PDF-XChange
Click to buy NOW!
www.docu-track.com

PDF-XChange
Click to buy NOW!
www.docu-track.com

our future through science

Business Plan:
Agro-processing machinery manufacturing

Revision 1.0
30 January 2015

Prepared by: CSIR Enterprise Creation for Development
Address: PO Box 395, Pretoria, 0001

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

EXECUTIVE SUMMARY

In 2013, the CSIR's Enterprise Creation for Development (ECD) Unit was commissioned by the then North West Department of Economic Development, Environment, Conservation and Tourism to assess the viability of establishing a metal fabrication industrial park at Matlosana. The results of the assessment indicated that in the short-term it was not advisable to establish such an industrial park and instead, some of the value addition opportunities identified should be further investigated in detail. The intention was to eventually establish enterprises that could exist as potential tenants for the envisaged industrial park.

The manufacturing of agro-processing machinery was one of the opportunities identified, based on the following factors:

- Alignment with the National Infrastructure Plan 2012, Strategic Integrated Project (SIP4) re the un-locking of economic opportunities in the North West province.
- A need to stimulate industrial investment in Matlosana.
- The multiplier impacts of metal fabrication on upstream and downstream industries.
- The current drive towards import replacement.
- Most agricultural products are sent out of the North West province as un-beneficiated commodities, and then brought back in processed form, due to the lack of processing capacity in the province.

ECD was subsequently commissioned by the North West Department of Economy and Enterprise Development to assess the viability of the opportunity to establish and operate an enterprise for the manufacturing of agro-processing machinery in Matlosana. The types of machines selected for production include de-huller machines; peanut shelling machines; winnowers; and threshers. These would initially be targeted at small and medium-sized farmers:

The key findings from the feasibility study were as follows:

The **situational analysis** indicated that Matlosana could be a good location for the establishment and operation of an enterprise that manufactures agro-processing machinery, based on the following:

- The required human resources and skills are available in the Matlosana area;
- The North West University is located in the same district municipality, and it has the capacity to provide technical and business support services required by the enterprise;
- The provision of water and waste management is reliable, even though some problems are being experienced with electricity supply; and
- There is a good network of road infrastructure that joins Matlosana to the main towns and cities for transporting raw material from suppliers and finished goods to the markets.

The main finding from the **market study** was that the enterprise would have a competitive advantage over other suppliers of agro-processing machinery, because it will be supplying to small and medium-sized farming operations. The study found the following:

- Most types of smaller agro-processing machinery are currently being imported;
- Large manufacturing companies for agro-processing machinery mainly focus on larger established farming operations;

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

- Small and medium-sized farmers are a focus for government departments and incentives; and
- The enterprise would sell 48 units of each machine during the first year of operation, and then increase its sales to 63 units of each machine by the fourth year.

The **technical study** found that the enterprise could be feasible from a technical perspective. Other findings were as follows:

- There is space available in a privately owned industrial village in Orkney that can be leased by the enterprise;
- Quality assurance will be important to ensure reliable products that are easy to maintain; and
- The capital and pre-production expenditure during the establishment of the enterprise would amount to approximately R4.4 million, the bulk of which would go towards the procurement of the fabrication equipment (R3 million).

The **financial study** found that this opportunity could warrant investment, as it would yield positive financial returns:

- The enterprise could have a positive cash flow from the start, if grant funding of R4.6 million is available as an investment into the enterprise;
- The enterprise will make a financial loss during the first three years and start making marginal positive net profits from year four onwards.
- At a discount rate of 1% the net present value will be about R2.5 million and the internal rate of return will be about 7%, indicating that the enterprise could be financially sustainable.

Based on the assumptions for the market, technical and financial analysis, the agro-processing machinery manufacturing enterprise in Matlosana could be viable. Furthermore, the economic benefits of the enterprise would include an average gross value added of R2.5 million per annum, seven direct jobs and the support of the livelihoods of an additional nine people.

It is therefore recommended that the enterprise be established, and that a phased implementation approach is adopted, as outlined below:

- Phase 1 – Production facility set-up;
- Phase 2 – Recruitment, training and procurement; and
- Phase 3 – Production and sales.

Throughout the establishment and development of the enterprise, stakeholder and community involvement will need to be carefully managed. An important element of the business plan implementation will be the continuous review and re-planning of project details.

Total grant funding of R4.6 million (including VAT) will be needed over a two year period. If such funding could be secured, the business will have a positive cash flow from the outset. Therefore it is critical that the involved stakeholders make a long term commitment to fund the establishment and operations of the business. It needs to be noted that no budget has been included for the services of an implementing agent contracted to implement the business plan.

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

TABLE OF CONTENTS

PDF-XChange
Click to buy NOW!
www.docu-track.com

PDF-XChange
Click to buy NOW!
www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

GLOSSARY OF TERMS

ARC	-	Agricultural Research Council
COMFAR	-	UNIDO Computer Model for Feasibility Analysis and Reporting
CSIR	-	Council for Scientific and Industrial Research
DARD	-	NW Department of Agriculture and Rural Development
DEDECT	-	NW Department of Economic Development, Environment, Conservation and Tourism (former name)
DEED	-	NW Department of Economy and Enterprise Development
DKKDM	-	Dr Kenneth Kaunda District Municipality
ECD	-	Enterprise Creation for Development Unit of the CSIR
EIA	-	Environmental impact assessment
EIP	-	NW Province Environmental Implementation Plan
GAIF	-	Global Agro Industry Forum
GDP	-	Gross domestic product
GVA	-	Gross value added
IDP	-	Integrated Development Plan
IPAP	-	Industrial Policy Action Plan
IRR	-	Internal rate of return
ISRDP	-	Integrated Sustainable Rural Development Programme
km^2	-	Square kilometre
LED	-	Local economic development
LIC	-	Low income country
LM	-	Local municipality
LMIC	-	Lower to middle income country
m^2	-	Square metre
MGDS	-	Matlosana Growth and Development Strategy
MLM	-	Matlosana Local Municipality
NAFU	-	National African Farmers Union
NDP	-	National Development Plan
NGP	-	New Growth Path
NIPF	-	National Industrial Policy Framework
NPO	-	Non-profit Organisation
NPV	-	Net present value
NW	-	North West
NWDC	-	NW Development Corporation
NWU	-	NW University
OHS	-	Occupational health and safety
PGDS	-	Provincial Growth and Development Strategy
PPPFA	-	Public Preferential Procurement Framework Act
QMS	-	Quality management system
RIDS	-	Regional Industrial Development Strategy
SA	-	South Africa
SADC	-	Southern African Development Community
SARS	-	South African Revenue Service
SEZ	-	Special Economic Zone
SIP	-	Strategic Integrated Project of the National Infrastructure Plan 2012
SMME	-	Small, Medium and Micro Enterprise
the dti	-	Department of Trade and Industry
UMIC	-	Upper to middle income country

PDF-XChange
Click to buy NOW!
www.docu-track.com

PDF-XChange
Click to buy NOW!
www.docu-track.com

UNIDO	-	United Nations Industrial Development Organization
URP	-	Urban Renewal Programme
VAT	-	Value added tax
WIP	-	Work-in-progress
WUL	-	Water use licence

PDF-XChange
Click to buy NOW!
www.docu-track.com

PDF-XChange
Click to buy NOW!
www.docu-track.com

LIST OF TABLES

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

LIST OF FIGURES

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

1 INTRODUCTION

In 2013, the then North West Department of Economic Development, Environment, Conservation and Tourism (DEDECT) identified a potential opportunity for the establishment of a metal fabrication industrial park in Matlosana. The CSIR's Enterprise Creation for Development (ECD) unit was commissioned by DEDECT to assess this opportunity with a view to develop a high-level business plan. A feasibility study was carried out, which indicated that at that stage it was not advisable to establish such a new industrial park in Matlosana.

Instead, various opportunities were identified for establishing metal fabrication enterprises, one of which is an agro-processing machinery manufacturing facility in Matlosana. In 2014, ECD was contracted by the North West Department of Economy and Enterprise Development (DEED) to conduct a feasibility study to assess the viability of such an agro-processing machinery manufacturing facility. This business plan has been prepared based on the results of the feasibility study, which are contained in the detailed appendices attached to the document, including the situational, market, technical and financial analysis.

1.1 Intent and rationale

The agro-processing sector is crucial for economic diversification in South Africa. It is a key sector with a high potential to impact the economy of the country. The sector aims to convert primary agricultural products into consumable commodities.

The manufacturing of agro-processing machinery in Matlosana could contribute to North West's economy. Furthermore, the development of the local agro-processing sector could provide an off-set market for local farmers' produce and encourage broad-based access to agriculture. The creation of linkages and marketing channels for emerging farmers should form part of initiatives to develop agro-processing activities in the province.

Due to agriculture's relative importance in North West and the fact that most of the sector's produce currently leaves the province in an unprocessed form (Urban-Econ, 2011), there is the potential to develop local processing capacity. This will not only add value and generate local jobs in agro-processing, but also in the fabrication and maintenance of the machinery.

A study of the farming outputs from North West, and the Dr Kenneth Kaunda District Municipality in particular, indicated that there could be a potential market for agro-processing machinery. This could support the establishment of a manufacturing enterprise for the fabrication of these products.

1.2 Opportunity and business description

The enterprise will be established in Matlosana, in North West, to manufacture and sell agro-processing machinery mainly to small and medium-sized crop growers. The enterprise could provide a solution to the post-harvest food processing mechanisation

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

needs of such farmers, and its products could contribute to food security and poverty alleviation.

The initial four products that will be manufactured and sold by the enterprise are winnowers, threshers, de-hullers and peanut shelling machines.

There is also a potential opportunity for other fabricated products, which could be manufactured in the same factory, with the same equipment. This would allow diversification of the products and markets of the enterprise.

1.3 Feasibility results

Some of the key results from the feasibility study are as follows:

- Situational analysis (Appendix A):
  - The North West University, as a knowledge centre located in Tlokwe, has the capacity to provide technical and business support services required by the enterprise;
  - Staff members required for the enterprise would be available in the Matlosana area;
  - The provision of essential services, such as water and waste management is reliable – however, electricity provision is not always reliable; and
  - There is a good network of road infrastructure that joins the enterprise to the main towns and cities for transporting raw material from suppliers and finished goods to the market.
- Market study (Appendix B):
  - Most types of smaller agro-processing machinery are currently imported from countries such as China, India, Brazil and the USA;
  - Large manufacturing companies for agro-processing machinery also supply agricultural equipment, and mainly focus on larger established farming operations;
  - The competitive advantage for the enterprise would be its ability to access the market of small and medium farmers, which are a focus for government departments and incentives; and
  - The enterprise would sell 48 units of each machine during the first year of operation (70% of the total production capacity), and then increase its sales to 63 units of each machine by the fourth year (100% of the capacity).
- Technical study (Appendix C):
  - The raw materials required by the enterprise include structural steel, sheet metal, screen metal, electric motors, steel flats, welding rods, other components and paint;
  - The factory will operate eight hours a day and five days a week;
  - At full capacity, the production facility will be able to make a total of 252 units of the agro-processing machines;
  - Quality assurance will be important to ensure reliable products that are easy to maintain; and
  - The capital and pre-production expenditure would amount to approximately R4.4 million, the bulk of which would go towards the procurement of the fabrication equipment (R3 million).
- Financial analysis (Appendix D):

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

- The largest cost contributors in the operation of the enterprise are labour and raw materials (especially structural steel and sheet metal).
- The enterprise could have a positive cash flow from the start, if grant funding of R4.6 million is available as an investment into the enterprise;
- The enterprise will make a financial loss during the first three years and start making marginal positive net profits from year four onwards.
- At a discount rate of 1% the net present value (NPV) will be about R2.5 million and the internal rate of return (IRR) will be about 7%, indicating that the enterprise could be financially sustainable.
- The economic benefits of the enterprise would include an average gross value added (GVA) of R2.5 million per annum, seven direct jobs and the support of the livelihoods of an additional nine people.

Based on the assumptions for the market, technical and financial analysis, the agro-processing machinery manufacturing enterprise in Matlosana could be viable, if:

- There is sufficient grant funding available;
- The raw material supply is consistent and at reasonable prices;
- The market for the machinery is thoroughly studied, accessed and sustained at the required levels;
- Product design drawings are readily available;
- Selling prices for the products, as per financial model, could be achieved or exceeded;
- Costs (including raw materials and salaries) are minimised; and
- The water and electricity supply is sufficient and reliable.

It was therefore recommended that the enterprise be established, and that a phased implementation approach is adopted, as outlined below:

- Phase 1 – Production facility set-up:
  - During this phase, investments in the form of grant funding will be made, to ensure that the production facility is fully operational in preparation for production.
  - This phase is estimated to take about six months.
- Phase 2 – Recruitment, training and procurement:
  - During this phase, the staff members will be recruited, training will be provided, and production machinery and equipment will be procured.
  - This is estimated to take a further six months.
- Phase 3 – Production and sales:
  - Products will have to be marketed and promoted to potential buyers, users and funders.
  - Production will start in the first year of operation, with the factory operating at 70% of its full capacity.
  - The production volumes will increase by about 10% per annum, until it reaches the full production capacity in the fourth year of operation.

The remainder of this document contains an operational business plan for these phases. This business plan could be used for securing investments into the enterprise.

It needs to be noted that the budgeted costs in the business plan are inclusive of value added tax (VAT) at 14%. Furthermore, no budget has been included for the services of an implementing agent contracted to implement the business plan.

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

1.4 Overall implementation plan

The overall implementation plan for the establishment of the enterprise is illustrated in Figure 1.

Phase	Activities	Year 0				Year 1 - 10			
		Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8 – Q44
1	1. Decision on investment								
	2. Set up legal entity								
	3. Implement governance activities								
2	4. Recruitment, market and training								
	5. Procurement of machinery and equipment								
3	6. Production and sales								

Figure 1: Phased approach

Table 1 sets out the high level activities required for the implementation.

Table 1: Overall action plan

Activities	Detailed activities	Accountability	Target start date	Target end date
1. Decision on investment	Approval of funding and conditions	DEED, Implementing Agent	Year 0, Month 1	Year 0, Month 2
2. Set up legal entity	Table 4	DEED, Implementing Agent	Year 0, Month 3	Year 0, Month 4
3. Implement HR & governance activities	Table 4	Board, Implementing Agent	Year 0, Month 5	Year 0, Month 5
4. Recruitment, market, & training	Table 4	Management, Board, Implementing Agent	Year 0, Month 5	Year 0, Month 7
5. Procurement of Machinery and Equipment	Table 3	Management	Year 0, Month 5	Year 1, Month 2
6. Production and sales	Table 2, Table 3	Management	Year 1, Month 1	Year 10, Month 22

2 BUSINESS AND PRODUCTS

2.1 Policy and strategy alignment

A number of policies and strategies were taken into consideration during the feasibility study. These include the Integrated Development Plan of the Matlosana Local Municipality, the Dr Kenneth Kaunda District Municipality IDP and the Provincial Growth and Development Strategy of North West.

The purpose for the review of the policies was to ensure that the enterprise would be aligned with the economic development, job creation and poverty alleviation agenda of the national, provincial and local governments. For more details refer to section A.4.1 of this document.

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

2.2 Provincial and local economic context

North West has various major economic activities that include agriculture, mining, manufacturing, finance and business services. According to 2009 statistics, these activities contribute 3.4%, 19.8%, 13.3%, and 15.8% respectively to the provincial outputs. The province as a whole contributes 6% to the South African economy. Matlosana Local Municipality and Dr Kenneth Kaunda District Municipality have their major economic activities in mining and agriculture.

Labour is one of the key resources for the production of goods and services. Workers with the right kind of skills for the enterprise are available in the Matlosana area.

In terms of infrastructure, the following was found:

- Matlosana has effective and convenient local road infrastructure to link it to large metropolitan markets, and the roads seem to be well maintained;
- Fixed line telecommunication, as well as cellular networks, is available for voice and data communication;
- Matlosana currently experiences unstable electricity supply; and
- The water in Matlosana has Blue Drop certification.

For more details refer to section A.4.2 of this document.

2.3 Location and site

Dr Kenneth Kaunda is one of the four district municipalities of North West, with the major town being Klerksdorp. It covers an area of 15 712 km^2 and has a population of about 700 000.

Orkney is one of the main towns in the district that also includes Klerksdorp and Potchefstroom. The enterprise will be located in a privately owned industrial village, from which factory space will be leased. For more details refer to section A.4.3 of this document.

2.4 Business concept

The enterprise will manufacture and sell agro-processing machinery mainly to small and medium farmers. Initially products will be supplied throughout the Dr Kenneth Kaunda district. Thereafter, sales and distribution will be expanded to include North West and eventually the whole of South Africa.

Once the enterprise has been established, other products could also be fabricated, as required by individuals or the industry.

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

2.5 Institutional arrangements

There are different forms of legal entities that could be considered. These include cooperatives, Section 10 companies (typically used for non-profit organisations), a public company where shares could be sold, a Proprietary Limited (Pty Ltd.) company, a partnership or a sole proprietorship. The particular conditions of the investment would dictate the type of legal entity.

The selection of the type of ownership and management structure of a business entity is normally guided by the type of investment into the business, as well as the preference of the investors. For this enterprise it is assumed that grant funding would be provided by DEED.

The beneficiaries for the proposed enterprise are also yet to be determined by DEED. Once that is done, a legal entity needs to be formed.

To enhance the potential success of the enterprise, proper governance structures have to be put in place with clearly defined roles, including:

- An oversight role (provided by a management board);
- The day-to-day management of the business processes (provided by the manager and staff members reporting to him/her).

A recommended structure for the governance of the enterprise is shown in Figure 2.

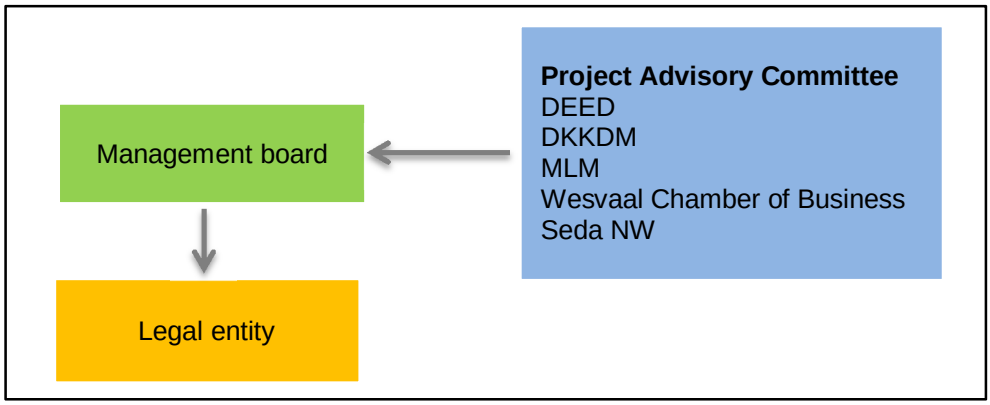


Figure 2: Governance structure

For more details refer to section C.7.1 of this document.

2.6 Products

The agro-processing machinery that will be manufactured by the enterprise is as follows:

- Peanut shelling machines (for the processing of groundnuts);
- De-huller or cleaning machines (for the processing of soya beans and sunflower seeds);
- Threshers (for the processing of maize and wheat); and
- Winnowers (for the processing of maize and wheat).

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

The enterprise staff will install the equipment on the respective customer's sites.

For these types of machinery, the customers (mainly small and medium-sized farmers) would consider cost, quality and ease of maintenance, when selecting products to buy. Therefore, the manufacturing of the machinery will be carried out based on design drawings, bills of materials and quality input materials.

In addition to the manufacturing of the four specific products, the factory could also fabricate other products made of sheet metal, using the same factory, staff and equipment. However, this will be phased in once the enterprise has been established.

For more details refer to section C.2 of this document.

3 MARKET RESEARCH, ANALYSIS AND PLAN

3.1 Customers

The main customers for the enterprise will be small and medium-sized farming operations. Initially only farmers in DR Kenneth Kaunda district will be targeted with the four types of agro-processing machinery, and thereafter also North West and the remainder of South Africa.

Later, once the enterprise has established its market, it will also fabricate other products for a wider range of customers.

3.2 Market demand and sales forecast

Statistics have shown (DARD, 2011) that agro-processing, as a subsector, is the most significant manufacturing activity within North West. The demand for agro-processing machinery is enhanced by the production of crops such as maize, sunflowers, wheat, soya and groundnuts. This demand can be further increased by retaining the opportunities for beneficiation and value addition of agricultural produce in the region.

The agro-processing machines that will be manufactured by the enterprise include peanut shelling machines, de-huller machines, threshers and winnowers. Currently the manufactured quantities of these machines in South Africa are very low. The majority of these machines are imported from countries such as China, India, Brazil and the USA (Destek, 2014).

The market size and share is estimated based on the agricultural output of the Dr Kenneth Kaunda District Municipality, the North West province and South Africa. SENWES, one of the leading agribusiness companies in Matlosana and in the country, provided the following statistics of the prominent crops of the Matlosana area:

- Maize: 704 000 ha (4.4 ton / ha), with a current processing shortfall of 30%;
- Sunflowers: 146 000 ha (1.2 ton / ha), with a current processing shortfall of 33%;
- Wheat: 40 000 ha (2.2 ton / ha), with a current processing shortfall of 60%;
- Soya: 32 000 ha (1.4 ton / ha), with a current processing shortfall of 60%; and

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

- Groundnuts: 18 000 ha (3.7 ton / ha), with a current processing shortfall of 23%.

The number of machines to be sold will escalate from 70% of the full production capacity from the first year to 100% in the fourth year, by increasing at about 10% per annum. That is, 48 of each of the four machines will be produced in the first year and 63 of each from the fourth year onwards. The sales revenue for the enterprise would increase from R2.4 million to R5.9 million over the same period.

For more details refer to section B.4.1 of this document.

3.3 Market prices

The selling prices for the respective products were determined by taking into account the current market prices (landing price of imported agro-processing machinery from China and India), as well as the production costs per product.

An average mark-up of 30% was added to the production costs to arrive at the selling prices, while still ensuring that these prices remain competitive when compared with the imported machinery.

The selling prices for the respective machines will be as follows:
- Shelling machine: R22 500;
- De-huller: R16 875;
- Thresher: R5 625; and
- Winnower: R2 250.

Furthermore, it is assumed that these prices will increase at 7% per annum.

For more details refer to section B.4.2 of this document.

3.4 Competition and competitive edge

The competitors of the enterprise are mostly distributors, who import from China, India, Brazil and the USA. These competitors are largely concentrated in the Gauteng area.

Agro-processing machinery is frequently supplied together with other agricultural machinery. Commercial enterprises are often more focused on the larger and more commercialised farmers and ignore the emerging ones.

The target market for this enterprise will mainly be emerging or small holder farms that often have a unique need for smaller, cost-effective, reliable equipment. These farmers are frequently excluded from agro-processing, due to the unaffordability of larger machinery supplied by the major suppliers.

Some competitive advantages of the enterprise are as follows:
- The focus on small and medium-sized farmers' needs;
- The strategic location of the manufacturing plant relative to the farmers;
- The close proximity to the raw material supply;

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

- An opportunity to partner with existing larger businesses, sector departments and government; and
- Competitive quality and prices;

For more details refer to section B.5 of this document.

3.5 Marketing and distribution

The agro-processing machinery will be sold to an existing market of growers, and the products will be fairly new to the sector. For a start-up enterprise to enter an existing market with new products, it is essential to build and develop a strong brand. The following channels will be used to promote the products of the enterprise:

- Newspapers;
- Community radio;
- Signboards, posters and leaflets;
- Personal contacts, including membership of farming organisations;
- Special promotions; and
- Exhibitions.

The distribution channels that the enterprise will use are as follows:

- Direct distribution to customers;
- Partnering with existing larger businesses, sector departments and government; and
- Using the services of marketing agents.

The strong agricultural presence in the Matlosana region should provide a competitive advantage for this business, due to the close proximity to its primary market. The enterprise will first market its products in the local areas, and then progressively expand provincially and nationally.

Distribution of the products will be done by using the factory bakkie, or alternatively having distributors collect products from the factory for bulk supply.

For more details refer to sections B.6 and B.7 of this document.

3.6 Market implementation plan

The plan for addressing all market related implementation is illustrated in Figure 3.

Activities	Phase 2						Phase 3	
	M7	M8	M9	M10	M11	M12	M13 – M132	
1. Develop logo								
2. Develop and print brochure								
3. Develop website								
4. Develop and print box labels								
5. Build agent relationships								
6. Develop new markets								
7. Routine operations and improvement								

Figure 3: Market implementation approach

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

Table 2 sets out the activities required for the marketing implementation.

Table 2: Market implementation action plan

Activities	Accountability	Target start date	Target end date
1. Develop logo	Board, Implementing Agent, Management	Year 0, Month 7	Year 1, Month 6
2. Develop and print brochure	Board, Implementing Agent, Management	Year 0, Month 6	Year 0, Month 7
3. Develop website	Board, Implementing Agent, Management	Year 0, Month 8	Year 0, Month 9
4. Develop and print box labels	Management	Year 0, Month 6	Year 0, Month 6
5. Build agent relationships	Management	Year 0, Month 7	Year 10, Month 12
6. Develop new markets	Management	Year 0, Month 10	Year 10, Month 12
7. Routine operations and improvement	Management, Board	Year 0, Month 10	Year 10, Month 12

4 MANUFACTURING AND OPERATIONS PLAN

4.1 Production inputs

Fabrication of agro-processing machinery requires a variety of inputs that include the following:

- Raw materials (such as structural steel, sheet metal and screen metal);
- Other materials (such as paint, grease and outsourced fitted components);
- Utilities (water and electricity);
- Skilled labour; and
- Transport.

