivalist businesses.
- In addition to the specific cases noted earlier (picture framing – owner died, Xhosa beer – greater competition from branded cooled beer, hardware – completion of shack construction etc) many of the businesses that had closed were small and highly marginal. In the pre-electrification phase many were also being run 'pending the arrival of electricity' on a make do basis. Some had idle electric appliances awaiting connection. Once electricity arrived, those operators with the appliances or necessary capital to purchase them have continued and consolidated. Those without the necessary equipment/capital may have given up in the face of stronger competition (however, we have recorded many reasons for closure other than on economic grounds i.e. changes in family health or employment circumstances).
- It must also be recognised that there is a regular inflow and outflow of residents with a moderate rate of household mobility. Many ME's travel with the owner and should they move to another location in Cape Town or return home, for example to the Transkei, the business will move with them.
- Although not specifically surveyed, the impact of the Aids pandemic was also evident. Because of this we have to assume that some businesses had closed and others were suffering a down turn in trade owing to aids related illness or death of the primary operators (e.g. head of household).

3A 2.5 Business life expectancy

The following figures (again using the sweep data) illustrate the high churn factor that was especially evident with the small survivalist ‘business’ activities:

Business life expectancy		
No. of businesses open across all 3 surveys	10	21% of original businesses recorded prior to electrification
No. of businesses recorded in pre-electrification survey that had closed by Year	28	60% of the recorded ME activity
No. of businesses opened after electrification i.e. first recorded in Year 1 and were still operating in Year 2	19	44% of the businesses opening in Year 1 had closed within a year

Other comments related to business life expectancy:

- It became evident that there was a high degree of business imitation, where businesses were started in an attempt to enhance family incomes by copying the perceived successful business activities of neighbours. Many of these were simple businesses that required very little in the way of start-up capital e.g. tuckshops or the sale of cool drinks and ice cream linked to a household refrigerator. With the proliferation of such activities the market had or will become saturated and the resulting competition will adversely impact all but the most viable businesses (thus for many of the new start-ups and existing small traders, an insufficient share of the available customers may force them to close after a very short period of operation). In addition, the ‘social’ requirement for giving credit may have very quickly led to the operator not having the necessary cashflow to purchase new stock.
- It appeared that several survivalist businesses are related to a breadwinner in the household who provides the necessary cash float to fund the business. When money is needed for other family expenditure with these being such ‘hand to mouth’ activities, the business closes only to start up again later when more money is again available.

3A 2.6 Open closed business changes by type

A further understanding can be gained by an analysis of which type of business opened and closed each year. Unlike the above findings, this analysis is based on the ***enterprises that were interviewed*** and thus the total number of enterprises may differ from (i.e. be less than) those counted in the sweep data *(it was not possible or in some cases necessary to interview 100% of each type of enterprise)*.

Open/close analysis			
Pre	Y1	Y2	Type
		1	Basket making
		1	Beadwork
	1		Braai Meat
		1	Braai Meat
		1	Braai Meat
	1		Braai Meat
	1	1	Cash loan
1			Clothing merchant
1	1		Clothing merchant
		1	Creche
1			Creche
	1	1	Fruit & Veg
		1	Fruit and Veg
1	1	1	Fruits and Vegetable
1	1		Fruits and Vegetable
		1	Hairdresser
	1		Hairdresser
		1	Hairdresser
		1	Hairdresser
	1		Hairdresser
	1	1	Hairdresser
		1	Hardware
1			Hardware
		1	Hardware
1	1		Hardware
	1		Hardware

Open/close analysis			
Pre	Y1	Y2	Type
1			Paraffin seller
1			Paraffin seller
1	1	1	Phone Shop
1		1	Photo Framing
		1	Sewing
	1		Sewing
		1	Sewing
	1	1	Sewing
1			Sewing
	1	1	Sewing
	1		Sewing
1	1		Sewing
1	1		Sewing
1	1	1	Shabeen
	1	1	Shabeen
		1	Shabeen
1	1	1	Shabeen
	1		Shabeen
	1	1	Shabeen
1	1	1	Shebeen
		1	Shoe repairer
1			Xhosa beer
1	1	1	Xhosa beer
		1	TV repairs

Open/close analysis			
Pre	Y1	Y2	Type
	1	1	Meat seller
1	1		Meat seller
	1	1	Meat seller
	1		Meat seller
1			Meat seller
		1	Meat seller
	1		Meat seller
1		1	Meat seller
	1		Meat seller
		1	Meat seller
1	1	1	Meat seller
1			Meat seller
	1	1	Meat seller
		1	Meat seller
	1	1	Meat seller
	1		Meat seller
	1		Meat seller
		1	Meat seller
		1	Meat seller
	1	1	Meat seller
	1		Meat seller
		1	Meat seller
	1		Medicine
	1	1	Medicine
	1	1	Medicine

Open/close analysis			
Pre	Y1	Y2	Type
1	1	1	Spaza Big
	1		Spaza Big
1	1		Spaza Big
		1	Spaza Big
1	1		Spaza Big AAA
		1	Spaza Big BBB
	1		Spaza Small
1			Spaza Small
		1	Spaza Small
		1	Spaza Small
	1		Spaza Small
1			Spaza Small
1	1	1	Spaza Small
		1	Spaza Small
		1	Spaza Small AAA
	1		Spaza Small BBB
	1	1	Tuckshop
		1	Tuckshop
	1		Tuckshop
	1		Tuckshop
	1	1	Tuckshop
	1		Tuckshop
	1		Tuckshop
	1	1	Tuckshop
	1		Tuckshop
1			Tuckshop

The above information provides a vivid pictorial representation of the different ME's in Mfuleni, when they opened, when they closed, how long they remained open and how many of the original businesses and those recorded in the year 1 survey were still trading in year 2. It highlights the marginal nature of many of the businesses and that only a small % can be classed as ***sustainable*** businesses.

As a subset of the total sweep data (Section 2.4), the above findings again reflect the 'churn' (large numbers of businesses continually opening and closing).

Comments:

- There were only 10 businesses (those coloured) that existed in all three surveys *(note that one of these Spaza AAA changed from a big to a small business over this period).* These may therefore be definable as ***sustainable*** businesses. These are 2 spaza's, fruit and vegetable seller, meat seller, 3 shabeens, phone shop and Xhosa beer.
- It could be possible for 2 of the businesses: fruit and vegetable seller and Xhosa beer maker / seller (traditionally using wood with brewed beer served at room temperature) to operate without electricity *(although we were informed that the former business runs a long lead from their house nearby to provide lighting after dark each evening so electricity has enabled longer opening hours)* however it would be very difficult for the others to sustain their businesses without electricity (because they rely on the use of fridges, freezers etc).
- Two of the businesses have changed category between years; these are the Big Spaza AAA has declined over three years and has become a small spaza (this is related to other problems in the household) and the Small Spaza BBB has grown to become a Big spaza in one year
- Regarding the business closures, apart from the paraffin sellers, the main reasons for closure were not related to electricity. Reasons were more to do with family circumstances, illness and death of proprietors, people moving away and running out of working capital (often due to family crises or non-repayment of credit).

3A 3. MFULENI QUANTITATIVE QUESTIONNAIRES

Based on the sweep data every effort was made to interview as many of the ME owners as possible, given the time and resource constraints of the project. Typical reasons for not achieving a 100% of the ME's with the detailed quantitative questionnaire were:

- Owner away.
- ME only operates after hours
- Owner relocated to a second home in the Eastern Cape for a period.

Analysis of the significance of the "sampling" was based on:

- Green tokens indicate 100% coverage of a particular ME type.
- Orange indicates less than 100%, but what is believed to be sufficient to reflect the ME type activity.
- Red tokens are cause for concern with specific comment given on each occurrence

Pre Electrification

Mfuleni Pre Electrification							
Enterprise numbers identified during the sweep Pre Elec				Quantitative data statistics			
Enterprise type	# from sweep	% of enterprises	% of total properties	# of records	% of sweep	Statistical significance	Comments
Clothing Seller	2	4.26%	0.41%	2	100.00%		
Creche	1	2.13%	0.20%	1	100.00%		
Fruits and Vegetable	4	8.51%	0.81%	2	50.00%		Ok
Hardware	3	6.38%	0.61%	2	66.67%		Ok
Meat seller	6	12.77%	1.22%	5	83.33%		
Medicine	1	2.13%	0.20%	0	0.00%		Visited many times
Paraffin seller	3	6.38%	0.61%	2	66.67%		Ok
Phone Service	1	2.13%	0.20%	1	100.00%		
Photo Framing	1	2.13%	0.20%	1	100.00%		
Sewing	4	8.51%	0.81%	3	75.00%		Ok
Shabeen	4	8.51%	0.81%	3	75.00%		Ok
Spaza - Big	3	6.38%	0.61%	3	100.00%		
Spaza - Small	3	6.38%	0.61%	3	100.00%		
Tuck shop	9	19.15%	1.83%	1	11.11%		Very small businesses
Xhosa beer seller	2	4.26%	0.41%	2	100.00%		
Total Enterprise	**47**	100.00%	9.55%	**31**	**65.96%**		Ok

Comments on Pre-energisation survey sample of the results:

- For the medicine ME type only one was found during the sweep so the overall impact on results will be small.
- Further only one Tuck shop was interviewed, simply to give an indication of how small these entities are – all where visited and found to be a similar size. These businesses were found to have minimal need for modern energy and profit levels of around R 150 per month.
- A total of 31 acceptable interviews completed and data captured, representing 65.96% of the identified ME's. However, if Tuck shops are removed then the figure rises to 78.95% coverage.
- All data has been normalised on a by enterprise type basis to give representative figures for the full sweep data based on the total number of enterprises in each category.

Post Electrification Year One

Mfuleni Year One Post Electrification							
Enterprise numbers identified during the sweep Post Year One				Quantitative data statistics			
Enterprise type	**# from sweep**	**% of enterprises**	**% of total properties**	**# of records**	**% of sweep**	**Statistical significance**	**Comments**
Braai Meat Take away	2	3.23%	0.41%	2	100.00%		
Cash Loans	1	1.61%	0.20%	1	100.00%		
Clothing Seller	2	3.23%	0.41%	2	100.00%		
Fruits and Vegetable	3	4.84%	0.61%	3	100.00%		
Hairdressor	3	4.84%	0.61%	3	100.00%		
Hardware	1	1.61%	0.20%	1	100.00%		
Meat seller	11	17.74%	2.24%	11	100.00%		
Medicine	3	4.84%	0.61%	3	100.00%		
Phone Service	1	1.61%	0.20%	1	100.00%		
Sewing	8	12.90%	1.63%	6	75.00%		ok
Shabeen	7	11.29%	1.42%	6	85.71%		ok
Spaza - Big	4	6.45%	0.81%	4	100.00%		
Spaza - Small	4	6.45%	0.81%	4	100.00%		
Tuck shop	11	17.74%	2.24%	8	72.73%		ok
Xhosa beer seller	1	1.61%	0.20%	1	100.00%		
Total Enterprise	**62**	100.00%	12.60%	**56**	**90.32%**		

Comments on Post Year One survey statistical relevance of the results:

- The smallest sample was 6 interviews for the 8 sewing businesses representing 75%. This was believed to be quite acceptable.
- A total of 59 acceptable interviews completed and data captured, representing 92.19% of the identified ME's.
- All data has been normalised on a by enterprise type basis to give representative figures for the full sweep data based on the total number of enterprises in each category. In the following tables, numbers in blue are for the quantitative data only and are not based on the sweep sample size.

Post Electrification Post Year Two

Mfuleni Year Two Post Electrification							
Enterprise numbers identified during the sweep Post Year Two				Quantitative data statistics			
Enterprise type	**# from sweep**	**% of enterprises**	**% of total properties**	**# of records**	**% of sweep**	**Statistical significance**	**Comments**
Basket making	1	1.52%	0.20%	1	100.00%		
Bead work	1	1.52%	0.20%	1	100.00%		
Braai Meat	5	7.58%	1.02%	3	60.00%		ok
Cash Loans	1	1.52%	0.20%	1	100.00%		
Creche	1	1.52%	0.20%	1	100.00%		
Fruits and Vegetable	3	4.55%	0.61%	3	100.00%		
Hairdressor	4	6.06%	0.81%	4	100.00%		
Hardware	2	3.03%	0.41%	2	100.00%		
Meat seller	13	19.70%	2.64%	12	92.31%		
Medicine	3	4.55%	0.61%	2	66.67%		ok
Phone Service	2	3.03%	0.41%	1	50.00%		One refused an interview
Photo framing	1	1.52%	0.20%	1	100.00%		
Sewing	4	6.06%	0.81%	4	100.00%		
Shabeen	7	10.61%	1.42%	6	85.71%		
Shoe repair	1	1.52%	0.20%	1	100.00%		
Spaza - Big	3	4.55%	0.61%	3	100.00%		
Spaza - Small	5	7.58%	1.02%	5	100.00%		
Tuck shop	7	10.61%	1.42%	4	57.14%		Ok very small bus
TV repairs	1	1.52%	0.20%	1	100.00%		
Xhosa beer seller	1	1.52%	0.20%	1	100.00%		
Total Enterprise	**66**	100.00%	13.41%	**57**	**86.36%**		

Comments on Post Year Two survey statistical relevance of the results:

- With most types of business being fully interviewed with 100% completion rate, a high level of representation was achieved.

The lowest representation was 50% where only 1 of 2 phone service providers was accessible for an interview. In all other cases, a high level of access and interviewing was achieved.

