

EXECUTIVE SUMMARY

National Route 12 Capital Developments (Pty) Ltd has contracted **AB Enviro Consult**, an independent environmental consultancy, to undertake an Integrated Environmental Impact Assessment for the proposed Township Establishment on 520.0882 ha of the Remainder of Portion 1 of Townlands of Klerksdorp 424-IP (Remainder of Portion 181 of Townlands of Klerksdorp No. 424-IP and Portion 388 of Townlands of Klerksdorp No. 424-IP).

The activity is listed in terms of *sections 24 and 24 (d)* of the National Environmental Management Act (Act No. 107 of 1998). This Notice came into effect on 1/07/2006 and was made under section 24(5) of the act and published in Government Notice No. R385. This particular activity is listed in Schedule 2 as Activity 2 namely:

"Any development activity, including associated structures and infrastructure, where the total area of the developed area is, or is intended to be, 20 hectares or more".

The purpose of the study is therefore to determine the impacts that the environment may have on the proposed activity, as well as the possible impacts that the activity may have on the environment. This report is therefore the result of the full impact study, as well as a proposed management plan for the proposed activity.

The study is being conducted according to normal scientific practices. A theoretical background review was compiled for the different variables by using available information from the literature. Field verification was undertaken and visits paid to the site to gather further information and/or to verify information. Specialist studies were undertaken to determine the impacts on sensitive areas and to determine whether the proposed project can be sustainably implemented. The specialists advised on mitigation measures where applicable. The Scoping report for the study has been submitted to DACE, and this was approved on 27/05/2008.

1 INTRODUCTION

National Route 12 Capital Developments (Pty) Ltd has contracted **AB Enviro Consult**, an independent environmental consultancy, to undertake an Integrated Environmental Impact Assessment for the proposed Township Establishment on 520.0882 ha of the Remainder of Portion 1 of Townlands of Klerksdorp 424-IP (Remainder of Portion 181 of Townlands of Klerksdorp No. 424-IP and Portion 388 of Townlands of Klerksdorp No. 424-IP).

The proposed development can be divided into four areas. **Area A** is 308 ha in extent and is situated to the north of the N12 road between Wolmaransstad and Klerksdorp as well as to the north east of the road between Klerksdorp and Hartbeesfontein. **Area B** is situated to the south west of the road between Klerksdorp and Hartbeesfontein and to the north of the N12 road, the area is 55ha in extent. **Area C** is situated to the south of the N12 between Jouberton and the industrial sites of Klerksdorp. It is 103ha in extent. **Area D** is 33ha in total and is situated in Meteor Street, opposite the Fresh Produce Market. The proposed development falls within the jurisdiction of the City of Matlosana and the Dr. Kenneth Kaunda District Municipality.

The activity is listed in terms of *sections 24 and 24 (d)* of the National Environmental Management Act (Act No. 107 of 1998). This Notice came into effect on 1/07/2006 and was made under section 24(5) of the act and published in Government Notice No. R.385. This particular activity is listed in Schedule 2 as Activity 2 namely:

"Any development activity, including associated structures and infrastructure, where the total area of the developed area is, or is intended to be, 20 hectares or more".

The Department of Agriculture, Conservation and Environmental Affairs was notified of the proposed activity by means of the normal application form. The Department assigned **Mr. R. Moseki** as the officer responsible for the application. The EIA number assigned to the project is **NWP/EIA/131/2007**.

The purpose of the study is therefore to determine the impacts that the environment may have on the proposed activity, as well as the possible impacts that the activity may have on the environment.

The study is being conducted according to normal scientific practices. A theoretical background review is being compiled for the different variables by using available information from the literature. Field verification was undertaken and visits paid to the site to gather further information and/or to verify information. Specialist studies were undertaken to determine the impacts on sensitive areas and to determine whether the proposed project can be sustainably implemented. The specialists advised on mitigation measures where applicable.

Other legislation, which must be considered, is the National Environmental Management Act (107/1998), National Heritage Act (25/1999), as well as the Bill of Rights, Constitution of South Africa, Section 27 (1) (b), the New Water Act (36/1998), and the Water Services Act (108/1997).

2. DETAILS AND EXPERTISE OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

AB OMGEWINGSKONSULTANTE (BK) IS A REGISTERED CONSULTANCY, OWNED AND OPERATED AS AN INDEPENDENT UNIT BY THE REGISTERED OWNER AND CONSULTANT: **PROF. A.B. DE VILLIERS**
MR J.P. DE VILLIERS JOINED THE CONSULTANCY DURING 2004
ME J.E. DU PLOOY IS AN ASSOCIATE

PERSONAL PARTICULARS AND CAREER HISTORY OF PROF DE VILLIERS

Name : ABRAHAM BAREND (BRAAM) DE VILLIERS
Date of birth : 1944/01/26
Telephone : (018) 294-5005
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Address : 7 LOUIS LEIPOLDT STREET
POTCHEFSTROOM
2531

Lecturer & Professor – Potchefstroom University 1969- 2004

ACADEMIC AND PROFESSIONAL QUALIFICATIONS

Post-Matric Qualifications

<u>YEAR</u>	<u>Qualification</u>	<u>Institution</u>	<u>Field of Study</u>
1968	B.Sc.	PU FOR CHE	Geography, Geology
1970	HONNS. B.Sc.	PU FOR CHE	Soil Science
1974	M.Sc.	PU FOR CHE	Geography
1981	Ph.D.	UOFS	Geography
1994	Certificate: Quality Auditing	ESCOM	Environmental Auditing

PROFESSIONAL QUALIFICATIONS AND REGISTRATIONS

<u>YEAR</u>	<u>Qualification/Registration</u>	<u>Institution</u>	<u>Field of Study</u>
1986	Professional Natural Scientist	S.A. Council for Natural Scientists	Environmental Science
1998	Personnel & Verifying Auditor	SAATCA	Environmental Auditing
2006	Environmental Assessment	Interim Certification	Environmental Science

	Practitioner	Board EAPSA	
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MEMBERSHIP AND PARTICIPATION IN SOCIETIES, COUNCILS, ETC.

Name of professional societies	YEAR	Capacity
S.A. Geographical Society.	1967-1996	Board Member
Society for Geography	1968-2004	Member
SAGS Western Transvaal	1985-1989 1987-1996	Chairman Board member
Africa Geographical Association	1993-1995	Vice-President.
Society for the Vaal River Catchment	1980-1999	Member
S.A. Society for Photogrammetry, Remote Sensing and Cartography	1984-1996	Member
Dendrological Society	1986-2005	Member
BirdLife South Africa	2003-present	Member
British Geomorphological Research Group	1985-1997	Member
Int Com on Water Resource Systems	1985-1997	Member
Int Com on Continental Erosion	1986-1990	Member
Int Com on Remote Sensing and Data Transmission	1986-1991	Member
Society for S.A. Geographers	1995-2005	Member
SA Photogrammetrical and Geo. Info.	1995-2003	Member
S.A. Association of Geomorphologists	1994-1999	Board Member and member
SADC Mine Dump Study Group	1996-2005	Member

***Chairman of the Committee for Interested and Affected Parties (CIP) (2004-2008) for International Accreditation by the influential accrediting body of Price, Waterhouse Coopers- International Environmental Auditors in Southern Africa.**

Member of Price Waterhouse Coopers CIP (2008-)

2.1. ACADEMIC COURSES TAUGHT AT POST-MATRIC LEVEL

- 1.1 The Geography of Economic Activities and Regional Geography (3rd year and honours students)
- 1.2 Weather and Climate (1st, 2nd, and 3rd year students)
- 1.3 Geomorphology (1st year up to Ph D level)
- 1.4 Remote Sensing and the Environment (3rd year and Honours)
- 1.5 Quantitative Geography (3rd year up to Masters Level)
- 1.6 Environmental Management (2nd year, up to PhD level)
- 1.7 Environmental Analysis (3rd year and up to Masters Level)
- 1.8 Geography of Soil (3rd year and Honours)
- 1.9 Cartography (1st year to Honours)
- 1.10 As professor 26 Masters & 4 PhD students completed their studies in environmentally related subjects under his tutor- and co-tutorship.

2.2 INVOLVEMENT IN COURSES AND WORKSHOPS

2.2.1 ENVIRONMENTAL COURSES:

Partially responsible for course development and taught various courses for environmental officers employed by the North West Province over a period of 3 years (1998-2001). These courses were aimed at improving their knowledge of the environment as well as their understanding of the environmental interactions specifically related to the North West province.

2.2.2 STATE OF THE ENVIRONMENT REPORT (SOE)

Involved in the first SOE prepared by the North West Province and was responsible for most of the physical geographical aspects (1999).

2.3 ENVIRONMENTAL PROJECTS

The following projects are typical examples, of such projects which he co-ordinated and managed:

2.3.1 MOOI RIVER CATCHMENT STUDIES:

This was a study on the impacts of the mining activities on the quality and quantity of water in the Mooi River catchments and was done for the North West Province. He co-ordinated and managed this project. The team consisted of a PhD student as well as two teams of local and international students; one responsible for the biophysical variables, and the other for socio-cultural aspects.

2.3.2 SADC MINE DUMPS STUDY GROUP:

Acted as coordinator for the formulation of tools to assess the effects of mine dumps on the environment in the SADC region. One group was involved in the Zimbabwean copper belt region, and the other in the Tanzanian gold mining area.

The studies were undertaken for the Carl Duisburg Gesellschaft (Germany). The research team consisted of geographers, ecologists and mining experts. From this study, a pilot program, the "South African Environmental Management System" (SEMS) developed, which was applied successfully by a team of researchers in a pilot study in the Carletonville region.

2.3.3 SADC DEVELOPMENT OF TRAINING MODULES FOR ENVIRONMENTAL STUDIES USING GIS:

Member of the three-person team who developed these training modules. It was applied at the Copper belt University, the University of Dar Es Salaam as well as at the Potchefstroom University as an introduction to the integration of environmental data (both biophysical and socio-economic) for the interpretation of geographical regions.

2.3.4 ENVIRONMENTAL DEGRADATION - THE RESULT OF INDISCRIMINATE LOCATION OF SLIME DAMS IN THE SADC REGION:

Coordinated this study in the Far West Rand Area; conducted case studies in Zambia and South Africa. The team consisted of researchers from the Netherlands, Germany, Zambia and Tanzania.

2.3.5 LAND USE CHANGES IN THE NORTH WEST PROVINCE:

An Environmental Management Support System for SOE North-West University Team leader. This project was undertaken for DACE (NWP) and various students participated – each involved in a specific aspect of the environment. This data was co-ordinated and eventually incorporated into the SOE report.

2.4 RESEARCH PUBLICATIONS AND CONFERENCES

He published 11 articles in peer-reviewed magazines, and appeared professionally at 30 conferences with a direct bearing on environmental work

ACADEMIC AND PROFESSIONAL QUALIFICATIONS MR J.P. DE VILLIERS

YEAR	Qualification	Institution	Field of Study
1993	BA	PU FOR CHE	Geography, Economics
2006	B.Sc.(Honns) Cum Laude	North-West University	Environmental Management
2007	M.Sc	North-West University	Geography
1994	HED	PU FOR CHE	Geography Economics

ACADEMIC AND PROFESSIONAL QUALIFICATIONS ME J.E. DU PLOOY

YEAR	Qualification	Institution	Field of Study
1999	BA	PU FOR CHE	Geography, Tourism
2000	BA(Honns) Cum Laude	PU FOR CHE	Geography
2002	Masters in Environmental Management (MEM)	PU FOR CHE	Environmental Management
2001	Aquabase Intro	AQUABASE	Hydrology
2001	Geomedia Professional	INTERTECH	GIS
2001	Map Info	SPATIAL TECHNOLOGY	GIS

EXPERIENCE OF THE CONSULTANCY

Over a period of 12 years (1996-2008), this consultancy has successfully applied for, and obtained positive ROD's for more than 180 projects.

The company was involved (from 1992-1994) in evaluation of 114 applications for the subdivision of land, 23 applications for resort developments, and 54 applications for business rights for the Department of Agriculture, Conservation and the Environment - North West Province.

The consultancy is qualified to undertake professional studies in waste management and is still involved in the development of waste disposal- (solid and liquid effluent), and emission studies. These studies are conducted both academically and practically. This work relates to mine waste, domestic waste and

effluent as well as to the monitoring of waste disposal. Environmental audits in this respect are undertaken on a regular basis.