For more details refer to section C.3.2 of this document.

4.2 Facility

4.2.1 Process flow

Figure 4 shows the process flow for the manufacturing of agro-processing equipment.

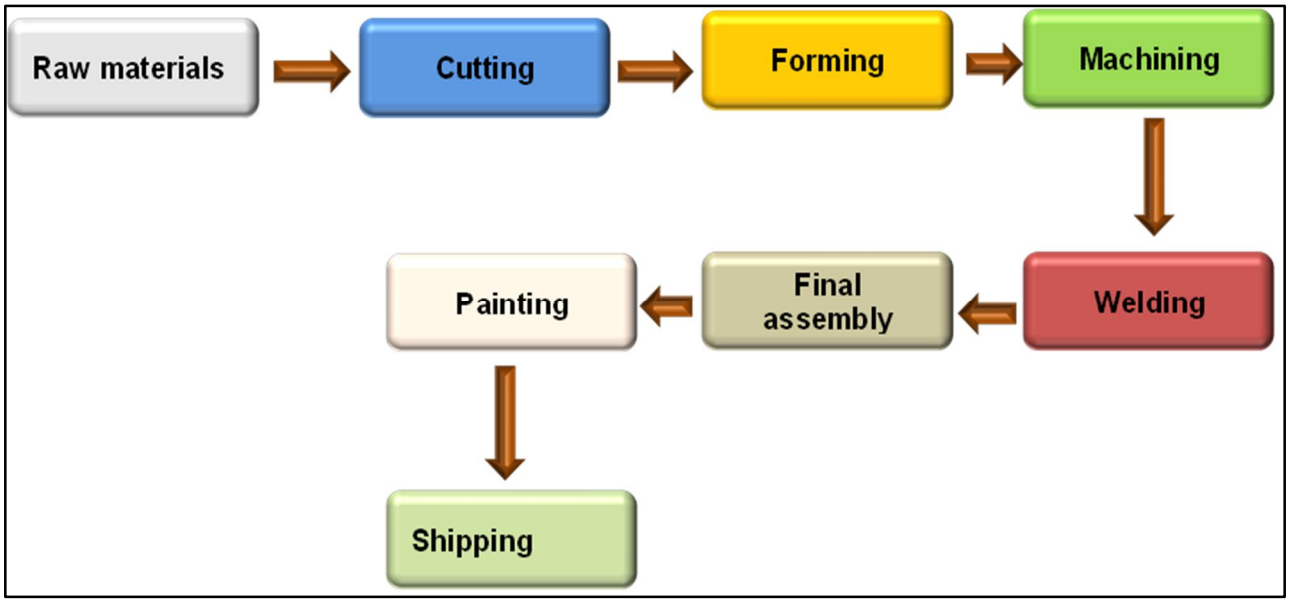


Figure 4: Process flow

For more details refer to section C.3.1 of this document.

4.2.2 Facility layout and space requirements

The detailed layout of the factory is shown in C.3.6. A total of 1 000m^2 of factory space is required for the manufacturing process, including the following areas:

- 600m^2 – Production area;
- 225m^2 – Administration and staff facilities; and
- 175m^2 – Storage space.

The factory space will be provided through renting an existing building in a privately owned industrial village in Orkney.

4.2.3 Utilities

The utilities required for the manufacturing process are as follows:

- Electricity – provided by Matlosana Local Municipality;
- Water – piped water provided by Matlosana Local Municipality; and
- Compressed air – generated by the enterprise's own compressor.

For more details refer to section C.3.2.2 of this document.

4.3 Equipment

The main equipment required for the manufacturing process includes the following:

- Lathe machine;
- Cutting or shearing machines;
- Drilling machine;
- Fabricating machine; and
- Welding machine.

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

The total cost for the equipment will be R 2 663 285. For more details refer to section C.3.4 of this document.

4.4 Regulatory and legal issues

The factory will implement all the required measures relating to occupational health and safety, including safety signage, floor demarcations, training and protective clothing.

The factory will have minimal environmental impact. No specialist environmental studies will be required, as the factory will be located in existing vacant buildings.

At the moment there is adequate water supply from the Matlosana Local Municipality. However, if a borehole have to be drilled at a later stage, a geo-hydrological study and water use licence would be required at an additional cost of R350 000.

For more details refer to section C.5 of this document.

4.5 Systems, processes and procedures

4.5.1 Quality management system (QMS)

A basic quality management system will be implemented to ensure customer satisfaction. It will include policies, procedures, drawings, specifications, welding documentation and equipment maintenance documentation. The quality system's effectiveness could be enhanced through training and mentoring.

4.5.2 Manuals and operating instructions

Suppliers of the different equipment and machinery for the factory will provide the manuals and operating instructions thereof.

Additional instructions on the process, standard operating procedures, drawings and specifications will be developed, as required for the quality system and the operation of the factory. For more details refer to section C.5.2 of this document.

4.5.3 Process yield and throughput

The enterprise will operate one eight-hour shift a day, five days a week, 52 weeks a year. At full capacity, the production facility will have the capacity to produce 252 machines per annum. In the first year of production only 192 units will be sold (70% of the total capacity). Thereafter, the production quantities will grow annually by an average of 10%, until the maximum capacity is each reached in the fourth year of operation. For more details refer to section C.3.3 of this document.

The generation of raw material waste should be kept as low as possible, in particular for sheet metal and structural steel, which contributes about 65% towards the total raw material costs. Therefore, the proper cutting of sheet metal should be ensured, to minimise waste and hence costs.

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

4.5.4 Consumables

A variety of consumables will be used in the factory, including the following:

- Welding rods and flux;
- Gas for the welding machine; and
- Office stationery.

4.5.5 Maintenance requirements

The manufacturing equipment will need regular maintenance, to ensure that the factory remains operational. This will include routine maintenance at scheduled intervals, as well as a complete overhaul of machinery after its warrantee period expires. Breakdown maintenance will be done in the event of unavoidable machine malfunction.

4.6 Supply chain and materials handling

Handling, transport and storage include raw materials, work-in-progress items and finished products. The storage area will have clearly labelled shelves and demarcated areas for each type of item. A stock control system will be implemented for the storage area.

Raw material is largely available in Klerksdorp and Potchefstroom which are located 15 km and 55 km from Orkney respectively. Raw materials will either be delivered by the suppliers, or collected with the enterprise's bakkie.

On the factory site, a forklift will be used for the handling of heavy raw materials, work-in-progress items and finished products. The forklift will also be used to load and unload the bakkie.

The target market is easily accessible by road. The finished products will be delivered with the enterprise's bakkie to individual customers, while hardware shops will collect products from the factory.

For more details refer to sections C.3.5 and C.4 of this document.

4.7 Operations implementation plan

The plan for addressing all operations related implementation is illustrated in Figure 5.

Activities	Phase 2						Phase 3	
	M7	M8	M9	M10	M11	M12	M13-M132	
1. Secure lease agreement / contract								
2. Prepare the building for installations								
3. Request quotations for equipment and machinery								
4. Acquisition of equipment and machinery								
5. Delivery and commissioning of machinery, equipment and utilities								
6. Procurement of raw materials and trial runs								
7. Full production and sales								

Figure 5: Operations implementation approach

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

Table 3 sets out the activities required for the operations implementation.

Table 3: Operations implementation action plan

Activities	Accountability	Target start date	Target end date
1. Secure lease agreement / contract	Service providers	Year 0, Month 7	Year 0, Month 7
2. Prepare the building for installations	Service providers	Year 0, Month 6	Year 0, Month 6
3. Request quotations for equipment and machinery	Implementing agent	Year 0, Month 6	Year 0, Month 7
4. Acquisition of equipment and machinery	Contractor / Implementing agent	Year 0, Month 8	Year 0, Month 9
5. Delivery and commissioning of machinery, equipment and utilities	Implementing agent	Year 0, Month 10	Year 0, Month 10
6. Procurement of raw materials and trial runs	Implementing agent	Year 0, Month 8	Year 0, Month 10
7. Full production and sales	Supplier / Implementing agent	Year 1, Month 1	Year 10, Month 12

5 HUMAN RESOURCES AND GOVERNANCE

5.1 Key management personnel

The person responsible for the day-to-day management of the enterprise will be the manager.

The manager needs to be suitably qualified and experienced to fulfil this role, and should have a formal qualification, such as a B.Eng or B.Tech mechanical engineering degree.

The duties of the manager include general administration, production supervision, marketing and financial management of the business. Some of these duties may be delegated to other staff members, but the overall accountability to the management board will remain with the manager.

For more details refer to section C.7.3 of this document.

5.2 Industry role players

Various stakeholders will need to contribute to the success of the envisaged enterprise, including the following:

- North West Department of Agriculture and Rural Development;
- Agri North West;
- AFRGI;
- National African Farmers Union;
- Wesvaal Business Chamber;
- Agricultural Research Council;

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

- Bojanala District Municipality;
- Dr Ruth Segomotsi Mompati District Municipality;
- North West University;
- Dr Kenneth Kaunda District Municipality;
- Ngaka Modiri Molema District Municipality; and
- North West Department of Economy and Enterprise Development.

For more details refer to section B.2.2 of this document.

5.3 Supporting professional advisors and services

The enterprise would initially require supporting professional advisors and services for the following:

- Technical support – product design and manufacturing support; and
- Training – financial, human resources and technical skills training.

North West University has the capacity to provide technical and business support services required by the enterprise.

5.4 Human resource requirements

A total of seven people will be employed, namely the following:

- Manager;
- Machine operators (X2);
- Assemblers (X2);
- Office administrator; and
- Driver / cleaner.

The human resource requirements have been determined based on the production at full capacity for the four types of agro-processing machines. More staff members may be required, once the enterprise starts fabricating other types of equipment also.

For more details refer to sections C.7.2 and C.7.3 of this document.

5.5 Governance

To achieve stability, consistency and continued success of the enterprise, there should be financial discipline and good governance. This will be achieved through a proper governance structure. The management board, which will comprise representatives of stakeholder organisations and beneficiaries, has to oversee the efficient use of resources and require accountability from the manager and employees.

Fiscal discipline and governance should not be negotiable. Therefore, policies and procedures need to be developed during the business establishment process, to ensure compliance with legislation, good governance and effective operations. The policies and procedures that need to be drafted and implemented have to cover the following aspects:

- Governance;

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

- Procurement;
- Financial management;
- Human resources management;
- General operations; and
- Safety, health and environmental protection.

5.6 Human resource and governance implementation plan

The plan for addressing all human resource and governance related implementation is illustrated in Figure 6.

Activities	Phase 1			Phase 2					
	M4	M5	M6	M7	M8	M9	M10	M11	M12
1. Development of the governance framework									
2. Register business as a legal entity									
3. Recruitment									
4. Training									
5. Mentorship									

Figure 6: Human resource and governance implementation plan

Table 4 sets out the activities required for the human resource and governance implementation.

Table 4: Human resource and governance implementation action plan

Activities	Accountability	Target start date	Target end date
1. Development of the governance framework	DEED / Legal entity	Year 0, Month 4	Year 0, Month 5
2. Register business as a legal entity	DEED / Legal entity	Year 0, Month 5	Year 0, Month 6
3. Recruitment	DEED / Legal entity	Year 0, Month 7	Year 0, Month 9
4. Training	Implementing agent / Service provider	Year 0, Month 10	Year 0, Month 11
5. Mentorship	Implementing agent / Service provider	Year 0, Month 11	Year 10, Month 12

6 RISK MANAGEMENT

A summary of the potential risks that have been identified for the enterprise, as well as possible ways to mitigate these, are listed in Table 5.

Table 5: Risk summary

Possible Risk	Overall risk rating	Mitigation Action
1. Raw material price variability	High	• Build and maintain strong relationships with suppliers
2. Loss of electricity supply	Medium	• Consider own backup power supply

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

Possible Risk	Overall risk rating	Mitigation Action
3. Inability to secure grant funding	Medium	• Presentation of the business plan to multiple funders
4. Low demand for products	Medium	• Marketing and promotion • Make changes to products
5. Cash flow problems due to delayed customer payments	Medium	• Take out insurance for credit or bad debt protection
6. Market collapse or economic recession	Medium	• Monitor world events for incidents that might affect the supply chain
7. Cheap agro-processing machine imports	Medium	• Negotiate lower sales prices or offer discounts
8. General liability claims	Low	• Apply quality control measures

For more details refer to section C.8 of this document.

7 FINANCIAL PLAN AND ECONOMICS OF THE BUSINESS

7.1 Costs

For any operation there are three types of costs that need to be taken into account, namely investment costs, direct operation costs and indirect operation costs. Investment costs are usually once-off costs incurred during the production facility setup or establishment phase for capital expenditure, pre-production expenses and working capital. Both direct and indirect operation costs are incurred only once production starts. Direct operation costs are linked to the number of agro-processing machines produced and sold (for example raw material costs), while indirect operation costs are incurred irrespective of the number of machines produced and sold (such as salaries).

7.1.1 Investment costs

The total investment costs for the establishment of the enterprise (Year 0) will amount to R4.4 million. A breakdown of these costs is shown in Figure 7.

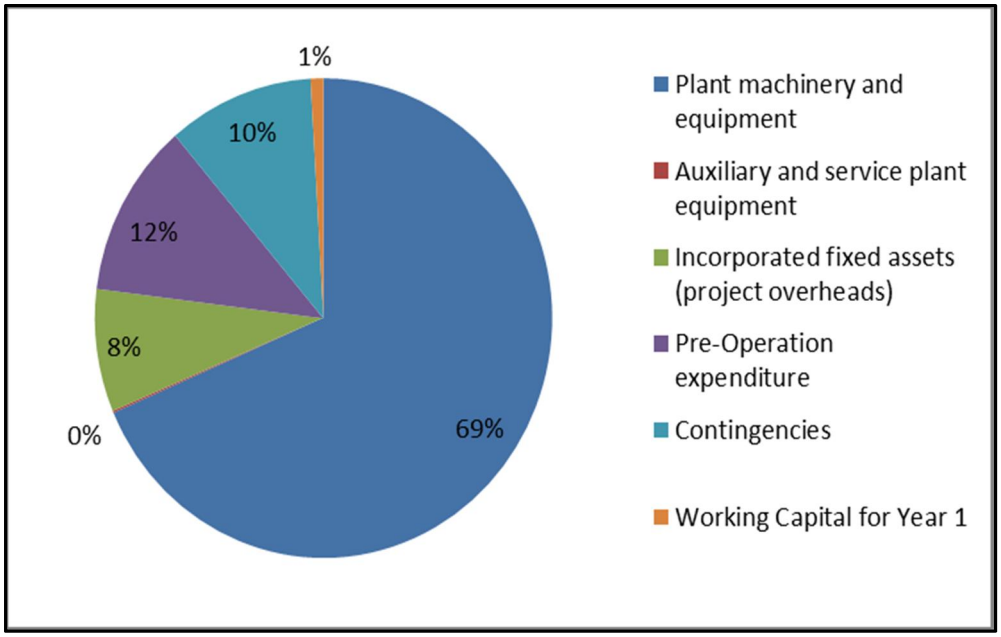


Figure 7: Investment costs

The major contributor to the total investment costs is plant machinery and equipment at 69%.

A further investment of R200 000 will be required for working capital in Year 1, to ensure that a positive cash flow is maintained.

Investment costs required in later years for the replacement of equipment, which has been fully depreciated or reached the end of its useful life, will be covered from the enterprise's retained profits.

For more details refer to section D.2.1 of this document.

7.1.2 Direct product related operation costs

The combined direct costs for all products will amount to R 857 843 in the first year of operation. A breakdown of these direct costs is illustrated in Figure 8

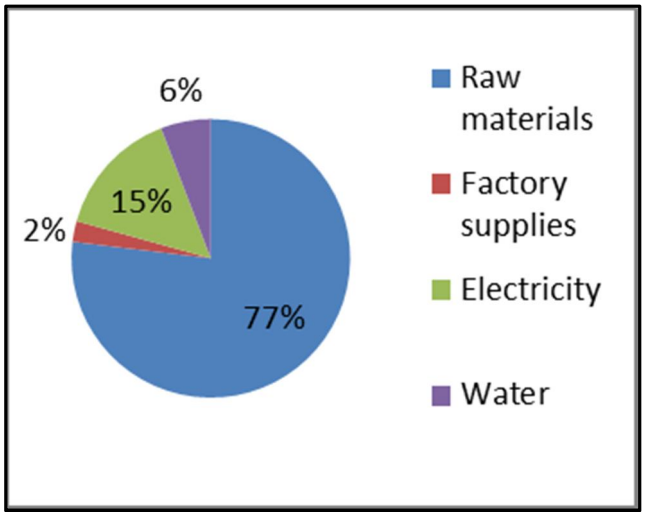


Figure 36.

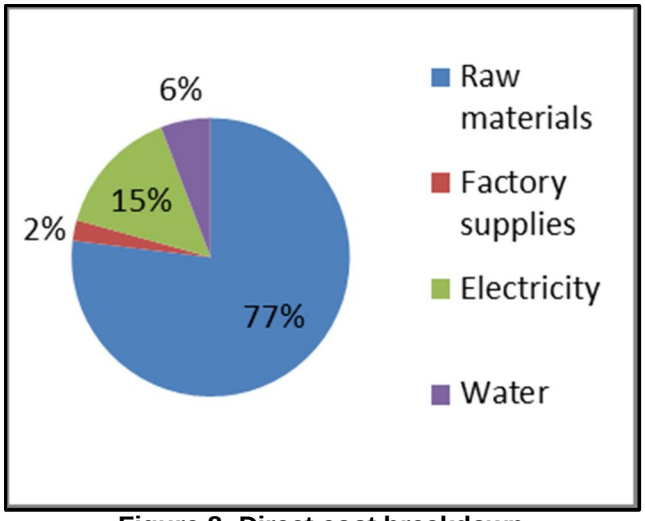


Figure 8: Direct cost breakdown

About 77% of the total direct costs are for raw materials (65% of these costs are for sheet metal and structural steel). The second largest portion, after raw materials, of the direct costs is electricity, at 15%.

For more details refer to section D.2.2 of this document.

7.1.3 Indirect operation costs

The indirect costs for the first year of operation will amount to about R2 million, and will escalate annually by 7%. A breakdown of the indirect costs is shown in Figure 9.

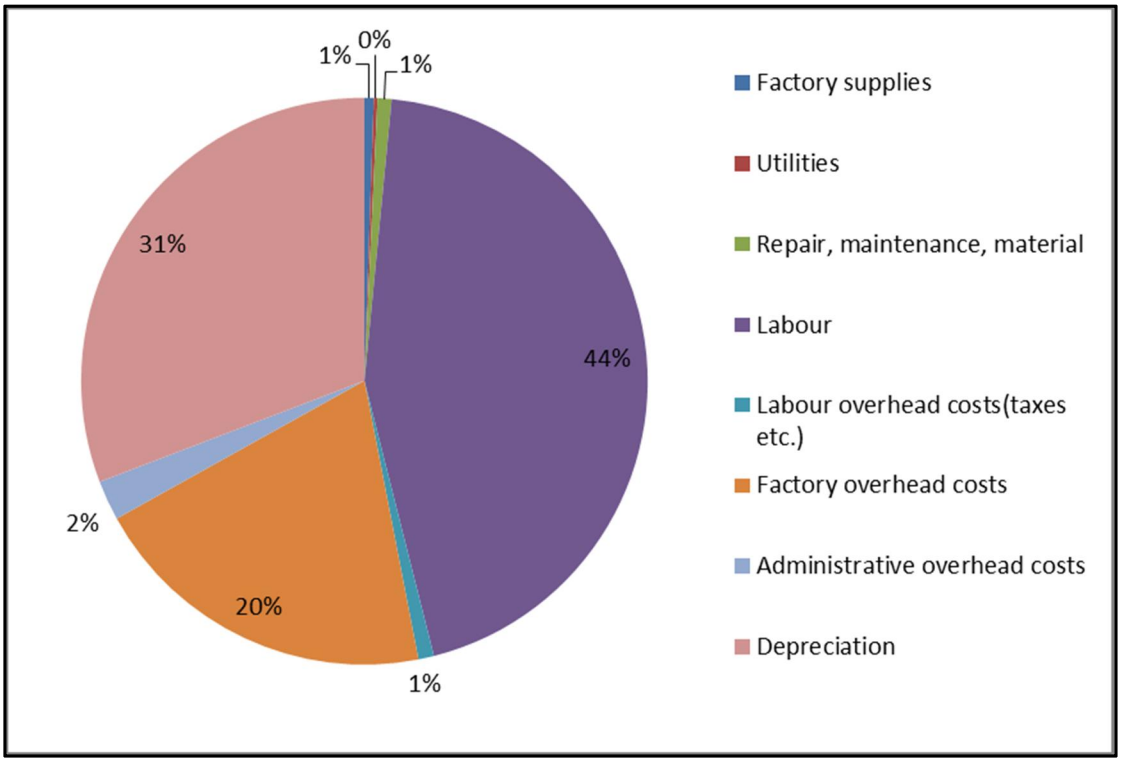


Figure 9: Indirect cost of the enterprise

About 44% of the total indirect costs are for labour. For more details refer to section D.2.3 of this document.

PDF-XChange
Click to buy NOW!
www.docu-track.com

PDF-XChange
Click to buy NOW!
www.docu-track.com

7.2 Predicted ten year financial statements

Based on the cost and sales assumptions, projected ten year income statements, balance sheets and cash flow forecasts were prepared. A summary of these financial statements is shown in Table 6, Table 7 and Table 8 respectively.

For more details refer to section D.4 of this document.

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

Table 6: Income statement

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Sales revenue	2 426 760	2 867 116	3 357 230	3 901 912	4 175 046	4 467 299	4 780 010	5 114 611	5 472 633	5 855 718
Gross profit	**(421 935)**	**(231 510)**	**(15 387)**	**229 099**	**451 275**	**337 885**	**847 820**	**920 471**	**998 207**	**1 204 109**
Taxable profit	**0**	**0**	**0**	**0**	**204 378**	**337 885**	**847 820**	**920 471**	**998 207**	**1 204 109**
Income(corporate) tax	0	0	0	0	57 226	94 608	237 390	257 732	279 498	337 150
Net profit	**421 935**	**231 510**	**15 387**	**229 099**	**394 049**	**243 277**	**610 431**	**662 739**	**718 709**	**866 958**

Table 7: Balance sheet

	Establishment (Year 0)	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Total assets	4 400 000	4 692 056	4 698 990	4 712 505	4 956 430	5 129 522	4 988 247	5 563 141	6 236 739	6 967 066	7 846 456
Total liabilities	4 400 000	4 692 056	4 698 990	4 712 505	4 956 430	5 129 522	4 988 247	5 563 141	6 236 739	6 967 066	7 846 456
Net worth	**4 400 000**	**4 178 065**	**3 946 555**	**3 931 168**	**4 160 267**	**4 554 316**	**4 797 593**	**5 408 024**	**6 070 763**	**6 789 472**	**7 656 431**

Table 8: Cash flow statement

	Establishment (Year 0)	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Total cash inflow	4 400 000	2 718 947	2 874 190	3 370 895	3 916 898	4 183 360	4 476 979	4 790 354	5 125 679	5 484 477	5 868 390
Total cash outflow	4 360 359	2 735 143	2 538 692	2 819 480	3 131 236	4 224 614	3 680 439	4 042 097	4 321 913	4 628 172	4 990 232
Surplus (deficit)	**39 641**	**16 195**	**335 497**	**551 415**	**785 663**	**41 253**	**796 540**	**748 257**	**803 766**	**856 305**	**878 158**
Cumulative cash balance	**39 641**	**23 446**	**358 943**	**910 358**	**1 696 021**	**1 654 767**	**2 451 307**	**3 199 565**	**4 003 331**	**4 859 636**	**5 737 794**

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

The combined variable and fixed costs for the first three years are more than the revenue generated – hence the enterprise will have a negative profit. However the trend is reversed from the fourth to the tenth year, with marginal profits being realised. Therefore, the enterprise has the potential to become sustainable, albeit at a survivalist level.

The balance sheet shows a positive net worth, which is an indication that the enterprise would have sufficient assets to meet its liabilities, both in short-term and long-term.

Total grant funding R4 600 000 is required cover capital expenditure and working capital for the establishment and first year of operation, in the following amounts:

- R4 400 000: Establishment (Year 0); and
- R 200 000: Operation Year 1.

If the required funding could be secured for the first two years, the business will have a positive cash flow from the outset. Therefore it is critical that the involved stakeholders make a long term commitment to fund the establishment and operations of the business.

It will be the responsibility of the business (or the implementing agent) to motivate, on an annual basis to the applicable government departments, the amount of funding required for the continued operation of the business.

7.3 Financial analysis

7.3.1 Financial ratios

When a discount rate of 1% is used:

- The net present value would be R2 5 million (refer D.5.2);
- The internal rate of return would be 7.34% (refer D.5.3); and
- The payback period would be 9.2 years (refer D.5.4).

Because the net present value is positive and the internal rate of return is greater than the discount rate, the business could be financially feasible.

7.3.2 Sensitivity analysis

A sensitivity analysis to determine the impact on the enterprise's profitability was carried out on different variables, namely:

- Reduction of product selling prices;
- Reduction in sales volumes;
- Increase in labour costs;
- Increase in raw material costs; and
- Increase in sheet metal and structural steel costs.

From this analysis it was found that a reduction in sales prices or volumes would have the largest negative impact on the profitability of the enterprise. Therefore, the following actions have to be taken:

- Building and maintaining long term relationships with customers;
- Liaising with the relevant government departments, regarding incentives to assist small farmers to buy equipment; and

- Aggressive marketing and promotion of the products.

For more details refer to section D.5.5 of this document.