3A 4. MFULENI MICRO-ENTEPRISE ACTIVITY MEASURE

Pre Electrification Results

#	Individual indicators	Units	Result
1	Number of households per enterprise - total households/enterprises	Hholds per ME	10.5
2	Total ME Turnover for the community - Turn over for all ME's added up	Rand	R164,066
3	Average enterprise turnover per community household - Total turn over/households	R / hhold / month	R333
4	Average enterprise profit per community household - Total turn over/households	R / hhold / month	R80
5	Average enterprise turnover per enterprise - Total turnover/ME's	R / ME / month	R3,491
6	Average enterprise profit per enterprise - ME profit/ME's	R / ME / month	R833
7	Total people employed per community household	# / household	0.15
8	Total people employed per enterprise	# / enterprises	1.58
9	Productivity (Income/person hours) - Total Turnover/hours worked	R / hour	R19.4
10	Average Stock value - Averatge of all stock in ME's at a point in time	R / enterprise	R683.9
11	Percentage of customers internal to community - % customers from inside village	%	93%
12	Percentage of customers external to community - % customers from outside village	%	7%
13	Average transaction size - average of all the sales sizes	R / transaction	R18.9

Post Electrification Results - year One

#	Individual indicators	Units	Result
1	Number of households per enterprise - total households/enterprises	Hholds per ME	7.9
2	Total ME Turnover for the community - Turn over for all ME's added up	Rand	R259,187
3	Average enterprise turnover per community household - Total turn over/households	R / hhold / month	R527
4	Average enterprise profit per community household - Total turn over/households	R / hhold / month	R116
5	Average enterprise turnover per enterprise - Total turnover/ME's	R / ME / month	R4,180
6	Average enterprise profit per enterprise - ME profit/ME's	R / ME / month	R919
7	Total people employed per community household	# / household	0.18
8	Total people employed per enterprise	# / enterprises	1.45
9	Productivity (Income/person hours) - Total Turnover/hours worked	R / hour	R17.2
10	Average Stock value - Averatge of all stock in ME's at a point in time	R / enterprise	R1,162.8
11	Percentage of customers internal to community - % customers from inside village	%	97%
12	Percentage of customers external to community - % customers from outside village	%	3%
13	Average transaction size - average of all the sales sizes	R / transaction	R45.7

Post Year Two Electrification Results Year Two

#	Individual indicators	Units	Result
1	Number of households per enterprise - total households/enterprises	Hholds per ME	7.5
2	Total ME Turnover for the community - Turn over for all ME's added up	Rand	R223,735
3	Average enterprise turnover per community household - Total turn over/households	R / hhold / month	R455
4	Average enterprise profit per community household - Total turn over/households	R / hhold / month	R122
5	Average enterprise turnover per enterprise - Total turnover/ME's	R / ME / month	R3,390
6	Average enterprise profit per enterprise - ME profit/ME's	R / ME / month	R910
7	Total people employed per community household	# / household	0.20
8	Total people employed per enterprise	# / enterprises	1.49
9	Productivity (Income/person hours) - Total Turnover/hours worked	R / hour	R14.1
10	Average Stock value - Averatge of all stock in ME's at a point in time	R / enterprise	R858.6
11	Percentage of customers internal to community - % customers from inside village	%	91%
12	Percentage of customers external to community - % customers from outside village	%	9%
13	Average transaction size - average of all the sales sizes	R / transaction	R46.7

Mfuleni ME activity measures - Net Change or Delta

#	Individual indicators	Pre Elec	Year One	Year Two	Year 1	Year 2	Year 1 & 2
1	Number of households per enterprise	10.5	7.9	7.5	-24%	-6%	-29%
2	Total ME Turnover for the community	R164,066	R259,187	R223,735	58%	-14%	36%
3	Enterprise turnover per community household	R333	R527	R455	58%	-14%	36%
4	Enterprise profit per community household	R80	R116	R122	45%	5%	53%
5	Enterprise turnover per enterprise	R3,491	R4,180	R3,390	20%	-19%	-3%
6	Enterprise profit per enterprise	R833	R919	R910	10%	-1%	9%
7	People employed per community household	0.15	0.18	0.20	21%	10%	32%
8	People employed per enterprise	1.58	1.45	1.49	-8%	3%	-6%
9	Productivity (Income/person hours)	R19	R17	R14	-12%	-18%	-27%
10	Average Stock value per enterprise	R684	R1,163	858.6	70%	-26%	26%
11	% of customers internal to community	93%	97%	91%	5%	-7%	-2%
12	% of customers external to community	7%	3%	9%	-62%	245%	32%
13	Average transaction size	R19	R46	R47	142%	2%	148%

There are a wide range of activity measures and trends evident in the above tables; below we draw out a number of the key findings from these.

Comments on the Micro Enterprise activity measures:

- There has been an increase in the number of micro-enterprises over the course of the study and therefore the number of households being supported through these small-scale income-generating activities. We see this as a decrease in the indicator 'number of households per enterprise' i.e. more enterprises amongst a fixed sample of households. There was also an increase in the total ME turnover for the community between the pre-electrification and the Year 1 post-electrification surveys (with a slight decrease in Year 2 but small enough to be considered similar to Year 1).
- An average household income across the community derived from micro-enterprise activity ('average enterprise profit per community household') can also be calculated and increased markedly from the pre-electrification phase to Year 1 post-electrification. In general this indicates a strengthening of household income however in reality the benefits of increased household incomes accrue to those running the micro-enterprise (and possibly other micro-enterprises within the communities where these households spend their additional income).
- There was also an average increase in ME profits suggesting greater business efficiency, lower operating costs (particularly energy), less wastage, larger stock holdings of frozen goods etc. To what extent electricity contributed to these increases is open to debate but it is clear that a positive impact took place.
- Productivity is shown to have improved from the pre to post survey, for pre and post electrification.
- From year 1 to year 2 some businesses contracted namely a large spaza due to family circumstances and another spaza increased from a small to a large spaza.
  The majority of the growth in businesses in this time was with electricity related businesses such as hairdressing, shoe and TV repairs.
- In terms of the impact of electricity the evidence shows that it did have a positive influence on ME's. Electricity can be viewed as a necessary enabler in a specific sense for several types of ME. It is also a more diffuse positive influence in terms of improved amenity, improving security and freedom of movement and making the area a desirable place to live for wage earners thereby increasing the potential market and disposable income available to support the local ME's. It must also be recognised however that there are other important factors contributing to fortunes of ME including access to capital, entrepreneurial skill levels and general social stability and coherence.

3A 5. MFULENI SUSTAINABLE LIVELIHOOD IMPACT MEASURE

Pre Electrification Results

#	Individual indicators	Units	Result
1	Average employees income per community household - total employee income / # households	R / hhold / month	R6.1
2	Average owners income per enterprise - Total owners income / # enterprises	R / hhold / month	R729
3	Average household income per enterprise - Includes non ME income / # entepises	R / hhold / month	R834
4	Enterprise owners per community household - Total owners income / # households	# / hhold	9%
5	Involvement of owner family members - # enterprises with family members / # enterprises	%	29%
6	Community based ownership - Total owners staying in community / # enterprise	%	94%
7	Female enterprise ownership- Total female owners staying in community / # enterprise	%	77%
8	Male enterprise ownership - Total male owners staying in community / # enterprise	%	23%

Post Electrification Results - Year One

#	Individual indicators	Units	Result
1	Average employees income per community household - total employee income / # households	R / hhold / month	R6.5
2	Average owners income per enterprise - Total owners income / # enterprises	R / hhold / month	R888
3	Average household income per enterprise - Includes non ME income / # entepises	R / hhold / month	R919
4	Enterprise owners per community household - Total owners income / # households	# / hhold	11%
5	Involvement of owner family members - # enterprises with family members / # enterprises	%	21%
6	Community based ownership - Total owners staying in community / # enterprise	%	91%
7	Female enterprise ownership- Total female owners staying in community / # enterprise	%	84%
8	Male enterprise ownership - Total male owners staying in community / # enterprise	%	16%

Post Electrification Results - Year Two

#	Individual indicators	Units	Result
1	Average employees income per community household - total employee income / # households	R / hhold / month	R1.7
2	Average owners income per enterprise - Total owners income / # enterprises	R / hhold / month	R784
3	Average household income per enterprise - Includes non ME income / # entepises	R / hhold / month	R843
4	Enterprise owners per community household - Total owners income / # households	# / hhold	13%
5	Involvement of owner family members - # enterprises with family members / # enterprises	%	33%
6	Community based ownership - Total owners staying in community / # enterprise	%	96%
7	Female enterprise ownership- Total female owners staying in community / # enterprise	%	72%
8	Male enterprise ownership - Total male owners staying in community / # enterprise	%	28%

Mfuleni Sustainable Livelihood activity measures - Net Change or Delta

#	Individual indicators	Pre Elec	Year One	Year Two	Year 1	Year 2	Year 1 & 2
1	Employees income per community household	R6	R7	R2	7%	-74%	-72%
2	Owners income per enterprise	R729	R888	R784	22%	-12%	7%
3	Owners household income per enterprise	R834	R919	R843	10%	-8%	1%
4	Enterprise owners per community household	9%	11%	13%	28%	13%	45%
5	Involvement of owner family members	29%	21%	33%	-26%	56%	15%
6	Community based ownership	94%	91%	96%	-3%	6%	3%
7	Female enterprise ownership	77%	84%	72%	8%	-14%	-7%
8	Male enterprise ownership	23%	16%	28%	-29%	75%	24%

Comments on the livelihood activity measures:

- The information obtained on the income of employees (of micro-enterprise) was based on a very small number of people, and it was often difficult to separate family members working in the business from formal employees in the eyes of the ME owner. However, it is clear that a very small % of the enterprises have any formal employees and that the owners rely heavily on other family members provide assistance in the business)
- The owners income per enterprise refers to income generated by micro-enterprise, where as the household income per enterprise includes non micro-enterprise income.
- There was a trend for increasing numbers of enterprise owners within the community as evidenced by a growing % of 'enterprise owners per community household' across the survey period; this took into account a few enterprise owners operated their business inside the survey boundary but living outside the community, and aligned closely with separate data on totals for the number of businesses, and the consistently >90% recorded for 'community based ownership'. The vast majority of businesses are household-based and operated by people in the community.

- Another important finding is that the majority of businesses (between 72 and 84% across the survey periods) are operated by ladies (and a high level of anecdotal evidence clearly indicates that many of these women are head of their household and have responsibility for income generation for their families)

3A 6. MFULENI ENERGY AND EQUIPMENT STATISTICS

Pre Electrification Results

#	Individual indicators	Units	Result
1	Electricity consumption per enterprise - No electrification yet	R / ME / month	R0.00
2	LPG consumption per enterprise - Mainly for refrigeration	R / ME / month	R15.45
3	Paraffin consumption per enterprise	R / ME / month	R22.81
4	Wood consumption per enterprise - Mainly for beer making	R / ME / month	R1.79
5	Other Fuel consumption per enterprise - Includes generator petrol	R / ME / month	R61.46
6	Average fuel cost per month	R / ME / month	R102.64
7	Energy importance average - Value is from a 1 to 5 scale	#	3.6
8	% Businesses using electric equipment - 1 out of 31	%	3%
9	Equipment penetration - Refirgerator/freezer "coolbox" use ice - Manually calculated totals	#	8
10	Equipment penetration - Parafin lamps - Manually calculated totals	#	23
11	Equipment penetration - Candles - Manually calculated totals	#	1
12	Equipment penetration - Manual sewing machine - Manually calculated totals	#	3
13	Equipment penetration - LPG Fridge/Freezer - Manually calculated totals	#	3
14	Equipment penetration - Wood braai - Manually calculated totals	#	3
15	Equipment penetration - Paraffin cooker - Manually calculated totals	#	4
16	Equipment penetration - Radio/ juke box/hifi (battery) - Manually calculated totals	#	2
17	Equipment penetration - Generator driven Electric lights - Manually calculated totals	#	2
18	Equipment penetration - Generator driven Refirgerator/freezer - Manually calculated totals	#	5
19	Equipment penetration - Generator driven HiFi - Manually calculated totals	#	1

Post Electrification Results - Year One

#	Individual indicators	Units	Result
1	Electricity consumption per enterprise - No electrification yet	R / ME / month	R39.98
2	LPG consumption per enterprise - Mainly for refrigeration	R / ME / month	R0.00
3	Paraffin consumption per enterprise	R / ME / month	R5.31
4	Wood consumption per enterprise - Mainly for beer making	R / ME / month	R11.45
5	Other Fuel consumption per enterprise - Includes generator petrol	R / ME / month	R0.00
6	Average fuel cost per month	R / ME / month	R56.82
7	Energy importance average - Value is from a 1 to 5 scale	#	4.3
8	% Businesses using electric equipment - 52 out of 56	%	93%
9	Equipment penetration - Electric Refirgerator/freezer - Manually calculated totals	#	46
10	Equipment penetration - Electric lights - Manually calculated totals	#	43
11	Equipment penetration - Manual sewing machine - Manually calculated totals	#	2
12	Equipment penetration - Electric sewing machine - Manually calculated totals	#	6
13	Equipment penetration - Wood braai - Manually calculated totals	#	3
14	Equipment penetration - Electric Hair dryers, clippers, tongs - Manually calculated totals	#	3
15	Equipment penetration - Electric Radio/ juke box/hifi - Manually calculated totals	#	5
16	Equipment penetration - Electric Kettle - Manually calculated totals	#	4
17	Equipment penetration - Electric Jigsaw - Manually calculated totals	#	1
18	Equipment penetration - Electric Stove/microwave oven - Manually calculated totals	#	2