3 DESCRIPTION OF THE ACTIVITY

Township Establishment on 520.0882 ha of the Remainder of Portion 1 of Townlands of Klerksdorp 424-IP (Remainder of Portion 181 of Townlands of Klerksdorp No. 424-IP and Portion 388 of Townlands of Klerksdorp No. 424-IP).

The proposed development will consist of 2 902 "Residential" 1 erven, 14 "Residential 2" (30 units /ha) erven, 23 "Residential 2" (40 units /ha) erven, 1 Rebangwe Social Housing, 5 "Business" erven, 27 Commercial / Business / Light Industrial erven, 3 Primary School erven, 2 erven for Crèches, 4 Church erven, 2 Institutional erven, 25 open spaces and streets. See Figure 1 for a Layout Plan

3.1 BULK AND LINK SERVICES

3.1.1 WATER

Bulk Potable water for the greater KOSH area is obtained from the Midvaal Water Company purification works next to the Vaal river near Vaal Reefs town. The treatment works which abstracts raw water from the Vaal river has more than adequate spare capacity to provide for the demand of the proposed new N12 development.

The infrastructure exists for the pumping of treated water from Midvaal to the various Klerksdorp reservoirs. Areas E, D, G & F of the proposed new N12 development fall within the supply zone of the Alabama Reservoir system which consists of three ground reservoirs, 26Mℓ, 17.5Mℓ and 4.54Mℓ respectively, and a 2Mℓ pressure tower.

The Alabama reservoirs including the elevated storage facilities have been designed to provide in all the future development demands of the Townlands ground on the western outskirts of Manzil Park and Alabama as well as the proposed new N12 infill areas covered in this report.

Area C is supplied from the Ou Dorp reservoir system above Rosen Street, which consist of 2.27Mℓ and 4.54Mℓ ground reservoirs.

A new 600mm diameter bulk connector line along the southern border of the N12 from the Alabama Reservoir site up to the Hartbeesfontein intersection is required to serve areas F and G. In order to also enhance the supply to the existing Meiringspark, De Clerqville and Elandia, this line shall be extended as a 400 mm/300 mm/250 mm diameter along the N12 as indicated on the attached Plan

No. 2312/ Figure 2 (Of the Engineering report. See Appendix F). The above areas are all integrated. Areas D & E can be connected to the existing internal water network of Meiringspark situated on its northern boundary, and as such it can be developed independently from areas G & F.

The City Council has programmed the installation of this connector line as part of their 2008/09 and 2009/10 budgets.

Area C does not require a new water connector since it can be connected to the existing supply system of Freemanville and Roosheuvel on its eastern border. Area C can therefore be developed independently.

To augment the water supply to the "Ou Dorp" and Ellaton residential areas, the existing 375 mm steel pipe along the Railway line as indicated on the attached Plan No. 2312/Figure 2 (Of the Engineering report. See Appendix F) needs to be sleeved with a new 250 mm PVC liner. Previously this line was used as a supply line to the Alabama reservoirs. This line has deteriorated and is causing major water losses. By relining this section of pipe, it is reversed to act as a feeder line to the "Ou Dorp" and Ellaton residential areas.

3.1.2 SEWER

The Klerksdorp Sewerage Treatment Plant located on the south-eastern side of Jouberton has recently been upgraded to accommodate the N12 and other new developments anticipated in Klerksdorp. More than sufficient capacity is therefore available for the proposed N12 (West) Corridor Development.

The existing outfall sewer along Meteor road on the western border of Area C, has sufficient spare capacity to accommodate the internal sewer of Area C which can be connected to the outfall line directly. In terms of sewer, Area C can therefore also be developed independently.

Area D can be connected to the existing internal network of Meiringspark situated on its northern boundary and as such, it could be developed independently from areas E, F and G.

With regard to the provision of sewer connectors for areas E, F and G, two options exist, namely:

Alternative 1: Upgrading and Extension of the Schoonspruit Outfall Sewer

This alternative entails upgrading of the existing Schoonspruit outfall Sewer from just south of the N12 / Hartbeesfontein intersection (Area F) along the route of the existing line and to the diameters as indicated on the attached Plan No. 2312/Figure 3(Of the Engineering report. See Appendix F). This line will collect all sewer effluent from areas E, F and G, and will also replace the existing Schoonspruit sewer, which is currently in a poor condition.

Alternative 2: New Rising Main, Pump Station and Gravity Sewer line

This alternative, as indicated on the attached Plan No. 2312/Figure 3, (Of the Engineering report. See Appendix F) provides for a pump station just west of Meiringspark in the low lying area to collect sewer effluent from areas E and G. A rising main will route the sewer to a new outfall sewer along the N12 on the northern border of area F. This sewer will extend to the east and turn to follow Meteor Road in a southern direction to the existing Swart Street pump station.

3.1.3 STORM-WATER DRAINAGE

Storm-water runoff from area C will be intercepted by the existing open drains along Meteor Road and will be discharged into the natural Schoonspruit water-course on the south as indicated on the attached Plan No. 2312/Figure 4(Of the Engineering report. See Appendix F).

Areas D and E will drain into the existing established open and piped storm-water systems of Meiringspark which eventually discharges into the natural Schoonspruit water-course to the north.

Areas F and G will drain through a network designed to collect storm-water in the natural low lying water-course along which a formalized storm-water system and will discharge the bulk storm-water in a northern direction as indicated on the attached Plan No. 2312/Figure 4(Of the Engineering report. See Appendix F). This system will pretty much follow the same route or direction of the Alternative 1 outfall sewer discussed earlier in this report.

The design principle to be followed for storm-water handling is to collect all runoff onto the road surfaces with outlet structures, either open or closed (underground) as appropriate.

3.1.4. ACCESS

Accesses to the proposed development areas as per the town planning layout are indicated on the attached Plan No. 2312/Figure 4(Of the Engineering report. See Appendix F) which is self explanatory. More than one access is available to each of the development areas via the N12 National route and various other primary and secondary routes interlinked with the existing road network of Klerksdorp.

3.1.5 SOLID WASTE

The Matlosana Municipality will extend its existing refuse removal service to include the new development areas. The refuse will be dumped and managed at the formal licensed dumping site of Klerksdorp which has the capacity to receive the additional refuse.

3.2 INTERNAL SERVICES

3.2.1 WATER

Each erf within the proposed development will be supplied through an internal network of uPVC water mains linked to the bulk connector lines described in paragraph 2.1 above. These will be designed to ensure ample capacity to comply with the fire flow demand of the new development. Each stand will be connected to the main lines with an appropriate diameter of HDPE feeder line and water meter. The system will be constructed with fire hydrants and air release valves and strategically positioned isolating valves for maintenance purposes to comply with the requirements of the local authority.

3.2.2 SEWER

An internal network of PVC sewer lines of not less than 160 mm diameter will be installed with 110mm Y-junction connections to each stand. The system will comply with the minimum specifications stipulated in the SABS 0400/89 Building Regulations. Manholes and rodding eyes will be constructed at necessary positions to allow for effective maintenance.

3.2.3 ROADS AND STORM-WATER

Access to all stands within the proposed development will be provided by means of a network of properly constructed formal surfaced roads according to the minimum requirements of the local authority.

Storm-water will as far as possible be collected onto the internal roads and further managed and discharged as described under paragraph 3.1.3 above.

3.2.4 REFUSE

Refuse removal is conducted by the Local Authority and their service in this regard will be extended to include the proposed development.

3.3. ELECTRICAL SUPPLY

Three options for supply of electricity exists:

Option 1

It is proposed by Motla Engineering (PTY) LTD that for the short term electricity be taken from the Uraniaville substation.

Option 2

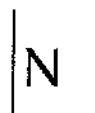
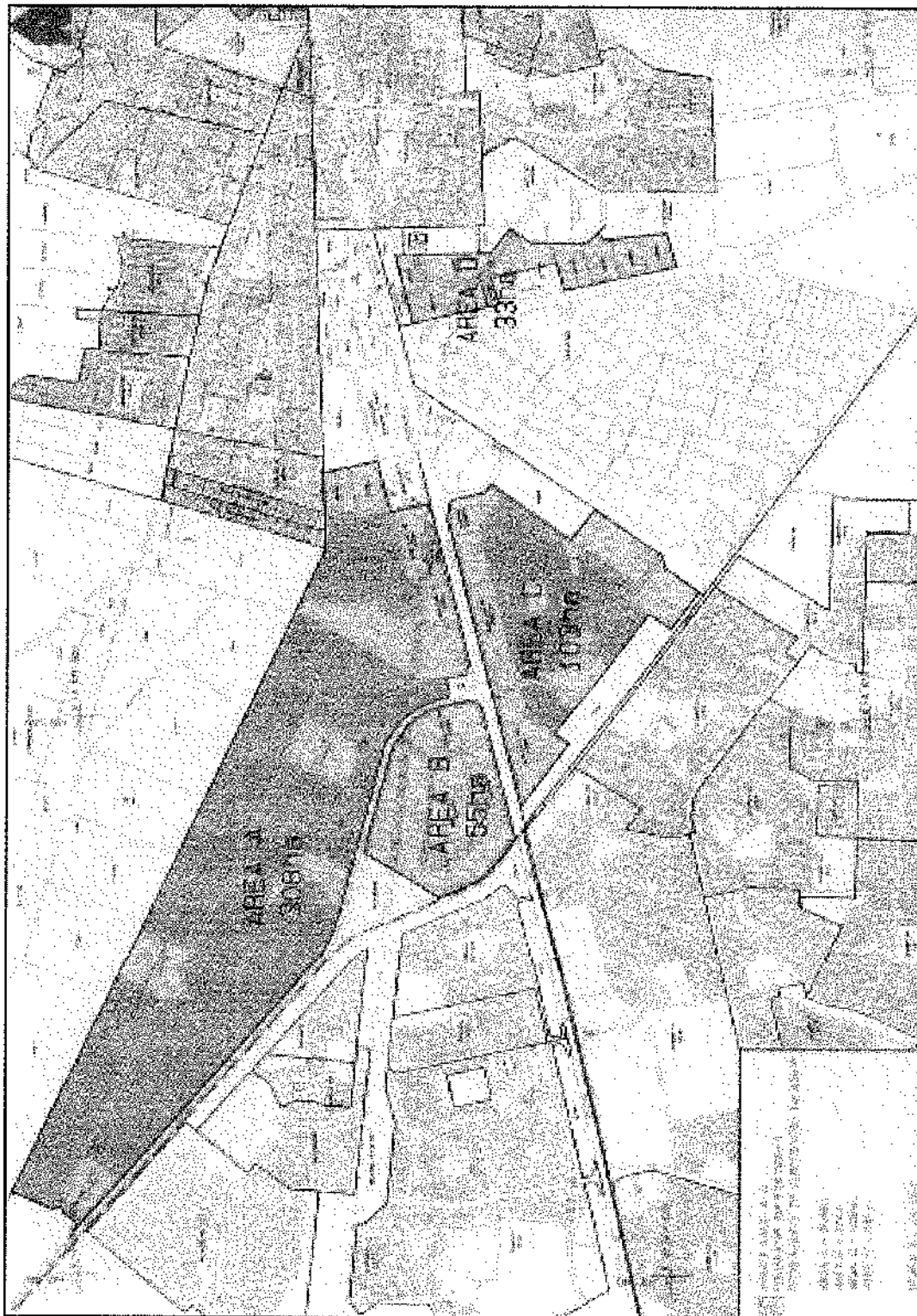
If the required capacity cannot be secured at the Uraniaville Substation, it is proposed that bulk supply be taken from Jouberton East Substation, or alternatively from the Jouberton Primary Substation.

Option 3

The long term recommendation is for the establishment of a new ESCOM bulk supply substation next to the N12.

Figure 1 Layout Plan

Figure 2 :LOCALITY MAP.



4 DESCRIPTION OF THE PROPERTY

The proposed development will be constructed on the Remainder of Portion 1 of the Townlands of Klerksdorp 424-IP (Remainder of Portion 181 of Townlands of Klerksdorp No. 424-IP and Portion 388 of Townlands of Klerksdorp No. 424-IP). The proposed development falls within the jurisdiction of the City of Matlosana and the Dr. Kenneth Kaunda District Municipality.

The size of the property is 520.0882 Ha.