7.4 Economic benefits of the business

The establishment of government funded ventures mainly aims at sparking economic activity in a chosen and specific area. Job creation also remains high on the government agenda. It is therefore important to analyse the potential of this venture to create jobs and livelihoods in Orkney and the nearby Klerksdorp.

The gross value added for this venture is expected to average at R2.6 million per annum.

This enterprise could create a total of seven sustainable job opportunities. These jobs would include the following:

- Qualified staff: 5; and
- Grade 12 or lower level jobs: 2.

In addition, this venture could contribute to the livelihoods of nine people.

For more details refer to section D.6 of this document.

PDF-XChange
Click to buy NOW!
www.docu-track.com

PDF-XChange
Click to buy NOW!
www.docu-track.com

APPENDIX A - SITUATIONAL ANALYSIS

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

A.1. INTRODUCTION AND BACKGROUND

The then North West Department of Economic Development, Environment, Conservation and Tourism (DEDECT) identified a potential opportunity for the establishment of a metal fabrication industrial park in Matlosana. This opportunity was identified based on the following:

- Alignment with National Infrastructure Plan 2012, Strategic Integrated Projects (SIPs):
  - SIP 4: Unlocking economic opportunities in NW province; and
  - SIP 8: Green energy in support of SA economy.
- A need to stimulate industrial investment in Matlosana.
- The planned Matlosana Special Economic Zone (SEZ) and N12 Development corridor plans at the City of Matlosana.
- Opportunities presented by national programmes in infrastructure, housing, minimum local content mandates and renewable energy equipment.
- Multiplier impacts of metal fabrication on upstream and downstream industries.
- The export potential to a fast-growing Southern African Development Community (SADC) market of 150 million people.
- Metal fabrication accounts for 21% of the manufacturing sector in Matlosana, equal to petroleum and chemicals.

The CSIR's Enterprise Creation for Development (ECD) unit was commissioned by DEDECT to assess this opportunity with a view to develop a high-level business plan. A feasibility study was carried out, which indicated that at this stage it is not advisable to establish a new metal fabrication, capital and transport equipment industrial park in Matlosana. Instead, it identified various opportunities for establishing metal fabrication enterprises, one of which is an agro-processing machinery manufacturing facility in Matlosana.

ECD was contracted by North West Department of Economy and Enterprise Development (DEED) to conduct a feasibility study to assess the viability of such an agro-processing machinery manufacturing facility. The project was structured in the following phases:

- Phase 1: Situational Analysis;
- Phase 2: Feasibility Study; and
- Phase 3: Business Plan or Report.

This appendix reports on the outcomes of Phase 1. It discusses the opportunity in detail; the methodology followed to gather and analyse the data and information; and the local and the provincial economic context.

A.2. OPPORTUNITY

The agro-processing sector is crucial for economic diversification in South Africa. It is a key sector with a high potential to impact the economy of the country. Agro-processing aims to convert primary agricultural products into consumable commodities. This is achieved through various processes, which include the following:

- Cutting;
- Milling;

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

- Moulding;
- Fermenting; and
- Blending.

Agro-processing machinery manufacturing in Matlosana could contribute to North West's economy in the following way:

- Adding to current activities within the Matlosana area to develop a Special Economic Zone (SEZ) and industrial development in the region;
- Contributing to food security in the area, the province and the country;
- Transferring skills and knowledge through quality products; and
- Contributing to Small, Medium and Micro Enterprise (SMME) development in the region and throughout the province.

The development of the local agro-processing sector could provide an off-set market for local farmers and encourage broad-based access to agriculture. The creation of linkages and marketing channels to emerging farmers should form part of initiatives to develop agro-processing activities.

Due to agriculture's relative importance in the North West (NW) province and the fact that most of the sector's produce leaves the province in an unprocessed form (Urban-Econ, 2011), there is the potential to develop local processing capacity. This will not only add value and generate local jobs for agro-processing, but also for the fabrication and maintenance of the machinery.

Table 9 shows the machinery that will be manufactured by the enterprise.

Table 9: Agro-processing machines to be manufactured

Machine type	Output (kg/hr)	Function	Produce processed	NW current processing capacity shortfall
Peanut shelling machine	250	Shelling is the process of separating grains from their shells or groundnuts from the portion of plant that holds them	Ground Nuts	5 200 tons (23%)
De-huller machine	180	De-hulling is process of removing the hulls or chaff from seeds	Soya Beans Sunflower	17 kilotons (60%) 100 kilotons (33%)
Thresher	400	Threshing is process of loosening the edible part of cereal, grain or other crops from the scaly, inedible chaff that surrounds it	Maize	832 kilotons (30%)
Winnower	1 000	Winnowing is the process of separating grain from the chaff	Wheat	74 000 tons (60%)

These machines were selected after an evaluation and review process, which considered amongst other things the following:

- The Production level of crops that would serve as raw material for the agro-processing machines;
- The ease of manufacturing the respective machines;
- The potential market for the machines;
- Alignment with government initiatives, in both industrial and agricultural development;

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

- Shared production lines between the various machines being produced;
- The availability of intellectual property; and
- The availability of technical skills to ensure the quality of the machines manufactured.

The machines will be sold to growers of the respective crops nationally, with NW being the core market for the machines. The product, market and promotional strategy are discussed in more detail in Appendix B.

A.3. METHODOLOGY

The feasibility study was conducted in a structured manner as illustrated in Figure 10.

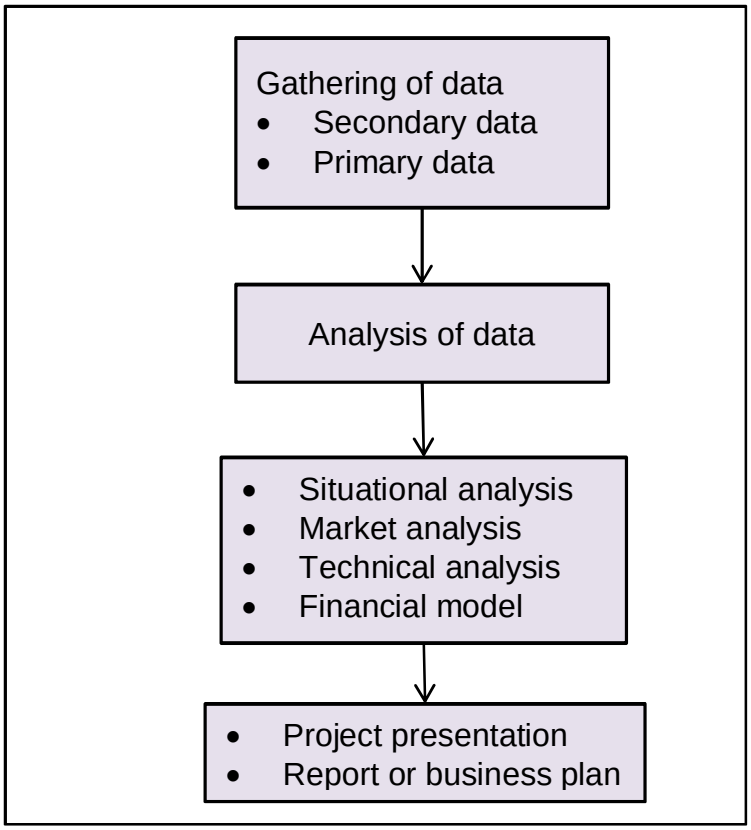


Figure 10: Methodology

Primary data was gathered through personal interviews, site visits, telephonic interviews and e-mails. Secondary data was gathered through internet searches and reviewing various documents on agriculture and agro-processing, metal fabrication and the local context.

Key stakeholders consulted include the following:

- Wesvaal Business Chamber;
- Agricultural Research Council (ARC);
- North West University (NWU);
- Dr Kenneth Kaunda District Municipality (DKKDM);
- Matlosana Local Municipality (MLM);

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

- DEED; and
- SENWES.

The data sources consulted are listed in the bibliography (Appendix F).

Primary and secondary data was used as inputs to analyse the situation, market and technical aspects of the proposed manufacturing facility. The results of the analysis were used to develop a financial model using the United Nations Industrial Development Organization (UNIDO) Computer Model for Feasibility Analysis and Reporting (COMFAR) tool. Conclusions and recommendations were made after the results of the financial model were analysed.

The results of the feasibility study were then presented to DEED, after which a decision was made to prepare a business plan.

A.4. LOCAL CONTEXT

A.4.1. Policy and Strategy Alignment

The MLM Integrated Development Plan (IDP) (Tlokwe City Council, 2013) prioritises the creation of jobs along with the Matlosana Growth and Development Strategy (MGDS) (Tlokwe City Council, 2013), which also promotes economic growth and expansion. In addition, the N12 Development Corridor which is visualised as an economic growth node can also support this metal fabrication opportunity.

It is the intent of the provincial government to identify projects to stimulate economic growth and skilled job creation, through the following interventions:

- Creating opportunities to attract business and investment into NW;
- Diversifying the provincial economy by developing industrial capacity and capability; and
- Creating market opportunities and a conducive environment, to assist business to capitalise on the National Infrastructure Plan.

The South African (SA) government adopted a National Infrastructure Plan in 2012 (SA Presidency, 2012) to transform the economic landscape of the country, while simultaneously creating a significant number of new jobs. The Plan identifies 18 SIPs. The North West (NW) province is singled out in geographic SIP 4 – unlocking the economic opportunities in North West – which entails the following:

- Acceleration of investments in road, rail, bulk water, water treatment and transmission infrastructure;
- Enabling reliable supply and basic service delivery;
- Facilitating development of mining, agricultural activities and tourism opportunities; and
- Opening up beneficiation opportunities in the North West province

The agro-processing industry is among the sectors identified as important by the Industrial Policy Action Plan (IPAP), the New Growth Path (NGP) and the National Development

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

Plan (NDP). This is due to its potential to enhance growth and create jobs, through its strong backward linkage with the primary agricultural sector.

Table 10 provides an overview of all relevant policies for agro-processing machinery manufacturing. More details can be found in Appendix G.

Table 10: Relevant policies

Presidential/ Ministerial	National Government	Provincial Government
• Presidential Outcomes • Urban Renewal Programme (URP) • Integrated Sustainable Rural Development Programme (ISRDP)	• New Growth Path • National Industrial Policy Framework (NIPF) • Integrated Manufacturing Strategy • Comprehensive Rural Development Programme • Strategic Plan for South African Agriculture • Sector Integrated Development Plan: Agriculture, Forestry and Fisheries • Land Redistribution for Agricultural Development programme • Pro-active Land Acquisition Strategy • Broadening Access to Agriculture Thrust • Agricultural Black Economic Empowerment Programme • Micro Agricultural Finance Institutions of South Africa	• Regional Industrial Development Strategy (RIDS) • North West Provincial Growth and Development Strategy (PGDS) • North West Comprehensive Rural Development Programme • NW Small Business Development Strategy • North West Province Agricultural Master Plan • North West Provincial Water Provisioning and Management Plan • North West Department of Agriculture, Conservation and Environment Strategic Plan • North West Province Environmental Implementation Plan (EIP) • North West Spatial Development Framework and Zoning Plan of 2003

From the relevant policy and strategic documents, important implications for NW in terms of agro-processing are as follows:

1. Agriculture and agro-processing are priority sectors, in the support of economic development in SA.
2. Focused interventions need to be planned and implemented in a coordinated effort by all levels of government, to address economic constraints, promote economic growth in key sectors and improve employment creation.
3. Economic growth and development should not be pursued for its own sake, but should be coupled with job creation and poverty alleviation.
4. Industrial development cannot happen in isolation and needs to be planned, taking into account economic, socio-economic and spatial principles, as set out in national policies or guidelines, such as the following:
   a. National Spatial Development Perspective;
   b. The New Growth Path;
   c. Micro-economic Reform Strategy;
   d. Integrated Sustainable Rural Development Programme;
   e. Integrated Manufacturing Strategy;
   f. National Industrial Policy Framework;

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

g. Industrial Policy Action Plan; and
h. Broad-based Black Economic Empowerment.

5. Industrial development should be supported and planned according to local competitive advantages, to promote an efficient allocation of scarce resources.
6. The focus of interventions should be on improving competitiveness and addressing the key drivers in transforming an industrial sector growth path, such as market access, beneficiation and value addition, equity and economic participation, knowledge intensity and service integration.
7. Spending and opportunity development should be channelled to corridors and nodes in close proximity to growth centres.
8. In areas with limited potential, government should, over and above other initiatives or programmes, focus on social investment (human resource development, labour market information and social transfers) and people development.

A.4.2. Provincial and Local Economic Context

NW is situated towards the north western part of SA. It borders the Limpopo province to the north east, Gauteng to the east, the Free State to the south east, the Northern Cape to the south and Botswana to the north (Figure 11).

Figure 11: Geographical location of North West in South Africa
(Urban-Econ, 2013)

NW comprises four district municipalities, which include DKKDM. MLM falls within DKKDM, which includes a large part of the economic activity in the province (Figure 12).

PDF-XChange
Click to buy NOW!
www.docu-track.com

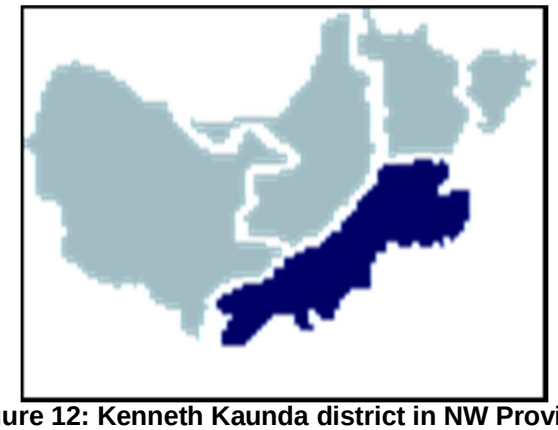


Figure 12: Kenneth Kaunda district in NW Province

The province covers a total land area of 116 320 square kilometres (about 8.7% of South Africa's land area), of which 15 712 square kilometres belongs to the DKKDM. The other three district municipalities are Ngaka Modiri Molema, Bojanala Platinum and Dr Ruth Segomotsi Mompati. DKKDM is situated at the southern part of the province and borders both the Gauteng and Free State provinces. It comprises four local municipalities (LMs), namely Maquassi Hills, Matlosana, Tlokwe and Ventersdorp.

According to Statistics South Africa the population of this district increased from 599 670 in 2001 to 695 933 in 2011 (StatsSA, 2011). The population of the district has been growing at an annual rate of 1.49% (Table 11).

Table 11: Municipal Statistics

Municipality	Total Population		Population (%)		Annual Growth (%)	No. of households	
	2001	2011	2001	2011	2001-2011	2001	2011
DKKDM	599 670	695 933	100	100	1.49	153 560	208 047
Ventersdorp	43 078	56 702	7.18	8.15	2.75	11 109	14 562
Tlokwe	128 353	162 762	21.4	23.39	2.38	32 038	52 537
Matlosana	359 202	398 676	59.9	57.29	1.04	93 339	120 442
Maquassi Hills	69 037	77 794	11.51	11.18	1.19	17 075	20 505

(North West Provincial Government, 2014)

MLM, the former Klerksdorp, is situated on the N12 highway, approximately 164km south west of Johannesburg. The town covers an area of 3 625 square kilometres, and is the highest density area in DKKDM. Prominent towns in the MLM area are Orkney, Stilfontein, Carletonville, Hartbeesfontein and Potchefstroom. MLM has strong linkages and economic interactions with the economic hub of SA, namely Gauteng.

A.4.2.1. Economic situation

NW's provincial economy contributed 5% towards the national gross domestic product (GDP) in the year 2011. DKKDM is the second strongest district economy in NW and contributed 26% towards the provincial economy in 2011, as illustrated in Figure 13.

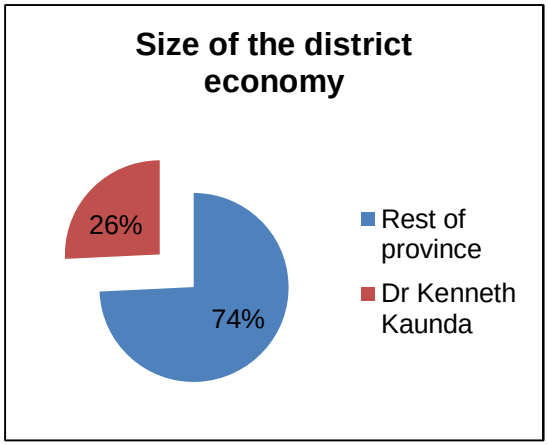


Figure 13: District economy size, 2011
(Tlokwe City Council, 2013)

According to the North West Development Corporation (NWDC), mining and quarrying, followed by agriculture and agri-business, are the strongest employment sectors in the province. These two dominant sectors mainly produce primary products, with insignificant local value addition taking place (NWDC, 2013).

Sector GDP contributions are shown in Figure 14.

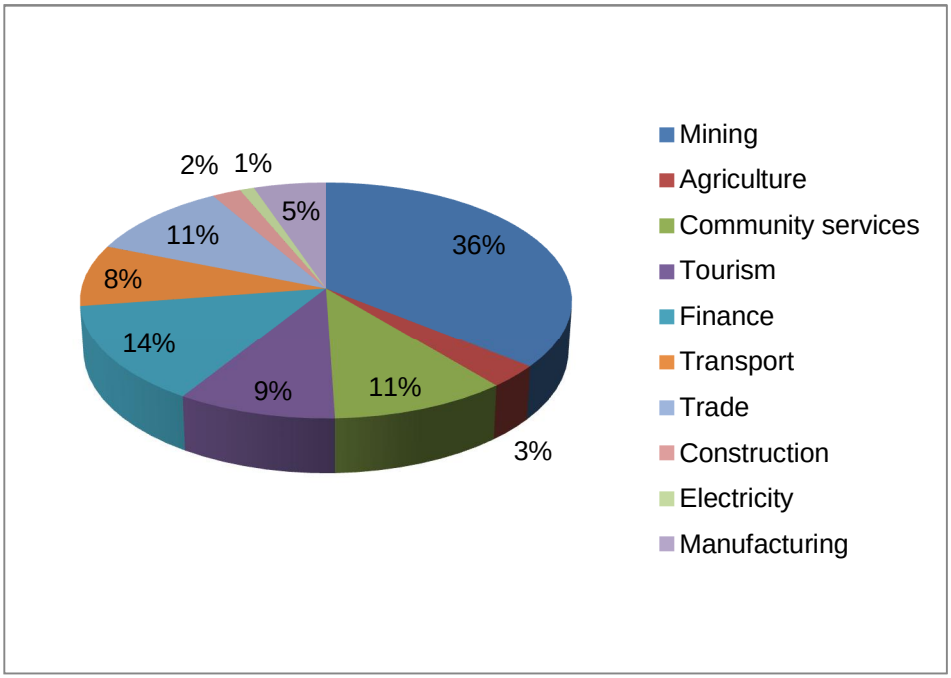


Figure 14: Sector contribution to the GDP
(North West Provincial Government, 2014)

The areas around Rustenburg and Brits are fertile, mixed-crop farming land. Sunflower seeds, groundnuts, sorghum, wheat and cotton are some of the most important crops in NW. Also, the province is the major white maize producer in SA, contributing a third of the country's production.

The manufacturing sector contributed only 5% towards the provincial gross value added (GVA) (NWDC, 2013). Manufacturing is almost exclusively dependent on the performance of a few sectors, such as mining. Industrial activity is centred in the towns of Rustenburg,

Klerksdorp, Vryburg and Brits, where automotive component manufacturing is predominant.

Labour intensive manufacturing activities have the potential to create jobs to stimulate the local economy, reducing unemployment and poverty. To this end, the province has proposed initiatives to develop capacity for local value addition. These initiatives include investigating the feasibility of establishing a number of commercial sector-based production facilities with a long term view of establishing industrial parks, as well as light industrial parks. The proposed Mafikeng Industrial Development Zone will also look to create employment and enterprise development opportunities.

A.4.2.2. Human capital

NW comprises 6.8% of SA's population, with an estimated population of 3.7 million people. The unemployment rate in the province is 25% which is similar to the national average (North West Provincial Government, 2014).

Labour is one of the key resources for the production of goods and services. The total labour force in NW is above 1.6 million people. Figure 15 indicates the breakdown of provincial employment by sector, confirming the dominance of the mining industry.

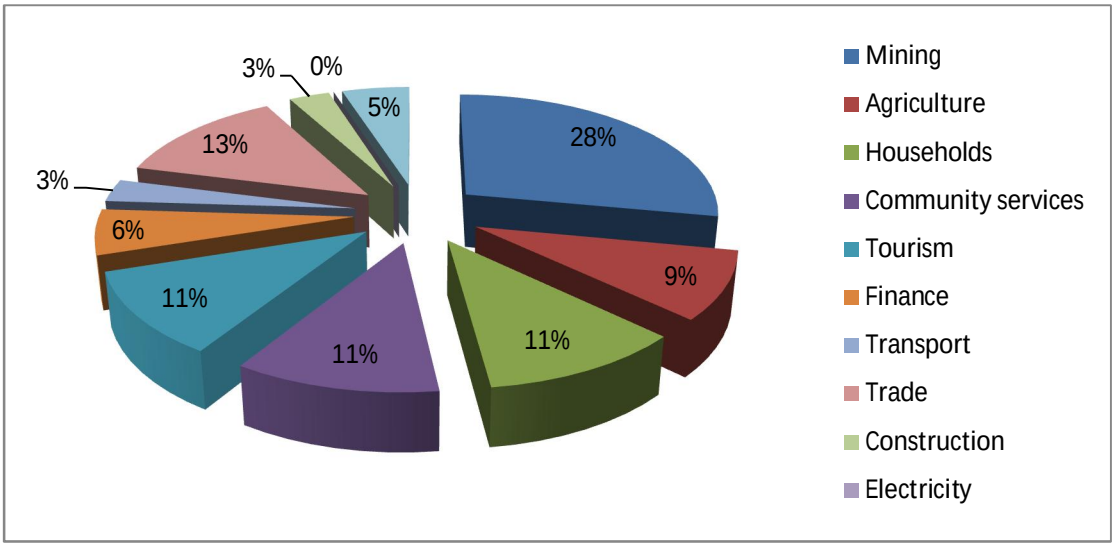


Figure 15: Formal employment per sector
(Invest North West)

The availability of workers with the right kind of skills is required. The level of education in an area gives an indication of the skills level and trainability of the available local labour supply. Figure 16 illustrates the 2011 level of education in NW.

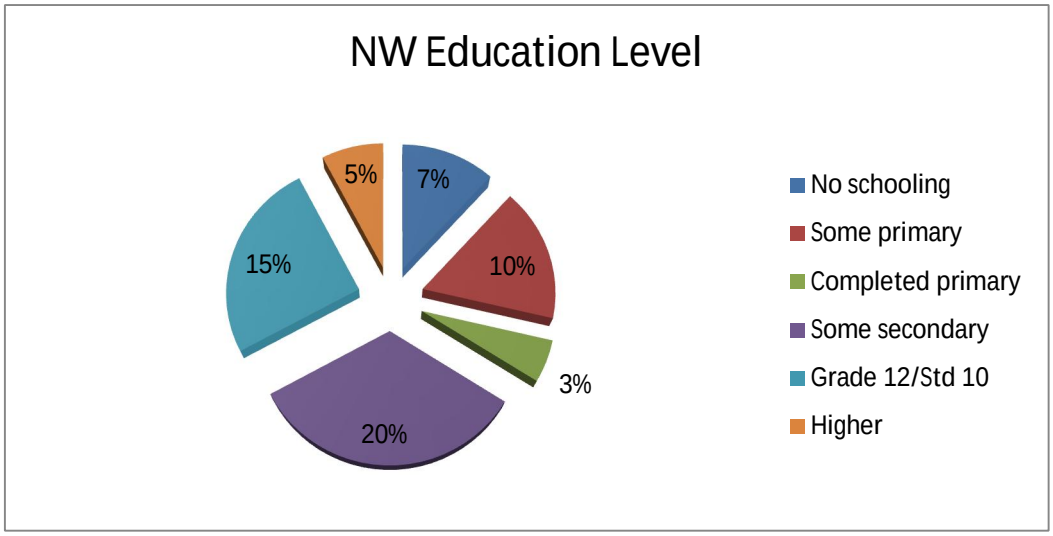


Figure 16: Level of education in the North West province
(StatsSA, 2011)

There were 162 815 people in the province who have studied beyond Grade 12. This accounts for 8% of the population. The literacy rate in the province is in a region of 57% (Tourism North West, 2014).

A.4.2.3. Infrastructure

- Industrial infrastructure
  Industrial activity is concentrated in the larger towns of the province. In line with the national IPAP as a major driver for economic development, the development of industrial parks is a priority for the province.

  Within MLM most manufacturing companies are located in the Uraniaville and Klerksdorp industrial areas. Figure 17 and Figure 18 show Google maps of the two areas.

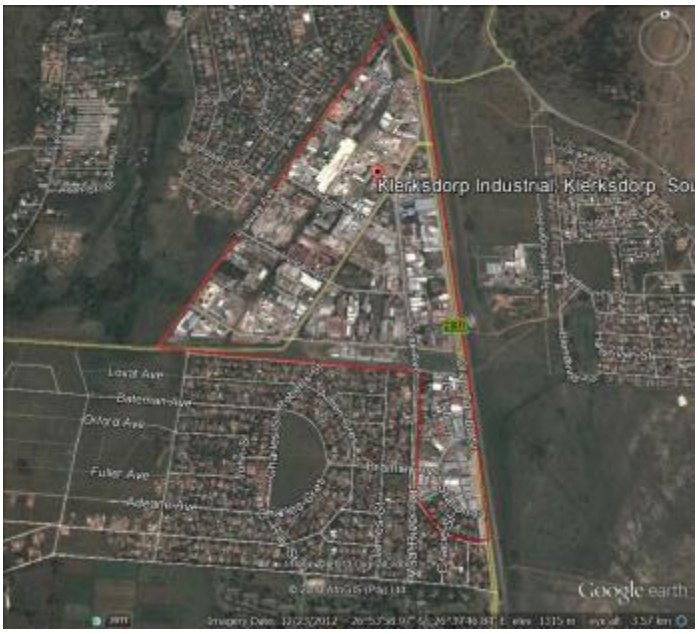


Figure 17: Klerksdorp industrial area

Figure 18: Uraniaville, Matlosana

- Transport infrastructure

  NW relies primarily on road infrastructure, and rail is used as an alternative to transport goods to the mainstream market nodes. Figure 19 illustrates the provincial road infrastructure which connects it to other provinces and the neighbouring SADC countries.