Post Electrification Results - Year Two

#	Individual indicators	Units	Result
1	Electricity consumption per enterprise - No electrification yet	R / ME / month	R40.39
2	LPG consumption per enterprise - Mainly for refrigeration	R / ME / month	R0.00
3	Paraffin consumption per enterprise	R / ME / month	R5.66
4	Wood consumption per enterprise - Mainly for beer making	R / ME / month	R5.66
5	Other Fuel consumption per enterprise - Includes generator petrol	R / ME / month	R0.00
6	Average fuel cost per month	R / ME / month	R47.46
7	Energy importance average - Value is from a 1 to 5 scale	#	4.4
8	% Businesses using electric equipment - 51 out of 57	%	89%
9	Equipment penetration - Electric Refirgerator/freezer - Manually calculated totals	#	46
10	Equipment penetration - Electric lights - Manually calculated totals	#	34
11	Equipment penetration - Manual sewing machine - Manually calculated totals	#	1
12	Equipment penetration - Electric sewing machine - Manually calculated totals	#	4
13	Equipment penetration - Wood braai - Manually calculated totals	#	5
14	Equipment penetration - Electric Hair dryers, clippers, tongs - Manually calculated totals	#	4
15	Equipment penetration - Radi/ juke box/hifi - Manually calculated totals	#	6
16	Equipment penetration - Electric Kettle - Manually calculated totals	#	3
17	Equipment penetration - Electric Jigsaw/grinder - Manually calculated totals	#	2
18	Equipment penetration - Electric Stove/microwave oven - Manually calculated totals	#	4

Net Change or Delta

#	Individual indicators	Pre Elec	Year One	Year Two	Year 1	Year 2	Year 1 & 2
1	Electricity consumption per enterprise	R0.00	R39.98	R40.39	na	1%	na
2	LPG consumption per enterprise	R15.45	R0.00	R0.00	-100%	na	-100%
3	Paraffin consumption per enterprise	R22.81	R5.31	R5.66	-77%	6%	-75%
4	Wood consumption per enterprise	R1.79	R11.45	R5.66	541%	-51%	216%
5	Ice consumption per enterprise	R61.46	R0.00	R0.00	-100%	na	-100%
6	Average fuel cost per enterprise	R102.64	R56.82	R47.46	-45%	-16%	-54%
7	Energy importnace average	3.6	4.3	4.4	18%	2%	21%
8	% Businesses using electric equipment	3%	93%	89%	2779%	-4%	2674%

Comments on the energy and equipment statistics:

- As expected, the number of businesses able to use electricity prior to the formal electrification was limited to those with access to a generator; in the pre-electrification survey only one business – a shabeen – was identified and was using a petrol-driven generator to operate electric lights, refrigeration and HiFi.
- A key finding is that 93% of the businesses recorded in the year 1 post-electrification survey were using electricity.
- The above % had declined marginally to 89% in year 2. This is largely because of the increase in braai meat sellers (from 3 to 5) who traditionally use wood as the fuel for cooking meat.
- Average fuel / energy costs declined significantly in the year 1 survey compared to the pre-electrification period, and there was a further decrease in ‘average fuel costs per enterprise’ in year 2 (likely to be the result of further consolidation of the use of electrical appliances and the negligible use of other fuels / associated equipment).
- Significant decline in inferior, unsafe and dangerous fuel usage. Wood and paraffin usage significant decline. LP Gas usage also declined. Ice usage was made redundant by electric refrigerators.
- Cleaner, safer and more efficient activities and environment.
- There had been a steady increase in the number and range of electrical appliances from year 1 to year 2

3A 7. MFULENI OTHER CALCULATED QUANTITATIVE DATA

Pre Electrification Results

#	Calculated indicator	Units	Result
1	Percentage of original owners	%	100%
2	Average educational level - scale 1 to 12		5.7
3	Average yearly activity - 100% equal all months of year		81%
4	Average area of premises	m sq	13.23
5	Percentage of businesses giving credit - # giving credit / # ME's		81%
6	Credit % of turnover - Value of Turnover on credit as % of Turnover		35%
7	Bad debt % - % of debt that is not paid up		10%
8	Percentage of enterprise having a bank account		26%
9	Adjuged percentage with growth potential - Y/N basis		87%

Post Electrification Results - Year One

#	Calculated indicator	Units	Result
1	Percentage of original owners	%	100%
2	Average educational level - scale 1 to 12		7.6
3	Average yearly activity - 100% equal all months of year		77%
4	Average area of premises	m sq	9.8
5	Percentage of businesses giving credit - # giving credit / # ME's		80%
6	Credit % of turnover - Value of Turnover on credit as % of Turnover		24%
7	Bad debt % - % of debt that is not paid up		8%
8	Percentage of enterprise having a bank account		13%
9	Adjuged percentage with growth potential - Y/N basis		91%

Post Electrification Results - Year Two

#	Calculated indicator	Units	Result
1	Percentage of original owners	%	100%
2	Average educational level - scale 1 to 12		7.1
3	Average yearly activity - 100% equal all months of year		63%
4	Average area of premises	m sq	10
5	Percentage of businesses giving credit - # giving credit / # ME's		81%
6	Credit % of turnover - Value of Turnover on credit as % of Turnover		59%
7	Bad debt % - % of debt that is not paid up		12%
8	Percentage of enterprise having a bank account		12%
9	Adjuged percentage with growth potential - Y/N basis		88%

Mfuleni other activity measures - Net Change or Delta

#	Claculated indicator	Pre Elec	Year One	Year Two	Year 1	Year 2	Year 1 & 2
1	percentage of original owners	100%	100%	100%	0%	0%	0%
2	Average educational level	6	8	7	32%	-7%	24%
3	Average yearly activity	81%	77%	63%	-5%	-17%	-21%
4	Average area of premises meters sqd	13	10	10	-26%	5%	-22%
5	Percentage of businesses giving credit	81%	80%	81%	0%	0%	0%
6	Credit % of turnover	35%	24%	59%	-31%	143%	67%
7	Bad debt %	10%	8%	12%	-27%	62%	19%
8	% of enterprise having a bank account	26%	13%	12%	-52%	-2%	-52%
9	Adjuged percentage with growth potential	87%	91%	88%	5%	-4%	1%

Comments include:

- The educational level of those involved in the ME's remained fairly constant.
- Seasonally the business seem to have changed with a greater peak around December/January and lowering of the average from 81 to 63%.
- Credit after initially decreasing then increased substantially from year 1 to year 2 from 24% of turnover to 59%. Bad debts have followed a similar pattern.
- An increase of 5% in those ME's adjudged to have growth potential between pre electrification and year 1 and then in year 2 a decline in optimism of 3%

3A 8. MFULENI BY TYPE ANALYSIS

The following tables show a breakdown of business numbers in a combined format together with a drill down set of data into main variables such as turnover profit etc.

	Pre elctrification				Post Year one				Post Year Two			
Enterprise type	**# from sweep**	**%**	**# of Inter**	**%**	**# from sweep**	**%**	**# of Inter**	**%**	**# from sweep**	**%**	**# of Inter**	**%**
Basket making	0	na	0	na	0	na	0	na	1	1.5%	1	100.0%
Bead work	0	na	0	na	0	na	0	na	1	1.5%	1	100.0%
Braai Meat	0	na	0	na	2	3.2%	2	100.0%	5	7.6%	3	60.0%
Cash Loans	0	na	0	na	1	1.6%	1	100.0%	1	1.5%	1	100.0%
Clothing Seller	2	4.3%	2	100.0%	2	3.2%	2	100.0%	0	na	0	na
Creche	1	2.1%	1	100.0%	0	na	0	na	1	1.5%	1	100.0%
Fruits and Vegetable	4	8.5%	2	50.0%	3	4.8%	3	100.0%	3	4.5%	3	100.0%
Hairdressor	0	na	0	na	3	4.8%	3	100.0%	4	6.1%	4	100.0%
Hardware	3	6.4%	2	66.7%	1	1.6%	1	100.0%	2	3.0%	2	100.0%
Meat seller	6	12.8%	5	83.3%	11	17.7%	11	100.0%	13	19.7%	12	92.3%
Medicine	1	2.1%	0	0.0%	3	4.8%	3	100.0%	3	4.5%	2	66.7%
Paraffin seller	3	6.4%	2	66.7%	0	na	0	na	0	na	0	na
Phone Service	1	2.1%	1	100.0%	1	1.6%	1	100.0%	2	3.0%	1	50.0%
Photo framing	1	2.1%	1	100.0%	0	0.0%	0	na	1	1.5%	1	100.0%
Sewing	4	8.5%	3	75.0%	8	12.9%	6	75.0%	4	6.1%	4	100.0%
Shabeen	4	8.5%	3	75.0%	7	11.3%	6	85.7%	7	10.6%	6	85.7%
Shoe repair	0	na	0	na	0	0.0%	0	na	1	1.5%	1	100.0%
Spaza - Big	3	6.4%	3	100.0%	4	6.5%	4	100.0%	3	4.5%	3	100.0%
Spaza - Small	3	6.4%	3	100.0%	4	6.5%	4	100.0%	5	7.6%	5	100.0%
Tuck shop	9	19.1%	1	11.1%	11	17.7%	8	72.7%	7	10.6%	4	57.1%
TV repairs	0	na	0	na	0	na	0	na	1	1.5%	1	100.0%
Xhosa beer seller	2	4.3%	2	100.0%	1	1.6%	1	100.0%	1	1.5%	1	100.0%
Total Enterprise	**47**	**100.0%**	**31**	**66.0%**	**62**	**100.0%**	**56**	**90.32%**	**66**	**100.0%**	**57**	**86.4%**

Average Monthly Turnover by type							Average Monthly Profit by type					
Pre Elec	**Post Year One**	**Post Year Two**	**Average Monthly Turnover change**				**Pre Elec**	**Post Year One**	**Post Year Two**	**Average Monthly Profit change**		
Average turnover	**Average turnover**	**Average turnover**	**Pre - Y1**	**Y1- Y2**	**Pre - Y2**		**Average profit**	**Average profit**	**Average profit**	**Pre - Y1**	**Y1- Y2**	**Pre - Y2**
0	0	2088	na	na	na		0	0	400	na	na	na
0	0	2380	na	na	na		0	0	1628	na	na	na
0	2585	1581	na	-39%	na		0	920	733	na	-20%	na
0	6030	4830	na	-20%	na		0	2000	800	na	-60%	na
1557	580		-63%	-100%	-100%		525	240		-54%	-100%	-100%
1000	0	1124	-100%	na	12%		0	0	460	na	na	na
1260	1701.66667	2339	35%	37%	86%		257	543	670	111%	23%	161%
0	1548	1065	na	-31%	na		0	663	375	na	-43%	na
460	1700	1082	270%	-36%	135%		155	270	430	74%	59%	177%
1126	1729.45455	1902	54%	10%	69%		363	528	591	45%	12%	63%
0	702.666667	1660	na	136%	na		0	440	1244	na	183%	na
617	0		-100%	na	-100%		145	0		-100%	na	-100%
22500	19115	24912	-15%	30%	11%		7300	6000	3500	-18%	-42%	-52%
340	0	990	-100%	na	191%		152	0	850	-100%	na	459%
267	2308.33333	1463	766%	-37%	449%		192	887	606	362%	-32%	215%
2353	3269.66667	4160	39%	27%	77%		457	943	949	106%	1%	108%
0	0	6000	na	na	na		0	0	4250	na	na	na
32333	32637.5	12490	1%	-62%	-61%		6233	3943	2813	-37%	-29%	-55%
2993	3295	5034	10%	53%	68%		801	953	760	19%	-20%	-5%
350	760.625	841	117%	11%	140%		150	176	215	17%	22%	43%
0	0	0	na	na	na		0	0	1920	na	na	na
1240	1680	1950	35%	16%	57%		757	400	500	-47%	25%	-34%
3491	**4180**	**3390**	**20%**	**-19%**	**-3%**		**833**	**919**	**910**	**10%**	**-1%**	**9%**

Total Monthly Turnover by type

Pre Elec	Post Year One	Post Year Two	Total Monthly Turnover change		
Total turnover	Total turnover	Total turnover	Pre Elec	Post Year One	Post Year Two
0	0	2088	na	na	na
0	0	2380	na	na	na
0	5170	7903	na	53%	na
0	6030	4830	na	-20%	na
3114	1160	0	2%	-100%	-100%
1000	0	1124	1%	na	12%
5040	5105	7016	3%	37%	39%
0	4644	4260	na	-8%	na
1380	1700	2164	1%	27%	57%
6755	19024	24728	4%	30%	266%
0	2108	4980	na	136%	na
1850	0	0	1%	na	-100%
22500	19115	49824	14%	161%	121%
340	0	990	0%	na	191%
1067	18467	5851	1%	-68%	449%
9413	22888	29120	6%	27%	209%
0	0	6000	na	na	na
97000	130550	37470	59%	-71%	-61%
8978	13180	25169	5%	91%	180%
3150	8367	5887	2%	-30%	87%
0	0	0	na	na	na
2480	1680	1950	2%	16%	-21%
164066	**259187**	**223735**	**58%**	**-14%**	**36%**

Total Monthly Profit by type

Pre Elec	Post Year One	Post Year Two	Total Monthly Profit change		
Total Profit	Total Profit	Total Profit	Pre Elec	Post Year One	Post Year Two
0	0	400	na	na	1%
0	0	1628	na	na	3%
0	1840	3667	na	3%	6%
0	2000	800	na	4%	1%
1050	480	0	3%	1%	na
0	0	460	na	na	1%
1028	1630	2009	3%	3%	3%
0	1990	1500	na	3%	2%
465	270	860	1%	0%	1%
2180	5813	7684	6%	10%	13%
0	1320	3732	na	2%	6%
435	0	0	1%	na	na
7300	6000	7000	19%	11%	12%
152	0	850	0%	na	1%
768	7095	2423	2%	12%	4%
1829	6600	6643	5%	12%	11%
0	0	4250	na	na	7%
18700	15770	8440	48%	28%	14%
2402	3812	3800	6%	7%	6%
1350	1936	1502	3%	3%	2%
0	0	1920	na	na	3%
1514	400	500	4%	1%	1%
39174	**56956**	**60067**	**100%**	**100%**	**100%**