The co-ordinates are as follows:

Latitude:	26 °	52'	03"	South
Longitude:	26 °	37'	02"	East

The Surveyor-General 21 digit site reference number is:

T	O	I	P	0	0	0	0	0	0	0	0	0	4	2	4	0	0	1	8	1
T	O	I	P	0	0	0	0	0	0	0	0	0	4	2	4	0	0	3	3	8

5 DESCRIPTION OF THE ENVIRONMENT THAT MAY BE AFFECTED BY THE PROJECT

- ❖ The site is underlain by amygdaloidal lava, agglomerate and tuff of the Rietgat Formation, Platberg Group of the Witwatersrand Supergroup.. A geo-technical survey of the area was undertaken and the report is incorporated into this report as Appendix E.
- ❖ The topography of the area varies from flat plains to relatively steep slopes. The engineering report addresses the issues regarding the storm water (See Appendix F for a copy of this report).
- ❖ Due to the scale of the project, no impacts are possible as far as the project's influence on the different climatic variables is concerned.
- ❖ There are no streams on the property. Infiltration into the groundwater has also been taken into account.
- ❖ The impact of the project on the soil was considered for the construction phase and soil protection measures were devised.
- ❖ As the flora and fauna of the area is already highly disturbed no further negative, impacts are likely. If the mitigation measures devised are implemented (considering the quality of the biological component of the environment) the environment will benefit because of rehabilitation and proper care during the operational phase of the project.
- ❖ The impacts on the aesthetic aspect of the area can become positive if the design and rehabilitation measures are implemented.

- ❖ As far as the social impacts are concerned, the development will have positive impacts. This is due to the need for formal housing in the area.
- ❖ It is obvious that a positive economic impact will result from the project, as the developer will inject capital into the development.

6. PUBLIC PARTICIPATION PROCESS

The following Departments were notified by registered mail of the proposed establishment of the proposed development, and comments were requested from them (see attached list of registered mail sent to the following bodies – see Appendix C):

- ◆ The Director, Agriculture – DACE
- ◆ The Director, Conservation – DACE
- ◆ The Municipal Manager- Southern District
- ◆ The Municipal Manager City of Matlosana
- ◆ Cnllr. J.J. Le Grange

- ◆ The proposed development was advertised in the local newspaper The Record on 18/08/2007 (See Appendix A).
- ◆ Site notices were placed on each of the four areas (For photographic evidence See Appendix B).
- ◆ The people within a 100 m radius of the proposed development were informed by hand delivery of a copy of the advertisement (Appendix D)

Comments received:

B. Du Plessis contacted the consultant via e-mail requesting more information regarding the proposed development. She had some concerns regarding the nature of the proposed development. As soon as the consultant clarified the nature of the development, she had no further comments and was satisfied (See Appendix G for a copy of the e-mail received).

Three other people also contacted the consultant via telephone, with the same enquiry as Me. Du Plessis and the outcome was the same.

7. NEED AND DESIRABILITY OF THE ACTIVITY

There is a definite need for first time house buyers to enter the house market which is supported with the necessary infrastructure such as churches and schools. There is also a need for industrial and business erven in the KOSH region. The proposed development will address this shortage. As in the rest of South Africa there is a housing shortage in the area. The proposed development will help to address this shortage.

During the construction phase of the proposed development, jobs will be created and thus the unemployment rate of the area will be reduced.

Alternatives regarding the provision of **sewer reticulation** exists. It can be described as follows:

Alternative 1: Upgrading and Extension of the Schoonspruit Outfall Sewer

This alternative entails upgrading of the existing Schoonspruit outfall Sewer from just south of the N12 / Hartbeesfontein intersection (Area F) along the route of the existing line and to the diameters as indicated on the attached Plan No. 2312/Figure 3 (Of the Engineering report. See Appendix F). This line will collect all sewer effluent from areas E, F and G, and will also replace the existing Schoonspruit sewer, which is currently in a poor condition.

Alternative 2: New Rising Main, Pump Station and Gravity Sewer line

This alternative, as indicated on the attached Plan No. 2312/Figure 3, (Of the Engineering report. See Appendix F) provides for a pump station just west of Meiringspark in the low lying area to collect sewer effluent from areas E and G. A rising main will route the sewer to a new outfall sewer along the N12 on the northern border of area F. This sewer will extend to the east and turn to follow Meteor Road in a southern direction to the existing Swart Street pump station.

Three options for supply of **electricity** exists:

Option 1

It is proposed by Motla Engineering (PTY) LTD that for the short term electricity be taken from the Uraniaville substation.

Option 2

If the required capacity cannot be secured at the Uraniaville Substation, it is proposed that bulk supply be taken from Jouberton East Substation, or alternatively from the Jouberton Primary Substation.

Option 3

The long term recommendation is for the establishment of a new ESCOM bulk supply substation next to the N12.

The only other alternative that exists for the proposed development is the “no-go” option which will imply that the *status quo* will prevail. This is totally unacceptable as the Bill of Rights clearly states that all people should have the right to live in a proper house with at least the basic services of water and sanitation.

It is thus clear that the proposed development will have a huge positive impact on the quality of the lives of the people living in the area.

8 INFORMATION ON THE METHODOLOGY THAT WAS ADOPTED IN ASSESSING THE POTENTIAL IMPACTS THAT HAVE BEEN IDENTIFIED, INCLUDING ANY SPECIAL STUDIES OR SPECIALISED PROCESSES THAT WERE UNDERTAKEN.

- ❖ The expertise of the EAP and the other members of the consultancy was utilised to the full. This included detailed analysis of the different variables as well as the development of a phased management plan. In all aspects of the study where more advanced studies by other experts were required, the consultancy advised the proponent to obtain the necessary expertise and implement the results of their findings.
- ❖ The service of an accredited geo-technical consultant was obtained- to ensure that preventative measures are defined to mitigate any negative impacts that may occur in the underlying rock and the development.
- ❖ The consulting civil engineers for the project devised ways and means to ensure that the drainage system of the project will take the level surface of the area into account. They were also responsible for the protection measures relating to the underground water.
- ❖ An Electrical Engineer was appointed to do the electrical bulk supply of the proposed development
- ❖ A Town and Regional Planner contributed towards the management plan as far as the socio-economic aspects of the study are concerned.
- ❖ The geo-technical consultant's responsibilities included the study of the nature of the soil cover. The results were included and the necessary management/mitigation measures, to ensure a healthy environment, were taken into full consideration.
- ❖ Mitigation measures to ensure minimum impacts on the flora and fauna are described in the EIA / Management Plan.
- ❖ The impacts on aesthetic aspects of the area will be positive – because proper design and rehabilitation measures are described in the EIA / Management Plan.

9. SUMMARY OF THE FINDINGS AND RECOMMENDATIONS OF SPECIALIST REPORTS

9.1. GEOTECHNICAL REPORT

- A site of approximately 528 hectares known as the Klerksdorp Matlosana N12 development, was investigated to determine the engineering geological properties that will influence township proclamation.
- This site is underlain by amygdaloidal lava, agglomerate and tuff of the Rietgat formation, Platberg Group of the Witwatersrand Supergroup.
- Some problems are foreseen regarding the excavatability to 1,5 m depth on site, and the use of pneumatic tools, a competent TLB or traxcavator, rock pecker or even blasting may be required to reach the required depth for the installation of services.
- Zoning of the site revealed zones with constraints regarding the excavatability of the soil and rock, as well as the expansive and collapsible properties.
- Normal to special construction techniques as described will be required for proper development.
- This investigation was done to reveal the geotechnical properties on site with the techniques as described. Although every possible factor during the investigation was dealt with, it is possible to encounter variable local conditions. This will require the inspection of foundations by a competent person to verify expected problems.

9.2. SERVICES REPORT

9.2.1 BULK SERVICES

9.2.1.1 WATER

Bulk Potable water for the greater KOSH area is obtained from the Midvaal Water Company purification works next to the Vaal River near Vaal Reefs town. The treatment works which abstracts raw water from the Vaal River has more than adequate spare capacity to provide in the demand of the proposed new N12 development.

Existing infrastructure exists for the pumping of treated water from Midvaal to the various Klerksdorp reservoirs. Areas E, D, G & F of the proposed new N12 development fall within the supply zone of the Alabama Reservoir system which consist of 26Mℓ, 17.5Mℓ and 4.54Mℓ ground reservoirs and a 2Mℓ pressure tower.

The Alabama reservoirs including the elevated storage facilities have been designed to provide in all the future development demands of the Townlands ground on the western outskirts of Manzil Park and Alabama as well as the proposed new N12 infill areas covered in this report.

Area C is supplied from the Ou Dorp reservoir system above Rosen Street, which consist of 2.27Mℓ and 4.54Mℓ ground reservoirs.

A new 600mm diameter bulk connector line along the southern border of the N12 from the Alabama Reservoir site up to the Hartbeesfontein intersection is required to serve areas F and G. In order to also enhance the supply to the existing Meiringspark, De Clerqville and Elandia, this line shall be extended as a 400 mm/300 mm/250 mm diameter along the N12 as indicated on the attached Plan No. 2312/ Figure 2 (Of the Engineering report. See Appendix F). The above areas are all integrated. Areas D & E can be connected to the existing internal water network of Meiringspark situated on its northern boundary, and as such it can be developed independently from areas G & F.

The City Council has programmed the installation of this connector line under their 2008/09 and 2009/10 budget.

Area C does not require a new water connector since it can be connected to the existing supply system of Freemanville and Roosheuvel on its eastern border. Area C can therefore be developed independently.

To augment the water supply to the "Ou Dorp" and Ellaton residential areas, the existing 375 mm steel pipe along the Railway line as indicated on the attached Plan No. 2312/Figure 2 (Of the Engineering report. See Appendix F) needs to be sleeved with a new 250 mm PVC liner. Previously this line was used as a supply line to the Alabama reservoirs. This line has deteriorated and is causing major water losses. By relining this section of pipe, it is reversed to act as a feeder line to the "Ou Dorp" and Ellaton residential areas.

9.2.1.2 SEWER

The Klerksdorp Sewerage Treatment Plant located on the south-eastern side of Jouberton has recently been upgrade to accommodate the N12 and other new developments anticipated in Klerksdorp. More than sufficient capacity is therefore available for the proposed N12 (West) Corridor Development.

The existing outfall sewer along Meteor road on the western border of Area C, has sufficient spare capacity to accommodate the internal sewer of Area C which can be connected to the outfall line directly. In terms of sewer, Area C can therefore also be developed independently.

Area D can be connected to the existing internal network of Meiringspark situated on its northern boundary and as such, it could be developed independently from areas E, F and G.

With regards to the provision of sewer connectors for areas E, F and G, and two options exist, namely:

Alternative 1: Upgrading and Extension of the Schoonspruit Outfall Sewer

This alternative entails upgrading of the existing Schoonspruit outfall Sewer from just south of the N12 / Hartbeesfontein intersection (Area F) along the route of the existing line and to the diameters as indicated on the attached Plan No. 2312/Figure 3(Of the Engineering report. See Appendix F). This line will collect all sewer effluent from areas E, F and G, and will also replace the existing Schoonspruit sewer, which is currently in a poor condition.

Alternative 2: New Rising Main, Pump Station and Gravity Sewer line

This alternative, as indicated on the attached Plan No. 2312/Figure 3, (Of the Engineering report. See Appendix F) provides for a pump station just west of Meiringspark in the low lying area to collect sewer effluent from areas E and G. A rising main will route the sewer to a new outfall sewer along the N12 on the northern border of area F. This sewer will extend to the east and turn to follow Meteor Road in a southern direction to the existing Swart Street pump station.

9.2.1.3. ACCESS ROADS

Accesses to the proposed development areas as per the town planning layout are indicated on the attached Plan No. 2312/Figure 4(Of the Engineering report. See Appendix F) which is self explanatory. More than one access is available to each of the development areas via the N12 National route and various other primary and secondary routes interlinked with the existing road network of Klerksdorp.

9.2.1.4. REFUSE REMOVAL

The Matlosana Municipality will extend its existing refuse removal service to include the new development areas. The refuse will be dumped and managed at the formal licensed dumping site of Klerksdorp which has the capacity to receive the additional refuse.