Figure 19: North West province road infrastructure

Matlosana has effective and convenient local road infrastructure to link it to large metropolitan markets. The N12 provides a link between Gauteng, Potchefstroom, Klerksdorp, Wolmaransstad and Cape Town. It is linked to Ventersdorp, Rustenburg

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

and the Free State by the R53 and to the Vaal areas by the R54. The roads seem to be well maintained.

Railway infrastructure is also available, although it is mainly used for passenger transportation. The rail network supports the logistical needs of NW and plays an important role in moving goods. Direct railway lines link the province to several Southern African countries, with the Cape Town to Zimbabwe railway line running through Mahikeng and Botswana. Angola, Zambia and Botswana can also be reached by rail from the province.

There is a small local airport in Matlosana. The two commercial airports closest to the town are OR Tambo and Kimberley.

- Telecommunication
  Fixed line telecommunications are mostly managed by Telkom, the public utility. South Africa's second landline operator, Neotel, has recently started offering its services to both commercial and individual users. There are also four cellular networks for voice and data communication.

- Electricity
  Electricity is supplied by Eskom. The local municipality experiences unstable electricity supply, due to the lack of infrastructure maintenance, theft, tampering and non-payment to Eskom.

- Water
  The water in Matlosana is provided by Midvaal Water Company, which has been maintaining the Blue Drop certification.

- Waste management
  MLM coordinates refuse removal and waste disposal, and controls the existing waste landfill sites.

  The major challenges in MLM are distribution losses of water and electricity from ageing infrastructure, as well as theft of water and electricity. Also the low debt collection rates remain a challenge.

A.4.3. Location / Site

The agro-processing machinery manufacturing facility will be located in a rented facility, in an existing industrial village in Orkney (Figure 20).

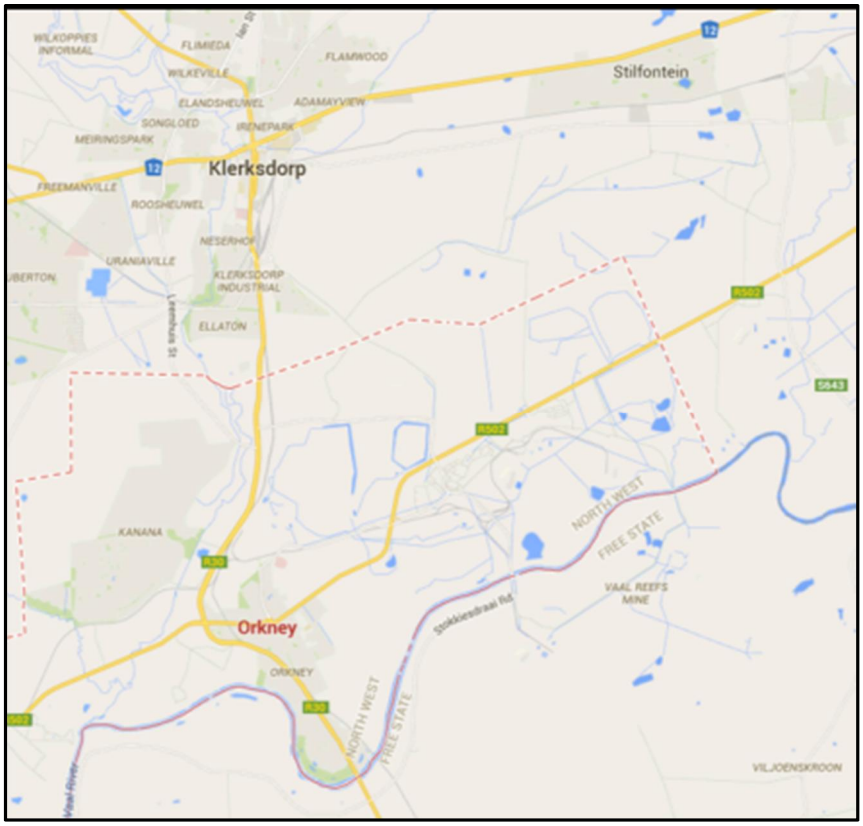


Figure 20: Site Location

The industrial village comprises 5 000m^2 of factory space and is shown in Figure 21 and Figure 21.

Figure 21: Industrial village in Klerksdorp Industrial

Figure 22: Signage on the Site

The facility is located in the Orkney industrial village, next to the railway line. It is privately owned, and was established in 2011. It comprises of a walled stand with two buildings. Table 12 provides a high-level overview on some of its characteristics.

Table 12: Orkney industrial village qualities

Characteristic	Detail
Stand size	14 000m^2
Building floor area	6 000m^2 (according to the owner)
Power supply capacity	375 kVA
Facilities	Workshops with offices, toilets and change rooms
Rental cost	About R20 per m^2, available immediately for rental

PDF-XChange
Click to buy NOW!
www.docu-track.com

PDF-XChange
Click to buy NOW!
www.docu-track.com

APPENDIX B - MARKET ANALYSIS

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

B.1. INTRODUCTION

Before an enterprise could be established or expanded, a market assessment and quantification is pivotal to determine factors, conditions and characteristics of the market. This assists in defining the target market and the potential it has to sustain the enterprise.

This market study covers an in-depth analysis of the agro-processing machinery manufacturing enterprise in Matlosana, with regard to the following:

- Industry analysis;
- Agro-processing markets, globally and locally;
- Marketing mix in terms of products, prices, promotion and distribution;
- Competition;
- Market size; and
- Estimated market share.

The results of the market study have been used in the development of the financial model for the enterprise.

B.2. INDUSTRY CONTEXT

A survey was done by the Technical Centre for Agricultural and Rural Cooperation (CTA) in 2010 (commissioned by the Department of Agriculture, Forestry and Fisheries) on the small-scale food processing sector in South Africa (SA). It revealed that an obstacle facing SMMEs is that they lack the necessary infrastructure and appropriate technology to operate efficiently. The CTA also noted that almost all SMMEs surveyed in the food processing industry lack knowledge on production processes and quality production tools. (CTA, 2000)

Agro-processing machinery is the linkage between the primary sector of agriculture and the secondary sector of manufacturing. Small scale agro-processing machinery could assist small businesses and emerging entrepreneurs to also do agro-processing. The expansion of agro-processing activities could increase local food production, employment, business development and international trade.

B.2.1. Industry

Agro-processing has proven to play a significant role in economic development globally, but particularly in developing countries. Its impact has shown direct benefits, both as a source of income and employment; and indirectly for its backward linkages with agriculture. South Africa has an agro-processing sector worth approximately R49 billion, which plays a significant role in terms of job creation and sustainability in the economy. The Department of Trade and Industry (**the dti**) indicates that food processing, as a subsector of manufacturing, had grown by over 2% more than SA's manufacturing sector as a whole for the period 2008 to 2009 (www.engineeringnews.co.za).

The agriculture and agro-processing sectors have been identified as priority sectors for development and investment by national and provincial government. Due to the

abundance of natural resources and unexploited development potential, these sectors could become drivers of economic growth and rural development in the North West (NW) province.

B.2.2. Industry Role players

One of the key success factors of any enterprise is the networks that it develops with the relevant industry stakeholders. The following is a list of the key stakeholders for this enterprise:

- North West Department of Agriculture and Rural Development (DARD);
- Agri North West;
- AFRGI;
- National African Farmers Union (NAFU);
- Wesvaal Business Chamber;
- Agricultural Research Council (ARC);
- Bojanala District Municipality;
- Dr Ruth Segomotsi Mompati District Municipality;
- North West University (NWU);
- Dr Kenneth Kaunda District Municipality (DKKDM);
- Ngaka Modiri Molema District Municipality; and
- North West Department of Economy and Enterprise Development (DEED).

The contributions from these organisations could greatly contribute towards the success and sustainability of the enterprise.

B.2.3. Value Chain

The agro-processing value chain is shown in Figure 23.

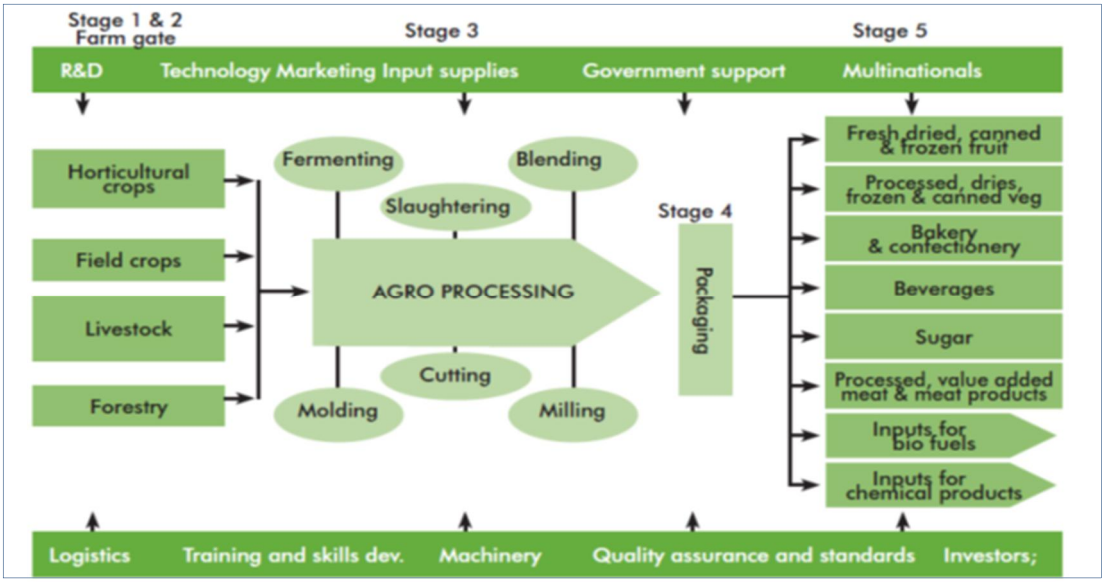


Figure 23: Agro-processing value chain
(SEDA, 2012)

The value chain comprises the following activities:

- Research and development:
  In agro-processing research and development focus on analysing current production trends against processed end-products, including possible new processed products.

- Primary farming activities:
  Primary farming activities are still concerned with the production of agricultural produce, on which agro-processing will take place. Therefore, farming is a key input to the value chain.

- Processing:
  Processing refers to milling, fermenting, slaughtering, blending, cutting and moulding of primary agricultural produce into value added products. Agro-processing machinery is used for this activity.

- Packaging:
  After the products have been processed and prepared it is important that these are preserved for consumption, in accordance with stipulated legal requirements. These inform the packaging of the final product, before being shipped to the final consumers.

- Supplying to the wholesale and retail market:
  Consumers source the final products from wholesalers or retailers. Therefore, a logistics system is required to ensure delivery to the market.

The value chain for agro-processing machinery and equipment is shown in Figure 24.

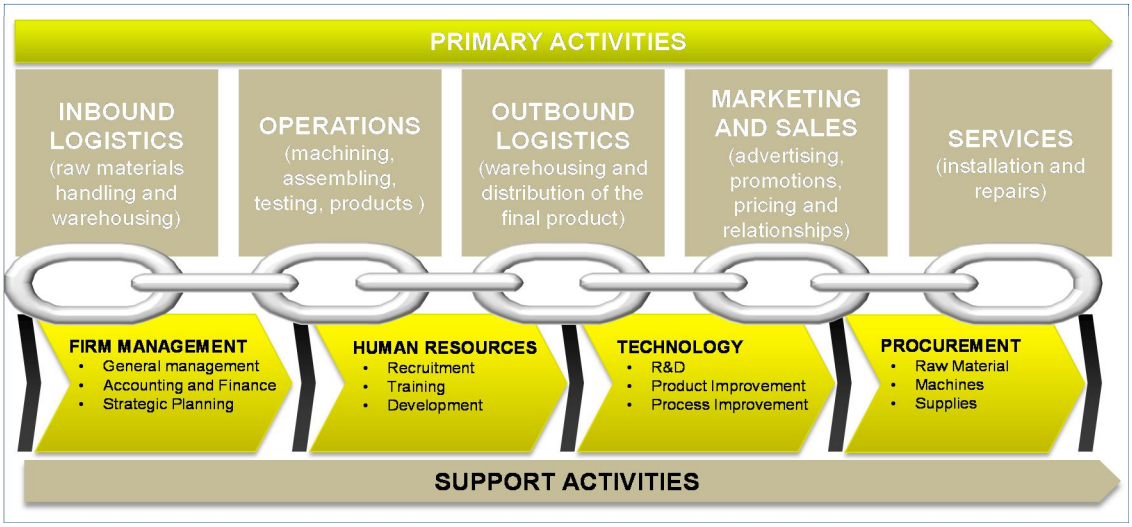


Figure 24: Agro-processing machinery value chain

The value chain comprises the following activities:

- Inbound logistics:
  Inbound logistics involve raw material procurement, handling and warehousing. The raw materials for the manufacturing of machines include welding wire or rod, steel sheet metal, formed metal and expanded metal.

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

- Operations:
  Operations include the fabrication of machine components, the assembly of bought in and fabricated parts, and testing of the completed machines.

- Outbound logistics:
  Outbound logistics involves the handling, storage and distribution of the finished products.

- Marketing and sales:
  Marketing include advertising, promotions, pricing strategies, and all activities undertaken to secure sales for the machinery.

- Services:
  Installation and repair services are offered with all machines supplied to customers.

There are also support activities that take place throughout the value chain. These include the following:
- Management;
- Human resource development;
- Technology transfer; and
- Procurement.

B.3. INDUSTRY TRENDS

B.3.1. World trends

In 2008, the Global Agro Industry Forum (GAIF) calculated agro-processing as a percentage of the gross domestic product (GDP) for each country as follows (UNIDO, 2008):
- 4.3% for low income countries (LICs);
- 5% for lower to middle income countries (LMICs), where SA is player; and
- 5% upper to middle income countries (UMICs).

GAIF made the estimates, based on the United Nations Industrial Development Organization's (UNIDO) Industrial Statistics Database of 2005 and the latest information available at the time. These figures excluded the contributions made by the informal sector to agro-processing globally.

Collectively, agro-processing accounts for more than 50% of the total manufacturing (UNIDO, 2008) value added in the LICs, compared to 36% and 32% for LMICs and UMICs respectively. From the classification in the World Bank's World Development Report 2008 (UNIDO, 2008), agro-industry's (food production from processed agricultural produce) contribution to total manufacturing is as follows:
- 61% in agriculture-based countries;
- 42% in countries in transformation from agricultural to industrial; and
- 37% in urbanised countries.

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

Although the primary sector is significant in SA, the country is transforming into an Industrial economy, and it is therefore seen as being in transformation. First world countries are mostly urbanised. Countries such as Brazil and India have economies anchored in agricultural production, and agro-processing in those countries is as high as 61% of all manufacturing.

Within the agro-industry, food and beverages account for more than 50% in LICs and LMICs, and more than 60% in UMICs. Meat, fish, fruits, vegetables and fats, together with bakery, macaroni, chocolate and others account for 70% to 75% of the food and beverage value added, with grains being more important in low-income and dairy products in high-income countries (UNIDO, 2008).

Globally, processed products account for 80% of food and beverage sales, with 60% being consumed in high-income countries. Per capita, retail sales of packaged foods are 15 times higher in developed countries than in LICs, but are growing slowly at around 2% to 3% per annum. On the other hand, growth in the consumption of packaged food is much higher in developing countries (UNIDO, 2008):

- 7% in UMICs;
- 28% in LMICs; and
- 13% in LICs.

The main trends at national and international levels that drive the growth of the agro-processing industry globally are as follows (UNIDO, 2008):

- The rise in population growth;
- Higher income growth leading to greater demand for highly processed and higher-value food products;
- Greater participation of women in the paid labour force;
- Increased ownership of household appliances (such as microwave ovens and refrigerators);
- Growing urbanisation; and
- The internationalisation of retail.

World-class infrastructure, counter-seasonality to Europe, vast biodiversity, marine resources, and competitive input costs could make SA a major player in the world's markets.

B.3.2. South African trends

Agro-processing (including food, beverages and tobacco) contributed R66.6 billion to SA's GDP in 2008, which is 17.3% of the total amount generated by the manufacturing sector. The direct contribution of agro-processing to the GDP was 3.2%, making it the third-largest contributor after chemicals and metals (Production, 2014).

According to Statistics South Africa, approximately 207 000 people are employed in agro-processing, which is 16% of the total employment figure for the manufacturing sector and 2.5% of the total SA economy. **The dti** indicated that the agro-processing sector contributes about 4% to the total SA exports (Production, 2014)

During 2011, the agro-processing industry contributed 30.5% and 5.2% (DAFF, 2011-2012) of the real value added (GDP) by the manufacturing sector and the total SA economy, respectively (Figure 25).

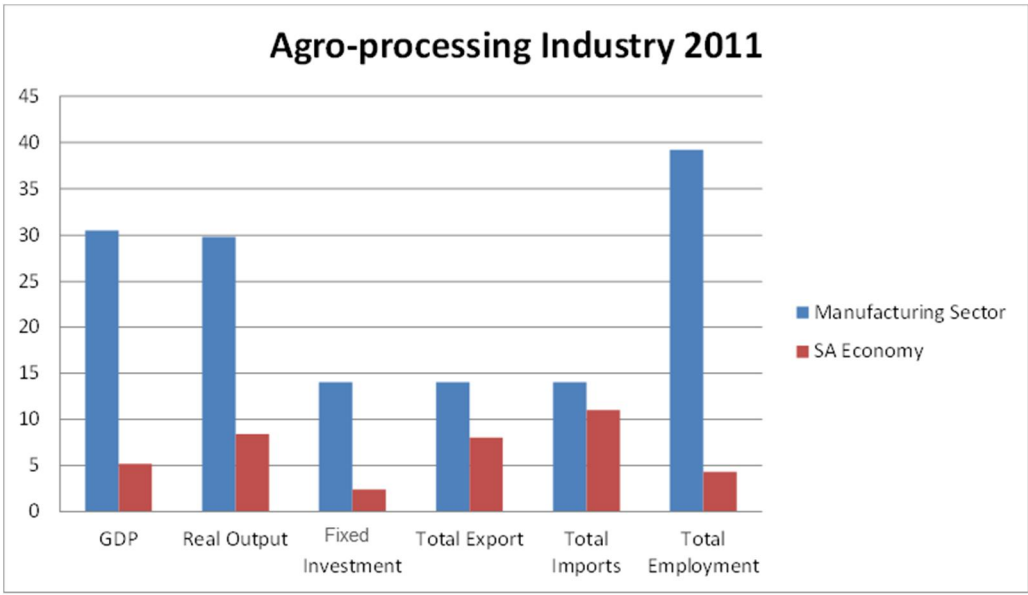


Figure 25: Agro-processing industry performance 2011
(DAFF, 2011-2012)

Agro-processing's contribution to the real output of the manufacturing sector and the SA economy was 29.8% and 8.4%, respectively. Its share of the real domestic fixed investment in the manufacturing sector and the SA economy was 14% and 2.4%, respectively, during the same period. In addition, 14% and 8% of the total exports by the manufacturing sector and the SA economy, respectively, originated from agro-processing. Similarly, 14% and 11% of the total imports of the manufacturing sector and the SA economy, respectively, were agro-processing products. During 2011, the industry accounted for 39.2% and 4.3% of the total employment in the manufacturing sector and the SA economy, respectively (SEDA, 2012).

B.3.3. Provincial trends

NW contributes approximately 6% to the total outputs of the SA economy. Figure 26 shows the NW economy by sector (DARD, 2011).

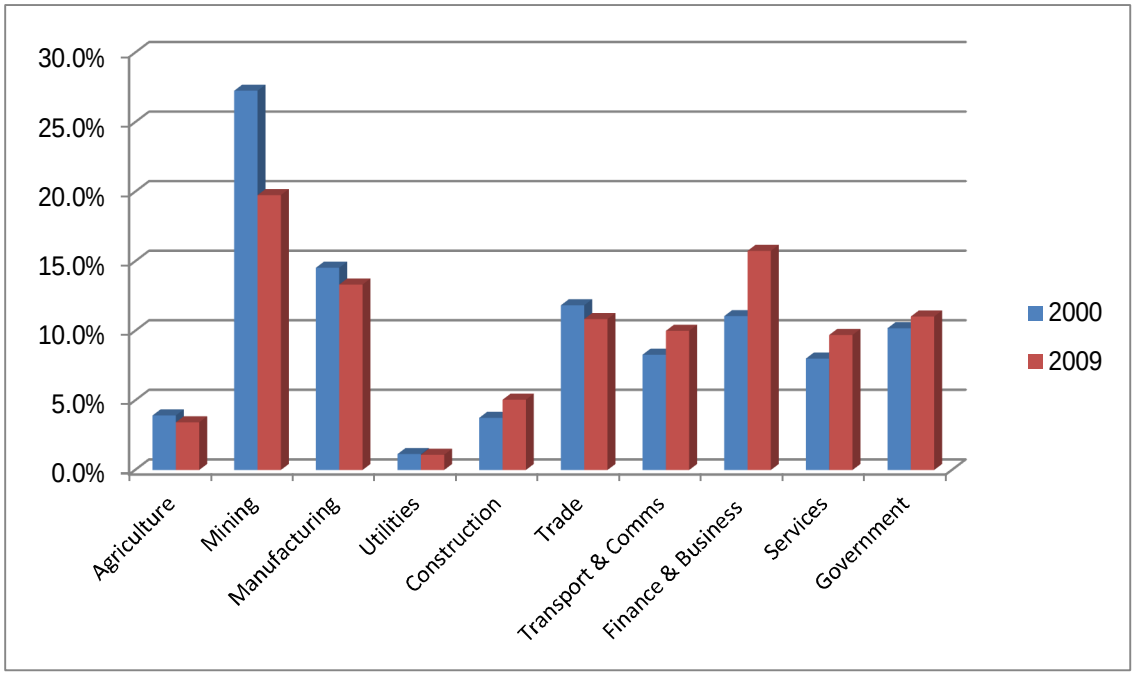


Figure 26: Sectoral structure of NW 2000- 2009
(DARD, 2011)

The mining sector (at 19.8%) was the largest contributor to the provincial economic output in 2009, followed by the finance and business services sector (at 15.8%) and the manufacturing sector (at 13.3%). The agriculture sector (at 3.4%) is the second smallest contributor to provincial outputs.

Within the manufacturing sector, agro-processing, as a subsector, is the most significant manufacturing activity within NW. The food, beverage and tobacco sub-sector represents 25.3% of the manufacturing output (Figure 27) and 20.3% of manufacturing employment (Figure 28).