Average Monthly Electricity usage by type

Pre Elec	Post Year One	Post Year Two	Average monthly Electricity usage change		
Average Electricity	Average Electricity	Average Electricity	Pre - Y1	Y1- Y2	Pre - Y2
0	0	10	na	na	na
0	0	10	na	na	na
0	38	23	na	-39%	na
0	10	5	na	-50%	na
0	33	0	na	-100%	na
0	0	60	na	na	na
0	15	27	na	78%	na
0	50	35	na	-30%	na
0	20	5	na	-75%	na
0	42	40	na	-4%	na
0	27	20	na	-25%	na
0	0	0	na	na	na
0	35	20	na	-43%	na
0	0	20	na	na	na
0	29	18	na	-40%	na
0	53	63	na	19%	na
0	0	20	na	na	na
0	131	115	na	-12%	na
0	18	94	na	437%	na
0	26	29	na	12%	na
0	0	4	na	na	na
0	50	35	na	-30%	na
0	**40**	**40**	**na**	**1%**	**na**

Average Monthly LPG usage by type

Pre Elec	Post Year One	Post Year Two	Average monthly LPG usage change		
Average LPG	Average LPG	Average LPG	Pre - Y1	Y1- Y2	Pre - Y2
0	0	0	na	na	na
0	0	0	na	na	na
0	0	0	na	na	na
0	0	0	na	na	na
0	0	0	na	na	na
0	0	0	na	na	na
0	0	0	na	na	na
3	0	0	-100%	na	-100%
0	0	0	na	na	na
0	0	0	na	na	na
0	0	0	na	na	na
0	0	0	na	na	na
0	0	0	na	na	na
0	0	0	na	na	na
0	0	0	na	na	na
0	0	0	na	na	na
1	0	0	-100%	na	-100%
212	0	0	-100%	na	-100%
30	0	0	-100%	na	-100%
0	0	0	na	na	na
1	0	0	-100%	na	-100%
0	0	0	na	na	na
15.45	**0**	**0**	**-100%**	na	-100%

Average Monthly Paraffin usage by type

Pre Elec	Post Year One	Post Year Two	Average monthly paraffin usage change		
Average Paraffin	Average Paraffin	Average Paraffin	Pre - Y1	Y1- Y2	Pre - Y2
0	0	0	na	na	na
0	0	0	na	na	na
0	0	0	na	na	na
0	0	0	na	na	na
0	0	0	na	na	na
96	0	0	-100%	na	-100%
28	0	0	-100%	na	-100%
4	0	0	-100%	na	-100%
3	7.0	0	115%	-100%	-100%
11	9.1	0	-17%	-100%	-100%
0	0.0	0	na	na	na
5	0.0	0	-100%	na	-100%
0	0.0	0	na	na	na
52	0.0	0	-100%	na	-100%
13	2.9	0	-77%	-100%	-100%
29	22.2	0	-23%	-100%	-100%
2	0.0	0	-100%	na	-100%
116	0.0	0	-100%	na	-100%
27	11.0	0	-59%	-100%	-100%
0	0	0	na	na	na
2	0	0	-100%	na	-100%
23	0	0	-100%	na	-100%
21	**5**	**0**	**-75%**	**-100%**	**-100%**

Average Monthly Total energy usage by type

Pre Elec	Post Year One	Post Year Two	Average monthly Energy usage change		
Average energy	Average Energy	Average Energy	Pre - Y1	Y1- Y2	Pre - Y2
0	0.0	10.0	na	na	na
0	0.0	10.0	na	na	na
0	237.5	68.7	na	-71%	na
0	10.0	5.0	na	-50%	na
0	32.5		na	-100%	na
96	2.0	60.0	-98%	2900%	-38%
28	15.0	26.7	-46%	78%	-5%
7	50.0	35.0	614%	-30%	400%
3	27.0	5.0	731%	-81%	54%
41	58.6	40.4	43%	-31%	-1%
0	26.7	20.0	na	-25%	na
5	13.0		150%	-100%	-100%
40	40.0	20.0	0%	-50%	-50%
52	13.0	20.0	-75%	54%	-61%
13	32.1	17.5	153%	-45%	38%
85	75.5	63.3	-11%	-16%	-25%
6	2.0	20.0	-67%	900%	233%
1141	148.8	115.0	-87%	-23%	-90%
84	28.5	94.0	-66%	230%	12%
0	25.6	28.8	na	12%	na
6	2.0	4.0	-67%	100%	-33%
68	210.0	275.0	209%	31%	304%
102	56.8	**47**	**-44%**	**-16%**	**-53%**

APPENDIX 3B: NGONYAMA (EASTERN CAPE – RURAL)

The rural site selected for the research was in a community called Ngonyama near Queenstown, Eastern Cape, South Africa.

Presented below are actual results extracted from the Ngonyama pre- and post-electrification quantitative surveys following extensive spreadsheet based analysis. All the tables presented in the text have been extracted directly from the file "Quantitative Analysis Mfuleni ver Report.xls" (although listed as an Appendix to this report, this file is only available in electronic format as it is not suitable for printing).

3B 1. NGONYAMA SWEEP RESULTS

For Ngonyama the number of properties surveyed is shown in the adjacent table. Over the three years the areas covered by the *sweep survey* increased marginally and a number of properties became occupied. In keeping with the identical geographic area principle, these additional properties were excluded to ensure that the same sample basis was applied for each survey.

	Final	Post	Pre
Non enterprise properties	**302**	**302**	**311**
Total properties occupied/included	**353**	**353**	**353**
Properties excluded	**75**	**38**	**0**
Empty properties or closed houses	**11**	**20**	**50**
Total properties Sweep	**439**	**411**	**403**

The following three tables reflect the actual number of Micro Enterprises (ME) by type that were identified from the Pre Electrification, Post Electrification Year One, Post Electrification Year Two *sweep surveys*. Please note these numbers and the actual enterprise type were checked and corrected during the quantitative interviews undertaken by the senior researchers. A number of comments are made on the data in each case.

Enterprise numbers identified during the sweep Pre Elec			
Enterprise type	**# from sweep**	**% of enterprises**	**% of total properties**
Brickmaker	2	4.88%	0.57%
Builder	1	2.44%	0.28%
Energy seller	2	4.88%	0.57%
Grass products	1	2.44%	0.28%
Household linens	2	4.88%	0.57%
Mechanical repairs	1	2.44%	0.28%
Sewing	8	19.51%	2.27%
Shabeen	5	12.20%	1.42%
Spaza Big	2	4.88%	0.57%
Spaza Small	3	7.32%	0.85%
Taxi - big	2	4.88%	0.57%
Taxi - small	1	2.44%	0.28%
Tractor hire	3	7.32%	0.85%
Tuck shop	7	17.07%	1.99%
Xhosa beer seller	1	2.44%	0.28%
Total Enterprise	**41**	100.00%	11.65%

Comments on the **Pre sweep data** include:

- In 11.65% of the homes an enterprise was found.

- It was notable that 1 out of every 8.6 homes was trying to make some additional income through micro-enterprise activity.
- 'Tuckshops and Spaza shops account for ~29% of the total enterprise activity.

Enterprise numbers identified during the sweep Post Year One			
Enterprise type	**# from sweep**	**% of enterprises**	**% of total properties**
Brickmaker	1	1.96%	0.28%
Energy seller	3	5.88%	0.85%
Fruit & Veg	1	1.96%	0.28%
Household linens	1	1.96%	0.28%
Sales Agent - Crockery	1	1.96%	0.28%
Sewing	8	15.69%	2.27%
Shabeen	8	15.69%	2.27%
Spaza Big	2	3.92%	0.57%
Spaza Small	8	15.69%	2.27%
Taxi - big	2	3.92%	0.57%
Taxi - small	1	1.96%	0.28%
Tractor hire	3	5.88%	0.85%
Tuck shop	10	19.61%	2.83%
Welder/fabricator	1	1.96%	0.28%
Xhosa beer seller	1	1.96%	0.28%
Total Enterprise	**51**	100.00%	14.45%

Comments on the **Post sweep data Year One** include:

- In 14.45 % of the homes an enterprise was found.
- Now 1 in every 6.9 homes in the community were supporting themselves or trying to make some additional income through micro-enterprise activity.
- "Tuck shops" and Spaza shops account for 39% of the total enterprises activity.

Enterprise numbers identified during the sweep Post Year Two			
Enterprise type	**# from sweep**	**% of enterprises**	**% of total properties**
Brickmaker	1	1.96%	0.28%
Energy seller	1	1.96%	0.28%
Fruit & Veg	2	3.92%	0.57%
Phone	1	1.96%	0.28%
Sales Agent - Crockery	1	1.96%	0.28%
Sewing	7	13.73%	1.98%
Shabeen	6	11.76%	1.70%
Spaza Big	2	3.92%	0.57%
Spaza Small	11	21.57%	3.12%
Taxi - big	2	3.92%	0.57%
Tractor hire	2	3.92%	0.57%
Tuck shop	13	25.49%	3.68%
Welder/fabricator	1	1.96%	0.28%
Xhosa beer maker	1	1.96%	0.28%
Total Enterprise	**51**	100.00%	14.45%

Comments on the **Post sweep data Year Two** include:

- As in the previous survey, 14.45% of the homes were operating a micro-enterprise, again representing 1 out of every 6.9 homes.
- The dominance of "Tuck shops" and Spaza shops further increased and accounted for ~51% of the total enterprise activity.

Sweep accuracy:

Additional work was undertaken during the quantitative interviews to improve the accuracy of the sweep data. This involved specifically findings and visiting all ME's recorded during the sweep and checking that the business was currently operational and that the type classification was correct. All required changes were made to the dataset in the spreadsheet prior to any data processing.

3B 2. NGONYAMA ENTERPRISE TYPE ANALYSIS

From the two sets of corrected sweep data an analysis have been completed on the description, change and nature of the micro enterprise evident in the community.

3B 2.1 Micro enterprise description

Brick Maker

- Mud based bricks are formed and cured in the sun.
- These bricks are sold for house building purposes.
- Classified as a manufacturer.

Builder

- Community member that sold his service as a builder, actually building in the community during the pre phase and excluded during the post phase as working outside the community.
- Classified as a service industry.

Energy Seller

- Home based sellers of paraffin that is purchased in 20 litre amounts and sold in 1 litre or less
- Classified as a retailer.

Farmer small and Farmer big

- Small farmers are effectively those that in growing for there own needs may sell a little on the side.
- Large farmers are those with significant lands who cultivate and stock farm with the intent to sell virtually all of what is produced.
- Classified as a manufacturing.

Fruit and vegetables

- These are dedicated fruit and vegetable vendors, often kerbside businesses selling to passing trade.
- Classified as retailers.

Grass products

- Cottage industry utilising traditional methods of mat, broom and other grass based products.
- Essentially only sold to the market within the communities.
- Classified as a manufacturing.

Household linens

- These business operators, mainly women, who buy clothes from off site manufacturers. Suppliers are from as far a field as Johannesburg.
- Sales of the linens are to community members and surrounding communities.
- Substantial turnovers are evident in these businesses and stock holdings.
- Classified as retailers.

Mechanical repairs

- Small scale car repairs and possibly tractors.
- Classified as a service business.

Phone service

- This is a phone franchised outlet operating in a purpose fitted container. This particular phone service is owned by an entrepreneur who lives in the community and employs a manager to operate the business on a daily basis for a salary.

- The business essentially consists of selling phone access and time on a number of phone booths set up in the container where customers can make phone calls. They also sell airtime for cell phones.
- Classified as a service provider.

Sales Agents - crockery

- These business operators, mainly women, are sales agents for a line of crockery.
- Essentially take orders, receive the goods and supply to the customers.
- Classified as retailers.

Sewing

- These businesses make garments and other household soft furnishings, Dresses, wedding gowns and clothes for special occasions are an important element of this business. Traditional costumes that are made to measure.
- Very similar to bespoke tailoring in many cases where clients will choose materials, design the garment with the seamstress, attend for a series of fittings.
- Credit and part payments are a frequent feature.
- Classified as manufacturing

Shabeens

- These are simple beer and entertainment establishments. They sell the branded beers (Castle of SA Breweries especially popular), cigarettes and in some cases food. Loud music and fires in the winter add to the attraction and 'escape' from the harsher realities that surround them.
- Credit a major feature of this trade.
- Bias towards male customers although women also customers.
- Classified as retailers.

Spaza Big and Small

- Nearest role model is a 'grocery shop' selling food, household detergents, matches, candles, cigarettes, cold drinks, ice cream etc. The operators buy in bulk from offsite wholesalers such as Macro. Transport or access to transport a key element in the more successful Spaza's.
- Provision of credit to customers is a major feature of this trade.
- Some of the Spaza's are substantial business operations with the operators being highly competent business people.
- Highly competitive retailing activity.
- Sub classification into Big and Small spaza based on whether the monthly profit is greater of less than R2000 per month.
- Classified as retailers.

Taxi small

- A local taxi that only operates within the bounds of the community.
- Classified as a service provider.

Taxi big

- Taxi operators owning multiple vehicles and employing drivers.
- Classified as a service provider.