9.2.1.5. STORM WATER

Storm-water runoff from area C will be intercepted by the existing open drains along Meteor Road and will be discharged into the natural Schoonspruit water-course on the south as indicated on the attached Plan No. 2312/Figure 4(Of the Engineering report. See Appendix F).

Areas D and E will drain into to existing established open and piped storm-water systems of Meiringspark which eventually discharges into the natural Schoonspruit water-course on the north.

Areas F and G will drain through a network designed to collect storm-water in the natural low lying water-course along which a formalized storm-water system will discharge the bulk storm-water in a northern direction as indicated on the attached

Plan No. 2312/Figure 4(Of the Engineering report. See Appendix F). This system will pretty much follow the same route or direction of the Alternative 1 outfall sewer discussed earlier in this report.

The design principle to be followed for storm-water handling is to collect all runoff onto the road surfaces with outlet structures, either open or closed (underground) as appropriate.

9.2.2. INTERNAL SERVICES

9.2.2.1. WATER

Each erf within the proposed development will be supplied through an internal network of uPVC water mains linked to the bulk connector lines described in paragraph 2.1 above. These will be designed to ensure ample capacity to comply with the fire flow demand of the new development. Each stand will be connected to the main lines with an appropriate diameter of HDPE feeder line and water meter. The system will be constructed with fire hydrants and air release valves and strategically positioned isolating valves for maintenance purposes to comply with the requirements of the local authority.

9.2.2.2. SEWER

To conform to the sanitation policy of the City of Matlosana for rural areas a basic level of sanitation services will be required. This can consist of either VIP (ventilated improved toilets) or Enviro Loo toilets on each stand whichever is preferred by the community.

Due to possible pollution of underground water sources the latter is however recommended

9.2.2.3. ROADS AND STORM WATER

An internal network of PVC sewer lines of not less than 160 mm diameter will be installed with 110mm Y-junction connections to each stand. The system will comply with the minimum specifications stipulated in the SABS 0400/89 Building Regulations. Manholes and rodding eyes will be constructed at necessary positions to allow for effective maintenance.

9.2.2.4. REFUSE

Refuse removal is conducted by the Local Authority and their service in this regard will be extended to include the proposed development.

10 DESCRIPTION OF ENVIRONMENTAL ISSUES AND POTENTIAL IMPACTS, INCLUDING CUMULATIVE IMPACTS THAT HAVE BEEN IDENTIFIED.

In the assessment of impacts, it is necessary to look both at the probable effects of the environment on the project, as well as at the probable effects of the project on the environment. These influences should include the following measurement criteria (adapted from the Department of Environment and Tourism, 1998: 27, 28). If these criteria are applied the *Nature of the Impact* can be determined:

EXTENT: The extent can be limited to the site (*Local*) and its immediate surroundings, or it can influence the region (*Regional*), the country (*National*) or even neighbouring countries (*International*).

DURATION: The duration of the impact can be *Short* (0-5 years), *Medium* (6-15 years), or *Long Term* (>15 years). The influences of the impact will only cease after the operational life of the activity has ended due to natural processes or to human intervention. A *Permanent* impact is however one for which no mitigation through natural or man-made intervention is possible.

INTENSITY: a *Low* intensity impact will not affect the natural, cultural, or social functions of the environment, while a *Medium* scale impact will alter the different functions slightly. A *High* intensity impact will influence these functions to such an extent that it will temporarily or permanently cease to exist

PROBABILITY: The probability that an impact will influence the environment can be rated as *Improbable*. Such an impact will have a very slight possibility to materialise, because of design or experience. *Probable*: - there is a distinct possibility for the occurrence of the impact. *Highly probable*: where it is most likely that the impact will occur. *Definite*: where the impact will occur regardless of any preventative measures.

SIGNIFICANCE: If the above criteria describing the influence of a project are synthesised, the significance of a project in relation to the environment can be determined. This can be described as having a *Low* influence on the eventual decision-making process if no mitigation is necessary. If the project can only be carried through if certain mitigatory steps are taken it can be described as having a *Medium* significance, while a project with a *High* significance would influence the decision regardless of any possible mitigation measures.

If a project is analysed and it is found that it will have medium or highly significant impacts on the environment certain mitigation steps will have to be taken. These mitigation options are usually a combination of compensation, relocation, and rehabilitation. It is a necessity in any environmental assessment to identify the environmental aspects that might have an influence on the project and/or aspects of the project that may have an influence on the environment.

10.1 BIO-PHYSICAL ASPECTS

10.1.1 GEOLOGY

The site is underlain by amygdaloidal lava, agglomerate and tuff of the Rietgat formation, Platberg Group of the Witwatersrand Supergroup. The whole of the study area has a stable seismic character. The geological structure and the associated seismic stability as well as the lithology will have positive influence on the project and no problems regarding this variable are envisaged.

The impact of the geology on the project will be medium in intensity and significance, with a probability of "probable".

If the necessary precautionary measures are implemented, little to no impact on the geology is expected.

10.1.2 TOPOGRAPHY

The area is undulating with no real steep slopes, except for a small piece of land to the northeast of the Hartbeesfontein road. As this area has been earmarked as an open space, it will not negatively impact on the project.

No major groundwork will be required. The engineering report addresses the issues regarding the storm water.

The topography will have an impact on the project due to the gradients involved. The influence is positive, local, long term and will occur during all the project phases. The intensity and significance is medium. The project's influence on the topography will be long term, local and of low intensity and significance and definite.

10.1.3 CLIMATE

The climate of the area is typical of the South African Highveldt with a summer maximum rainfall and a dry winter. Extreme climatic events may have an influence on the project during both the phases of the project and will have to be considered. The data regarding temperature, rainfall and wind direction and wind speed was obtained from the National Weather service

10.1.3.1 RAINFALL

The area falls in the summer rainfall region of South Africa. December and January are the two months in which Klerksdorp receives the most rain. The average rainfall for December since 1993 is 104.9 mm. The average for January is 81.4 mm. For the same period May, June, July, August and September have all recorded instances with 0 mm of rain. The variation in rainfall is very high. A high

of 713.4 mm was recorded in 1998 while the total rainfall for 2002 was a mere 199 mm. The average rainfall for Klerksdorp over the past 12 years was 432.9 mm/y. Thundershowers occur frequently during the summer and the highest recorded single monthly rainfall was 173 mm, which fell during December 2001. Intense rainfall events such as these can have significant impacts on the project during its entire life cycle. Thunderstorms with hail occur from time to time during summer. The expected frequency is 3.3 days per year.

The total impact of rainfall on the project will in all probability be "probable" with medium significance but a rather low intensity. The variable will only affect the project during the last two phases of the project. If proper mitigation measures are implemented to curb the possible effects of high intensity rainfall events (see surface drainage) the effects can be considered to be positive. Due to the localized nature of the project, no influence will be discernable on the receiving environment.

10.1.3.2. TEMPERATURE

The average daily maximum temperature for the winter months for the area is approximately 20.4°C. The average daily minimum for that time of the year is in the order of 2.5°C. During the summer months, the average daily maximum is 28.8°C and the daily average minimum approximately 15.5°C. The month with the highest average daily maximum for Klerksdorp is January with 28.8°C, while the month with the lowest average temperature is June with 1.3°C. This illustrates the character of the temperature regime of the area.

The influence of this variable on the project is considered as very low and of very little significance, while the project cannot influence this variable. In fact, it can be taken that this variable will only play a minor role during the operational phases of the project. Because extremely high temperatures may occur (mostly during dry spells), the adverse effects due to temperature will cause this variable to be negative with regard to this project. The general nature of the average conditions will however be positive. The impacts should therefore be considered as "variable".

The project itself cannot influence this variable and it must be considered as "not applicable".

10.1.3.3. WIND

According to the data received from the S.A. Weather Service, the dominant wind direction is from the north northeast (22%) and from the North (14%). The highest percentage calm days occur from February up to the end of June. The months in which the strongest winds occur (winds in excess of 8 meters per second) are from August to November.

The wind speeds are normally fairly low, but high wind speeds may occur during early spring and during thundershowers.

Wind can be considered as having a low intensity and a low significance impact on the operational phase of the project. The probability is probable and the duration, short. It is also local in extent.

The project can have no influence on the wind and is therefore "not applicable".

10.1.4 SOIL

The soil was investigated as part of the Geo-technical investigation and the results obtained from the report were incorporated in this section of the EIA. (See Appendix E for all the aspects of soils as far as the project is concerned). The soils of profiles with accompanied plates are represented in Appendix B of the Geo technical report, (Appendix E of this report).

Typical collapsible profile on lava.

Slightly moist, orange to light brown, loose to dense, clayey sand. Colluvium.
Slightly moist, orange brown, dense intact, sandy gravel. Ferruginised pebble marker.
Refusal of TLB in hard pan ferricrete or slightly to moderate weathered lava.

Typical expansive profile on lava.

Slightly moist, dark brown to grey, stiff, micro shattered sandy clay. Colluvium.
Slightly moist, orange brown, dense intact, sandy gravel. Ferruginised pebble marker.
Refusal of TLB in slightly to moderate weathered lava.

As far as the results obtained in this report are concerned the use of standard foundation techniques and normal to special construction with normal site drainage and standard building practice will be adequate for the proposed development.

The impact of the soil will be local, long term, negative in the development phase (but becoming positive in the operational phase – if proper management steps are taken). The impact of the project on the soil will probably be local, long term, negative in the development phase (but becoming positive in the operational phase – if proper management steps are implemented).

10.1.5 SURFACE DRAINAGE

The study area is located on an area drained mostly by overland flow. No permanent streamlines are found on the proposed sites for the project

No erosion by overland flow is evident on site. Surface drainage will have an influence on the project on a local scale and long in duration. The influence is positive in the sense that no major ground works are necessary to overcome possible erosion by overland flow. The intensity and significance is low and of a probable probability.

The project will have a negative influence on the environment during the construction phase because the natural overland flow will be disturbed during this phase. If the prescribed management plan for the operational phase is adhered to, no undue stress will be placed on the environment - a positive impact can be expected. The likelihood of these impacts is probable, but the impacts and significance, are judged low. The extent is local and the duration long.

10.1.6 GROUND WATER

According to the Geotechnical Report, a slightly ferruginised profile indicates that some perennial water level fluctuations occur. Information available points to a deep water table and a good reserve of water. The impact and significance of this variable is at present considered low, probable but with a low significance.

The project could adversely affect ground water if proper steps are not implemented in order to prevent pollution from reaching the groundwater. If proper mitigation and pollution prevention steps are taken during the planning, implementation and post-construction phases it is highly unlikely that the groundwater will be affected. The eventual influence should therefore be one of low significance, probability and intensity.

10.1.7 FLORA

There are only a few small indigenous trees in the study area. The veldt cover is also highly disturbed. No severe impacts on the flora are expected if normal precautionary measures are implemented.

The flora can have very little impact on the project, and its influence is considered as local, short term and improbable. The intensity and significance is judged low.

The influence of the project on the flora can be negative if proper mitigation steps are not followed. If proper mitigation steps are defined in the management plan, a positive impact will result after the construction phase. The probability of such an impact occurring is probable and of medium significance and intensity.

10.1.8 FAUNA

The natural fauna is highly disturbed and little to no evidence could be found of mammals in the area. Birds and insects were observed but no listed species were identified during the fieldwork phase.

Fauna can have little influence on the project, but the influence is likely to be of low intensity and significance, local in scale, long in duration, and positive.

The project will probably have a low intensity and significance impact on this variable if certain precautions are taken during the pre- construction phase. The impact during the construction phase will be negative, especially on the animals that have their nests in the ground. If the necessary precautions are taken and the management plan implemented, the operational phase should be so beneficial to the fauna that they may eventually re-occupy the whole area. The probability will be probable and the duration long. The scale is local.

10.1.9 AIR QUALITY

Air quality will have no influence on the project. The project will however create a certain amount of dust during the construction and operational phases. If proper dust suppression measures are implemented this variable will have very little impact (low in intensity and significance during the construction phase).

10.1.10 NOISE

It is a fact that a certain amount of noise will be generated during the construction phase of the project. Noise levels should however rarely exceed the allowable limits. It is unlikely that the project will create any more noise during the operational phase than that already experienced on site.

The impact of this variable on the site is "not applicable".

10.1.10 ARCHAEOLOGY

No evidence of archaeological sites was found during the fieldwork phase. The normal precautionary measures will be described in the Management plan.