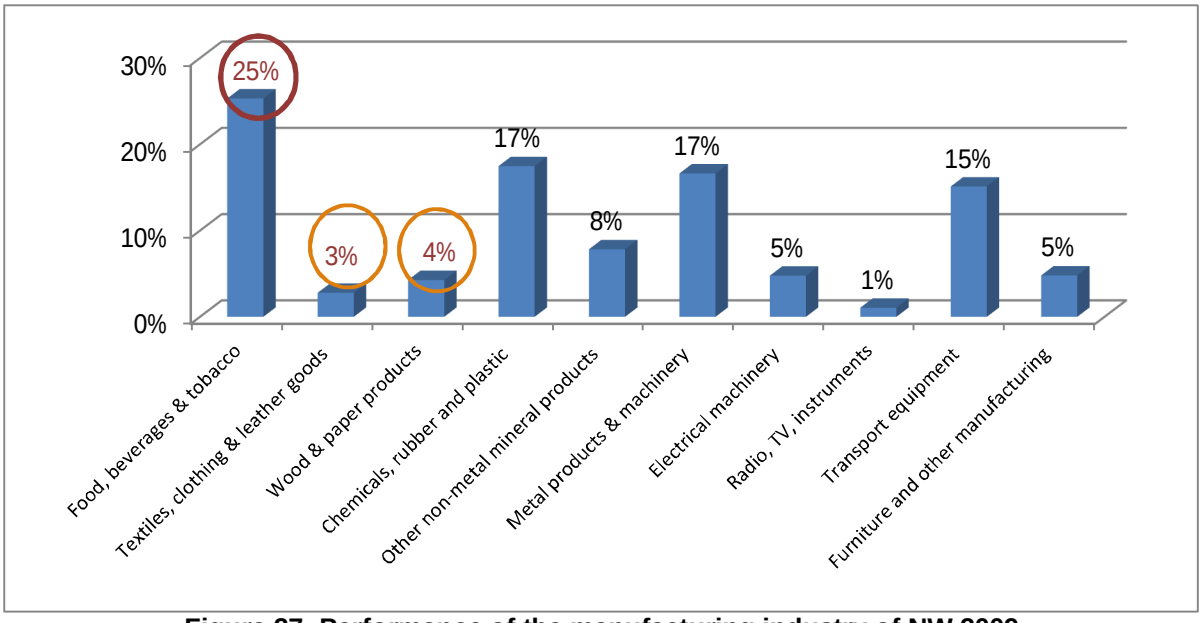


Figure 27: Performance of the manufacturing industry of NW 2009
(DARD, 2011)

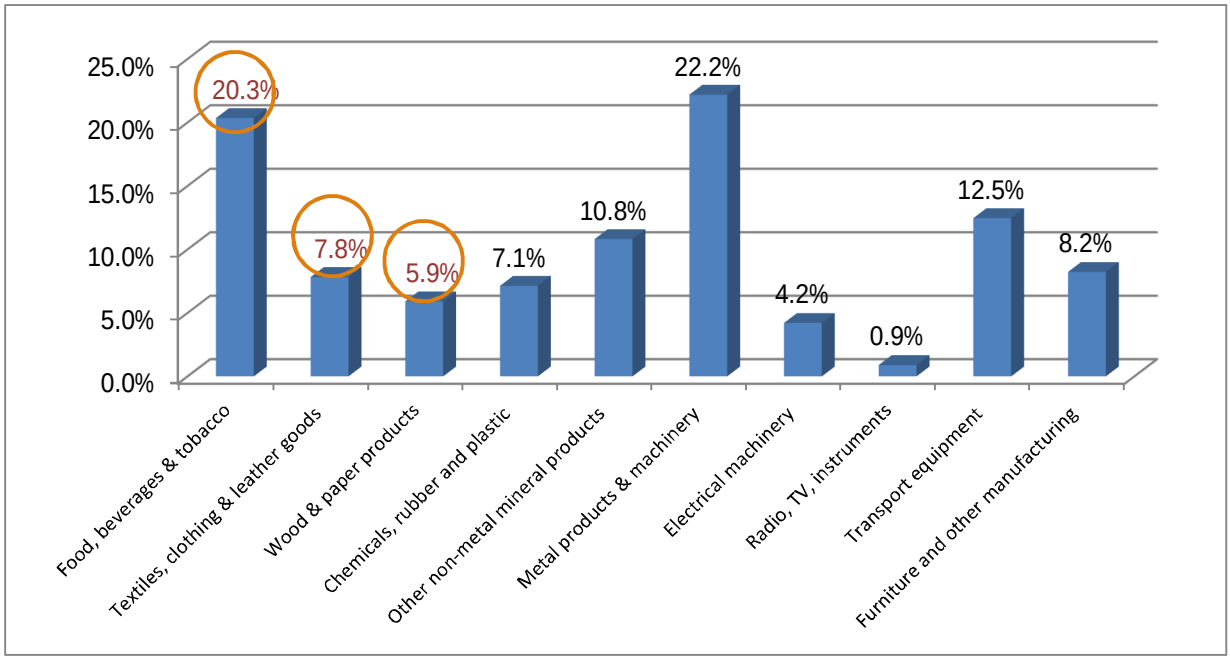


Figure 28: Employment of the manufacturing industry in NW 2009
(DARD, 2011)

The performance of the manufacturing of food, beverages and tobacco illustrates the importance of the link between the agriculture and manufacturing sectors. Due to the province's strategic location, natural resource endowment, easy market access, relatively low production costs, forward and backward linkages, opportunities exist for more agro-processing in the province.

B.4. MARKET SIZE

In the agro-processing industry, the food division remained dominant in its share of the total output, at 42%. The paper and paper products division is the second largest contributor with a total output of 14%, followed by the beverages division with an output of 12 %. Figure 29 shows the share for each industry division.

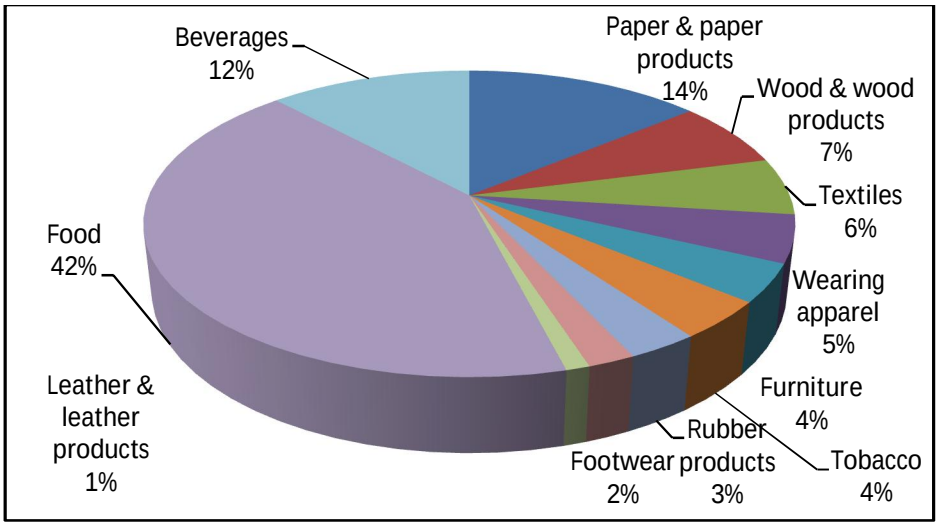


Figure 29: SA agro-processing industry output 2005-2010

(SEDA, 2012)

In the third quarter of 2013, the food-processing sub-sector was one of the largest employers in the manufacturing sector with 208 000 jobs in spite of job losses in other parts of the sector. According to **the dti**, the agro-processing sector remains resilient and has the support of government, despite the "continued ripple effect" of the 2008 global economic meltdown (www.engineeringnews.co.za).

B.4.1. Market demand and market share

Agriculture is regarded as one of the main economic focus areas of Matlosana Local Municipality (MLM), due to its agricultural potential, climate suitability and current production capacity. Statistics have shown (DARD, 2011) that agro-processing, as a subsector, is the most significant manufacturing activity within the province. SENWES, one of the leading agribusiness companies in the MLM area and in SA, provides statistics of the prominent crops of the MLM area, as shown in Figure 30.

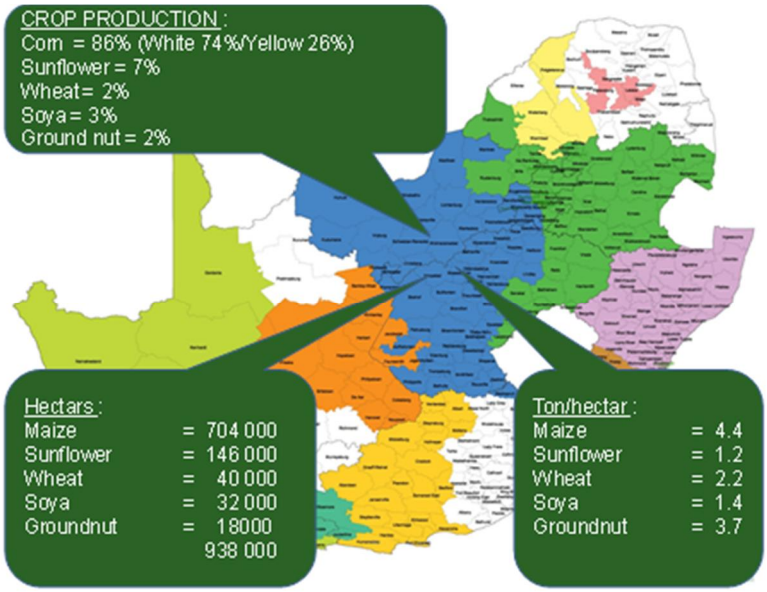


Figure 30: Dominant crops in DKKDM 2013-2014
(SENWES)

Figure 30 shows the volumes of raw material for processing in DKKDM. Corn or maize volumes account for 86% of all crops produced in the region, followed by sunflowers at 7% and soya at 3%. The land usage for growing crops also shows maize at 704 000 hectares, followed by groundnuts at 146 000 hectares and wheat at 40 000 hectares.

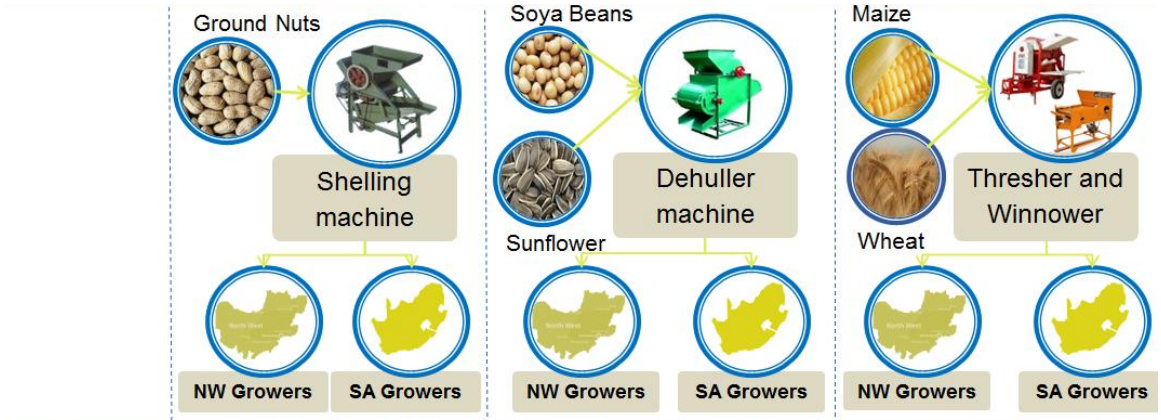
The demand for agro-processing machinery is enhanced by the production of agro-processing raw materials. This demand can be further increased by retaining the opportunities for beneficiation and value addition of agricultural produce in the region.

The agro-processing machinery that will be manufactured by the enterprise is as follows:

- Peanut shelling machines;
- De-huller or cleaning machines;
- Threshers or threshing machines; and
- Winnowers.

Currently the manufactured quantities of these machines in SA are very low. The majority of these machines are imported from countries such as Brazil and USA (Destek, 2014).

Figure 31 shows the volumes of growers (total target market), as well as the project market share targeted for the enterprise's products.



Growers	1411	9442	4357	29160	5543	37095
Market Share	129	866	400	2674	508	3401
% per Annum	10%	6%	5%	2%	9%	2%
Year 1	13	35	20	28	46	50
Year 2	13	40	20	33	46	60
Year 3	13	45	20	38	46	70
Year 4	13	50	20	43	46	80
Year 5	13	50	20	43	46	80

Figure 31: Market share per product
(Agriseta, 2010)

Figure 31 shows the number of growers of each crop in SA. These growers are then divided in to NW based growers and the rest of the country. Each grower segment has an estimated market share. The thresher and winnower are grouped together as they form part of a milling process common to both wheat and maize.

It is estimated that 48 units of each machine will be sold during the first year of operation. This number of units per type of machine is calculated as follows:

- Peanut shelling machine: 13 for NW and 35 for the rest of SA;
- De-huller machine: 20 for NW and 28 for the rest of SA;
- Thresher and winnower: Total of 46 for NW and 50 for the rest of SA;

The 48 units will then be increased to 53, then 58, and finally 63 in the fourth year of operation, where the factory's full production capacity will be reached.

B.4.2. Market prices and pricing policy

The dynamics of the industry determines the pricing strategy that an enterprise could develop to position itself well in the market, while at the same time ensuring that it generates profits. One of the determining factors is the level of competition in the industry. If there is strong competition in a market, customers are faced with a wide choice of whom to buy from. They may buy from the cheapest provider or perhaps from the one which offers the best quality standard or customer service. The determination of selling prices

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

should be influenced by current industry prices, as well as the competitive advantage of the products.

The current landed prices for the imported agro-processing machinery are as follows:

- R26 000 for a shelling machine;
- R19 500 for a de-huller machine;
- R 6 500 for a thresher; and
- R2 600 for a winnower.

The Department of Agriculture Fisheries and Forestry (DAFF) indicated in 2013 that the prices of machinery and implements would increase by 9.4%, and maintenance and repairs by 7% over the next 10 years (DAFF, 2013). The prices for the four machines are worked on the landing price of imports, minus a 30%. The prices were analysed against production requirements and they were still profitable.

The selling prices for the respective products were determined by taking into account the current market prices (landing price form imported agro- processing machinery from China and India), as well as the production costs per product.

An average mark-up of 30% was added to the production costs to arrive at the selling prices, while still ensuring that these prices remain competitive when compared with the imported machinery.

Table 13 shows proposed machine prices and the projected sales volumes per annum.

Table 13: Machine prices and projected annual sales

Product	Units sold per annum	Selling price per unit	Annual sales (Year 1)
Shelling machine	48	R 22 500	R 1 080 000
De-huller	48	R 16 875	R 810 000
Thresher	48	R 5 625	R 270 00
Winnower	48	R 2 250	R 108 000
TOTAL			**R 2 268 000**

These sales will result in R2.3 million sales per annum. Furthermore, it is assumed that these prices will increase at 7% per annum.

B.5. COMPETITION

B.5.1. Competitors

Competition exists in a market where there are a number of suppliers and customers, so that no single role player is able to influence the price or any other aspect of the market. In such cases, no one has any market control. Suppliers usually benefit when there are only a few of them supplying to a large number of customers. In contrast, customers benefit from competition, in terms of prices where there is a large number of suppliers with few customers.

It is important for every business to assess the strengths and weaknesses of current and potential competitors, to be able to develop both a defensive and offensive strategy, and to identify opportunities and threats. Knowledge of rivals could provide a competitive advantage.

Possible competitors within MLM could include the following:

- Informal private manufacturers;
- Large processing plants;
- Agri-business companies; and
- Importing companies.

There are various other businesses in the agricultural sector that provides agricultural equipment. Prominent businesses in MLM are SENWES, Afgri and MGK.

The SA companies involved in the manufacturing of agricultural machinery are listed in Table 14.

Table 14: Agricultural machinery manufacturers

Company	Logo	Location	Machines
Heat & Control	HEAT AND CONTROL	pe Town	er systems, Oven systems, Potato systems, Corn product systems
CFAM	CFAM	chefstroom	rusion machines
HM	HammerMill.co.za	gersdorp	mmer mills, Threshers, Winnowers, Bagging machines
Snack Quip	SNACKQUIP	noni	d and soft extrusion machines, Frying and flavouring machines
ROFF	ROFF YOUR COMPETITIVE ADVANTAGE	onstad	ing systems, Threshers, Winnowers, Cereal machines
Y-Deco	Y-deco	odepoort	ing systems

(Saama)

Agro-processing machinery is frequently supplied with agricultural machinery. Some of the businesses involved in this industry confirmed that the product designs are often aligned with existing markets and market projections. Commercial entities are often more focused on the bigger and more commercialised farmers and ignore the emerging ones.

The target market for this enterprise will mainly be emerging or small holder farms that often have a unique need for smaller, cost-effective, reliable equipment. They are often excluded from agro-processing, due to the unaffordability of larger machinery supplied by the major suppliers.

The focus on emerging farmers is linked with various other national and provincial initiatives. Programme 2 of the provincial Intervention Action Plan for Cluster and Value Chain Development (DARD, 2011) of the provincial agriculture department has the following focus points for value chain development:

- Identifying emerging entrepreneurs in medium-potential agro-processing value chains;
- Identifying training needs for emerging agro-processing entrepreneurs;
- Facilitating training and skills development opportunities for emerging entrepreneurs;

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

- Establishing agro-processing incubators to support emerging agro-processing entrepreneurs;
- Simplifying and streamlining approval procedures for the establishment of agro-processing activities;
- Identifying infrastructure requirements and facilitating improvements; and
- Facilitating linkages with existing value chain organisations and initiatives

This creates a gap in the market for the manufacturing of relevant agro-processing machinery, with the focus on emerging or small holder farmers.

B.5.2. Barriers to entry

The following factors are viewed as barriers to entry for agro-processing machinery manufacturing:

- Cheap imported machines;
- The high capital investment required to set up a new business;
- Competitors in the market;
- The cost and availability of raw materials; and
- The established relationships that large manufacturers and distributors have with clients.

The following could help to overcome these barriers:

- Cheap imported machinery could be difficult to maintain, due to service and spares availability;
- The availability of grant funding for the establishment of the enterprise, and assistance from government programmes for small farmers to buy equipment;
- Aggressive marketing and awareness creation; and
- The fabrication of own components to replace raw materials that are difficult to come by.

B.6. DISTRIBUTION

Distribution is the method used to get a product or service to the end-user. It influences the location of the business and the target market, as well as logistical arrangements. The location and distribution of a manufacturing plant should be planned strategically. To minimise costs, it is important to be close to raw material suppliers and not far from existing markets.

The distribution channels that the enterprise will use are as follows:

- Direct distribution to customers;
- Partnering with existing larger businesses, sector departments and government; and
- Using the services of marketing agents.

The strong agricultural presence in the MLM region should provide a competitive advantage for this business, due to the close proximity with its primary market. The

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

enterprise will first market its products in the local areas, and then progressively expand nationally.

B.7. PROMOTION

Promotion is about communication to potential customers to ensure awareness of the enterprise and its products. The aim is to generate, maintain and eventually improve sales. The techniques used in promotion include among others personal selling, advertising, sales promotion, direct marketing and publicity.

The agro-processing machinery will be sold to an existing market of growers, and the products will be fairly new to the sector.

For a start-up enterprise to enter an existing market with new products, it is essential to build and develop a strong brand. The brand will become the link between the enterprise and the customer. A strong brand image means brand recognition, an emotional connection with the user, customer loyalty, and lower costs of customer retention.

The following channels will be used to promote the products of the enterprise:

- Newspapers;
- Community radio;
- Signboards, posters and leaflets;
- Personal contacts, including membership of farming organisations;
- Special promotions; and
- Exhibitions.

PDF-XChange
Click to buy NOW!
www.docu-track.com

PDF-XChange
Click to buy NOW!
www.docu-track.com

APPENDIX C - TECHNICAL ANALYSIS

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

C.1. INTRODUCTION

The main focus of the technical study was on the products and the required manufacturing facility. The results of the study were later used in the development of the financial model for agro-processing machinery manufacturing, herein after referred to as the enterprise.

The following main aspects were investigated:

- Product requirements;
- Production processes (including process flow and production inputs);
- The production facility (including equipment, space required and floor layout);
- Supply chain logistics; and
- The organisational design.

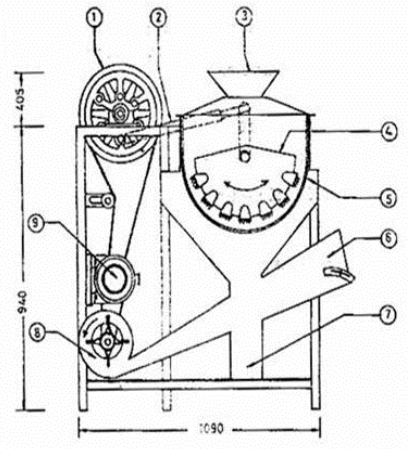
C.2. PRODUCTS

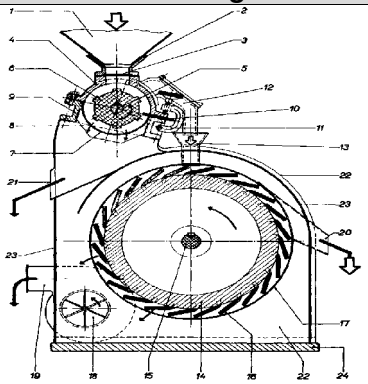
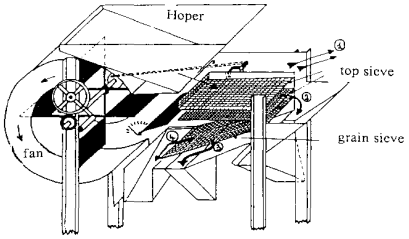
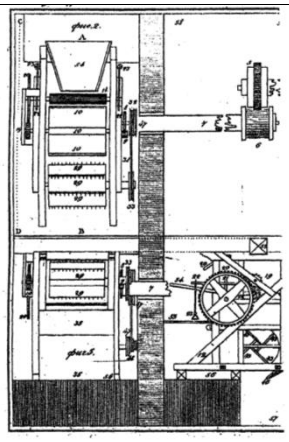
The factory will initially produce four different types of agro-processing machinery, namely:

- Peanut shelling machine;
- De-huller machine;
- Winnower machine; and
- Thresher machine.

The machinery is shown in Table 15, including the respective pictures, schematic drawings and components breakdown.

Table 15: Products

No	Product picture	Schematic drawing	Components
1	Peanut shelling machine 		1. Fly wheel 2. Connecting rod 3. Feed hopper 4. Sieve 5. Husk outlet 6. Kernels outlet 7. Blower 8. Electrical motor 9. Metal frame and sheet covering

No	Product picture	Schematic drawing	Components
2	De-huller / Cleaning machine 		1. Fees hopper 2. Hopper base 3. Feed regulation gate 4. Cover 5. Shaft 6. Steel roll/shaft 7. Screen 8. Screen holder 9. Machine frame cover 10. Hulling blade 11. Cover clamp 12. Outlet spout 13. Grain inlet to polisher 14. Drum 15. Shaft 16. Leather strip 17. Screen 18. Fan 19. Fan outlet 20. Grain outlet 21. Bran and husk outlet
3	Winnower 	 (Mulawo, May 20th 2004)	1. Hopper 2. Seed flow regulator; 3. Fan 4. Sieve with alternated movement (Top sieve and grain sieve) 5. Outlet 6. 0.5 cv of power electric motor 7. Frame 8. Metal sheet covering
4	Thresher 	 (Chernykoh)	1. Folding Pulley 2. Belt Tightening Pulley 3. Folding Sieve Frame 4. Drive Joint 5. Fenner V-Belt 6. Heavy duty bearings 7. Axle and Tyre 8. Frame structure 9. Flywheel 10. Concave and sieve changing mechanism 11. Rotor 12. Blowers

C.2.1. Product specification

The four products to be produced by the factory have the following specifications in terms of the outputs, power requirement, weight and size (Table 16).

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

Table 16: Product specification

Product	Output (kg/hr)	Power (kW)	Approximate weight (kg)	Size (length X width X height) (mm)
Peanut shelling machine	250	1.5	127	1 000 x 750 x 1 380
De-huller	180	1.5	120	1 230 x 610 x 1 240
Thresher	400	5.5	135	1 350 x 850 x 950
Winnower	1 000	0.9	20	1 100 x 450 x 1 000

The manufacturing of the machinery will be carried out based on the design drawings, bills of materials and quality input materials.

C.2.2. Customer requirements

For the agro-processing machinery, the customers (mainly smaller farmers) would consider the following aspects, when buying the products:

- Cost;
- Quality; and
- Ease of maintenance.

In addition to the manufacturing of the four specific products, the factory could also fabricate other products made of sheet metal, such as rain gutters, roofs and HVAC ducts for individuals, contractors and corporations, as required. However, this will be phased in at a later stage to assist with diversifying the business and to improve its productivity and cash flow.

The enterprise staff will install the equipment on the respective customer's sites. If customers require machines to be maintained or serviced after installation, the enterprise would subcontract this work to a qualified person or enterprise, and the customer would pay for this separately.

C.3. PRODUCTION

The production of the different types of agro-processing machinery involves similar equipment and processes.

There could, however, be major variations with regard to the following:

- Production inputs;
- Production cycles and outputs; and
- Handling and storage.

C.3.1. Production process

The fabrication of agro-processing machinery involves the conversion of sheet metal and various other raw materials (such as angle iron, round bars, hollow round bars and square

bars) into an assembled finished product, through a series of operations as shown in Figure 32.

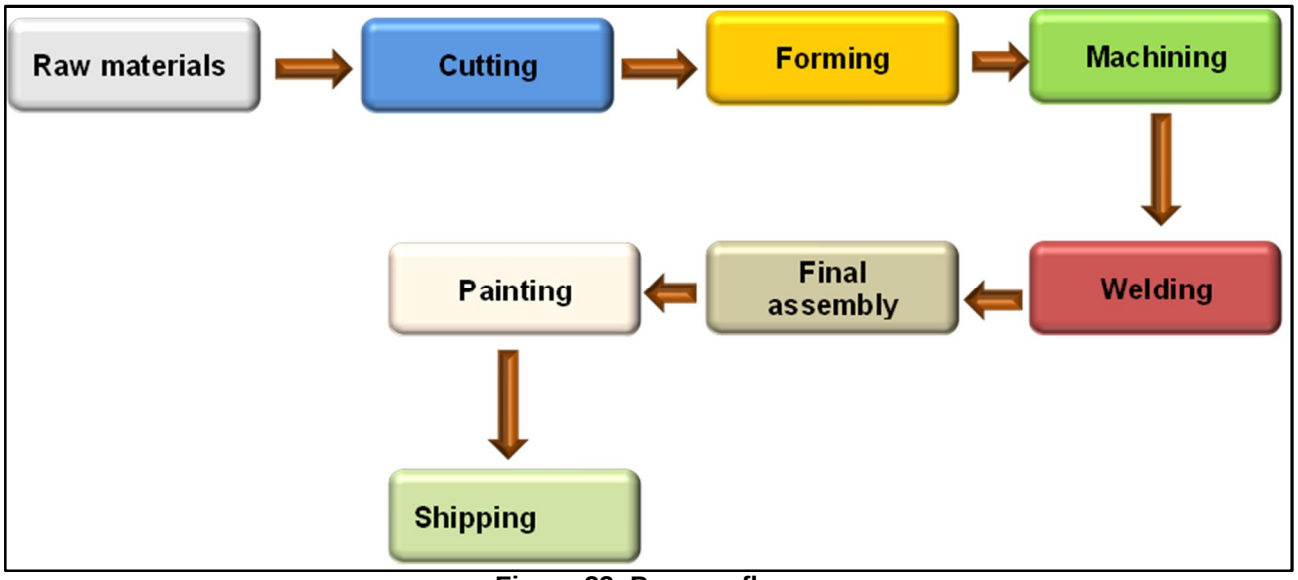


Figure 32: Process flow

Machine operators will fabricate the different components that will be required, to be put together by the assemblers. The process will involve the following activities:

- Raw material procurement, receiving, handling and storage.
- Cutting – done through sawing, shearing or chiselling via press brakes and similar tools. The proper cutting of sheet metal should be ensured, to minimise waste and hence costs.
- Forming – the process of changing the shape of materials with a stamping machine.
- Machining – the production of components, such as spindles and wheel support hubs, through the use of lathe or milling machine.
- Welding – the bonding of metal parts by using welding rods and welding machines.
- Final assembly – adding all components to the complete the product, including bearings, spindles, pins and bearings.
- Painting – the application of paint to the final product to improve its aesthetics and to prevent rust.
- Shipping – this includes the packaging (if applicable), storage and dispatch of final products to customers.