Tractor hire

- A number of tractors are owned by community members that are rented out to perform functions such as ploughing fields and carry river sand.
- Classified as a service provider.

Tuckshop

- These are extremely small, often secondary activities for households where a member has other work; selling snacks, biscuits and sweets, mainly to local children for a few cents. Products can also include ice lollies and cups of cool drink.

- They often buy their few products from the larger Spaza's in the community unless they have access to transport to buy off site or have a family member regularly travelling offsite to work.
- These businesses come and go and are often extremely vulnerable.
- Importantly a distinction was drawn with small spaza's by setting a maximum profit per month for tuckshops at R300 per month.
- Classified as retailers.

Welder Fabricator

- Has a range of small engineering tools and equipment that the introduction of electricity has meant production of vehicle seats etc. has started.
- Classified as a manufacturer.

Xhosa Beer producer

- Specialised type of local Xhosa beer is brewed from the necessary ingredients, brewing it in large plastic containers on site. They then sell the beer in available plastic containers.
- Classified as a manufacturer.

3B 2.2 Change in Micro Enterprise numbers

The following table presents a delta change in the numbers of enterprise by type and overall figures from the just before electrification until the year later:

Ngonyama Business changes - opened or closed analysis									
Change in business type and number (opened or closed)									
Enterprise type	# from Pre Survey		# from Post Survey		# from Final Survey		Delta change Year 1	Delta change Year 2	Delta change Year 1 & 2
Brickmaker	2	5%	1	2%	1	2%	-1	0	-1
Builder	1	2%	0	0%	0	0%	-1	0	-1
Energy seller	2	5%	3	6%	1	2%	1	-2	-1
Fruit & Veg	0	0%	1	2%	2	4%	1	1	2
Grass products	1	2%	0	0%	0	0%	-1	0	-1
Household linens	2	5%	1	2%	0	0%	-1	-1	-2
Mechanical repairs	1	2%	0	0%	0	0%	-1	0	-1
Phone booth	0	0%	0	0%	1	2%	0	1	1
Sales Agent - Crockery	0	0%	1	2%	1	2%	1	0	1
Sewing	8	20%	8	16%	7	14%	0	-1	-1
Shabeen	5	12%	8	16%	6	12%	3	-2	1
Spaza Big	2	5%	2	4%	2	4%	0	0	0
Spaza Small	3	7%	8	16%	11	22%	5	3	8
Taxi - big	2	5%	2	4%	2	4%	0	0	0
Taxi - small	1	2%	1	2%	0	0%	0	-1	-1
Tractor hire	3	7%	3	6%	2	4%	0	-1	-1
Tuck shop	7	17%	10	20%	13	25%	3	3	6
Welder/fabricator	0	0%	1	2%	1	2%	1	0	1
Xhosa beer seller	1	2%	1	2%	1	2%	0	0	0
Total Enterprise	**41**	100%	**51**	100%	**51**	100%	**10**	**0**	**10**
				Change			**24%**	**0%**	**24%**

Comments are:

- Overall there has been an increase in the total number of ME's by 24%. All of this occurred in the first year following electrification. This provides strong evidence that the arrival of electricity facilitates an immediate change (increase) in micro-enterprise activity. There was no further increase in the number of enterprises in the year 2 survey however further work would be needed to determine whether this was a long term trend and for firm conclusions to be drawn.
- Greatest gains are tuckshops and spaza's, with all these directly related to the availability of working refrigerators and freezers. This allows for the cooling of drinks, holding of frozen ice creams, meat etc.
- "Tuck shops" and Spaza shops (big and small) account for a total of 29%, 40% and 51% of the enterprises activity in each of the three surveys, respectively.
- Similarly Tuck shops, Spaza and Shabeens account for a total of 41%, 56% and 63% of the enterprise activity in each of the three surveys, respectively.
- Some businesses (builder and mechanical repairs) have disappeared because their owners either moved out of the community (the builder) or stopped working in this business (repair person).
- Several of the existing businesses in the pre and post survey had become more commercially robust with the coming of electricity. Examples include electric versus manual sewing machines, Shabeens and Spaza's.
- Interesting that in the pre electrification survey there were 2 energy sellers then 3 in the post electrification survey and then only 1 in the post year two survey. The additional energy seller in the second survey was possibly due to small size of the business in the pre survey (failed to be identified) and then a personal family need arose to generate more income. However, all three were vulnerable during the second survey and two having already failed by the third.
- Also notable that following the initial significant increase in shabeens from 5 to 8 after electrification, 2 subsequently closed. This is understood to be directly related to the

small barrier to entry (fridge and stock) allowing a number to open, yet the impact of credit and the strong competition from a number of shabeens which are run by very competent entrepreneurs forced some closure. Price and availability of credit are the only real differentiation between the shabeens – with virtually all small shabeens operating a credit system and charging R8 per beer, versus the largest shabeen (supplied by the beer company and wholesales to some of the others) that charges R7 per beer, however operates a mainly cash operation.

3B 2.3 Sectoral analysis of Enterprise type

From the data an understanding of the sectoral division (retail, service, manufacture) of the various businesses can by gained.

Ngonyama - Pre versus Post Electrification analysis by sector									
Enterprise sector	**# from Pre Survey**		**# from Post Survey**		**# from Final Survey**		**Delta change Year 1**	**Delta change Year 2**	**Delta change Year 1 & 2**
Retail	21	51%	34	67%	36	71%	13	2	15
Manufacture and farming	11	27%	11	22%	10	20%	0	-1	-1
Service	9	22%	6	12%	5	10%	-3	-1	-4
Retail	21		34		36		62%	6%	71%
Manufacture	11		11		10		0%	-9%	-9%
Service	9		6		5		-33%	-17%	-44%
Total Enterprise	**41**		**51**		**51**		**24%**	**0%**	**24%**

Comments include:

- There is a complete over emphasis on retailing businesses. These are essentially providing a service of local sales, helping customers over come the need to travel to the shops and for transportation of goods versus travelling the 20 km's to Queenstown, This also facilitates one cycle of the expenditure through the community before reaching the wholesalers external to the community. Some of the larger Spaza's act as wholesalers supplying small quantities of goods for some of the Tuckshops. However they are not classified as wholesalers since this is not their primary business.
- Manufacturing activities (itself very limited in the overall enterprise landscape of the community) has decreased (by 9%) through the loss of one business. Services enterprises (originally representing almost 25% of the enterprises) has reduced markedly (by 44%) over the three surveys through the loss of a total of 4 business (3 less in the year 1 survey and a further reduction of 1 in the year 2 survey). An examination of the reasons for closure of these businesses revealed that it was not related to the arrival of electricity, rather factors such as owners moving away form the village, movement of the business to other local areas (such as one of the tractor businesses), switching to other endeavours including employment, and other personal circumstances.
- Much of the retailing is based on credit and very small affordable quantities. The retailing is generally a very personal business where the business operator knows the majority of the customers, their circumstances and their purchase / credit record.
- Manufacturing is primarily sewing, together with Xhosa beer making, brick making and a new welding / fabrication business.
- The provision of electricity for refrigeration (cool drinks and ice lollies) and electric sewing machines for sewing etc has helped to increase and sustain these types of business.

3B 2.4 Closed / Opened business analysis - Totals

Given the significantly large number of businesses that had opened and closed between (and even during) each of the survey, this deserves special comment.

The following table shows the number of businesses of each type that existed within the survey boundary in each of the three years. Importantly this uses the finalized sweep data (i.e. checked and corrected during the quantitative survey phase) and examines all properties where a micro-enterprise was recorded. This differs from the data used in Section 2.6, which focused on interviewed micro-enterprises, in that a greater number of individual properties are captured.

Open/closed analysis based on sweep data

Property	Pre	Year 1	Year 2	Pre	Y1	Y2
1	Spaza Small			1		
2		Spaza Small			1	
3	Tuckshop	Spaza Small		1	1	
4		Tuckshop			1	
5	Spaza Big	Spaza Big	Spaza Big	1	1	1
6	Brickmake	Brickmaker		1	1	
7			Tuckshop			1
8		Sewing			1	
9	Sewing			1		
10		Shabeen	Spaza Small		1	1
11		Tuckshop			1	
12	Tuck shop			1		
13	Household	#	Spaza Sma	1	#	1
14	Sewing	Sewing	Sewing	1	1	1
15			Tuckshop			1
16		Tuckshop	Tuckshop		1	1
17			Welding			1
18	Xhosa beer seller	Xhosa bee	Xhosa bee	1	1	1
19	Tuckshop	Spaza Sma	Spaza Sma	1	1	1
20	Tuck shop	Spaza Sma	Spaza Sma	1	1	1
21	Sewing	Sewing	Sewing	1	1	1
22	Tractor hire	Tractor hire	Tractor hire	1	1	1
23	Sewing	Sewing	Sewing	1	1	1
24	Shabeen	Shabeen	Shabeen	1	1	1
25	Grass products			1		
26	Brickmake	#	Brickmake	1	#	1
27	Shabeen	Shabeen	Shabeen	1	1	1
28	Sewing	Sewing	Sewing	1	1	1
29		Tuckshop	Spaza Small		1	1
30	Mechanical repairs			1		
31	Tuck shop	Tuck shop	Tuck shop	1	1	1
32		Sales Ager	Sales Agent - Crocker		1	1
33			Tuckshop			1
34		Shabeen	Shabeen		1	1
35	Taxi - smal	Taxi - small		1	1	
36	Household	Household linens		1	1	
37		Sewing	Sewing		1	1
38	Spaza Big	Spaza Big	Spaza Big	1	1	1
39		Welder/fabricator			1	
40	Tractor hire	Tractor hire	Tractor hire	1	1	1
41	Taxi - big	Taxi - big	Taxi - big	1	1	1
42			Phone			1
43	Tractor hire	Tractor hire		1	1	
44			Spaza Small			1
45		Shabeen	Spaza Small		1	1
46	Energy sell	Energy seller		1	1	
47		Tuckshop	Tuckshop		1	1
48	Shabeen	Shabeen	Shabeen	1	1	1
49	Shabeen	Shabeen	Shabeen	1	1	1
50			Tuckshop			1
51	Shabeen	Shabeen	Shabeen	1	1	1
52		Spaza Small			1	
53		Fruit Veg	Fruit Veg		1	1
54	Taxi - big	Taxi - big	Taxi - big	1	1	1
55		Tuckshop	Tuckshop		1	1
56	Spaza Sma	Spaza Sma	Spaza Sma	1	1	1
57		Spaza Sma	Spaza Small		1	1
58			Spaza Small			1
59	Sewing	Sewing	Sewing	1	1	1
60	Spaza Sma	Spaza Sma	Spaza Sma	1	1	1
61		Sewing	Sewing		1	1
62			Tuckshop			1
63		Tuckshop			1	
64	Sewing	Tuckshop		1	1	
65			Fruit Veg			1
66	Energy sell	Energy sell	Energy sell	1	1	1
67	Tuck shop			1		
68		Energy sell	Tuckshop		1	1
69	Tuck shop	#	Tuckshop	1	#	1
70		Tuckshop			1	
71			Tuckshop			1
72			Tuckshop			1
73	Builder			1		
74	Sewing			1		

Analysis of businesses opened and closed

Measure	#	%
Open Pre Electrification	41	
Closed Post Year one	15	[illegible] %
Opened Post year one	25	
Closing balance	[illegible]	
Closed Post Year Two (from Pre)	5	[illegible]
Closed Post Y[illegible]	[illegible]	[illegible]
Opened Post year Two	19	
Closing balance Post Year One	51	

Comments include:

- 15 of the business during the pre survey were found to have closed by the first post electrification survey.
- A total of 19 businesses were closed in the intervening year between the Year 1 and Year 2 surveys (5 of those originally recorded in the pre-electrification phase and a further 14 that were first recorded in the year post-electrification survey). It is possible that a number of these operate at a very low level, leading to them being identified during the sweep but excluded from the detailed quantitative analysis interviews as further investigations revealed that they had either closed permanently or temporarily ceased trading (often for family, other personal reason, or temporary employment).
- Several of the businesses that closed were related to farming e.g. tractor hire. In other cases proprietors had either moved away and took their business with them or a change in personal circumstances had led to the closure of the business.
- Since ‘sustainable’ business is the hope with the facilitation of electricity and other enabling elements, those businesses that had a longevity over the three survey phases are of particular interest. It is notable that in most cases, those businesses that survived were clearly strengthened through the availability of electricity and their access to electrical equipment (including also lighting, which the majority of business owners indicated had made a significant difference to aspects of their business e.g. extended hours, customers willing to go our after dark).

3B 2.5 Business life expectancy

Business life expectancy		
Business open all three surveys	21	50% of original businesses pre electrifica
Opened after electrification & closed	14	56% of the business opening closed in o

Comments:

- 21 businesses remained in operation from the pre-electrification survey to the year 2 post-electrification (this is in contrast to 9 businesses in urban Mfuleni, where there where higher levels of opening and shutting of businesses) The degree of competition and the uniqueness of the business plays a role in this. It is notable that the Xhosa Beer producer and seller, the 2 large Spaza's survived across the whole research period.
- The increase of businesses with little competitive differential advantage was significant. Many were tuckshops or small spazas selling cool drinks, ice cream and sometimes meat linked to having a household refrigerator. With the proliferation of such activities the market became diluted and competition more fierce that further diminished the viability of these new start ups and the existing small traders hence leading to further closures.
- It appeared that several survivalist businesses are related to a breadwinner in the household who provides the necessary cash float to fund the business. When money is needed for other family expenditure with these being such hand to mouth activities, the business closes only to start up again later when more money is again available.
- Other business survival enabling elements include the business skill of the proprietor, access to the local market and suppliers, reputation in the community and the ability to sustain the granting of credit especially in the retailing types of business.