10.2 SOCIO ECONOMIC FACTORS

10.2.1 CULTURAL SITES

No cultural sites as per definition were noted on the proposed site during the preliminary investigations.

10.2.2. AESTHETICS

Aesthetics as such have very little influence on the project due to the fact that the area is already highly disturbed. This variable can be considered as having no impact as such and is therefore "not applicable".

The project itself will impact on the aesthetics. The area, which is at present open veldt, will be built up. However, if proper mitigation measures are followed as far as the re-establishment of vegetation is concerned (and the protected trees properly managed) the impact could be described as "probable" with a local influence, long in duration but low in intensity and significance. It must however be stressed that measures to curb any possible waste pollution must be strictly enforced.

10.2.3 SOCIOLOGICAL AND ECONOMIC ISSUES

The socio-economic status of the area will have an impact on the project and it was addressed as part of the Public Participation Process. The project on the other hand will have a positive long-term impact on these variables. It is judged highly probable and the significance and intensity should be medium. This is due to the positive influence that it will have on the local population due to the new job opportunities and the new injection of capital into the local community.

11. OPINION OF PRACTITIONER

It is the opinion of the EAP that the information contained in this report and the documentation attached hereto is sufficient to conclude that the proposed development is viable on condition that:

1. The mitigation measures as described in this report must be implemented
2. The mitigation measures contained in this report are legally binding
3. Mitigation measures must be made known to personnel, contractors and sub-contractors associated with this project
4. Erosion control measures as specified in the Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983) must be controlled as specified in the act
5. Weeds and invader plants that are declared in terms of the Conservation of Agricultural Resource Act (Act 43 of 1983) must be controlled as prescribed in the act
6. An environmental control officer must ensure that conditions stipulated in the ROD are complied by. The name and contact details must be supplied to The Department of Environmental Affairs - prior to the commencement of the activities
7. The contractor/s responsible for the construction must leave the site free from erosion, pollution and/or unwanted material. The affected areas must be rehabilitated to the satisfaction of the department
8. The site seems to be clear of any archaeological / historical / cultural features as specified by SAHRA. However, if during the construction phase any such artefacts are discovered, the work in the direct vicinity of the find must be stopped. Under no circumstances shall any artefacts be destroyed. Such a site must be marked and fenced off and SAHRA notified as soon as possible
9. As far as possible, employment opportunities should be given to the local labour force in order to stimulate growth in the local and regional economy
10. In the event of non-compliance to any of the conditions contained in the ROD, the contractor / applicant will be held responsible
11. The applicant is responsible for all costs necessary to comply with the above conditions unless otherwise specified in the contracts of the contractor/s

12. ENVIRONMENTAL IMPACT STATEMENT

12.1. SUMMARY OF KEY FINDINGS

12.1.1 BIO-PHYSICAL ASPECTS

12.1.1.1 GEOLOGY

GEOLOGY -POSSIBLE IMPACTS (TYPE)

- ◆ Excavations will impact on the broad environment
- ◆ If produced by the activity excess rock spoils will impact on the environment

GEOLOGY- POSSIBLE DURATION OF IMPACTS

- ◆ As long as it is necessary to do the trenching and laying the necessary infrastructure (Max. 4 months)
- ◆ As soon as the trenches are filled again, - all excess rubble will be removed (Max. 2 months)

GEOLOGY- LIKELIHOOD OF IMPACTS OCCURRING

- ◆ The likelihood of the impacts occurring is high

GEOLOGY- POSSIBLE SIGNIFICANCE

- ◆ If properly managed and the stipulations of the Health and Safety Act and the geo-technical report are implemented, the significance of the impacts occurring is low to medium

GEOLOGY – POSSIBLE MITIGATION STEPS

- ◆ The mitigation of the possible impacts deriving from the geology is fairly simple and entirely possible if the management steps described in the management plan are implemented

12.1.1.2 TOPOGRAPHY

TOPOGRAPHY- POSSIBLE IMPACTS (TYPE):

- ◆ Low gradients may impact on storm water dispersal
- ◆ Low gradients are ideal for the layout of this type of development

TOPOGRAPHY- POSSIBLE DURATION OF IMPACTS

- ◆ The duration of the storm water dispersal as well as the final layout is local and long term

TOPOGRAPHY- LIKELIHOOD OF IMPACTS OCCURRING

- ◆ The likelihood of the impacts occurring is high

TOPOGRAPHY- POSSIBLE SIGNIFICANCE

- ◆ If properly managed and the stipulations of the Health and Safety Act implemented when constructing infra-structure, the significance of the impacts occurring is low to medium

TOPOGRAPHY – POSSIBLE MITIGATION STEPS

- ◆ Construct the necessary infra-structure to mitigate adverse impacts from steep slopes/storm events and ensure that it is properly maintained over the long term

12.1.1.3 CLIMATE

CLIMATE- POSSIBLE IMPACTS (TYPE):

- ◆ Floods due to intense rainfall events
- ◆ Dry spells due to droughts – with the resultant dust storms and possibility of veldt fires

CLIMATE- POSSIBLE DURATION OF IMPACTS

- ◆ The duration of climate impacts are difficult to determine as climatic fluctuations are extremely difficult to determine. The impacts may be local and short term after an intense rainfall event, but may be long-term during draughts

CLIMATE- LIKELIHOOD OF IMPACTS OCCURRING

- ◆ The likelihood of the impacts occurring is high

CLIMATE- POSSIBLE SIGNIFICANCE

- ◆ The significance of extreme climatic events can be high
- ◆ If properly managed and the stipulations of the Health and Safety Act implemented when constructing infra-structure, the significance of the impacts occurring is low to medium

CLIMATE – POSSIBLE MITIGATION STEPS

- ◆ Construct the necessary infra-structure to mitigate adverse impacts of possible flood events
- ◆ In the event of extremely dry spells during the construction phase plan to spray exposed surfaces with water to curb excessive dust generation

12.1.1.4 SOIL

SOIL- POSSIBLE IMPACTS (TYPE):

- ◆ Soil erosion due to either floods or dry spells (wind erosion)
- ◆ Soil disturbance due to construction activities

SOIL - POSSIBLE DURATION OF IMPACTS

- ◆ The duration of erosion caused by either floods or dry spells are difficult to determine due to the uncertainty associated with weather cycles
- ◆ Soil problems associated with the construction activities are dependant on the time that will be spent on this activity. It is envisaged that it will take anything between one and two years

SOIL- LIKELIHOOD OF IMPACTS OCCURRING

- ◆ The likelihood of both the impacts occurring is high

SOIL- POSSIBLE SIGNIFICANCE

- ◆ The significance of climatic events on the soil is medium depending on the implementation of mitigation measures. While the impact deriving from construction activities are normally (if sound management practises are implemented) regarded as low to medium
- ◆ If properly managed and the stipulations of the Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983) implemented when constructing infra-structure, the significance of the impacts occurring is low to medium

SOIL – POSSIBLE MITIGATION STEPS

- ◆ Ensure that the mitigation measures described for the protection of soils denuded of vegetation, as well of soils disturbed during construction phase are implemented

12.1.1.5 WATER

WATER -POSSIBLE IMPACTS (TYPE):

- ◆ Floods due to intense rainfall events
- ◆ Pollution of surface and/or ground water resources

WATER- POSSIBLE DURATION OF IMPACTS

- ◆ The duration of floods are virtually impossible to determine as climatic fluctuations are extremely difficult to predict
- ◆ If pollution of surface and/or ground water resources are occurring, it is usually likely due to mismanagement of either water dispersal / water pollution (e.g. by sewage) or poor management, it can be considered to be local and long-term for underground water and regional and short term for surface water resources

WATER- LIKELIHOOD OF IMPACTS OCCURRING

- ◆ The likelihood of the impacts occurring is low

WATER- POSSIBLE SIGNIFICANCE

- ◆ The significance of extreme climatic events can be high

- ◆ The significance of pollution occurring will be low if all the proposed mitigation steps are implemented

WATER – POSSIBLE MITIGATION STEPS

- ◆ Implement the plans to deal with excessive rainfall events (build and maintain flood prevention measures)
- ◆ Implement plans to prevent the possible contamination of surface and/or underground water resources. This can be accomplished by implementing measures described in both the bio-physical as well as the socio-economical sections of this document

12.1.1.6 FLORA

FLORA -POSSIBLE IMPACTS (TYPE):

- ◆ The denuding of surfaces due to construction activities and the resultant erosion (water and wind)
- ◆ Invasion by non-indigenous species

FLORA- POSSIBLE DURATION OF IMPACTS

- ◆ The impacts derived from denuded surfaces will depend entirely on the effectiveness and dedication to the principal of rehabilitation of disturbed surfaces. In the extreme scenario – the impact can last for years, or in the favourable scenario – impacts can last for a few months only. If the proposed mitigation measures are implemented, the duration of the impacts will be local and short term
- ◆ The duration of impacts from invasive species also depend entirely on the dedication/and/or lack of dedication to the invasive prevention programs. If the proposed mitigation measures are implemented, the duration of the impacts will be local and short term

FLORA- LIKELIHOOD OF IMPACTS OCCURRING

- ◆ The likelihood of the impacts occurring during the construction phase is high.
- ◆ The positive impacts derived from the proposed mitigation measures will be local and long term and of high significance

FLORA- POSSIBLE SIGNIFICANCE

- ◆ The significance of both denuded surfaces and/or invasive intrusions are low if the proposed mitigation measures are implemented

FLORA – POSSIBLE MITIGATION STEPS

- ◆ Implement the rehabilitation plans for vegetation as well as the elimination of invader species at the earliest possible moment

12.1.1.7 FAUNA

FAUNA -POSSIBLE IMPACTS (TYPE):

- ◆ Disturbance of habitats

FAUNA- POSSIBLE DURATION OF IMPACTS

- ◆ The impact on burrowing mammals and reptiles of all kinds are likely to be local and short term during the construction phase
- ◆ Insects and birds are likely to survive and even re-colonise the area (if proper rehabilitation of flora is implemented)

FAUNA- LIKELIHOOD OF IMPACTS OCCURRING

- ◆ The likelihood of the negative impacts occurring is high, while sound environmental practices may result to some degree of success as far as the return of insects and birds are concerned

FAUNA- POSSIBLE SIGNIFICANCE

- ◆ The significance of the expected faunal impacts are low – depending on the degree of success achieved through habitat restoration

FAUNA- MITIGATION STEPS

- ◆ Take the necessary steps to preserve the few remaining faunal species and enhance their possibility of survival by implementing rehabilitation measures for flora.

12.1.1.8 AIR QUALITY

AIR QUALITY -POSSIBLE IMPACTS (TYPE):

- ◆ Dust – due to exposed soils

AIR QUALITY -- POSSIBLE DURATION OF IMPACTS

- ◆ The duration of these impacts will be local and short term

AIR QUALITY -- LIKELIHOOD OF IMPACTS OCCURRING

- ◆ The likelihood of the negative impacts occurring is medium

AIR QUALITY - POSSIBLE SIGNIFICANCE

- ◆ The significance of the expected air quality impacts are low

AIR QUALITY - MITIGATION STEPS

- ◆ Take the necessary steps to prevent dust generation by spraying water over denuded surfaces during dry spells

12.1.1.9 NOISE

NOISE -POSSIBLE IMPACTS (TYPE):

- ◆ Noise pollution due to construction activities

NOISE-- POSSIBLE DURATION OF IMPACTS

- ◆ The duration of these impacts will be local and short term

NOISE - LIKELIHOOD OF IMPACTS OCCURRING

- ◆ The likelihood of the negative impacts occurring is low

NOISE - POSSIBLE SIGNIFICANCE

- ◆ The significance of this impact is judged to be low - if the restrictions of construction times are adhered to
- ◆ The significance of the expected noise impacts are low

NOISE - MITIGATION STEPS

- ◆ Take the necessary steps to restrict construction times to normal working hours

12.1.1.10 AESTHETICS

AESTHETICS -POSSIBLE IMPACTS (TYPE):

- ◆ As the present area is already highly disturbed and very little of the original ambiance of the Highveld region is still preserved in the study area no further real negative impacts are likely
- ◆ Positive impacts may however occur if the proper rehabilitation measures described for fauna and flora are implemented

AESTHETICS -- POSSIBLE DURATION OF IMPACTS

- ◆ The duration of these negative impacts are likely to be long term if proper rehabilitation is not implemented. If proper rehabilitation (and the establishment of gardens) is a priority for the future inhabitants of the area, the negative impacts may be local and short term

AESTHETICS QUALITY - LIKELIHOOD OF IMPACTS OCCURRING

- ◆ The likelihood of the positive impacts occurring is high if proper mitigation steps are not implemented

AESTHETICS - POSSIBLE SIGNIFICANCE

- ◆ The likelihood of the negative impacts occurring is highly significant – as it could distract from the quality of living from concerned citizens. If proper rehabilitation is a priority to the future inhabitants, the positive impacts may become the dominant factor (with a highly positive aesthetic impact)

AESTHETICS - MITIGATION STEPS

- ◆ Implement the proper rehabilitation measures to enhance the aesthetics of the area

12.1.2. SOCIO-ECONOMIC ASPECTS

SOCIO-ECONOMIC ASPECTS -POSSIBLE IMPACTS (TYPE)

- ◆ Enhanced quality of living may result from the new adequate housing that the project will provide for the people of the area
- ◆ Job opportunities will be created for some of the unemployed people in the area under the jurisdiction of the City of Matlosana
- ◆ Skills improvement will be provided for presently unskilled (or semi-skilled workers) living in the area under the jurisdiction of the City of Matlosana
- ◆ If a proper management plan for the project can be implemented, the present neglected to semi-neglected nature of the area where the proposed development is planned, can be changed to a more acceptable standard (that is if proper mitigation steps described in this report are implemented)
- ◆ The quality of living for people living in the proposed development can be enhanced if ALL the proper steps are followed when services are provided
- ◆ All possible negative impacts** that may be derived from poor environmental performances during all the project phases, must be identified, monitored, and mitigation steps implemented

** Negative impacts include all the aspects described under the bio-physical as well as the socio-economic characteristics of the area.