C.3.2. Production inputs

Inputs to the fabrication process include raw materials (mostly sheet metal), transport, labour and utilities.

C.3.2.1. Raw materials

The following raw materials will be used in the manufacturing of the agro-processing machinery:

- Structural steel:
  - Angle (L-shaped cross section);
  - Channel (C-cross section);

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

- Bar (rectangular cross section); and
- Rod (round or square, solid or hollow).

- Sheet metal (3 mm).
- Screen metal (perforated metal sheet).
- Bearings (including the accessories).
- Fans.
- Pulleys and belts.
- Electric motors.
- Wheels.
- Steel flats.
- Welding rods.
- Other hardware (such as nuts, bolts, washers).
- Paint (oil based enamel and acrylic).

The costs of the main raw materials are shown in Table 17.

Table 17: Raw material costs

Description	Unit of measure	Cost
Angle	Metre	R 20
Channel	Metre	R 150
Bar	Metre	R 300
Rod (hollow)	Metre	R 47
Rod (solid)	Metre	R 170
Sheet metal (1 500mm x 3 000mm x 3 mm)	Each	R 2 600
Screen metal (1 220mm x 2 440mm)	Each	R 350
Electric motors	Each	0.9 kW: R 3 800
		1.5 kW: R 3 900
		5.5 kW: R 7 600
Steel flats	Metre	R 112
Welding rods (4mm)	Each	R 120

C.3.2.2. Utilities

Electricity and water are the main utilities required by the enterprise, and their respective annual consumption are listed in Table 18

Table 18: Annul consumption for electricity and water

Utility	Annual consumption	Unit of measure	Rate per unit of measure	Annual costs
Electricity	121 800.00	Kilowatt hour (kWh)	R 1.26	R 153 468
Water	2 864.29	Kilolitre (kl)	R 8.71	R 24 948

Electricity and water will be provided by the Matlosana Local Municipality (MLM). Backup power will be provided by a diesel generator.

Compressed air will be generated on site with the compressor.

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

C.3.3. Production cycles and outputs

The enterprise will operate one eight-hour shift a day, five days a week, 52 weeks a year.

At full capacity, the production facility will have the capacity to produce 252 machines per annum.

In the first year of production only 192 units will be sold (70% of the total capacity). Thereafter, the production quantities will grow annually by an average of 10%, until the maximum capacity is each reached in the fourth year of operation.

C.3.4. Equipment

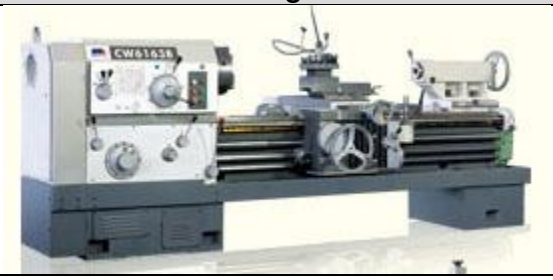
The production equipment required for the factory will comprise different types of fabrication machines, as well as other supporting machines as listed in Table 19.

Table 19: List of equipment

Machine type	Quantity	Price
Drilling machine	1	R 65 000
Lathe machine	1	R 175 000
AD-R 30135 Press brake	1	R 595 000
MRB-S 1506 Plate Roll	1	R 195 000
SBT 3006 Shear	1	R 420 000
DCB-S 360 Band Saw	1	R 198 000
IW55/110BTD Iron Worker	1	R 180 000
TVK-1100TK Compressor	1	R 86 785
Machine accessories	1	R 150 000
Mechanical shaper	1	R 90 000
Horizontal and Vertical milling machine	1	R 170 000
Welding plant	1	R 45 000
Stamping machine	1	R 175 000
Disc cutter	1	R 8 500
Steel inspection table	1	R 35 000
Measuring instruments and gauges	1	R 15 000
Tools	Set	R 60 000
Total		**R 2 663 285**

Table 20 provides more information on the major machines and their functions.

Table 20: Major machines and functions

Equipment	Image	Function
Lathe machine		Metal cutting, e.g. for the production of spindles

Equipment	Image	Function
Hydraulic drilling machine		Boring holes
Stamping machine		Shaping or cutting metal, by forming it with a die
Horizontal vertical milling machine		Metal material removal, using rotary cutters
Mechanical shaper		Metal material removal, through planning

Equipment	Image	Function
Compressor (with air receiver)		Generation of compressed air for various industrial uses

C.3.5. Handling and storage

Handling and storage include raw materials, work-in-progress (WIP) items and finished products. The storage area will have clearly labelled shelves and demarcated areas for each type of item requiring storage.

When raw materials and bought-in components are received, these will be inspected to ensure that it complies with the ordered quantities and specifications. Thereafter it will be moved to the storage area.

WIP assemblies and finished products will be moved to the same storage area for safe-keeping.

A stock control system will be implemented for the storage area:

- The inventory will be updated on the system when raw materials are received.
- When items are taken from the storage area to the process area, these will be checked out of the system.
- When WIP items or finished products are taken to the storage area from the processing area, these will be booked into system.
- Regular stock takes will be done to confirm the physical inventory against the data on the system.
- The manager will order additional raw materials, as required.

C.3.6. Space requirements and factory layout

The size of the factory will be a total of 1 000 m^2, including the following:

- Production area (600 m^2);
- Administration and staff facilities (225 m^2); and
- Storage (175 m^2).

The factory layout is largely dependent on the structure of the existing building, and is shown in Figure 33.

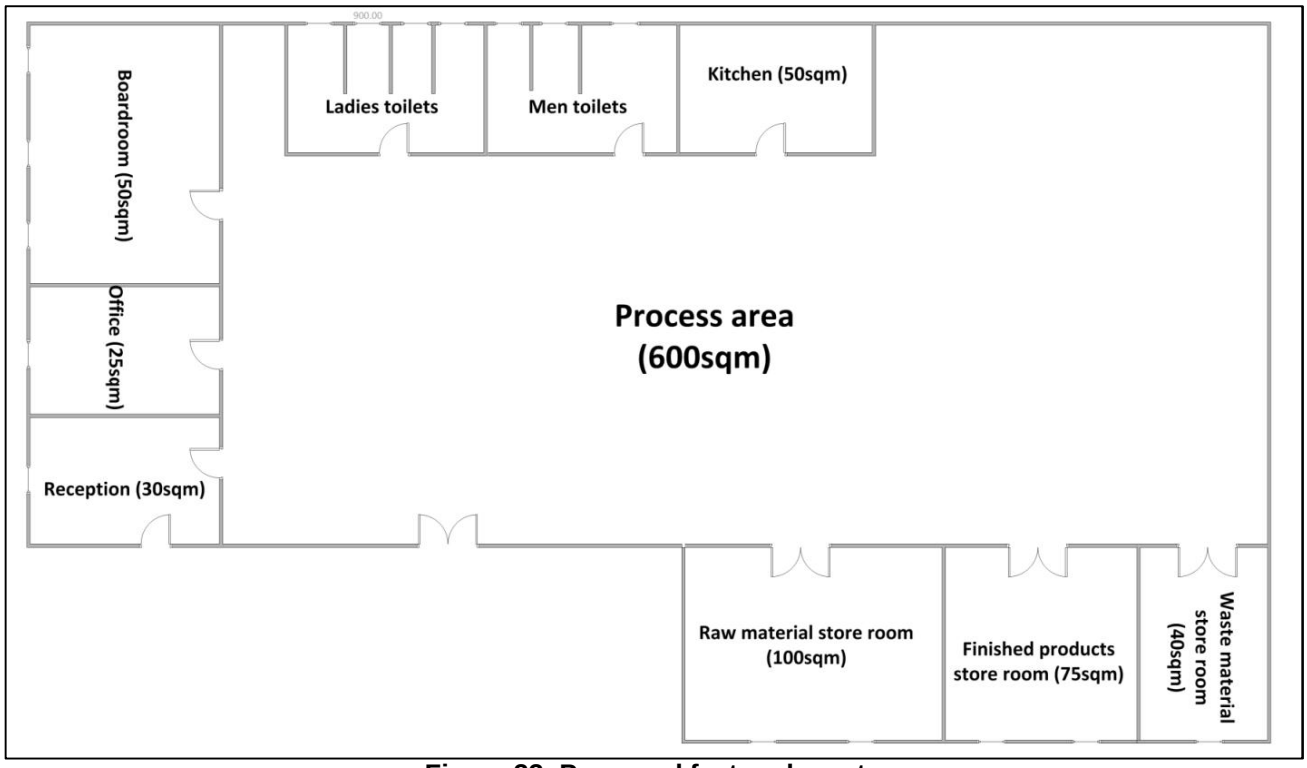


Figure 33: Proposed factory layout

C.4. SUPPLY CHAIN LOGISTICS

The fabrication factory location in Orkney is close to the N12 highway, 15km from Klerksdorp and 55km from Potchefstroom. Klerksdorp and Potchefstroom are the sources of most of the raw materials required for the agro-processing machinery manufacturing. Raw materials will either be delivered by the suppliers, or collected with the enterprise's bakkie.

On the factory site, a forklift will be used for the handling of raw materials, WIP items and finished products.

The initial target market for the enterprise is within Dr Kenneth Kaunda District Municipality (DKKDM), which covers an area of about 3 625 km^2. This area is easily accessible by both railway and road. The products will be delivered with the enterprise's bakkie to individual customers, but hardware shops will collect products from the factory.

C.5. REGULATORY COMPLIANCE

C.5.1. Occupational health and safety (OHS)

The factory will implement all the required measures relating to OHS that is mandatory for all factories in South Africa.

This will include the following:

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

- Putting up safety signage in the appropriate locations;
- Floor demarcations in the factory area;
- Training staff regarding OHS;
- Providing machine operators with the required training for the safe use of machinery; and
- Providing staff with the protective clothing, and ensuring its correct use.

C.5.2. Quality management system (QMS)

A basic quality management system will be implemented. The enterprise will establish and maintain the policies and procedures required for the quality system and the operation of the factory. The required documentation shall include the following:

- Drawings and specifications;
- Welding documentation;
- Purchase orders;
- Raw material specification documentation; and
- Equipment maintenance documentation.

The quality system's effectiveness could be enhanced through training and mentoring.

C.5.3. Environmental requirements

The factory will have minimal environmental impact, due to the following:

- The manufacturing process will simply be converting sheet metal and structural steel, and assembling components;
- No gaseous and liquid affluent will be generated;
- Some solid waste would be generated in the form of metal cuttings, which can easily be disposed of and sold to foundries; an
- The waste generated could be minimised through the use of economic cutting methods.

The waste generated during operations, as well as the recommended disposal methods, are shown in Table 21.

Table 21: Waste generated and mitigation measures

Type of waste	Quantity	Mitigation measures	Impact on environment
Liquid effluents	None	N/A	No adverse impact
Gaseous effluents	None	N/A	No adverse impact
Solid effluents	Metal cuttings	Metal cuttings sold to foundries	No adverse impact

No specialist environmental studies will be required, as the factory will be located in existing vacant buildings.

At the moment there is adequate water supply from MLM for the operation of the enterprise. However should the need arise; a borehole may have to be drilled to supply water for the operations. In such case, a geo-hydrological study and water use licence (WUL) would be required. The additional costs will be as follows:

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

- R200 000 for the geo-hydrological study and WUL application; and
- R150 000 for the drilling and pump installation.

C.6. LAND TENURE

The building to be used for the factory is in an industrial village in Orkney, which is vacant currently. The village is privately owned by Ilidio Cabanita.

The enterprise will lease the factory space at a cost of R20 000 per month.

C.7. ORGANISATIONAL DESIGN

C.7.1. Institutional Arrangements

The selection of the type of ownership and management structure of a business entity is normally guided by the type of investment into the business. For this enterprise it is assumed that grant funding would be provided as an investment, in the case of the opportunity being feasible.

The legal structure that could be appropriate in this situation is a Non-Profit Organisation (NPO), which is an association incorporated not for gain.

One of the legal structures commonly used by Non-profit companies are Section 10 companies, which resemble business oriented (for profit) companies in their legal structure, but do not have a share capital and cannot distribute shares or pay dividends to their members. These companies are governed by the members and directors. A Section 10 company is therefore recommended as a legal vehicle to own and manage the enterprise.

However, there are other different forms of legal entities that could be considered. These include cooperatives, a public company where shares could/will be sold, a Proprietary Limited (Pty Ltd.) company, a partnership or a sole proprietorship. The particular conditions of the investment would dictate the type of legal entity.

C.7.2. Organogram

A total of seven people will be employed. The structure of the organisation is illustrated in Figure 34.

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

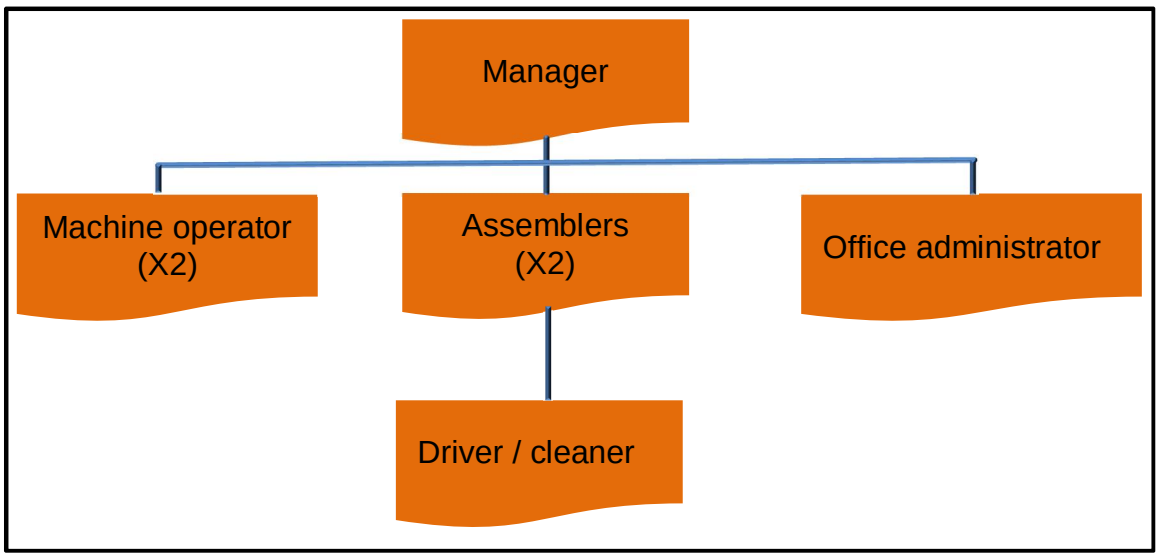


Figure 34: Organogram

C.7.3. Human resource requirements

The human resources required to operate the enterprise is detailed in Table 22.

Table 22: Human resource requirements

Job title	Duties	Qualifications and experience required	Number of jobs	Monthly cost per employee	Total annual costs
Manager	• General administration • Production supervision • Marketing • Bookkeeping	• B.Sc / B.Tech / Mechanical engineering • 10 years	1	R 29 167	R 350 000
Machine operators	• Operation of the factory equipment	• Technician / Artisan • 5 years	2	R 8 333	R 200 000
Assemblers	• Assembly of agro-processing machinery	• Diploma • 5 years	2	R 6 667	R 160 000
Office administrator	• Office administration • Ad hoc tasks	• Matric • 3 years	1	R 6 250	R 75 000
Driver / cleaner	• Driving • Cleaning • Ad hoc tasks	• Matric • 3 years	1	R 4 167	R 50 000
TOTALS			**7**		**R 835 000**

Labour would be sourced from Matlosana and its surrounding areas.

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

C.8. RISK MANAGEMENT

Every enterprise is exposed to risks. Risk management is the process of identifying those risks, analysing them and implementing mitigation measures.

The potential risks that have been identified for the factory, as well as ways to mitigate these are listed in Table 23.

Table 23: Risk factors, impact and mitigation

Possible Risk	Impact	Likelihood	Overall rating	Mitigation Action
9. Raw material price variability	High	Medium	High	• Build and maintain strong relationships with suppliers
10. Loss of electricity supply	High	Medium	Medium	• Consider own backup power supply
11. Inability to secure grant funding	High	Medium	Medium	• Presentation of the business plan to multiple funders
12. Low demand for products	High	Medium	Medium	• Marketing and promotion • Make changes to products
13. Cash flow problems due to delayed customer payments	High	Low	Medium	• Take out insurance for credit or bad debt protection
14. Market collapse or economic recession	High	Low	Medium	• Monitor world events for incidents that might affect the supply chain
15. Cheap agro-processing machine imports	Medium	Medium	Medium	• Negotiate lower sales prices or offer discounts
16. General liability claims (due to product quality failure)	Medium	Low	Low	• Apply quality control measures

PDF-XChange
Click to buy NOW!
www.docu-track.com

PDF-XChange
Click to buy NOW!
www.docu-track.com

APPENDIX D - FINANCIAL ANALYSIS

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

D.1. INTRODUCTION

Based on a comprehensive list of assumptions (refer Appendix E), a financial model was prepared for the agro-processing machinery manufacturing enterprise.

The enterprise will focus on the production and sale of the following agro-processing equipment:

- Shelling machines;
- De-hullers;
- Threshers; and
- Winnowers.

The main assumptions that underpin the model are as follows:

- Manufacturing of four units of each machine per month.
- Phased in production:
  - Year 1: 70% of the total production capacity;
  - Year 1: 80% of total the production capacity;
  - Year 1: 90% of the total production capacity; and
  - Year 1: 100% of the total production capacity.
- Operating time of eight hours per day, five days per week.
- Costs and sales prices increase by 7% per annum for the next ten years.
- Depreciation rates for infrastructure and equipment are set at the standard South African Revenue Services (SARS) wear and tear rates.
- The financial model assumed a discount rate or cost of capital of 1%.
- Grant funding will be provided for the construction, capital equipment and working capital.

D.2. COSTS

There are three types of costs for any business operation that need to be taken into account. These are investment, direct and indirect costs.

Investment costs are typically once-off, and incurred mainly during the set-up of the facility for items such as:

- Capital expenditure;
- Pre-operation expenses; and
- Working capital.

Direct operating costs, alternatively known as variable costs, are directly linked to the number of products or services produced and sold (such as raw materials costs).

Indirect operating costs, alternatively known as fixed production costs, are incurred once operations start. These costs are not linked to any level or amount of production and are as such incurred irrespective of the number of products or services produced and sold (such as insurance, maintenance and salaries).

D.2.1. Investment costs

The investment costs for the enterprise are summarised in Table 24.

Table 24: Investment costs

Description	Amount (R)
Plant machinery and equipment	3 014 769
Auxiliary and service plant equipment	6 000
Incorporated fixed assets (project overheads)	366 150
Pre-Operation expenditure	519 000
Contingencies	454 440
Working Capital for Year 1	39 641
Total investment costs	**4 400 000**

A summary of these costs are illustrated in Figure 35.

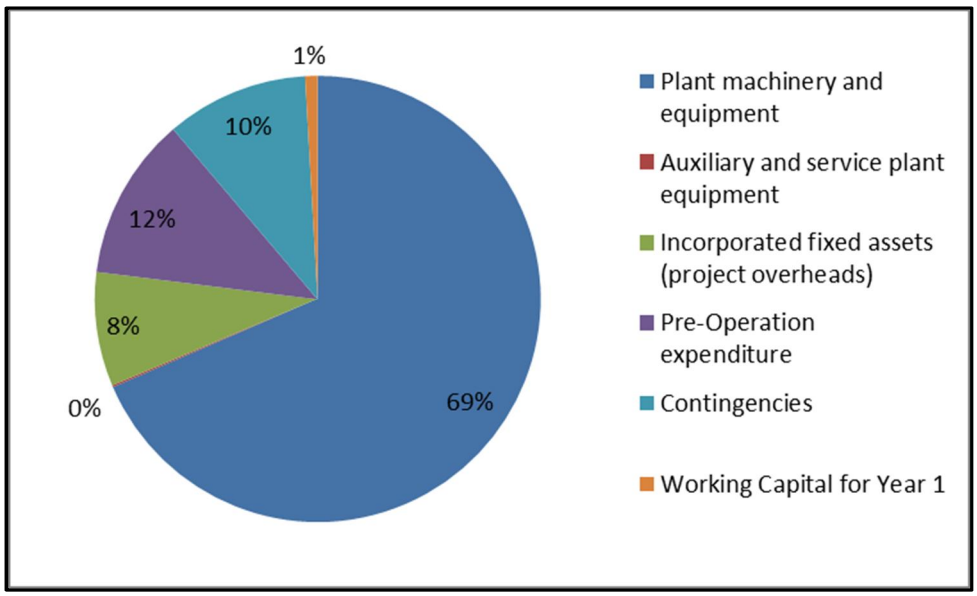


Figure 35: Capital investment costs

The total investment costs include funds required for the replacement of fully depreciated or obsolete assets, such as computers, printers, office furniture and the bakkie during the operation of the enterprise.

About 69% of the total investment costs are for plant machinery and equipment. The second largest portion of the investment costs is pre-operation expenditure, at 12%.

D.2.2. Direct costs

The direct or variable costs of the operation are incurred proportionally to the number of products or services produced.

The direct costs comprise raw materials, utilities and delivery.

Raw materials include the following:

- Structural steel;

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

- Sheet metal (3 mm);
- Screen metal (perforated metal sheet);
- Bearings (including accessories);
- Fans;
- Pulleys and belts;
- Electric motors;
- Wheels;
- Steel flats;
- Welding rods;
- Other hardware (nuts, bolts, washers); and
- Paint.

Utilities only include electricity and water.

The direct costs for the products during the first year of operation are contained in Table 25.

Table 25: Direct costs for products

Cost Description	Shelling machines	De-hullers	Threshers	Winnowers	Total
Raw materials	R 314 152	R 235 614	R 78 538	R 31 415	R 659 719
Factory supplies	R 5 184	R 5 184	R 5 184	R 5 184	R 20 736
Electricity	R 31 886	R 31 886	R 31 886	R 31 886	R 127 544
Water	R 12 461	R 12 461	R 12 461	R 12 461	R 49 844
Total	**R 363 683**	**R 285 145**	**R 128 069**	**R 80 946**	**R 857 843**

The breakdown of the combined direct costs is illustrated in Figure 36

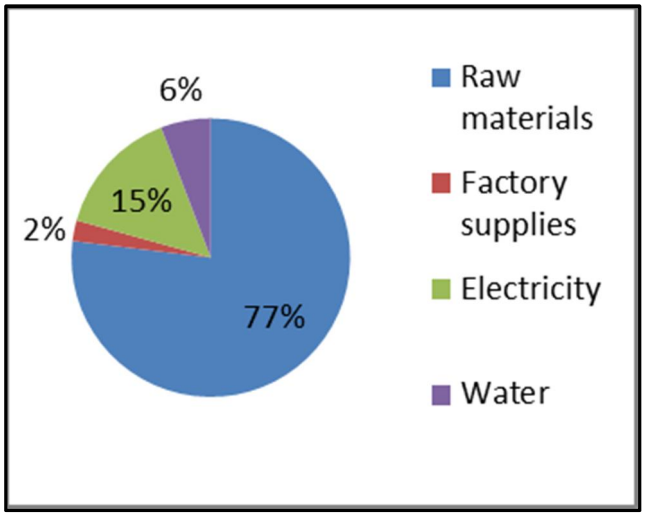


Figure 36.

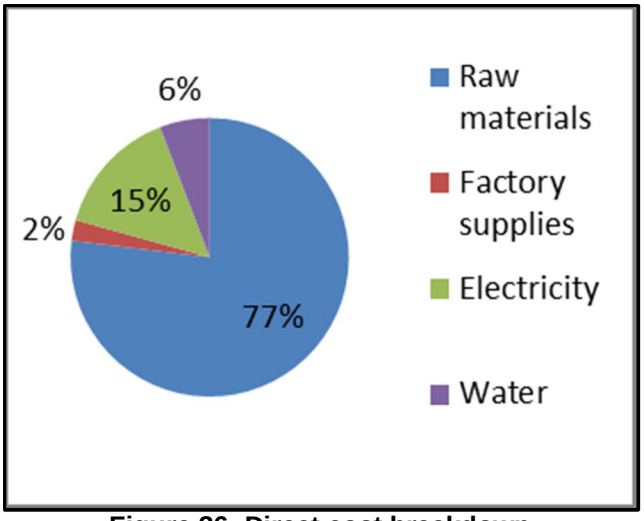


Figure 36: Direct cost breakdown

About 77% of the total direct costs are for raw materials. The second largest portion of the direct costs is electricity, at 15%.

The breakdown of the direct costs for the respective products is illustrated in Figure 37 to Figure 40.