3B 2.6 Open closed business changes by type

A further understanding can be gained by an analysis of which type of business opened and closed each year. Unlike the above findings, this analysis is based on the ***enterprises that were interviewed*** and thus the total number of enterprises may differ from (i.e. be less than) those counted in the sweep data *(it was not possible or in some cases necessary to interview 100% of each type of enterprise)*.

Open/close analysis

Pre	Y1	Y2	Type
		1	Brick maker
1	1		Brickmaker
1			Builder
1	1		Energy seller
1	1	1	Energy seller
	1		Energy seller
	1	1	Fruit & Veg sellor
		1	Fruit & Veg sellor
1			Grass products
1			Household linens
1	1		Household linens
1			Mechanical repairs
	1	1	Sales agent Crockery
	1		Sewing
1			Sewing
1	1	1	Sewing
1		1	Sewing
1	1	1	Sewing
1	1	1	Sewing
	1	1	Sewing
1	1	1	Sewing
	1	1	Sewing
1			Sewing
	1		Shabeen
1	1	1	Shabeen
1	1	1	Shabeen
	1	1	Shabeen
1	1	1	Shabeen
		1	Shabeen
1	1	1	Shabeen

Open/close analysis

Pre	Y1	Y2	Type
1	1	1	Spaza Big
1	1	1	Spaza Big
1			Spaza Small
		1	Spaza Small
		1	Spaza Small
	1	1	Spaza Small
	1	1	Spaza Small
		1	Spaza Small
		1	Spaza Small
		1	Spaza Small
1	1	1	Spaza Small
	1	1	Spaza Small
		1	Spaza Small
1	1	1	Spaza Small
	1	1	Taxi
1	1		Taxi - Big
1			Taxi - small
1	1	1	Tractor hire
1			Tractor hire
1	1		Tractor hire
1			Tuck shop
1	1	1	Tuck shop
1			Tuck shop
	1		Tuck shop
1			Tuckshop
	1		Tuckshop
1			Tuckshop
1			Tuckshop
	1	1	Tuckshop
	1	1	Tuckshop
	1		Tuckshop
	1		Tuckshop
		1	Tuckshop
		1	Welding
	1		Welding
1	1	1	Xhosa beer seller

Comments:

- The above data gives a vivid pictorial representation of the longitudinal nature of all the businesses surveyed.
- Some 16 businesses interviewed existed throughout the survey and might therefore be regarded as sustainable enterprise not subject to the 'churn' identified with the more marginal business activities.
- The most robust in terms of the 16 businesses were 4 sewing and 4 shabeen businesses. 2 big spaza's and 2 small spaza's also survived across the survey period.
- Apart from tractor hire and Xhosa beer seller the remaining 14 robust businesses all benefited from electricity in terms of electric sewing machines, cooling for shabeens and spaza's etc.
- Some of the businesses that closed such one of the tractor hire were due to movement of the business out of the community to irrigation schemes further a field.

3B 3. NGONYAMA QUANTITATIVE QUESTIONNAIRES

Based on the sweep data every effort was made to interview as many of the ME owners as possible, given the time and resource constraints of the project. Typical reasons for not achieving a 100% of the ME's with the detailed quantitative questionnaire were:

- Owner away.
- ME only operates after hours or in holidays

Analysis of the significance of the "sampling" was based on:
- Green tokens indicate 100% coverage of a particular ME type.
- Orange indicates less than 100%, but what is believed to be sufficient to reflect the ME type activity.
- Red tokens are cause for concern with specific comment given on each incident.

Pre Electrification

Ngonyama Pre Electrification							
Enterprise numbers identified during the sweep Pre Elec				Quantitative data statistics			
Enterprise type	# from sweep	% of enterprises	% of total properties	# of records	% of sweep	Statistical significance	Comments
Brickmaker	2	4.88%	0.57%	1	50.00%		Ok - owner away
Builder	1	2.44%	0.28%	1	100.00%		
Energy seller	2	4.88%	0.57%	2	100.00%		
Grass products	1	2.44%	0.28%	1	100.00%		
Household linens	2	4.88%	0.57%	2	100.00%		
Mechanical repairs	1	2.44%	0.28%	1	100.00%		
Sewing	8	19.51%	2.27%	7	87.50%		Ok
Shabeen	5	12.20%	1.42%	4	80.00%		Ok
Spaza Big	2	4.88%	0.57%	2	100.00%		
Spaza Small	3	7.32%	0.85%	3	100.00%		
Taxi - big	2	4.88%	0.57%	1	50.00%		Ok little elec impact
Taxi - small	1	2.44%	0.28%	1	100.00%		
Tractor hire	3	7.32%	0.85%	3	100.00%		
Tuck shop	7	17.07%	1.99%	6	85.71%		Ok
Xhosa beer seller	1	2.44%	0.28%	1	100.00%		
Total Enterprise	**41**	100.00%	11.65%	**36**	**87.80%**		Ok

Comments on Pre Electrification survey statistical relevance of the results:
- The only RED indicating unsatisfactory sample level was for the large taxi operators and brick makers. This was accepted given the fact that the introduction of electricity would have no impact on them.
- All other categories had an acceptable level of sampling for significance.
- A total of 36 out of a possible 41 ME's were interviewed, 87.8% overall.
- All data has been normalised on a by enterprise type basis to give representative figures for the full sweep data based enterprise number. In the following tables numbers in blue are for the quantitative data only and are not based on the sweep sample size.

Post Electrification Year Two

Ngonyama Year One Post Electrification							
Enterprise numbers identified during the sweep Post Year One				Quantitative data statistics			
Enterprise type	**# from sweep**	**% of enterprises**	**% of total properties**	**# of records**	**% of sweep**	**Statistical significance**	**Comments**
Brickmaker	1	1.96%	0.28%	1	100.00%		
Energy seller	3	5.88%	0.85%	3	100.00%		
Fruit & Veg	1	1.96%	0.28%	1	100.00%		
Household linens	1	1.96%	0.28%	1	100.00%		
Sales Agent - Crockery	1	1.96%	0.28%	1	100.00%		
Sewing	8	15.69%	2.27%	7	87.50%		Ok
Shabeen	8	15.69%	2.27%	6	75.00%		Ok
Spaza Big	2	3.92%	0.57%	2	100.00%		
Spaza Small	8	15.69%	2.27%	5	62.50%		Ok
Taxi - big	2	3.92%	0.57%	2	100.00%		
Taxi - small	1	1.96%	0.28%	1	100.00%		
Tractor hire	3	5.88%	0.85%	3	100.00%		
Tuck shop	10	19.61%	2.83%	7	70.00%		Ok
Welder/fabricator	1	1.96%	0.28%	1	100.00%		
Xhosa beer seller	1	1.96%	0.28%	1	100.00%		
Total Enterprise	**51**	100.00%	14.45%	**42**	**82.35%**		Ok

Comments on Post Electrification Year One survey statistical relevance of the results:

- No Red unacceptable levels were obtained, with an overall sampling of 82.4% from 42 interviews with 51 identified enterprises.
- The smallest sample was 7 interviews for the 10 for Tuckshops.
- All data has been normalised on a by enterprise type basis to give representative figures for the full sweep data based enterprise number. In the following tables numbers in blue are for the quantitative data only and are not based on the sweep sample size.

Post Electrification Year Two

Ngonyama Year Two Post Electrification							
Enterprise numbers identified during the sweep Post Year Two				Quantitative data statistics			
Enterprise type	**# from sweep**	**% of enterprises**	**% of total properties**	**# of records**	**% of sweep**	**Statistical significance**	**Comments**
Brickmaker	1	1.96%	0.28%	1	100.00%		
Energy seller	1	1.96%	0.28%	1	100.00%		
Fruit & Veg	2	3.92%	0.57%	2	100.00%		
Phone	1	1.96%	0.28%	0	0.00%		Owner not available
Sales Agent - Crockery	1	1.96%	0.28%	1	100.00%		
Sewing	7	13.73%	1.98%	7	100.00%		
Shabeen	6	11.76%	1.70%	6	100.00%		
Spaza Big	2	3.92%	0.57%	2	100.00%		
Spaza Small	11	21.57%	3.12%	11	100.00%		
Taxi - big	2	3.92%	0.57%	1	50.00%		Ok - not available
Tractor hire	2	3.92%	0.57%	2	100.00%		
Tuck shop	13	25.49%	3.68%	4	30.77%		Ok - large number
Welder/fabricator	1	1.96%	0.28%	1	100.00%		
Xhosa beer maker	1	1.96%	0.28%	1	100.00%		
Total Enterprise	**51**	100.00%	14.45%	**40**	**78.43%**		Ok

Comments on Post Electrification Year Two survey statistical relevance of the results:

- No Red unacceptable levels were obtained apart from phone shop where the owner was away. There was an overall sampling of 78.43%, from 40 interviews of the 51 enterprises.
- The smallest sample was 4 interviews for the 13 tuck shops, however a number of the remainder were visited to verify that they were of a similar size (i.e. stock levels held, weekly turnover, surplus generated, etc).

All data has been normalised by enterprise type basis to give representative figures for the full sweep data based enterprise number.

3B 4. NGONYAMA MICRO-ENTERPRISE ACTIVITY MEASURE

Pre Electrification Results

#	Individual indicators	Units	Result
1	Number of households per enterprise - total households/enterprises	Hholds per ME	8.6
2	Total ME Turnover for the community - Turn over for all ME's added up	Rand	R259,593
3	Average enterprise turnover per community household - Total turn over/households	R / hhold / month	R737
4	Average enterprise profit per community household - Total turn over/households	R / hhold / month	R333
5	Average enterprise turnover per enterprise - Total turnover/ME's	R / ME / month	R6,332
6	Average enterprise profit per enterprise - ME profit/ME's	R / ME / month	R2,856
7	Total people employed per community household	# / household	0.27
8	Total people employed per enterprise	# / enterprises	2.3
9	Productivity (Income/person hours) - Total Turnover/hours worked	R / hour	R33.3
10	Average Stock value - Averatge of all stock in ME's at a point in time	R / enterprise	R400.4
11	Percentage of customers internal to community - % customers from inside village	%	83%
12	Percentage of customers external to community - % customers from outside village	%	17%
13	Average transaction size - average of all the sales sizes	R / transaction	R77.6

Post Electrification Results - Year 1

#	Individual indicators	Units	Result
1	Number of households per enterprise - total households/enterprises	Hholds per ME	6.9
2	Total ME Turnover for the community - Turn over for all ME's added up	Rand	R316,030
3	Average enterprise turnover per community household - Total turn over/households	R / hhold / month	R895
4	Average enterprise profit per community household - Total turn over/households	R / hhold / month	R340
5	Average enterprise turnover per enterprise - Total turnover/ME's	R / ME / month	R6,197
6	Average enterprise profit per enterprise - ME profit/ME's	R / ME / month	R2,354
7	Total people employed per community household	# / household	0.27
8	Total people employed per enterprise	# / enterprises	1.84
9	Productivity (Income/person hours) - Total Turnover/hours worked	R / hour	R39.7
10	Average Stock value - Averatge of all stock in ME's at a point in time	R / enterprise	R503.2
11	Percentage of customers internal to community - % customers from inside village	%	86%
12	Percentage of customers external to community - % customers from outside village	%	14%
13	Average transaction size - average of all the sales sizes	R / transaction	R80.1

Post Electrification Results - Year 2

#	Individual indicators	Units	Result
1	Number of households per enterprise - total households/enterprises	Hholds per ME	6.9
2	Total ME Turnover for the community - Turn over for all ME's added up	Rand	R327,601
3	Average enterprise turnover per community household - Total turn over/households	R / hhold / month	R928
4	Average enterprise profit per community household - Total turn over/households	R / hhold / month	R339
5	Average enterprise turnover per enterprise - Total turnover/ME's	R / ME / month	R6,552
6	Average enterprise profit per enterprise - ME profit/ME's	R / ME / month	R2,391
7	Total people employed per community household	# / household	0.13
8	Total people employed per enterprise	# / enterprises	0.89
9	Productivity (Income/person hours) - Total Turnover/hours worked	R / hour	R41.6
10	Average Stock value - Averatge of all stock in ME's at a point in time	R / enterprise	R691.8
11	Percentage of customers internal to community - % customers from inside village	%	87%
12	Percentage of customers external to community - % customers from outside village	%	13%
13	Average transaction size - average of all the sales sizes	R / transaction	R77.2

Ngonyama ME activity measures - Net Change or Delta

#	Individual indicators	Pre Elec	Year One	Year Two	Year 1	Year 2	Year 1 & 2
1	Number of households per enterprise	8.6	6.9	6.9	-19%	0%	-19%
2	Total ME Turnover for the community	R259,593	R316,030	R327,601	22%	4%	26%
3	Enterprise turnover per community household	R737	R895	R928	21%	4%	26%
4	Enterprise profit per community household	R333	R340	R339	2%	0%	2%
5	Enterprise turnover per enterprise	R6,332	R6,197	R6,552	-2%	6%	3%
6	Enterprise profit per enterprise	R2,856	R2,354	R2,391	-18%	2%	-16%
7	People employed per community household	0.27	0.27	0.13	0%	-53%	-53%
8	People employed per enterprise	2.29	1.84	0.89	-20%	-52%	-61%
9	Productivity (Income/person hours)	R33	R40	R42	19%	5%	25%
10	Average Stock value	R400	R503	R692	26%	37%	73%
11	% of customers internal to community	83%	86%	87%	3%	1%	4%
12	% of customers external to community	17%	14%	13%	-14%	-7%	-20%
13	Average transaction size	R78	R80	R77	3%	-4%	-1%

Comments on the Micro Enterprise activity measures:

- Overall increase in number enterprise and enterprise turnover definitely representing an increase of overall micorenterprise activity.
- A dip in the middle survey can also be partly attributed to a lower that normal levels of disposable income in the community. The survey coincided with a short period where disability and child grants where not paid. Economically the community was foiund to be depressed during the first post electrification survey.
- Turnover and profit per enterprise stayed fairly constant, with the reflected increased volume coming rather through an increase in number. The question may be asked, due to limited staff usage – owners tends to do everything and constrained size of the immediate market – places a ceiling on the growth level?
- There was clearly a consolidation of businesses and those more robust businesses that use electricity appear to have prospered.
- Detailed analysis of the data shows that a number of the large businesses such as linen sellers have actually failed during the year, which has impacted on all the figures. This highlights the notion that extraneous factors can have an even bigger negative impact on the ME activities than electricity would. These extraneous factors include; personal circumstances (marriage, illness, death)
- Electricity based businesses have significantly increased, spaza's, tuckshops and shabeens in number directly as a result of fridges for storing larger quantities of stock and ensuring better quality cold products sold.
- The increase of new micro-enterprises is also seen in the higher levels of stock.
- However manufacturing and service related business has only seen marginal growth and no where near what would be expected. The negative impact of the drought and downturn in farming activity probably also led to the closure of certain businesses.
- Electricity whilst an ME enabling factor is not sufficient on its own – other factors include capital availability, access to markets and business skills.
- The impact of Aids was not directly measured although there is a high incidence of illness and death in the community as a result of the pandemic.