SOCIO-ECONOMIC ASPECTS – POSSIBLE DURATION OF IMPACTS

- ◆ The duration of these impacts will be entirely dependant on the duration of the construction phase, the implementation of possible mitigation measures and the dedication of the applicant, contractors and eventual occupants of the new infrastructure to sound environmental principals (including management plans / mitigation measures, etc). The overall duration of impacts can be considered to be long term

SOCIO-ECONOMIC ASPECTS - LIKELIHOOD OF IMPACTS OCCURRING

- ◆ The likelihood of the impacts occurring is high

SOCIO-ECONOMIC ASPECTS - POSSIBLE SIGNIFICANCE

- ◆ The significance of this impact is judged to be medium to high

SOCIO-ECONOMICS - MITIGATION STEPS

- ◆ Implement all the management steps described in this document to enhance the socio-economic aspects of the area

12.2. ASSESSMENT OF PROPOSED ACTIVITY

There is a definite need for first time house buyers to enter the house market. The proposed development will address this shortage. As in the rest of South Africa there is a housing shortage in the area. The proposed development will address this shortage.

During the construction phase of the proposed development, jobs will be created and thus the unemployment rate of the area will be reduced.

Alternatives regarding the provision of **sewer reticulation** exists. It can be described as follows:

Alternative 1: Upgrading and Extension of the Schoonspruit Outfall Sewer

This alternative entails upgrading of the existing Schoonspruit outfall Sewer from just south of the N12 / Hartbeesfontein intersection (Area F) along the route of the existing line and to the diameters as indicated on the attached Plan No. 2312/Figure 3(Of the Engineering report. See Appendix F). This line will collect all sewer effluent from areas E, F and G, and will also replace the existing Schoonspruit sewer, which is currently in a poor condition.

Alternative 2: New Rising Main, Pump Station and Gravity Sewer line

This alternative, as indicated on the attached Plan No. 2312/Figure 3, (Of the Engineering report. See Appendix F) provides for a pump station just west of Meiringspark in the low lying area to collect sewer effluent from areas E and G. A rising main will route the sewer to a new outfall sewer along the N12 on the northern border of area F. This sewer will extend to the east and turn to follow Meteor Road in a southern direction to the existing Swart Street pump station.

Three options for supply of **electricity** exists:

Option 1

It is proposed by Motla Engineering (PTY) LTD that for the short term electricity be taken from the Uraniaville substation.

Option 2

If the required capacity cannot be secured at the Uraniaville Substation, it is proposed that bulk supply be taken from Jouberton East Substation, or alternatively from the Jouberton Primary Substation.

Option 3

The long term recommendation is for the establishment of a new ESCOM bulk supply substation next to the N12.

The only other alternative that exists for the proposed development is the "no-go" option which will imply that the *status quo* will prevail. This is totally unacceptable as the Bill of Rights clearly states that all people should have the right to live in a proper house with at least the basic services of water and sanitation.

It is thus clear that the proposed development will have a huge positive impact on the quality of the lives of the people living in the area.

13 LIST OF REFERENCES

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DRAFT ENVIRONMENTAL MANAGEMENT PLAN

- ◆ A professional team consisting of the following experts have been assembled in order to ensure the success of the proposed development:
 - Civil Engineer (See Appendix F for a copy of this report)
 - Town and Regional Planners
 - Geo-Technical Engineer (See Appendix E for a copy of this report)
 - Electrical Engineer (See Appendix G for a copy of the report)
 - Registered Environmental Assessment Practitioner (EAP) (see Para 2.6 of this section for details of the EAP-firm)
 - Surveyor
- ◆ The Civil Engineer designed the services (see Appendix F for the Services Report) in such a manner as to ensure that sufficient water is available. Sewage will be treated at the new upgraded waste water treatment plant operated by the City of Matlosana. Roads and storm water will be constructed to the standards set by the Local Municipality (see Appendix F). Refuse will be managed by the City of Matlosana.
- ◆ The Town and Regional Planner designed the proposed development in such a way that optimal living conditions are available to all residents of the proposed development as well as the occupants of the surrounding areas.
- ◆ The surveyor ensured that the cadastral information is accurate, up to date and properly mapped. The contours of the area are accurately plotted.
- ◆ The Geo-Technical Engineer assessed the ground and soil conditions of the area in order to ensure that the intended development can be constructed. His recommendations on construction methods, where applicable, must be complied with.
- ◆ The Electrical Engineer designed the bulk provision for electrical services (See Appendix H for a copy of the report)
- ◆ The EAP assessed all possible environmental issues that may affect the proposed development and ensured that all interested and affected parties were notified in order to assist him in identifying possible impacts. He also devised mitigation measures where applicable.
- ◆ During this stage of the project, it will be essential to plan for the appointment of an Environmental Control Officer (ECO) who will be responsible to ensure that all aspects regarding the environmental issues are implemented and monitored.
- ◆ The ECO will be responsible for maintaining a database of all records pertaining to the environment for the study area.

It will be essential that the Environmental Management Plan (EMP) should not become an additional requirement separate from day-to-day activities of the site. If the EMP becomes another layer of control, staff will see it as an obstruction to normal duties and operations. For the EMP to be effective it must be part of the company's routine operations (EPA, 1995a).

Commitment from all levels of management and the workforce is the most important element in the success of this EMP.

The employees must be able to identify and act to minimise or avoid environmental impacts. This will only be possible by training and educating them to make the project their own. Once they realise that their actions can make a difference on a local and even on a global scale, it will result in a commitment to ensure better living conditions for themselves and generations to come.

- ◆ The developer will have to ensure that the contractors are aware of their responsibilities regarding the environmental issues.
- ◆ The developer will be responsible to ensure that an ECO is appointed and that the ECO knows his responsibilities.
- ◆ The developer will be responsible to ensure that the contractors are aware of all the design specifications as planned for by the professional team.
- ◆ The developer will be responsible to ensure that the proposed development is constructed as planned.
- ◆ The ECO must monitor and report on the contractor's work.
- ◆ All incidents such as spills of toxic or any other substance that may negatively affect the environment must be reported to the relevant authorities

The developer will remain responsible for the rehabilitation of the area. He will have to ensure that the contractors rehabilitate as planned.

The development will eventually be transferred to the City of Matlosana who will be legally bound to all environmental obligations as defined in this management plan.

DETAILS OF ASPECTS OF THE ACTIVITY

1 BIO-PHYSICAL ASPECTS

1.1 GEOLOGY

Pre-construction phase

- Plan for excavations that may be necessary to establish the infrastructure. This will be the responsibility of the developer in conjunction with someone who has the necessary qualifications to perform this task for example the civil engineer and the contractor.
- Plan for the dumping of excess rock spoils at a suitable site. No excess rock spoils will be allowed to remain on site. Ensure that contractors are aware of this prerequisite. It will be the responsibility of the developer and the contractor to ensure that this task is adequately planned for, and that a proper site is determined. The ECO will be responsible to monitor this aspect.

Construction phase

- Use the most practical methods (limiting force) for the excavations necessary to establish the infrastructure. If explosives are to be used, the ECO must first ensure that it is necessary and secondly ensure, together with the Safety Officer, that all procedures as required by law are taken.
- Ensure that no rock spoils remain in the area. This should be monitored by the ECO and will remain the responsibility of the developer.
- Ensure that excess spoils are removed to a suitably licensed site. This should be monitored by the ECO and will remain the responsibility of the developer.
- Further aspects concerning geology and soil will be discussed under the subheading "Site classification" in the section on soils.

Operational phase

- No further management steps are necessary for this variable during the operational phase of the project.

1.2. TOPOGRAPHY

Certain management steps, which are related to the topography, will be described in other sections of the management plan (climate, drainage, aesthetics etc.).

Pre-construction phase

- Plan the layout of the proposed settlement in such a manner that optimal use is made of the low gradient. This will be the responsibility of the Town Planner and the Civil Engineer, using the topographical map provided by the Surveyor.
- Make provision for structures to prevent concentrated runoff. The Civil Engineer will do this.
- The overall design criteria and approach, including geometric design and road layer design, can therefore be summarised as follows:
- Plan the storm water system for the low cost housing units to consist of graded storm water channels, following the natural ground level and gradient.
- Plan all roads to have a 2% cross-fall with a minimum longitudinal gradient of 1:200 (0.5%) to ensure sufficient storm water drainage. The storm water will be accommodated by means of natural surface drainage as far as possible, after which the storm water will be converted into storm water channels as mentioned above.

Construction phase

- Construct the structures to prevent concentrated runoff. This will be done by the developer and monitored by the ECO.
- Construct the roads as 5m wide graded roads with a 2% cross fall, following the natural ground level, with graded side channels to accommodate the storm water flow, according to RDP standards.
- Construct the roads to prevent accumulation of storm water at any point.
- Construct the roads as designed.
- Construct the roads to have a 2% cross-fall with a minimum longitudinal gradient of 1:200 (0.5%) to ensure sufficient storm water drainage. The storm water must be accommodated by means of natural surface drainage as far as possible, after which the storm water will be converted into storm water channels as mentioned above.
- The layouts of the proposed erven have been planned taking the prerequisite with regard to slopes and the optimisation of gentle slopes into full consideration.
- The ECO will have to monitor that the constructed measures are according to the designs.

Operational phase

- Maintain anti-erosion and runoff measures. This will be the responsibility of the City of Matlosana that takes over from the developer after construction has been completed.

1.3. CLIMATE

1.3.1 RAINFALL

Pre-construction phase

- Plan for extreme events to ensure that no concentrated runoff in excess of the capacity of the drainage network occurs. This will be the responsibility of the Civil Engineer.
- In the event of an extreme event occurring, plan to move all contractors from the construction site. They can only move back to the construction sites once all damage caused by the extreme event has been mitigated. This will have to be initiated by the developer and executed by the contractor and monitored by the ECO.
- Develop a contingency plan to cope with very hot dry spells and the possibility of fires occurring. This will have to be done by the contractor and monitored by the ECO.
- Plan for dust suppression during dry spells. This will have to be done by the contractor and monitored by the ECO.

Construction phase

- Implement the above mentioned steps to ensure that the effects of extreme events can be mitigated. It is extremely important to ensure that the effects of high rainfall events are planned for during the pre-construction phase. This will prevent erosion during the construction phase when large tracts of the land could be denuded. This will have to be done by the contractor and monitored by the ECO.
- Implement fire prevention and control measures. This will have to be done by the contractor and monitored by the ECO.
- Implement dust suppression measures. This will have to be done by the contractor and monitored by the ECO.