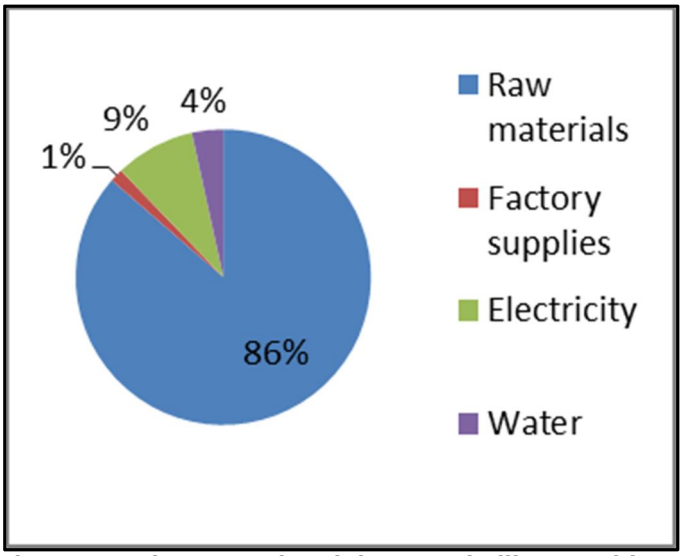


Figure 37: Direct cost breakdown – Shelling machines

About 86% of the direct costs for the shelling machines are for raw materials. The second largest portion of the direct costs is for electricity, at 9%.

PDF-XChange
Click to buy NOW!
www.docu-track.com

PDF-XChange
Click to buy NOW!
www.docu-track.com

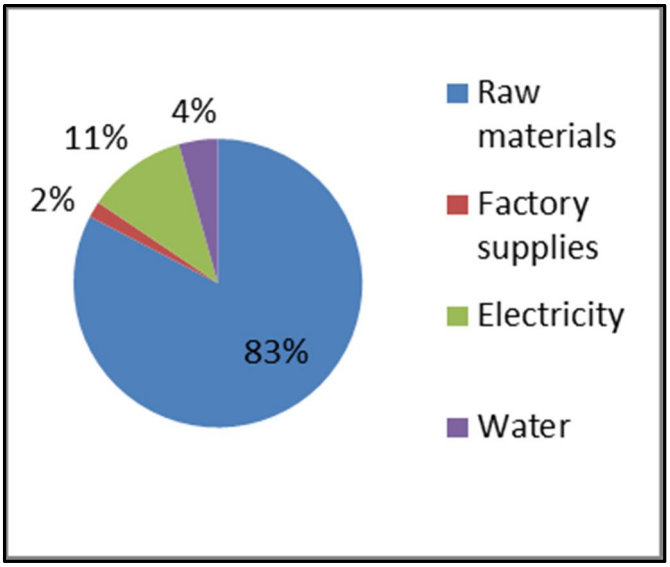


Figure 38: Direct cost breakdown – De-hullers

About 83% of the direct costs for the de-hullers are for raw materials. The second largest portion of the direct costs is for electricity, at 11%.

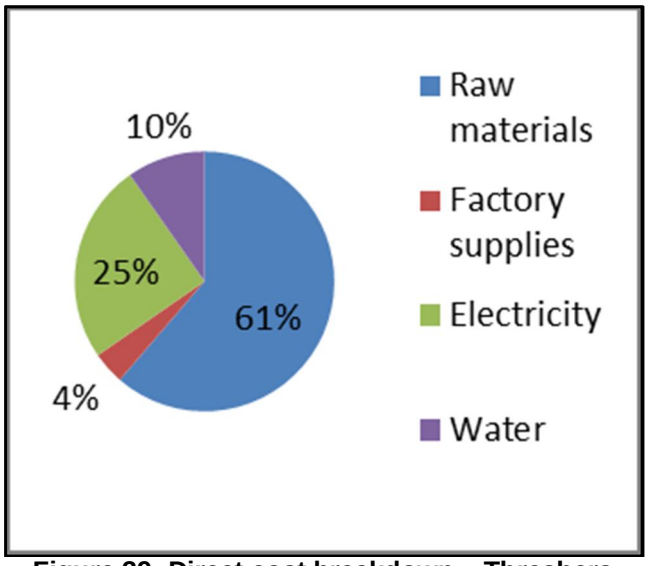


Figure 39: Direct cost breakdown – Threshers

About 61% of the direct costs for the threshers are for raw materials. The second largest portion of the direct costs is for electricity, at 25%.

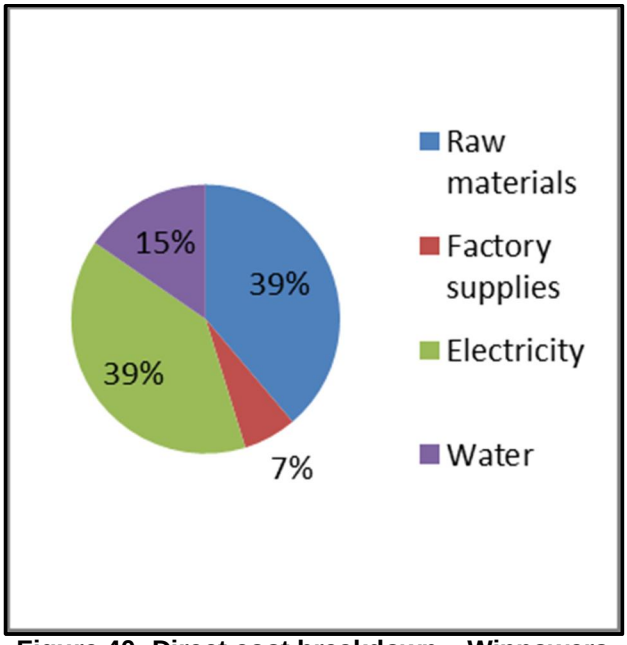


Figure 40: Direct cost breakdown – Winnowers

About 39% of the direct costs for the winnowers are is for raw materials and another 39% for electricity. The next largest portion of the direct costs is for water, at 15%.

Based on the above analysis, the following measures need to be put in place to keep costs as low as possible:

- Generation of raw material waste should be kept as low as possible, in particular for sheet metal and structural steel, which contributes about 65% towards the total raw material costs;
- Negotiation with raw material suppliers for lower prices based on bulk buying;
- Continuous competitiveness improvement to manufacture quality products at lower costs; and
- Bulk importation of cheaper machine components such as electric motors.

D.2.3. Indirect costs

The indirect costs of the operation are not linked to the quantity of products or amount of services produced and sold. These costs are fixed.

A summary of the indirect costs and their breakdown are shown in Table 26 and Figure 41 respectively.

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

Table 26: Indirect costs

Description	Operation Y1	Operation Y2	Operation Y3	Operation Y4	Operation Y5	Operation Y6	Operation Y7	Operation Y8	Operation Y9	Operation Y10
Factory supplies	10 700	11 449	12 250	13 108	14 026	15 007	16 058	17 182	18 385	19 672
Water	4 201	4 495	4 810	5 146	5 506	5 892	6 304	6 746	7 218	7 723
Repair, maintenance, material	16 050	17 174	18 376	19 662	21 038	22 511	24 087	25 773	27 577	29 507
Labour	893 450	955 992	1 022 911	1 094 515	1 171 131	1 253 110	1 340 828	1 434 685	1 535 113	1 642 571
Labour overhead costs (taxes etc.)	17 869	19 120	20 458	21 890	23 423	25 062	26 817	28 694	30 702	32 851
Factory overhead costs	401 250	429 338	459 391	491 549	525 957	562 774	602 168	644 320	689 422	737 682
Administrative overhead costs	45 712	48 912	52 335	55 999	59 919	64 113	68 601	73 403	78 541	84 039
Depreciation	618 112	618 112	618 112	618 112	455 241	632 087	190 049	190 049	190 049	67 326
Costs of products	**2 007 343**	**2 104 590**	**2 208 643**	**2 319 980**	**2 276 240**	**2 580 556**	**2 274 912**	**2 420 852**	**2 577 008**	**2 621 372**

The indirect costs for the first year of operation will amount to about R2 007 343, and will escalate annually by 7%.

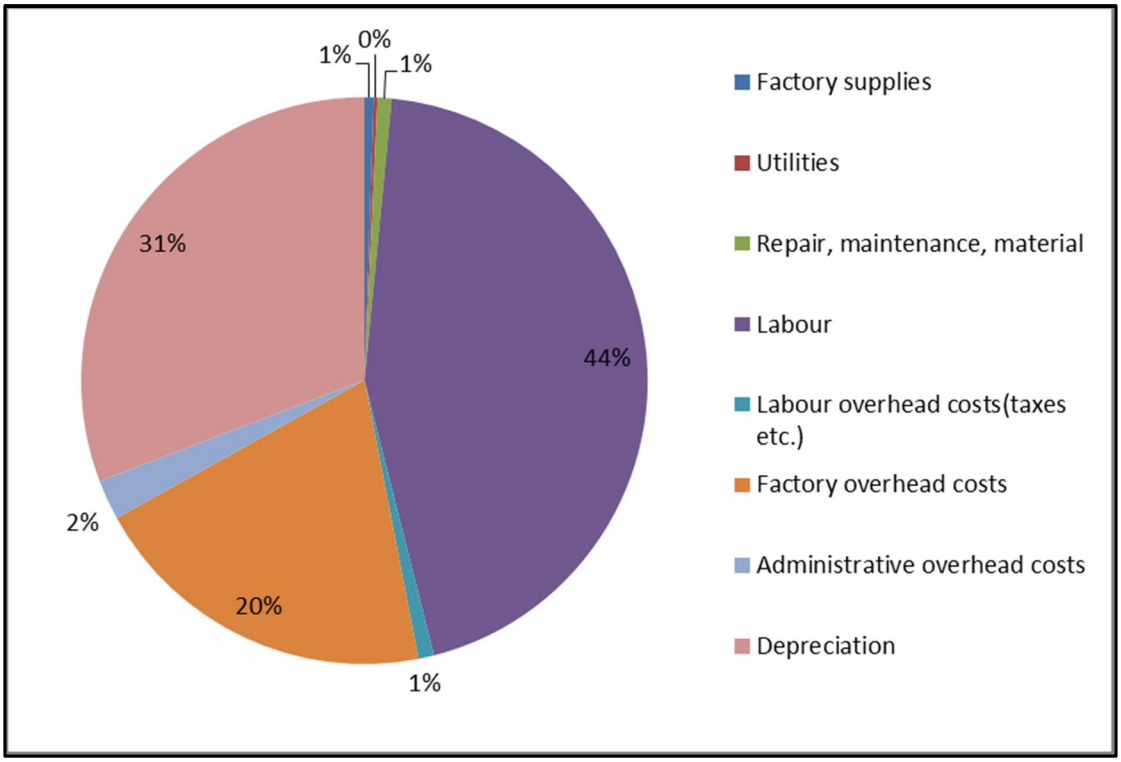


Figure 41: Indirect cost of the enterprise

About 44% of the total indirect costs are for labour. The second largest portion of the indirect costs is for depreciation, at 31%.

D.3. SALES

Table 27 shows the projected sales for the enterprise.

Table 27: Sales forecast

Product	Units sold per annum (Y1)	Current selling price per unit	Annual sales
Shelling machine	48	R 22 500	R 1 080 000
De-huller	48	R 16 875	R 810 000
Thresher	48	R 5 625	R 270 000
Winnower	48	R 2 250	R 108 000
TOTAL			**R 2 268 000**

The total revenue generated by sales is projected to be R2 268 000 in the first year of operation. Thereafter sales will increase at a rate of 7% or a higher percentage if the market share increases.

PDF-XChange
Click to buy NOW!
www.docu-track.com

PDF-XChange
Click to buy NOW!
www.docu-track.com

D.4. PREDICTED TEN YEAR FINANCIAL STATEMENTS

Based on the cost and sales assumptions, projected ten year income statements, balance sheet and cash flow statements were prepared.

D.4.1. Income Statement

The primary purpose of the income statement is to report the enterprise's earnings to interested and affected parties such as investors, shareholders, employees and creditors over a specific period of time. It matches the corresponding expenses to the revenue. The income statement, sometimes referred to as the statement of earnings or statement of operations, presents a picture of enterprise’s profitability over the entire period of time covered. The predicted income statement of this enterprise is shown in Table 28.

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

Table 28: Income statement

Description	Operation Y1	Operation Y2	Operation Y3	Operation Y4	Operation Y5	Operation Y6	Operation Y7	Operation Y8	Operation Y9	Operation Y10
Sales revenue	2 426 760	2 867 116	3 357 230	3 901 912	4 175 046	4 467 299	4 780 010	5 114 611	5 472 633	5 855 718
Less variable costs	841 482	994 176	1 164 124	1 352 993	1 447 703	1 549 042	1 657 475	1 773 498	1 897 643	2 030 478
Less fixed costs	2 007 343	2 104 590	2 208 643	2 319 980	2 276 240	2 580 556	2 274 912	2 420 852	2 577 008	2 621 372
Material	30 951	33 117	35 436	37 916	40 570	43 410	46 449	49 700	53 179	56 902
Personnel	911 319	975 111	1 043 369	1 116 405	1 194 553	1 278 172	1 367 644	1 463 379	1 565 816	1 675 423
Marketing (except personnel)	0	0	0	0	0	0	0	0	0	0
Depreciation	618 112	618 112	618 112	618 112	455 241	632 087	190 049	190 049	190 049	67 326
Other fixed costs	446 962	478 249	511 727	547 547	585 876	626 887	670 769	717 723	767 964	821 721
GROSS PROFIT	**(421 935)**	**(231 510)**	**(15 387)**	**229 099**	**451 275**	**337 885**	**847 820**	**920 471**	**998 207**	**1 204 109**
Deductible loss	0	0	0	229 099	246 897	0	0	0	0	0
TAXABLE PROFIT	**0**	**0**	**0**	**0**	**204 378**	**337 885**	**847 820**	**920 471**	**998 207**	**1 204 109**
Income (corporate) tax	0	0	0	0	57 226	94 608	237 390	257 732	279 498	337 150
NET PROFIT	**(421 935)**	**(231 510)**	**(15 387)**	**229 099**	**394 049**	**243 277**	**610 431**	**662 739**	**718 709**	**866 958**

PDF-XChange
Click to buy NOW!
www.docu-track.com

PDF-XChange
Click to buy NOW!
www.docu-track.com

The combined variable and fixed costs for the first three years are more than the revenue generated, hence the negative profit.

However the trend is reversed from the fourth to the tenth year, with marginal profits being realised.

The results of the income statement indicate a potential for this opportunity to be turned into a sustainable enterprise, even though it may be at a survivalist level.

D.4.2. Balance Sheet

The balance sheet, also known as a "statement of financial position", reveals the enterprise's assets, liabilities and owners' equity (net worth). The purpose of the balance sheet is to provide an idea of the company's financial position, along with displaying what the company owns and owes.

The projected balance sheet of the enterprise is illustrated in Table 29.

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

Table 29: Balance sheet

Description	Establishment Y0	Operation Y1	Operation Y2	Operation Y3	Operation Y4	Operation Y5	Operation Y6	Operation Y7	Operation Y8	Operation Y9	Operation Y10
TOTAL ASSETS	**4 400 000**	**4 692 056**	**4 698 990**	**4 712 505**	**4 956 430**	**5 129 522**	**4 988 247**	**5 563 141**	**6 236 739**	**6 967 066**	**7 846 456**
Total current assets	39 641	527 875	921 410	1 537 650	2 394 456	2 401 943	3 250 785	4 055 006	4 918 653	5 839 030	6 785 746
Inventory on materials & supplies	0	56 430	65 436	76 512	88 819	94 892	101 534	108 641	116 246	124 384	133 090
Work in progress	0	6 115	6 760	7 512	8 336	8 913	9 537	10 205	10 919	11 684	12 501
Finished product	0	43 375	48 235	53 563	59 400	63 558	68 007	72 768	77 861	83 312	89 144
Accounts receivable	0	371 786	413 442	459 109	509 144	544 784	582 919	623 723	667 383	714 100	764 087
Cash-in-hand	0	24 852	26 592	28 454	30 445	32 577	34 857	37 297	39 908	42 701	45 690
Cash surplus, finance available	39 641	23 446	358 943	910 358	1 696 021	1 654 767	2 451 307	3 199 565	4 003 331	4 859 636	5 737 794
Total fixed assets, net of depreciation	4 360 359	3 742 247	3 124 135	2 506 023	1 893 142	2 287 847	1 691 778	1 508 135	1 318 086	1 128 036	1 060 710
Fixed investments	0	3 841 359	3 841 359	3 841 359	3 841 359	3 846 589	4 696 535	4 732 553	4 738 960	4 738 960	4 738 960
Construction in progress	3 841 359	0	0	0	5 230	849 946	36 018	6 407	0	0	0
Total pre-production expenditures	519 000	519 000	519 000	519 000	519 000	519 000	519 000	519 000	519 000	519 000	519 000
Less accumulated depreciation	0	618 112	1 236 224	1 854 336	2 472 447	2 927 688	3 559 775	3 749 824	3 939 874	4 129 923	4 197 250
Accumulated losses brought forward	0	0	421 935	653 445	668 832	439 733	45 684	0	0	0	0
Loss in current year	0	421 935	231 510	15 387	0	0	0	0	0	0	0
TOTAL LIABILITIES	**4 400 000**	**4 692 056**	**4 698 990**	**4 712 505**	**4 956 430**	**5 129 522**	**4 988 247**	**5 563 141**	**6 236 739**	**6 967 066**	**7 846 456**
Total current liabilities	0	92 056	98 990	112 505	127 331	135 474	144 969	155 117	165 976	177 594	190 025
Accounts payable	0	92 056	98 990	112 505	127 331	135 474	144 969	155 117	165 976	177 594	190 025
Total equity capital	4 400 000	4 600 000	4 600 000	4 600 000	4 600 000	4 600 000	4 600 000	4 600 000	4 600 000	4 600 000	4 600 000
Subsidies, grants	4 400 000	4 600 000	4 600 000	4 600 000	4 600 000	4 600 000	4 600 000	4 600 000	4 600 000	4 600 000	4 600 000
Retained profit	0	0	0	0	229 099	394 049	243 277	610 431	662 739	718 709	866 958
Net worth	**4 400 000**	**4 178 065**	**3 946 555**	**3 931 168**	**4 160 267**	**4 554 316**	**4 797 593**	**5 408 024**	**6 070 763**	**6 789 472**	**7 656 431**

PDF-XChange
Click to buy NOW!
www.docu-track.com

PDF-XChange
Click to buy NOW!
www.docu-track.com

The balance sheet shows a positive net worth, which is an indication that the enterprise would have sufficient assets to meet its liabilities, both in short-term and long-term.

D.4.3. Cash Flow Statement

The cash flow statement discloses how the enterprise raises money and how it spends those funds during a given period. It also measures its ability to cover its expenses in the short term. Generally speaking, a business that is consistently earning more cash than it spends is considered to be of good value.

Table 30 shows the projected cash flow of the enterprise.

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

Table 30: Cash-flow statement

Description	Establishment Y0	Operation Y1	Operation Y2	Operation Y3	Operation Y4	Operation Y5	Operation Y6	Operation Y7	Operation Y8	Operation Y9	Operation Y10
TOTAL CASH INFLOW	**4 400 000**	**2 718 947**	**2 874 190**	**3 370 895**	**3 916 898**	**4 183 360**	**4 476 979**	**4 790 354**	**5 125 679**	**5 484 477**	**5 868 390**
Total equity capital	4 400 000	200 000	0	0	0	0	0	0	0	0	0
Total short-term finance	0	92 056	6 934	13 515	14 826	8 143	9 496	10 148	10 858	11 618	12 432
Sales revenue	0	2 426 760	2 867 116	3 357 230	3 901 912	4 175 046	4 467 299	4 780 010	5 114 611	5 472 633	5 855 718
TOTAL CASH OUTFLOW	**4 360 359**	**2 735 143**	**2 538 692**	**2 819 480**	**3 131 236**	**4 224 614**	**3 680 439**	**4 042 097**	**4 321 913**	**4 628 172**	**4 990 232**
Fixed investments	3 841 359	0	0	0	5 230	849 946	36 018	6 407	0	0	0
Pre-production expenditures	519 000	0	0	0	0	0	0	0	0	0	0
Increase in current assets	0	504 429	58 038	64 825	71 144	48 740	52 302	55 963	59 881	64 073	68 558
Operating costs	0	2 230 714	2 480 654	2 754 655	3 054 862	3 268 702	3 497 511	3 742 337	4 004 300	4 284 601	4 584 524
Income (corporate) tax	0	0	0	0	0	57 226	94 608	237 390	257 732	279 498	337 150
SURPLUS (DEFICIT)	**39 641**	**16 195**	**335 497**	**551 415**	**785 663**	**41 253**	**796 540**	**748 257**	**803 766**	**856 305**	**878 158**
CUMULATIVE CASH BALANCE	**39 641**	**23 446**	**358 943**	**910 358**	**1 696 021**	**1 654 767**	**2 451 307**	**3 199 565**	**4 003 331**	**4 859 636**	**5 737 794**

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

Total grant funding R4 600 000 is required cover capital expenditure and working capital for the establishment and first year of operation, in the following amounts:

- R4 400 000: Establishment (Year 0); and
- R 200 000: Operation Year 1.

If such grant funding could be secured, the enterprise will have a positive cash flow from the start.

D.5. FINANCIAL ANALYSIS

A financial analysis was done to analyse whether the enterprise could be stable, solvent, liquid, and profitable enough to be invested in.

D.5.1. Profitability

The projected performance of the enterprise in terms of profitability is summarised in Figure 42.

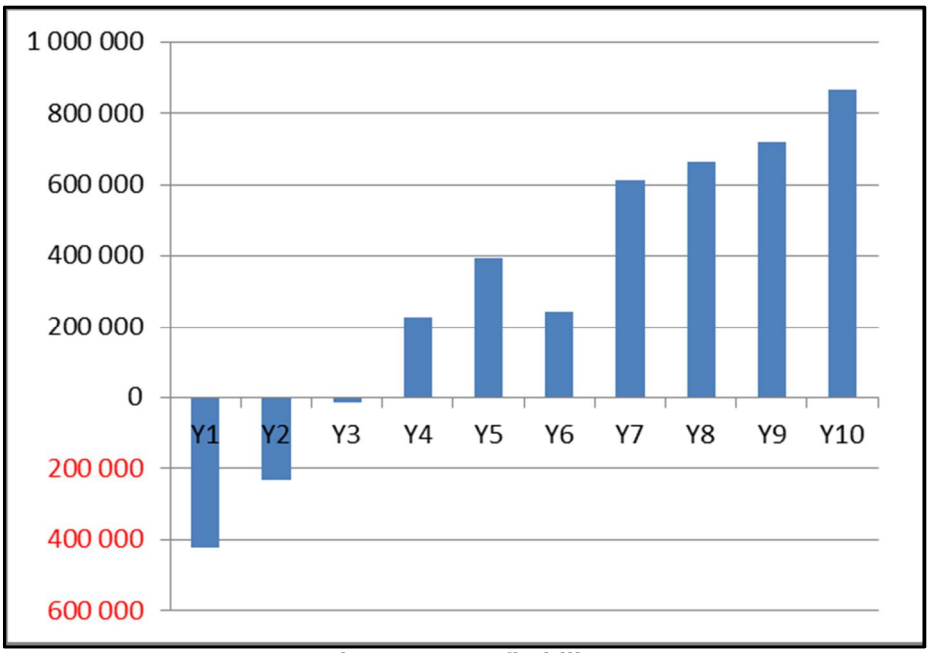


Figure 42: Profitability

The graph shows financial losses for the first three years. However, the profit margins would become positive from the fourth year onwards, and be above R800 000 by the tenth year of operation.

D.5.2. Net present value (NPV)

The NPV compares the value of money today to the value of the projected cash flow in the future, taking into account inflation and returns.

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

If a discount rate of 1% is used, the NPV for this enterprise is R2 510 836. This indicates positive returns for the investment into the enterprise.

D.5.3. Internal rate of return (IRR)

The IRR measures and compares the profitability of investments against the cost of capital. The cost of capital is decided upon by the investor as a minimum return that could be accepted by the investor. The acceptable IRR for any enterprise should always be above the cost of capital.

The projected IRR for this enterprise is 7.34% which is more than the discount rate of 1%. At this rate, this opportunity could be considered for investment.

D.5.4. Payback period

The payback period gives an indication of how long the business would have to operate and generate profits, before it will be able to repay the initial investment. The acceptable payback period is normally determined by investors.

This enterprise would be able to pay back the investment of grant funding in 9.2 years.

D.5.5. Sensitivity analysis

A sensitivity analysis to determine the impact on the NPV, IRR and payback was carried out on different variables, as shown in Table 31.

Table 31: Sensitivity analysis

Analysis parameter	NPV	IRR	Payback period
Current / baseline	R2.5 million	7.34%	9.2 years
Reduction of product selling prices by 10%	R0.7 million	0.93%	Not found
Reduction in sales volumes by 10%	R0.5 million	2.28%	11 years
Increase in labour costs by 10%	R1.6 million	5.11%	10.3 years
Increase in raw material costs by 10%	R1.7 million	5.33%	10.2 years
Increase in sheet metal and structural steel costs by 10%	R1.9 million	5.74%	9.96 years

From this analysis it can be seen that the enterprise would be negatively affected by any of the following:

- A reduction in sales prices or volumes; and
- An increase in labour or raw material costs (especially sheet metal and structural steel costs).

A reduction in sales prices or volumes would have the largest impact on the profitability of the enterprise. Therefore, the following actions have to be taken:

- Building and maintaining long term relationships with customers;
- Liaising with the relevant government departments, regarding incentives to assist small farmers to buy equipment; and
- Aggressive marketing and promotion of the products.

PDF-XChange
Click to buy NOW!
www.docu-track.com

PDF-XChange
Click to buy NOW!
www.docu-track.com

D.6. ECONOMIC BENEFITS OF THE PROPOSED BUSINESS

The establishment of government funded ventures mainly aims at sparking economic activity in a specific area. Job creation also remains high on the government agenda. It is therefore important to consider benefits beyond just financial viability. An analysis was done on the potential of the enterprise to create jobs and livelihoods in the area, as well as its impact on the local economy.