3B 5. NGONYAMA SUSTAINABLE LIVELIHOOD IMPACT MEASURE

Pre Electrification Results			
#	Individual indicators	Units	Result
1	Average employees income per community household - total employee income / # households	R / hhold / month	R26
2	Average owners income per enterprise - Total owners income / # enterprises	R / hhold / month	R2,856
3	Average household income per enterprise - Includes non ME income / # enterpises	R / hhold / month	R3,154
4	Enterprise owners per community household - Total owners income / # households	# / hhold	11%
5	Involvement of owner family members - # enterprises with family members / # enterprises	%	37%
6	Community based ownership - Total owners staying in community / # enterprise	%	100%
7	Female enterprise ownership- Total female owners staying in community / # enterprise	%	67%
8	Male enterprise ownership - Total male owners staying in community / # enterprise	%	33%

Post Electrification Results - Year 2			
#	Individual indicators	Units	Result
1	Average employees income per community household - total employee income / # households	R / hhold / month	R27
2	Average owners income per enterprise - Total owners income / # enterprises	R / hhold / month	R2,354
3	Average household income per enterprise - Includes non ME income / # enterpises	R / hhold / month	R2,525
4	Enterprise owners per community household - Total owners income / # households	# / hhold	14%
5	Involvement of owner family members - # enterprises with family members / # enterprises	%	35%
6	Community based ownership - Total owners staying in community / # enterprise	%	100%
7	Female enterprise ownership- Total female owners staying in community / # enterprise	%	71%
8	Male enterprise ownership - Total male owners staying in community / # enterprise	%	29%

Post Electrification Results - Year 2			
#	Individual indicators	Units	Result
1	Average employees income per community household - total employee income / # households	R / hhold / month	R30
2	Average owners income per enterprise - Total owners income / # enterprises	R / hhold / month	R2,391
3	Average household income per enterprise - Includes non ME income / # enterpises	R / hhold / month	R2,734
4	Enterprise owners per community household - Total owners income / # households	# / hhold	14%
5	Involvement of owner family members - # enterprises with family members / # enterprises	%	33%
6	Community based ownership - Total owners staying in community / # enterprise	%	100%
7	Female enterprise ownership- Total female owners staying in community / # enterprise	%	78%
8	Male enterprise ownership - Total male owners staying in community / # enterprise	%	23%

Ngonyama ME activity measures - Net Change or Delta							
#	Individual indicators	Pre Elec	Year One	Year Two	Year 1	Year 2	Year 1 & 2
1	Average employees income per community household	R26	R27	R30	1%	12%	13%
2	Average owners income per enterprise	R2,856	R2,354	R2,391	-18%	2%	-16%
3	Average owners household income per enterprise	R3,154	R2,525	R2,734	-20%	8%	-13%
4	Enterprise owners per community household	11%	14%	14%	26%	0%	26%
5	Involvement of owner family members	37%	35%	33%	-4%	-6%	-9%
6	Community based ownership	100%	100%	100%	0%	0%	0%
7	Female enterprise ownership	67%	71%	78%	7%	9%	16%
8	Male enterprise ownership	33%	29%	23%	-14%	-21%	-33%

Comments on the livelihood activity measures:

- In terms of benefit to the households, the ME's **do substantially** assist the 11% to 14% of households that have a business. The average owners income varying between R2856 and R2354 is greater than a typical minimum monthly wage in South Africa, being typically between R1700 and R1800 (varies according to each sector). A further relative indicator is the monthly old pension of between R700 and R780 over the 3 surveys, wich can be seen as less than a third of the micro-enterprise returns.
- No significant increase of staff numbers or staff remuneration levels following electrificaiton, in fact the level of employment from the micro enterprise decreased. Here electrification seemed to perpetuate the owner operated type business model versus a job creation model.
- 100% of the businesses are owned / operated by members of the community *(although a new spaza that was just opening during the year 2 post-electrification survey was owned by an Indian businessman from another community who was now renting a building that used to be a spaza in the pre-electrification stage)*
- Female enterprise ownership continued to increase; this is most likely to be related to the retail nature of mainly of the businesses (low capital investment and can be

undertaken alongside household chores) and the fact that many of the households are female-headed (some have not male head at all, whilst for others, the husband / partner and / or other male family members may be a way working for the majority of the year).

3B 6. NGONYAMA ENERGY AND EQUIPMENT STATISTICS

Pre Electrification Results

#	Individual indicators	Units	Result
1	Electricity consumption per enterprise - No electrification yet	R / ME / month	R0.00
2	LPG consumption per enterprise - Mainly for refrigeration	R / ME / month	R24.13
3	Paraffin consumption per enterprise	R / ME / month	R4.85
4	Wood consumption per enterprise - Mainly for beer making	R / ME / month	R2.22
5	Other Fuel consumption per enterprise - Includes generator petrol	R / ME / month	R16.13
6	Average fuel cost per month	R / ME / month	R47.93
7	Energy importance average - Value is from a 1 to 5 scale	#	3.06
8	% Businesses using electric equipment - 2 out of 36	%	6%
9	Equipment penetration - LPG/paraffin Fridge/freezer - Manually calculated totals	#	10
10	Equipment penetration - Parafin lamps - Manually calculated totals	#	11
11	Equipment penetration - Manual sewing machine - Manually calculated totals	#	8
12	Equipment penetration - Generator - Manually calculated totals	#	2
13	Equipment penetration - Electric Radio/TV - Manually calculated totals	#	1

Post Electrification Results - Year One

#	Individual indicators	Units	Result
1	Electricity consumption per enterprise - No electrification yet	R / ME / month	R22.90
2	LPG consumption per enterprise - Mainly for refrigeration	R / ME / month	R6.29
3	Paraffin consumption per enterprise	R / ME / month	R1.90
4	Wood consumption per enterprise - Mainly for beer making	R / ME / month	R19.05
5	Other Fuel consumption per enterprise - Includes generator petrol	R / ME / month	R0.95
6	Average fuel cost per month	R / ME / month	R51.09
7	Energy importance average - Value is from a 1 to 5 scale	#	4.3
8	% Businesses using electric equipment - 28 out of 42	%	67%
9	Equipment penetration - LPG/paraffin Fridge/freezer - Manually calculated totals	#	2
10	Equipment penetration - Electric Fridge/freezer - Manually calculated totals	#	15
11	Equipment penetration - Electric lights - Manually calculated totals	#	30
12	Equipment penetration - Manual sewing machine - Manually calculated totals	#	4
13	Equipment penetration - Electric sewing machine - Manually calculated totals	#	5
14	Equipment penetration - Electric Radio/TV - Manually calculated totals	#	4
15	Equipment penetration - Drill/welder/grinder - Manually calculated totals	#	3

Post Electrification Results - Year Two

#	Individual indicators	Units	Result
1	Electricity consumption per enterprise - No electrification yet	R / ME / month	R45.51
2	LPG consumption per enterprise - Mainly for refrigeration	R / ME / month	R0.85
3	Paraffin consumption per enterprise	R / ME / month	R2.56
4	Wood consumption per enterprise - Mainly for beer making	R / ME / month	R9.87
5	Other Fuel consumption per enterprise - Includes generator petrol	R / ME / month	R0.64
6	Average fuel cost per month	R / ME / month	R59.44
7	Energy importance average - Value is from a 1 to 5 scale	#	4.9
8	% Businesses using electric equipment - 33 out of 40	%	83%
9	Equipment penetration - LPG/paraffin Fridge/freezer - Manually calculated totals	#	2
10	Equipment penetration - Electric Fridge/freezer - Manually calculated totals	#	28
11	Equipment penetration - Electric lights - Manually calculated totals	#	46
12	Equipment penetration - Manual sewing machine - Manually calculated totals	#	2
13	Equipment penetration - Electric sewing machine - Manually calculated totals	#	8
14	Equipment penetration - Electric Radio/TV - Manually calculated totals	#	6
15	Equipment penetration - Drill/welder/grinder - Manually calculated totals	#	3

Net Change or Delta

#	Individual indicators	Pre Elec	Year One	Year Two	Year 1	Year 2	Year 1 & 2
1	Electricity consumption per enterprise	R0.00	R22.90	R45.51	na	99%	na
2	LPG consumption per enterprise	R24.13	R6.29	R0.85	-74%	-87%	-96%
3	Paraffin consumption per enterprise	R4.85	R1.90	R2.56	-61%	35%	-47%
4	Wood consumption per enterprise	R2.22	R19.05	R9.87	757%	-48%	344%
5	Other Fuel consumption per enterprise	R16.13	R0.95	R0.64	-94%	-33%	-96%
6	Average fuel cost per enterprise	R47.93	R51.09	R59.44	7%	16%	24%
7	Energy importnace average	3.1	4.3	4.9	40%	15%	61%
8	% Businesses using electric equipment	6%	67%	83%	1100%	24%	1385%

Comments on the energy and equipment statistics:

- The ranking of the importance of energy by respondents increased over each of the three surveys, 3.1 to 4.3 then 4.9 out of 5. Thus, the business proprietors themselves perceived energy to be of increasing importance. The coming of electricity and the practical impact this had on the various businesses is the singular factor that occurred during the life of the survey to impact such perceptions.

- Percentages of businesses using electric equipment went up from 6% to 67% and on to 83% - substantial conversion to using electricity.
- The reliance on electricity by the ME's from post electrification year 1 to year 2, indicates a continued growth. This trend can be partly explained by the need to save cash for the purchase of equipment (saving for electrical sewing machine cables, conversions etc.) which takes time on the one hand and related to some business growth (e.g. purchase of additional fridge's).
- The use of LPG and of paraffin declined significantly over the survey period, whereas electricity increases where sufficient to raise overall fuel costs by 24% over the survey period.
- The use of electric lighting showed a significant increase and the ME's themselves indicated (both in the quantitative surveys and the focus groups) that this was very beneficial to their businesses.
- Second most common item was fridges again related to the retail business growth.
- Fuel costs as a percentage of all costs increased over the period. It is worth postulating that there were two possible reasons for this. Firstly more electricity was being consumed for fridges, lighting and so forth. The second reason, probably more debatable but none the less probably true is that with electricity there is a single fuel bill to be paid or electricity pre purchased enabling proprietors to have a clearer understanding of the costs incurred. Prior to the arrival of electricity multiple energy was used such as candles, wood, paraffin and batteries making the tracking of energy costs all the more difficult.