Operational phase

- Implement the steps described in the previous phase to ensure that the anti-erosion measures are implemented and that erosion prevention structures are maintained. This will be the responsibility of the City of Matlosana that takes over from the developer after construction has been completed.

1.3.2 TEMPERATURE

No further management steps will be needed other than those described in the previous section with regard to the possibility of fires breaking out during extremely hot and dry spells.

1.3.3 WIND

If the management steps described in the section with regard to possible fires as well as dust suppression are properly implemented, no extra management steps will be needed to mitigate the possible effects of this variable.

1.4 SOIL

Pre- construction phase

- Plan to locate the infrastructure on the area classified as suitable for development and avoid the area classified as suitable for development with precaution or risk.
- Plan the general infrastructure in such a manner that minimum disturbance of soil is necessary. This will be the responsibility of the developer.
- Undertake the necessary detailed engineering investigations and plan to implement their findings. This was done by the Geo-technical Engineer and his findings are described in the following paragraphs:
- Each individual stand must be planned to minimise soil impacts and to ensure that the necessary Geo-technical findings are implemented. This will have to be done by the Geo-technical Engineer and his findings will have to be incorporated into the Town Planner's layout plan.
- Ensure that the planning of control structures do not cause erosion in the areas to which the water is diverted to. This will have to be planned for by the Civil Engineer.
- Plan to control erosion as specified in the Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983).

Construction phase

- Locate the infrastructure on the area classified as suitable for development and avoid the area classified as suitable for development with precaution or risk.
- Construct the general infrastructure in such a manner that minimum disturbance of soil occurs. This will be the responsibility of the developer.
- Implement the plans to ensure that the infrastructure will cause minimum soil disturbance. This will have to be done by the contractor and monitored by the ECO.
- Ensure that each individual stand is developed in such a way that soil impacts are minimised. This will have to be done by the contractor and monitored by the ECO.
- If topsoil is removed for construction purposes, it should be stockpiled in such a manner that the soil does not erode (a maximum side slope of 18° is allowable). If excess topsoil is removed, it must be used for soil rehabilitation of previously

disturbed areas. This will have to be done by the contractor and monitored by the ECO.

- Control erosion as specified in the Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983).

Operational phase

- Implement a maintenance plan to ensure that no soil erosion can occur as specified in the Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983).
- It is crucially important to maintain anti-erosion structures. See other sections dealing with surface drainage and flora. This will be the responsibility of the City of Matlosana that takes over from the developer after construction has been completed.

1.5 WATER

1.5.1. SURFACE WATER

Pre-construction phase

- Plan to ensure that all contractors that are employed on site are aware of their responsibilities with regard to pollution of water prevention according to the requirements of the National Water Act, 1998 (Act 36 of 1998). This will be the responsibility of the developer and will have to be monitored by the ECO
- No raw sewage or other pollutants such as plastic, oil, cement, etc. will be allowed to pollute water. (See also sections on underground water and socio-economic aspects). This will be the responsibility of the developer and the contractor and will have to be monitored by the ECO
- Develop a management plan to ensure a clean-water environment during all phases of the project. The service of a suitably qualified engineer is essential in the planning phase. The Civil Engineer will be responsible to develop such a plan.
- Design all (and other surface water flow modifications) in such a manner that the impact on the natural systems are minimised. The system must comply with the requirements of the Local Authority and DWAF. Keep in mind that increased runoff invariably results from increased bare surfaces. All excess runoff structures must end up in infiltration structures (thereby ensuring maximum groundwater recharge). The Civil Engineer will be responsible to develop such a plan.
- Plan to slope ground surfaces in such a way that no ponding occurs. This will have to be done by the contractor and monitored by the ECO.

Construction phase

- Ensure that contractors are aware of their responsibilities as far as water pollution is concerned in terms of the requirements of the National Water Act, 1998 (Act 36 of 1998). It will be imperative to monitor their activities. It is suggested that a penalty clause be inserted in the contracts to enable the applicant to take the necessary rehabilitation measures in case of non-compliance. This will have to be done by the developer and monitored by the ECO.
- Implement the water management plan with regard to dispersion. This will have to be done by the contractor and monitored by the ECO.

Operational phase

- Ensure that all concerned are aware of all aspects regarding the integrity of the water environment. Enforce if necessary.
- Maintain the surface water management infrastructure. This will be the responsibility of the City of Matlosana that takes over from the developer after construction has been completed.

1.5.2 UNDERGROUND WATER

Pre construction phase

- Ensure that all activities that may possibly affect ground water are performed in accordance with the requirements of the National Water Act, 1998 (Act 36 of 1998), DWAF and the Local Authority. The correct installation and maintenance of sewage systems must be regarded as having a high priority.
- The Civil Engineer will do the planning of the installation of the above-mentioned system. The responsibility will however remain that of the developer to ensure that the contractors install the sewage system as planned. It will be essential that the ECO monitor this aspect very closely.
- Plan for adequate chemical toilets to be used by contractors during the construction phase. The provision and maintenance of which must form part of the contractor liabilities and must be described as such in their contracts. It will be essential that the ECO monitor this aspect very closely.
- Plan for the regular inspection of sewage facilities throughout the life cycle of the project. This will be the responsibility of the City of Matlosana.
- The storage and handling of lubricants, oils, paint and material such as cement must be provided for as part of the different contractor's contracts. Specially demarcated and secure storage facilities must be provided for. It will be essential that the ECO monitor this aspect very closely.

- Plan the disposal from hard surfaces in such a manner that the water can infiltrate into the underground water without causing surface erosion. The Civil Engineer will do this.

Construction phase

- Construct the sewage system in such a manner that no spillage is possible
- Ensure that all construction activities that may possibly affect ground water are performed in accordance with the requirements of the National Water Act, 1998 (Act 36 of 1998), DWAF and the Local Authority. This will have to be done by the contractor and monitored by the ECO.
- Ensure that adequate chemical toilets are available and are used by contractors during the construction phase - the provision and maintenance of which must form part of the contractor's liabilities. It will be essential that the ECO monitor this aspect very closely.
- The storage and handling of lubricants, oils, paint, and material such as cement must be provided for as part of contractor's contracts. Specially demarcated and secure storage facilities must be used. It will be essential that the ECO monitor this aspect very closely.
- Construct the disposal from hard surfaces in such a manner that the water can infiltrate into the underground water without causing surface erosion. This will have to be done by the contractor and monitored by the ECO to ensure that the construction is according to the plan.

Operational phase

- Continue to treat all operational activities that may possibly affect ground water in accordance with the requirements of DWAF and the Local Authority. This will be the responsibility of the City of Matlosana that takes over from the developer after construction has been completed.
- Maintain the disposal systems that originate on hard surfaces in order to allow the water to infiltrate into the underground water without causing surface erosion. This will be the responsibility of the City of Matlosana that takes over from the developer after construction has been completed.

1.6 FLORA

Pre-construction phase

- Plan for the rehabilitation of all cleared communal open spaces with indigenous vegetation. This will be the responsibility of the developer.

- Plan for the rehabilitation of all areas disturbed during construction. This will be the responsibility of the developer.
- Prepare a contingency plan to deal with the invasive species in terms of the Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983). This will be the responsibility of the developer to be executed by the contractor and monitored by the ECO.
- Plan to prevent veldt fires in the adjoining land. Firebreaks should be established in terms of the requirements and conditions of the National Veldt and Forest Fires Act (Act No. 101 of 1998). Plan a fire-combating program that adheres to the by-laws of the City of Matlosana. This will be the responsibility of the contractor to be monitored by the ECO.

Construction phase

- Implement the eradication programme for invasive species in terms of the Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983). This will have to be done by the contractor and monitored by the ECO.
- Institute the rehabilitation of areas as soon as the construction activity allows it. The sooner rehabilitation starts, the more beneficial it will be for the total environment. This will have to be done by the contractor and monitored by the ECO.
- Implement plan to prevent veldt fires in the adjoining land. Establish firebreaks in terms of the requirements and conditions of the National Veldt and Forest Fires Act (Act No. 101 of 1998). Fire-combating programs must adhere to the by-laws of the City of Matlosana. This will have to be done by the contractor and monitored by the ECO.

Operational phase

- Implement the rehabilitation plan for disturbed areas. Ensure that rehabilitation is in accordance with the above-mentioned criteria. This will be the responsibility of the City of Matlosana that takes over from the developer after construction has been completed.
- Continue with invader eradication. This will be the responsibility of the City of Matlosana that takes over from the developer after construction has been completed.
- Maintain the habitats of indigenous vegetation by implementing measures to ensure that the inhabitants of the area do not disturb the vegetation in open areas. This will be the responsibility of the City of Matlosana that takes over from the developer after construction has been completed.

1.7. FAUNA

Pre-construction phase

- Develop a management plan with CLEAR instructions to ensure that the least disturbance of fauna will take place during the last two phases of the project. The principle of NO disturbance of animal life must be the rule. This will be the responsibility of the developer to be executed by the contractor and monitored by the ECO.

Construction phase

- Implement the management plan to ensure that the least disturbance of fauna will occur. This will have to be done by the contractor and monitored by the ECO.

Operational phase

- Maintain management plan for the preservation of fauna. This will be the responsibility of the City of Matlosana that takes over from the developer after construction has been completed.

1.8. AIR QUALITY

Pre-construction phase

- Plan for the re-vegetation of areas where vegetation has been disturbed. This will be the responsibility of the developer to be executed by the contractor and monitored by the ECO.
- Plan to impose a speed limit of 20 km/h on vehicles using all non-surfaced roads in order to curb dust. This will have to be done by the contractor and monitored by the ECO.
- Plan for the implementation of rehabilitation as described in previous sections of this management plan. This will be the responsibility of the developer to be executed by the contractor and monitored by the ECO.
- Ensure that contractors' contracts contain clauses with their responsibilities with regard to possible losses incurred from fires originating from their contract areas. They will be held responsible for damages in the case of a fire spreading from their site.
- Plan to ensure that NO refuse is burnt. This will be the responsibility of the developer to be executed by the contractor and monitored by the ECO.

Construction and operational phases

- Implement the measures devised in the pre-construction phase by rehabilitating as soon as possible. This will be the responsibility of the developer to be executed by the contractor and monitored by the ECO.
- Enforce the 20 km/h speed regulations. This will have to be done by the contractor and monitored by the ECO.
- No refuse may be burnt on site. This will have to be done by the contractor and monitored by the ECO.

1.9 NOISE

Pre-construction phase

- Plan to ensure that construction vehicles are fitted with proper noise reduction fittings such as silencers. This will have to be done by the contractor and monitored by the ECO.

Construction and Operational phase

- Implement the measures devised in the pre- construction phase. This will have to be done by the contractor and monitored by the ECO.
- Normal working hours are between 08h00 and 17h00 (Mondays to Saturdays). No work will be allowed on Sundays. This will have to be done by the contractor and monitored by the ECO.

1.10 ARCHAEOLOGY

If any artefacts of archaeological significance are found during any of the project phases, it must be immediately reported to the SAHRA office in Mafikeng within 48 hours and all work on the site must be stopped and the area marked and fenced off until proper investigation by that body has been completed. This will have to be done by the contractor and monitored by the ECO.

2 SOCIO ECONOMIC FACTORS

It will be imperative that the project must be managed throughout its entire life cycle. This will ensure that the impacts remain positive. Neglect will lead to environmental deterioration. This will be the responsibility of the developer.

2.1 CULTURAL SITES

As there are no sites of cultural significance, no management measures are necessary.

2.2. AESTHETICS

Pre-construction phase

- ❖ Plan to / for:
 - Implement proper maintenance of all areas on the property that will help to enhance the aesthetics of the site. This will be the responsibility of the City of Matlosana that takes over from the developer after construction has been completed.

Construction and Operational phase

- Implement the steps described in the pre-construction phase. This will be the responsibility of the City of Matlosana that takes over from the developer after construction has been completed.