D.6.1. Gross value added (GVA)

The GVA, also known as the localised gross domestic product (GDP), is a measure of the value of goods and services produced in an area, industry or sector of the economy. It takes into account the following:

- Net profits;
- Depreciation; and
- Salaries and wages.

The GVA is an indication of the economic activity that can take place in a certain geographical area, brought about by the establishment or operation of a venture. GVA is calculated by adding the average annual net profit, depreciation and salary spend.

The GVA for this opportunity is expected to average at R2 560 610 per annum.

D.6.2. Jobs

Based on the number of people needed to operate the operations, management and auxiliary staff, the venture could yield seven direct job opportunities. These would include the following:

- Qualified staff: 5;
- Grade 12 level jobs: 1; and
- Low skill jobs: 1.

In addition, the impact multiplier for jobs in the manufacturing sector is 1.3 – therefore, in addition to the direct jobs created, this venture could contribute to the livelihoods of nine people.

PDF-XChange
Click to buy NOW!
www.docu-track.com

PDF-XChange
Click to buy NOW!
www.docu-track.com

APPENDIX E - FINANCIAL ASSUMPTIONS

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

Description	Value			
1.Project ID				
Project Type:	Industrial			
Level of Analysis:	Feasibility Study			
Project Title	Agro-processing machinery			
Project Classification:	• New project			
Depth of Analysis:	Financial			
Special Features:	• Inflation = 7%			
	• Escalate first year= **0** times			
	• Stock model=By total			
2.Planning Horizon				
Month of Balance	3			
Construction phase	• Beginning month & year=**07/2015**			
	• length= 0.5 years			
Production phase	• length= **10 years**			
	• length of start-up phase= 0 months(included in **above years**)			
	• Reference year=2021 (no of years after start by which payback will happen)			
3.Products	**Name**	**Start of Production**	**End of Production**	**Nominal Capacity**
Products:	Shelling machine	**01/2016**	**12/2025**	63
	De-huller	**01/2016**	**12/2025**	63
	Thresher	**01/2016**	**12/2025**	63
	Winnower	**01/2016**	**12/2025**	63
4.Currencies				

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

Currency	• Type=Local						
	• Name=South African Rand						
	• Abbreviation=ZAR						
	• Exchange Rate=N/A						
5.Inflation							
Inflation Rate:	**7**% for each year, except for first year(All costs and sales prices will be increased annually by ths percentage)						
6.Joint Venture Partner							
Joint Venture Partner	Not applicable						
7.Discounting							
Total investment:	• Rate (%) = **1**						
	• Length=**Automatic (Construction + Production years)**						
Total equity capital:	• Rate (%) = **1**						
	• Length=**Automatic (Construction + Production years)**						
For all Joint Venture Partners:	• Rate (%) = **1**						
	• Length=**Automatic (Construction + Production years)**						
8.Fixed Investments:							
Fixed Investments:	**Description**	**Supplier**	**Depreciation Years (Use SARS Wear &Tear Rates)**	**Years of Purchase**	**Quantity**	**Cost(ZAR)**	**Total Cost(ZAR)**
	Land Purchase						-
	Land preparation		0	0	0.00		-
	Civil works, structures & buildings						
	Construction of factory		0	0	0.00		-
							-
	Plant machinery & equipment:						
	Production machinery		6		1.00	2 663 285	2 663 285
	Forklift		4		1.00	351 484	351 484
	TOTAL: Land preparation; Civil works, structures & buildings; Plant, machinery & equipment						**3 014 769**
	Auxiliary & service plant equipment:						
	•Telephone connections			Y0	1.00	5 000	5 000

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

	•Utilities(Electricity & water)			Y0			
	•internet connection			Y0	1.00	1 500	1 500
	•Develop brochure						
	Develop Web page						
	Environmental protection						-
	Total: Auxiliary & service plant equipment						**6 500**
	Incorporated fixed assets(project overheads):						
	•Basic canteen furniture		6 years	Y0	1.00	13 370	13 370
	•Office furniture, fittings and fixtures		6 years	Y0	2.00	9 395	18 790
	•Computers		5 years	Y0 & Y6	2.00	12 000	24 000
	Printers/Copier		5 years	Y0; Y4 & Y7	2.00	2 000	4 000
	•Software(MS office, Pastel ,e-mail)		3 years	Y0 & Y6	1.00	3 990	3 990
	•Telephones		5 years	Y0 & Y6	2.00	1 000	2 000
	•Bakkie		4 years	Y0 & 5	1.00	300 000	300 000
	Total: Incorporated fixed assets						**366 150**
	Preproduction Expenditure						
	•Training			Y0	1.00	100 000	100 000
	•Marketing			Y0	1.00	50 000	50 000
	•Recruitment			Y0	2.00	30 000	60 000
	•Relocation cost for staff			Y0	5.00	6 000	30 000
	•Consultants			Y0	1.00	100 000	100 000
	•Project management (Design costs)			Y0	1.00	100 000	100 000
	•Cleaning of machines			Y0	1.00	12 000	12 000
	•Cleaning of factory			Y0	1.00	6 000	6 000
	•Set up production control system			Y0	1.00	30 000	30 000
	•Set up stock control system			Y0	1.00	25 000	25 000
	•Establish legal entity			Y0	1.00	6 000	6 000
	Total: Preproduction expenditure						**519 000**

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

	Contingencies (10% of total Fixed Investments)				10%	3 906 419	390 641.90
							-
9.Production Costs							
	Description			**Years**	**Quantity**	**Cost(ZAR)**	**Cost(ZAR)**
	Factory Supplies:				1.00	10 000	10 000
	Utilities:				1.00	10 000	10 000
	•Electricity (kWh)			Y1 - Y10	1.00	2 857	2 857
	•Water (kl)			Y1 - Y10	1.00	1 069	1 069
	Transport						-
	Repair, Maintenance & material				1.00	15 000	15 000
	Labour:						
	Manager			Y1 - Y10	1.00	350 000	350 000
	Machine operators			Y1 - Y10	4.00	100 000	400 000
	Assemblers			Y1 - Y10	4.00	80 000	320 000
	Maintenance artisan			Y1 - Y10	1.00	100 000	100 000
	Sales and marketing officer			Y1 - Y10	1.00	180 000	180 000
Indirect Costs:	Driver			Y1 - Y10	1.00	50 000	50 000
	Cleaner			Y1 - Y10	1.00	36 000	36 000
	Office administrator			Y1 - Y10	1.00	75 000	75 000
	Total - Labour						1 511 000
	Labour overhead costs (taxes etc.):						
	•SDL (1% of salary bill)			Y1 - Y10	1%	1 511 000	15 110
	•UIF (1% of salary bill)			Y1 - Y10	1%	1 511 000	15 110
	Factory overhead costs:						
	Materials & Services			Y1 - Y10	1.00	15 000	15 000
	Security services			Y1 - Y10	1.00	60 000	60 000
	Rent, leasing costs			Y1 - Y10	1.00	240 000	240 000
	Insurance			Y1 - Y10	12.00	5 000	60 000
	Administrative overhead costs						

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

	•Office supplies				1	12500	12500
	•Accounting & audit fees				1	16000	16000
	•Bank				1	2221.32	2221.32
	•Telephone & internet				1	12000	12000
	Marketing overhead costs:						
	•Brochure updates						
	•Samples						
	•S&T						
	•Web page updates						
	•Exhibitions						
	•Publications						
Shelling machine	Raw materials				1.00	11 250	6 000
	Factory supplies				1.00	99	99
	Electricity				1.00	609	609
	Water				1.00	238	238
De-huller	Raw materials				1.00	8 438	4 500
	Factory supplies				1.00	99	99
	Electricity				1.00	609	609
	Water				1.00	238	238
Thresher	Raw materials				1.00	2 812	1 500
	Factory supplies				1.00	99	99
	Electricity				1.00	609	609
	Water				1.00	238	238
Winnower	Raw materials				1.00	1 125	600
	Factory supplies				1.00	99	99
	Electricity				1.00	609	609
	Water				1.00	238	238
10.Sales Programme							

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

Product Sales:				**Years**	**Quantity**	**Price(ZAR)**	**Total Price(ZAR)**
	Shelling machine				**63.00**	**22 500**	1 417 500
	De-huller				**63.00**	**16 875**	1 063 125
	Thresher				**63.00**	**5 625**	354 375
	Winnower				**63.00**	**2 250**	141 750
11.Working Capital							
Inventory	•Raw Materials=30 days						
	•Work in Progress =1 day						
	•Finished Goods 7 days						
	•Utilities=1 day						
	•Energy= 1 day						
Description	**Value**						
Account Receivable	• 60 days						
Cash-in-hand:	• Cash-in-hand-local=7 days						
Account Payable:	•Raw Materials=30 days						
	•Utilities=30 days						
	•Energy= 30 days						
	•Repair, maintenance, materials= 30 days						
	•Labour= 1day						
	•Labour Overheads = 1 day						
	•Factory Overheads= 30 days						
	•Administrative Costs = 30 days						
	•Direct Marketing Costs = 30 days						
12. Sources of Finance							
Equity,Risk Capital	**Joint Venture Partner**	**Year**	**Amount paid in**	**Total % of profits distributed**	**% of dividends Received(split between partners**		
				None			
				None			
				None			

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

				None	
				None	
Long-term Loan:	•Type= Annuity				
	•Repayment = Monthly				
	•First Repayment Date=?????				
	•Number of Repayments=60				
	•Disbursement date=??????				
	•Amount=R??????				
	•Interest rate=?%				
	•Capitalize interest=0%				
	•Commitment Fees=1 %				
	•Agency Fees=1 %				
	•Guarantee=1%				
	•Other Fees=%				
13.Tax Allowances					
Income	•Tax rate=28 % (or use SARS rates for small business)				
Description	**Value**				
(corporate)tax:	•Losses carried forward =3 years				

PDF-XChange
Click to buy NOW!
www.docu-track.com

PDF-XChange
Click to buy NOW!
www.docu-track.com

APPENDIX F - BIBLIOGRAPHY

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

Agriseta. (2010). *SECTOR ANALYSIS - Agriculture.* Agriseta.

Chernykoh, Y. (n.d.). *Threshing machines*. Retrieved from www.fotross.org: www.fotross.org

CTA. (2000). *Small-scale Food Processing Sector in South Africa, Working Document Number 8014.* Technical Centre for Agricultural and Rural Cooperation (CTA).

DAFF. (2011-2012). *Quarterly Economic Review of the.* DIRECTORATE: AGRO-PROCESSING SUPPORT.

DAFF. (2013). *Trends in the Agricultural Sector.* Department of Agriculture Forestry and Fisheries.

DARD. (2011). *Agro processing Strategy - North West Province.* Urban-Econ.

Destek. (2014, September 29). Product analysis of machinery in foodprocessing industry: http://www.destek.co.za/projects.htm.

Mulawo, E. S. (May 20th 2004). *Appropriate technologies for crop processing and storage in kkcp sites.*

North West Provincial Government. (2014). *Estimates of provincial revenue & expenditure 2014/2015.*

NWDC. (2013). *Invest in the North West.* North West Development Corporation.

Production, N. C. (2014). *www.ncpc.co.za*. Retrieved July 14, 2014, from ncpc.co.za: http://ncpc.co.za/ncpc-services/8-sectors-serviced/agroprocessing

SA Presidency. (2012). *national Infrastructure Plan.*

Saama. (n.d.). *saama.co.za*. Retrieved September 29, 2014, from www.saama.co.za: http://www.saama.co.za/

SEDA. (2012). *Research on the performance of the manufacturing sector.* Umjwali Market Research.

SENWES. (n.d.). *senwes.o.za*. Retrieved October 03, 2014, from www.senwes.co.za: http://www.senwes.co.za/

StatsSA. (2011). *Census Data.* Pretoria: Statistics South Africa.

Tlokwe City Council. (2013). *Integrated Development Plan (IDP).* Potchefstroom.

Tourism North West. (2014). *Overview of North West Province.*

UNIDO. (2008). *Report of the Global Agro-Industries Forum.* New Delhi (India): Food and Agriculture Organization of the United Nations.

Urban-Econ. (2011). *Agro-Processing Strategy NW.*

Urban-Econ. (2013). *NW Industry Workshop.*

www.engineeringnews.co.za. (n.d.). Retrieved July 03, 2014, from Engineering news: http://www.engineeringnews.co.za/article/agroprocessing-significant-economy-role-player-davies-2014-03-10

PDF-XChange
Click to buy NOW!
www.docu-track.com

PDF-XChange
Click to buy NOW!
www.docu-track.com

APPENDIX G - RELEVANT GOVERNMENT POLICIES

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

Presidential outcomes

After the 12 Presidential outcomes were adopted in 2010, it became acknowledged that they collectively address the main strategic priorities of government. As shown in the list below through bolded text, this project addresses four of the outcomes:

- Improved quality of basic education;
- A long and healthy life for all South Africans;
- All people in South Africa are and feel safe;
- Decent employment through inclusive economic growth;
- A skilled and capable workforce to support an inclusive growth path;
- An efficient, competitive and responsive economic infrastructure network;
- Vibrant, equitable and sustainable rural communities with food security for all;
- Sustainable human settlements and improved quality of household life;
- A responsive, accountable, effective and efficient local government system;
- Environmental assets and natural resources that are well protected and continually enhanced;
- Create a better South Africa and contribute to a better and safer Africa and World; and
- An efficient, effective and development oriented public service and an empowered, fair and inclusive citizenship.

New Growth Path

The Department of Economic Development tabled a summary of the New Growth Path (NGP) in 2010. The NGP recognises the role of an effective, developmental state in achieving broad-based employment growth and states that a key challenge in this regard is to improve the state's efficiency, effectiveness and responsiveness in the face of new opportunities and risks. The NGP prioritises efforts to support employment creation in the following key sectors (this project has an impact on five of the sectors):

- Infrastructure;
- The agricultural value chain;
- The mining value chain;
- The green economy;
- Manufacturing sectors; and
- Tourism and certain high-level services.

The agricultural value chain is highlighted as a priority sector in support of employment creation. Interventions should be focused on contributing towards economic growth and job creation in this sector.

Regional Industrial Development Strategy (RIDS)

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

RIDS is premised on the belief that industrial development cannot manifest through silos. RIDS calls on all regions to build their industrial economies based on local competitive advantages and opportunities. The main objectives of RIDS are that it should:

- Help to achieve the national industrial development objectives as set out in the NSDP.
- Further the goals of the Accelerated and Shared Growth Initiative for South Africa (ASGISA).
- Conform to the principles of the Integrated Manufacturing Strategy (IMS), the Microeconomic Reform Strategy (MRS) and the current draft National Industrial Policy Framework.
- Enhance the capacities and potentials identified in the Urban Spatial Competitive Framework and the proposed Local Economic Development (LED) framework that seek to address spatial constraints and opportunities related to industrial development in municipalities.
- Conform to principles of enterprise development and Broad-based Black Economic Empowerment (BEE).
- Conform to the government's environmental and other relevant policies

National Industrial Policy Framework (NIPF)

The National Industrial Policy Framework (NIPF) is a framework that aims to provide strategic direction for South Africa's industrial development. It follows the principles of the Reconstruction and Development Programme and plays a fundamental role in achieving ASGISA's goals.

Interventions to promote industrial development should address four main focus areas, namely the macro-economic environment, skills development, infrastructure and innovation.

Integrated Manufacturing Strategy (IMS)

The Integrated Manufacturing Strategy is geared at addressing industrial transformation. The Strategy is driven behind a sound policy environment with the following objectives:

- Achieving global competitiveness;
- Creation of employment;
- The development of small businesses;
- Black economic empowerment; and
- The geographic spread of economic activity.

Industrial Policy Action Plan

The Industrial Policy Action Plan for 2010 (IPAP2) follows from a range of successive industrial policies developed for South Africa, including the NIPF and the Industrial Policy Action Plan (IPAP), which was aimed at the implementation of industrial policy. IPAP2 sets

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

out an industrial policy for a three-year period (2010/2011 – 2012/2013), indicating the interventions that need to be undertaken to generate a structurally new path of industrialisation. The following sectors are identified:

- Green energy saving industries especially wind biomass, solar, thermal and green waste management;
- Plastics, pharmaceuticals, chemicals and packaging;
- Textiles and leather;
- Fuels and biofuels; and
- Agro-processing, food processing and organic food processing

The NSDP, URP and ISRDP

The President stated in his "State of the nation address" on the 9 February 2001 that: "the new structures of the local government, in urban and rural areas, will be the focal institution of government to ensure co-ordinated implementation of its feasibility study". Former President Thabo Mbeki announced the Urban Renewal Programme (URP) and the Integrated Sustainable Rural Development Programme (ISRDP) in February 2001, during the State of the Nation Address. It was articulated that the aim of these nodal programmes was the following:

"To conduct a sustained campaign against rural and urban poverty and underdevelopment, bringing in the resources of all three spheres of government in a coordinated manner"

Comprehensive Rural Development Programme (CRDP)

The CRDP is anchored on a belief that to create vibrant, equitable and sustainable rural communities, a three-pronged strategy is needed as follows:

- ***Co-ordinated and integrated broad-based agrarian transformation*** through the establishment of rural business initiatives, rural and agro-industries, co-operatives, cultural initiatives and local markets. It also involves increased production and the sustainable use of natural resources through livestock farming and cropping, as well as related value chain development;
- ***Rural development*** through the empowerment of rural people and communities and investment in economic and social infrastructure; and
- ***An improved land reform programme*** focusing on reviewing the Restitution, Redistribution and Tenure Reform Programmes to develop less costly alternative models of land redistribution.

Strategic Plan for South African Agriculture

The Strategic Plan for South African Agriculture is the product of cooperation between Government, Agri SA and the National African Farmers Union of South Africa (NAFU). The vision for the sector implies sustained profitable participation in the South African

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

agricultural economy by all stakeholders. It recognises the need to maintain and increase commercial production, to build international competitiveness and to address the historical legacies and biases that resulted in skewed access and representation. It gives a clear picture of where South African agriculture wants to be in the long term.

Sector Integrated Development Plan: Agriculture, Forestry and Fisheries

The department of Agriculture, Forestry and Fisheries published an Integrated Growth and Development Plan, 2011-2031(IGDP) for the sector. The purpose of the IGDP is to provide a long term strategic plan for the growth and development of South Africa's Agriculture, Forestry and Fisheries sectors, to allow it to address key government priorities and outcomes. The Plan also seeks to develop a common vision for all three sectors, and to develop an integrated implementation framework which allows common issues to be addressed in unison, and specific issues to be addressed in separate policies and strategies.

In order to transform and enhance the sector, the Plan focuses on:

- ***Equity*** in the sector (transformation and equitable access to markets and support and equity in the value chain);
- ***Growth and competitiveness*** of the sector (through provision of support to large numbers of small producers to enable them to improve their productivity and incomes, while ensuring the commercial sector continues to grow); and
- ***Environmental sustainability*** to ensure that the natural resources the sector is dependent on are used sustainably and efficiently.

Land Redistribution for Agricultural Development (LRAD)

The Land Redistribution for Agricultural Development programme was designed to help previously disadvantaged citizens from African, Coloured and Indian communities to buy land or agricultural implements specifically for agricultural purposes. It is a non-refundable form of funding or financial contribution by government to help prospective farmers to purchase land.

The strategic objectives of the programme include: contributing to the redistribution of 30% of the country's agricultural land over 15 years; improving nutrition and incomes of the rural poor who want to farm on any scale; de-congesting overcrowded former homeland areas; and expanding opportunities for women and young people who stay in rural areas.

Pro-active Land Acquisition Strategy (PLAS)

The Pro-active Land Acquisition Strategy (PLAS) follows a pro-poor approach aimed at speeding up land redistribution through the purchasing of advantageous land or land with high agricultural potential by the state for targeted groups.

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

The Strategy seeks to:

- Accelerate the land redistribution process;
- Ensure that the state can acquire land in the nodal areas and in the identified agricultural corridors and other areas of high agricultural;
- Improve the identification and selection of beneficiaries and the planning of land on which people would be settled; and
- Ensure maximum productive use of land acquired.

The PLAS supports the concept of the agricultural development corridors and should increase economic growth and development of rural towns.

Department of Agriculture: Broadening Access to Agriculture Thrust (BATAT)

Broadening Access to Agriculture Thrust (BATAT) is the Department of Agriculture's policy which formulates the implementing strategy aimed at transforming the government's services and re-orienting the budget in agriculture to meet developmental needs. BATAT is embedded in the White Paper on agricultural policy and is interwoven with the budget re-prioritisation process to be undertaken in the provinces. The objectives of BATAT are to design and establish mechanisms for broadening access to agriculture for previously excluded farmers in terms of their needs for financial services, human resource development, technology development, delivery systems and marketing services.

Agricultural Black Economic Empowerment Programme (AgriBEE)

This programme focuses on the promotion of Black Economic Empowerment (BEE) initiatives in the agricultural sector. Its aim is to stimulate growth in agribusiness, facilitate development, and provide support for enterprise and entrepreneurial development in the agricultural sector as well as increasing levels of black participation, especially women and youth, in the ownership and control of the economy. Interventions to promote agro-industrial development should adhere to the principles of Broad-based Black Economic Empowerment.

Micro Agricultural Finance Institutions of South Africa (MAFISA)

MAFISA is a government supported financial intervention scheme designed for a second economy target market. Its vision is to empower the rural working poor, entrepreneurs and farmers within the agricultural sector to improve their livelihoods by providing micro-agricultural financial services on a large, accessible, cost-effective and sustainable basis in the rural areas. Interventions to promote development in the agricultural and agro-industrial sectors should focus on broadening access to financial services to emerging farmers and entrepreneurs.

PDF-XChange
Click to buy NOW!
www.docu-track.com

PDF-XChange
Click to buy NOW!
www.docu-track.com

North West Provincial Growth and Development Strategy

The North West Provincial Growth and Development Strategy (PGDS) provides a framework for integrated and sustainable growth and economic development for the province and its people between 2004 and 2014. It addresses the formulation of a common vision, goals and objectives of what should be achieved and how the provincial government and its social partners should achieve its objectives.

The vision of the North West PGDS is as follows:

To build a truly united, non-racial, non-sexist, democratic and prosperous society that is jointly focused to deliver on key priorities aimed at growing a vibrant economy.

North West Comprehensive Rural Development Programme

Rural development is understood to be multi-dimensional, encompassing improved provision of services, enhanced opportunities for income generation and local economic development, improved physical infrastructure, social cohesion and physical security within rural communities, active representation in local political processes, and effective provision for the vulnerable. Rural development in this context is thus much broader than poverty alleviation through social programmes and transfers.

North West Small Business Development Strategy

The Small Business Development Strategy was formulated to act as platform for coordination, collaboration and cooperation across sectors of the economy, spheres of government, government departments and between the public and private sector.

The intention of the Strategy is to ensure that the North West is among the regional economies that can boast about the centrality of the small business sector in sustaining employment. This will help reduce the levels of unemployment, increase levels of growth across industries and ensure that jobs translate into poverty eradication.

North West Province Agricultural Master Plan

The primary purpose of the Master Plan is to act as a decision support system for all agricultural role players in the province, especially at intergovernmental level. Its main focus areas include identifying stakeholders and their roles, producing a comprehensive resource audit, identification of best practice land use options, identifying economic opportunities, a dynamic commodity analysis, and viable development projects, creation of a project information library and identification of appropriate eco-technologies.

PDF-XChange Click to buy NOW! www.docu-track.com

PDF-XChange Click to buy NOW! www.docu-track.com

North West Provincial Water Provisioning and Management Plan

The North West Provincial Government (NWPG) adopted a ten-year growth and development strategy for the province known as North West 2014. The strategy was founded on two key policy objectives which were to halve unemployment and poverty by 2014, through economic growth of 6.6% per annum, development of rural areas and removing basic service delivery backlogs.

The potential for growth and development in the province are dependent on the availability of a number of resources such as water supplies which is an important factor of production. Secure, sustainable water supplies are integral to continued growth and prosperity and poverty eradication in the North West Province.

North West Department of Agriculture, Conservation and Environment Strategic Plan

The Strategic Plan of the North West Department of Agriculture, Conservation, Environment and Rural Development (DACERD) is meant to guide the processes and activities of the Department towards the realisation of its strategic goals. It seeks to enhance the agricultural potential and environmental stability as key vehicles in building prosperous communities.

North West Environmental Implementation Plan

The North West Province Environmental Implementation Plan (EIP) of 2002 is a statutory instrument which facilitates the development of a long term sustainable development policy, legislative and planning framework for the province, of which the EIP will be a part. The specific output of the EIP will result in the alignment of policy, legislation, plans, programmes and decision making which results in a more effective integrated and co-operative governance of environmental management functions and activities.

Support for Environment and Sustainable Development in the North West Province (SESDNW)

This project is aimed at developing Legislative Framework and Mechanisms, Provincial Spatial Development Framework, Zone Mapping and Strategic Environmental Assessment, Institutional Capacity Building and an efficient and effective funding mechanism for environmental projects.

PDF-XChange
Click to buy NOW!
www.docu-track.com

PDF-XChange
Click to buy NOW!
www.docu-track.com

North West Province Spatial Development Initiatives

The North West Spatial Development Framework and Zoning Plan of 2003 adopted the normative principles of the National Spatial Development Perspective and categorised all municipalities in terms of their absolute potential and needs. In unlocking this potential in line with the NSDP principle, future settlements and economic development opportunities should be channelled into activity corridors and nodes. The link up with main growth centres, will assist locations to take advantage of the province's proximity to Gauteng. It also became imperative that the province has a limited potential towards the west. It was concluded that the province needs to strengthen its growth and development potential by promoting of development corridors that link up with Gauteng; the East-West corridor through the Platinum Corridor within the Province with Botswana/ Namibia and Maputo.