3B 7. NGONYAMA OTHER CALCULATED QUANTITATIVE DATA

Pre Electrification Results

#	Calculated indicator	Units	Result
1	Percentage of original owners	%	100%
2	Average educational level - scale 1 to 12		6.1
3	Average yearly activity - 100% equal all months of year		75%
4	Average area of premises	m sq	17.68
5	Percentage of businesses giving credit - # giving credit / # ME's		67%
6	Credit % of turnover - Value of Turnover on credit as % of Turnover		27%
7	Bad debt % - % of debt that is not paid up		8%
8	Percentage of enterprise having a bank account		19%
9	Adjuged percentage with growth potential - Y/N basis		75%

Post Electrification Results - Year One

#	Calculated indicator	Units	Result
2	Percentage of original owners	%	100%
3	Average educational level - scale 1 to 12		6.6
4	Average yearly activity - 100% equal all months of year		77%
5	Average area of premises	m sq	19.7
6	Percentage of businesses giving credit - # giving credit / # ME's		79%
7	Credit % of turnover - Value of Turnover on credit as % of Turnover		24%
8	Bad debt % - % of debt that is not paid up		6%
9	Percentage of enterprise having a bank account		31%
10	Adjuged percentage with growth potential - Y/N basis		69%

Post Electrification Results - Year Two

#	Calculated indicator	Units	Result
2	Percentage of original owners	%	100%
3	Average educational level - scale 1 to 12		6.7
4	Average yearly activity - 100% equal all months of year		75%
5	Average area of premises	m sq	20.1
6	Percentage of businesses giving credit - # giving credit / # ME's		77%
7	Credit % of turnover - Value of Turnover on credit as % of Turnover		23%
8	Bad debt % - % of debt that is not paid up		4%
9	Percentage of enterprise having a bank account		33%
10	Adjuged percentage with growth potential - Y/N basis		67%

Ngonyama other activity measures - Net Change or Delta

#	Calculated indicator	Pre Elec	Year One	Year Two	Year 1	Year 2	Year 1 & 2
2	percentage of original owners	100%	100%	100%	0%	0%	0%
3	Average educational level	6.1	6.6	6.7	7%	2%	9%
4	Average yearly activity	75%	77%	75%	3%	-3%	0%
5	Average area of premises	17.7	19.7	20.1	11%	2%	14%
6	Percentage of businesses giving credit	67%	79%	77%	18%	-2%	15%
7	Credit % of turnover	27%	24%	23%	-11%	-4%	-15%
8	Bad debt %	8%	6%	4%	-29%	-34%	-53%
9	Percentage of enterprise having a bank account	19%	31%	33%	59%	8%	71%
10	Adjuged percentage with growth potential	75%	69%	67%	-8%	-3%	-11%

Comments on the energy and equipment statistics:

- The educational level of those involved in the ME's had increased by 9%
- Significant jump in businesses giving credit, from 67% to 79% then back to 77% in the third survey. This is inline with the trend that the business draw effectively from the same pool of community money, meaning increased pressure to give credit to make sales in a greater traded market. The community as a whole can be seen to be in a worse position or debt spiral.
- Yet the credit as a percentage of turn over decreased. This could possibly due to the increase in working capital throughout, as all the new entrants have purchased stock to enter the market for a first time.
- Bad debts have also declined over the 3 surveys. Where the measured value of what percentage of credit not paying has lowered from 8 to 4 %. From the interviews a hardening of sentiment towards credit and outstanding credit in this instance

particularly amongst existing owners was evident. This is simply to the decline in credit as a percentage of turnover.

- A significant jump as well in businesses using a bank account, from 19 to 33% or an overall increase of 71%. Many businesses opening since electrification are owners amongst the higher income earners (have funds for a fridge & stock) hence, the likelihood of having a bank account is higher.
- The number of businesses with adjudged growth potential has declined. Primarily related to the vulnerability of the many retail businesses, all fishing from the same economic pond.

3B 8. NGONYAMA BY TYPE ANALYSIS

The following tables show a breakdown of business numbers in a combined format together with a drill down set of data into main variables such as turnover profit etc.

	Pre elctrification				Post Year one				Post Year Two			
Enterprise type	# from sweep	%	# of Inter	%	# from sweep	%	# of Inter	%	# from sweep	%	# of Inter	%
Brickmaker	2	5%	1	3%	1	2%	1	2%	1	2%	1	3%
Builder	1	2%	1	3%		na		na		na		na
Energy seller	2	5%	2	6%	3	6%	3	7%	1	2%	1	3%
Grass products	1	2%	1	3%		na		na		na		na
Fruit & Veg		na		na	1	2%	1	2%	2	4%	2	5%
Household linens	2	5%	2	6%	1	2%	1	2%		na		na
Mechanical repairs	1	2%	1	3%		na		na		na		na
Phone		na		na		na		na	1	2%	0	na
Sales Agent - Crockery		na		na	1	2%	1	2%	1	2%	1	3%
Sewing	8	20%	7	19%	8	16%	7	17%	7	14%	7	18%
Shabeen	5	12%	4	11%	8	16%	6	14%	6	12%	6	15%
Spaza Big	2	5%	2	6%	2	4%	2	5%	2	4%	2	5%
Spaza Small	3	7%	3	8%	8	16%	5	12%	11	22%	11	28%
Taxi - big	2	5%	1	3%	2	4%	2	5%	2	4%	1	3%
Taxi - small	1	2%	1	3%	1	2%	1	2%		na		na
Tractor hire	3	7%	3	8%	3	6%	3	7%	2	4%	2	5%
Tuck shop	7	17%	6	17%	10	20%	7	17%	13	25%	4	10%
Welder/fabricator		na		na	1	2%	1	2%	1	2%	1	3%
Xhosa beer seller	1	2%	1	3%	1	2%	1	2%	1	2%	1	3%
Total Enterprise	**41**	**100.0%**	**36**	**100.0%**	**51**	**100.0%**	**42**	**100.0%**	**51**	**100.0%**	**40**	**100.0%**

Average Monthly Turnover by type						Average Monthly Profit by type					
Pre Elec	Post Year One	Post Year Two	Average Monthly Turnover change			Pre Elec	Post Year One	Post Year Two	Average Monthly Profit change		
Average turnover	Average turnover	Average turnover	Pre - Y1	Y1- Y2	Pre - Y2	Average profit	Average profit	Average profit	Pre - Y1	Y1- Y2	Pre - Y2
6,350	10,500	3,000	65%	-71%	-53%	4,940	5,502	2,200	11%	-60%	-55%
4,730	0	0	-100%	na	-100%	3,225	0	0	-100%	na	-100%
424	298	22	-30%	-93%	-95%	111	68	8	-39%	-88%	-93%
960	0	0	-100%	na	-100%	960	0	0	-100%	na	-100%
0	2,452	7,476	na	205%	na	0	472	1,038	na	120%	na
9,000	3,000	0	-67%	-100%	-100%	6,565	1,780	0	-73%	-100%	-100%
1,620	0	0	-100%	na	-100%	1,620	0	0	-100%	na	-100%
0	0	0	na	na	na	0	0	0	na	na	na
0	14,000	4,000	na	-71%	na	0	14,000	756	na	-95%	na
850	1,516	2,775	78%	83%	226%	339	697	1,136	106%	63%	235%
2,468	2,651	5,257	7%	98%	113%	656	657	1,492	0%	127%	128%
30,938	51,703	49,922	67%	-3%	61%	6,420	11,460	12,648	79%	10%	97%
3,873	3,284	2,868	-15%	-13%	-26%	1,111	1,089	946	-2%	-13%	-15%
40,000	34,160	42,060	-15%	23%	5%	22,600	16,960	18,660	-25%	10%	-17%
350	350	0	0%	-100%	-100%	275	275		0%	-100%	-100%
14,250	14,250	12,125	0%	-15%	-15%	6,087	6,087	8,400	0%	38%	38%
500	596	577	19%	-3%	15%	172	148	141	-14%	-5%	-18%
0	0	2,600	na	na	na	0	0	2,400	na	na	na
1,500	4,800	4,800	220%	0%	220%	943	1,712	3,575	82%	109%	279%
6,332	**6,197**	**6,424**	**-2%**	**4%**	**1%**	**2,856**	**2,354**	**2,345**	**-18%**	**0%**	**-18%**

Total Monthly Turnover by type

Pre Elec	Post Year One	Post Year Two	Total Monthly Turnover change		
Total turnover	Total turnover	Total turnover	Pre Elec	Post Year One	Post Year Two
12,700	10,500	3,000	-17%	-71%	-76%
4,730	0	0	-100%	na	-100%
847	894	22	6%	-98%	-97%
960	0	0	-100%	na	-100%
0	2,452	14,952	na	510%	na
18,000	3,000	0	-83%	-100%	-100%
1,620	0	0	-100%	na	-100%
0	0	0	na	na	na
0	14,000	4,000	na	-71%	na
6,803	12,127	19,427	78%	60%	186%
12,338	21,205	31,544	72%	49%	156%
61,875	103,405	99,843	67%	-3%	61%
11,620	26,269	31,545	126%	20%	171%
80,000	68,320	84,120	-15%	23%	5%
350	350	0	0%	-100%	-100%
42,750	42,750	24,250	0%	-43%	-43%
3,500	5,957	7,498	70%	26%	114%
0	0	2,600	na	na	na
1,500	4,800	4,800	220%	0%	220%
259,593	**316,030**	**327,601**	**22%**	**4%**	**26%**

Total Monthly Profit by type

Pre Elec	Post Year One	Post Year Two	Total Monthly Profit change		
Total Profit	Total Profit	Total Profit	Pre Elec	Post Year One	Post Year Two
9,880	5,502	2,200	-44%	-60%	-78%
3,225	0	0	-100%	na	-100%
222	203	8	-8%	-96%	-96%
960	0	0	-100%	na	-100%
0	472	2,076	na	340%	na
13,130	1,780	0	-86%	-100%	-100%
1,620	0	0	-100%	na	-100%
0	0	0	na	na	na
0	14,000	756	na	-95%	na
2,712	5,579	7,949	106%	42%	193%
3,278	5,253	8,953	60%	70%	173%
12,839	22,920	25,296	79%	10%	97%
3,334	8,714	10,405	161%	19%	212%
45,200	33,920	37,320	-25%	10%	-17%
275	275	0	0%	-100%	-100%
18,260	18,260	16,800	0%	-8%	-8%
1,203	1,481	1,836	23%	24%	53%
0	0	2,400	na	na	na
943	1,712	3,575	82%	109%	279%
117,081	**120,072**	**119,574**	**3%**	**0%**	**2%**

Average Monthly Electricity usage by type

Pre Elec	Post Year One	Post Year Two	Average monthly Electricity usage change		
Average Electricity	Average Electricity	Average Electricity	Pre - Y1	Y1- Y2	Pre - Y2
0.0	0.0	0.0	na	na	na
0.0	0.0	0.0	na	na	na
0.0	3.3	5.0	na	50%	na
0.0	0.0	0.0	na	na	na
0.0	0.0	12.0	na	na	na
0.0	0.0	0.0	na	na	na
0.0	0.0	0.0	na	na	na
0.0	0.0	0.0	na	na	na
0.0	0.0	0.0	na	na	na
0.0	9.6	18.7	na	96%	na
0.0	30.8	49.2	na	59%	na
0.0	82.5	150.0	na	82%	na
0.0	41.0	41.4	na	1%	na
0.0	0.0	100.0	na	na	na
0.0	0.0	0.0	na	na	na
0.0	0.0	2.5	na	na	na
0.0	13.6	20.0	na	47%	na
0.0	0.0	100.0	na	na	na
0.0	0.0	0.0	na	na	na
0.0	**18.9**	**34.8**	**na**	**85%**	**na**

Average Monthly LPG usage by type

Pre Elec	Post Year One	Post Year Two	Average monthly LPG usage change		
Average LPG	Average LPG	Average LPG	Pre - Y1	Y1- Y2	Pre - Y2
0.0	0.0	0.0	na	na	na
0.0	0.0	0.0	na	na	na
0.0	0.0	0.0	na	na	na
0.0	0.0	0.0	na	na	na
0.0	0.0	0.0	na	na	na
0.0	0.0	0.0	na	na	na
0.0	0.0	0.0	na	na	na
0.0	0.0	0.0	na	na	na
0.0	0.0	0.0	na	na	na
0.0	0.0	0.0	na	na	na
35.0	0.0	0.0	-100%	na	-100%
178.0	0.0	0.0	-100%	na	-100%
55.0	33.0	3.0	-40%	-91%	-95%
0.0	0.0	0.0	na	na	na
0.0	0.0	0.0	na	na	na
0.0	0.0	0.0	na	na	na
24.7	0.0	0.0	-100%	na	-100%
0.0	0.0	0.0	na	na	na
0.0	0.0	0.0	na	na	na
21.2	**5.2**	**0.6**	**-76%**	**-88%**	**-97%**

Average Monthly Paraffin usage by type

Pre Elec	Post Year One	Post Year Two	Average monthly paraffin usage change		
Average Paraffin	Average Paraffin	Average Paraffin	Pre - Y1	Y1- Y2	Pre - Y2
0.0	0.0	0.0	na	na	na
0.0	0.0	0.0	na	na	na
0.0	0.0	0.0	na	na	na
0.0	0.0	0.0	na	na	na
0.0	0.0	0.0	na	na	na
0.0	0.0	0.0	na	na	na
0.0	0.0	0.0	na	na	na
0.0	0.0	0.0	na	na	na
0.0	0.0	0.0	na	na	na
5.0	0.0	0.0	-100%	na	-100%
5.0	0.0	0.0	-100%	na	-100%
40.0	40.0	50.0	0%	25%	25%
10.0	0.0	0.0	-100%	na	-100%
0.0	0.0	0.0	na	na	na
0.0	0.0	0.0	na	na	na
0.0	0.0	0.0	na	na	na
0.0	0.0	0.0	na	na	na
0.0	0.0	0.0	na	na	na
0.0	0.0	0.0	na	na	na
4.3	**1.6**	**2.0**	**-63%**	**25%**	**-54%**

Average Monthly Total energy usage by type

Pre Elec	Post Year One	Post Year Two	Average monthly Energy usage change		
Average energy	Average Energy	Average Energy	Pre - Y1	Y1- Y2	Pre - Y2
0.0	0.0	0.0	na	na	na
0.0	0.0	0.0	na	na	na
0.0	3.3	5.0	na	50%	na
0.0		0.0	na	na	na
0.0	0.0	12.0	na	na	na
0.0	0.0	0.0	na	na	na
80.0	0.0	0.0	-100%	na	-100%
0.0	0.0	0.0	na	na	na
0.0	0.0	0.0	na	na	na
6.1	9.6	18.7	57%	96%	206%
44.3	30.8	49.2	-30%	59%	11%
368.0	122.5	200.0	-67%	63%	-46%
128.9	79.0	46.6	-39%	-41%	-64%
0.0	0.0	100.0	na	na	na
0.0	0.0	0.0	na	na	na
0.0	0.0	2.5	na	na	na
24.7	13.6	20.0	-45%	47%	-19%
0.0	0.0	100.0	na	na	na
80.0	800.0	385.0	900%	-52%	381%
42.1	**42.1**	**45.5**	**0%**	**8%**	**8%**