2.3 OTHER SOCIO-ECONOMIC FACTORS

Pre-construction phase

- Plan the project in such a way that optimal use is made of local labour. All labour practices must conform to the rules and regulations of the Occupational Health and Safety Act, 85 of 1993. This will be the responsibility of the developer to be executed by the contractor and monitored by the ECO.
- Devise a management plan for the project as a whole to ensure that the environmental issues can be addressed as described in this report. This will be the responsibility of the developer.
- Ensure that the management steps concerning the construction phase of the project are part of the construction contracts. This will be the responsibility of the developer to be monitored by the ECO.
- Ensure that all the people involved with the project are aware of the implications of non-compliance. This will be the responsibility of the developer to be monitored by the ECO.
- It is imperative to devise a set of rules that must form part of the overall management strategy of the development. These rules must provide for all the issues raised in this document with regard to sound environmental practices as well as with regard to good house keeping. This will be the responsibility of the developer to be monitored by the ECO.
- Plan for solid waste storage and disposal. All solid waste generated during all the phases of the project will be stored on site and disposed of only at a suitably licensed site in accordance with the stipulations of the National Environmental Act, 1998 (Act No. 107 of 1998, as amended). This will be the responsibility of the developer and contractors, to be monitored by the ECO.
- Plan to ensure that the transportation, storage and handling of hazardous materials on site conforms to the rules and regulations stipulated in terms of the Hazardous Substances Act, No. 15 of 1973. This will be the responsibility of the developer to be monitored by the ECO.
- Plan to implement all the instructions contained in the Geo-technical report. This will be the responsibility of the developer to be monitored by the ECO.

Construction phase

- Utilise local labour optimally. Ensure that all labour practices conform to the rules and regulations of the Occupational Health and Safety Act, 85 of 1993. This will be the responsibility of the developer and contractors, to be monitored by the ECO.
- Solid waste storage and disposal. All solid waste generated during all the phases of the project will only be stored on site temporarily and disposed of at a suitably licensed site in accordance with the stipulations of the National Environmental Act, 1998 (Act No. 107 of 1998, as amended). This will be the responsibility of the developer and contractors, to be monitored by the ECO.
- Ensure that the transportation, storage and handling of hazardous materials on site conforms to the rules and regulations stipulated in terms of the Hazardous Substances Act, No. 15 of 1973. This will be the responsibility of the developer to be monitored by the ECO.
- Enforce management steps with regard to provisions in contractor contracts. This will be the responsibility of the developer to be monitored by the ECO.
- Install all services as planned and described in the various reports mentioned in this document. This will be the responsibility of the developer and the contractors, to be monitored by the ECO.

Operational phase

- Maintain all infrastructure in an environmentally responsible manner. This will be the responsibility of the City of Matlosana who takes over from the developer after construction has been completed.
- All solid waste generated during this phase of the project will only be stored on site temporarily and disposed of at a suitably licensed site in accordance with the stipulations of the National Environmental Act, 1998 (Act No. 107 of 1998, as amended). This will be the responsibility of the City of Matlosana.

2.4 OTHER MANAGEMENT STEPS

- Prepare an Environmental awareness programme for contractors and the contract workers. This will be the responsibility of the developer to be monitored by the ECO.
- Ensure that the above-mentioned programme forms part of the contract of all contractors who will operate on site. This will be the responsibility of the developer to be monitored by the ECO.
- Plan for regular environmental audits of contractors' environmental performance. This will be the responsibility of the developer to be monitored by the ECO.
- Prepare a budget to ensure that environmental management issues are provided for. This will be the responsibility of the developer to be monitored by the ECO.

- o Plan measures to ensure that the environment at construction sites is properly protected during the construction phase. The following list of issues need to be addressed in the planning phase (a few of these issues have already been mentioned but are once again mentioned in this list to ensure that they are indeed addressed). This will be the responsibility of the developer to be monitored by the ECO.
- ** Plan a waste disposal programme for the workers on site. Solid waste must be safely disposed of. Waste must be collected on a daily basis and safely stored temporarily until it can be removed and disposed of at a licensed site.
- ** All food and other organic waste must be removed to a waste disposal facility.
- ** Building rubble shall only be disposed of on a properly demarcated site and must be removed at the end of the construction phase.
- ** No concrete, gravel or other rubbish shall be allowed to remain on any site after the construction phase.
- ** All cement used during the construction period must be housed in properly protected sheds that will prevent spilling into the receiving environment.
- ** Measures to ensure that no glass, plastic, metal, or paper shall be allowed to spread into the environment must be taken.
- ** Comprehensive safety measures shall be planned and implemented regarding the security of the area during all project phases.
- ** All construction vehicles must be road worthy and drivers must be instructed on applicable road safety measures.
- ** Ensure that NO oil spills occur. If bulk fuel tanks are used on site, ensure that all possible spills are contained in a demarcated (bunkered) area that will be reclaimed after the construction phase. If a spill does occur, the method of reclamation recommended is the treatment process using sodium sulphate. All such incidences MUST be reported to the relevant authorities.
- ** Contractors are responsible for proper maintenance of all chemical toilets used during construction.
- ** No vehicles will be serviced on any of the sites.
- ** Plan the construction phase for the installation of infrastructure in accordance to the Guidelines for the provision of Engineering Services and Amenities in residential township development as issued by the Department of National Housing (1994). Implement these instructions in the construction and operational phases where applicable.
- ** Plan all construction activities taking the Standardised specifications for Civil Engineering Construction (SABS 1200-1983) into account. Implement these instructions in the construction and operational phases where applicable.

2.5 MONITORING, AUDITING AND REPORTING

It is the responsibility of the development project team or their delegate to ensure that regular monitoring of environmental issues addressed in this management plan is undertaken. The applicant is responsible for the monitoring of the infrastructure that is providing services to individual stands.

Site inspections to determine maintenance needs during the operational phase are imperative for good house keeping.

Internal environmental audits must be undertaken at regular monthly intervals throughout the construction phase to ensure compliance.

The applicant will be responsible for maintaining a database for all records pertaining to the environment for the study area.

All incidents such as spills of toxic or any other substance that may negatively affect the environment, must be reported to the relevant authorities.

2.6 PARTICULARS OF AB ENVIRO-CONSULT (ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP) FIRM)

PRACTITIONERS

AB OMGEWINGSKONSULTANTE (BK) (OPERATING AS AB ENVIRO-CONSULT) IS A REGISTERED CONSULTANCY, OWNED AND OPERATED AS AN INDEPENDENT UNIT BY THE REGISTERED OWNER AND CONSULTANT:

PROF. A.B. DE VILLIERS

MR J.P. DE VILLIERS JOINED THE CONSULTANCY DURING 2004

ME J.E. DU PLOOY IS AN ASSOCIATE

PERSONAL PARTICULARS AND CAREER HISTORY OF PROF DE VILLIERS

Name : ABRAHAM BAREND (BRAAM) DE VILLIERS

Date of birth : 1944/01/26

Telephone : (018) 294-5005

Fax : (018) 294 5005

Electronic mail: brama@abenviro.co.za

Address : 7 LOUIS LEIPOLDT STREET
POTCHEFSTROOM
2531

Lecturer & Professor – Potchefstroom University 1969- 2004

ACADEMIC AND PROFESSIONAL QUALIFICATIONS

Post–Matric Qualifications

<u>YEAR</u>	<u>Qualification</u>	<u>Institution</u>	<u>Field of Study</u>
1968	B.Sc.	PU FOR CHE	Geography, Geology
1970	HONNS. B.Sc.	PU FOR CHE	Soil Science
1974	M.Sc.	PU FOR CHE	Geography
1981	Ph.D.	UOFS	Geography
1994	Certificate: Quality Auditing	ESCOM	Environmental Auditing

PROFESSIONAL QUALIFICATIONS AND REGISTRATIONS

<u>YEAR</u>	<u>Qualification/Registration</u>	<u>Institution</u>	<u>Field of Study</u>
1986	Professional Natural Scientist	S.A. Council for Natural	Environmental Science

		Scientists	
1998	Personnel & Verifying Auditor	SAATCA	Environmental Auditing
2006	Environmental Assessment Practitioner	Interim Certification Board EAPSA	Environmental Science

MEMBERSHIP AND PARTICIPATION IN SOCIETIES, COUNCILS, ETC.

Name of professional societies	YEAR	Capacity
S.A. Geographical Society.	1967-1996	Board Member
Society for Geography	1968-2004	Member
SAGS Western Transvaal	1985-1989 1987-1996	Chairman Board member
Africa Geographical Association	1993-1995	Vice-President.
Society for the Vaal River Catchment	1980-1999	Member
S.A. Society for Photogrammetry, Remote Sensing and Cartography	1984-1996	Member
Dendrological Society	1986-2005	Member
BirdLife South Africa	2003-present	Member
British Geomorphological Research Group	1985-1997	Member
Int Com on Water Resource Systems	1985-1997	Member
Int Com on Continental Erosion	1986-1990	Member
Int Com on Remote Sensing and Data Transmission	1986-1991	Member
Society for S.A. Geographers	1995-2005	Member
SA Photogrammetrical and Geo. Info.	1995-2003	Member
S.A. Association of Geomorphologists	1994-1999	Board Member and member
SADC Mine Dump Study Group	1996-2005	Member

***Chairman of the Committee for Interested and Affected Parties (CIP) (2004-2008)**
for International Accreditation by the influential accrediting body of **Price, Waterhouse
Coopers- International Environmental Auditors in Southern Africa.**

Member of **Price Waterhouse Coopers CIP (2008-)**

1. ACADEMIC COURSES TAUGHT AT POST-MATRIC LEVEL

- 1.1 The Geography of Economic Activities and Regional Geography (3rd year and honours students)
- 1.2 Weather and Climate (1st, 2nd, and 3rd year students)
- 1.3 Geomorphology (1st year up to Ph D level)
- 1.4 Remote Sensing and the Environment (3rd year and Honours)
- 1.5 Quantitative Geography (3rd year up to Masters Level)
- 1.6 Environmental Management (2nd year, up to PhD level)
- 1.7 Environmental Analysis (3rd year and up to Masters Level)
- 1.8 Geography of Soil (3rd year and Honours)
- 1.9 Cartography (1st year to Honours)
- 1.10 As professor 26 Masters & 4 PhD students completed their studies in environmentally related subjects under his tutor- and co-tutorship.

2 INVOLVEMENT IN COURSES AND WORKSHOPS

2.1 ENVIRONMENTAL COURSES:

Partially responsible for course development and taught various courses for environmental officers employed by the North West Province over a period of 3 years (1998-2001). These courses were aimed at improving their knowledge of the environment as well as their understanding of the environmental interactions specifically related to the North West province.

2.2 STATE OF THE ENVIRONMENT REPORT (SOE)

Involved in the first SOE prepared by the North West Province and was responsible for most of the physical geographical aspects (1999).

3 ENVIRONMENTAL PROJECTS

The following projects are typical examples, of such projects which he co-ordinated and managed:

3.1 MOOI RIVER CATCHMENT STUDIES:

This was a study on the impacts of the mining activities on the quality and quantity of water in the Mooi River catchments and was done for the North West Province. He co-ordinated and managed this project. The team consisted of a PhD student as well as two teams of local and international students; one responsible for the biophysical variables, and the other for socio-cultural aspects.

3.2 SADC MINE DUMPS STUDY GROUP:

Acted as coordinator for the formulation of tools to assess the effects of mine dumps on the environment in the SADC region. One group was involved in the Zimbabwean copper belt region, and the other in the Tanzanian gold mining area. The studies were undertaken for the Carl Duisburg Gesellschaft (Germany). The research team consisted of geographers, ecologists and mining experts. From this study, a pilot program, the "South African Environmental Management System" (SEMS) developed, which was applied successfully by a team of researchers in a pilot study in the Carletonville region.

3.3 SADC DEVELOPMENT OF TRAINING MODULES FOR ENVIRONMENTAL STUDIES USING GIS:

Member of the three-person team who developed these training modules. It was applied at the Copper belt University, the University of Dar Es Salaam as well as at the Potchefstroom University as an introduction to the integration of environmental data (both biophysical and socio-economic) for the interpretation of geographical regions.

3.4 ENVIRONMENTAL DEGRADATION - THE RESULT OF INDISCRIMINATE LOCATION OF SLIME DAMS IN THE SADC REGION:

Coordinated this study in the Far West Rand Area; conducted case studies in Zambia and South Africa. The team consisted of researchers from the Netherlands, Germany, Zambia and Tanzania.

3.5 LAND USE CHANGES IN THE NORTH WEST PROVINCE:

An Environmental Management Support System for SOE North-West University Team leader. This project was undertaken for DACE (NWP) and various students participated – each involved in a specific aspect of the environment. This data was co-ordinated and eventually incorporated into the SOE report.

4 RESEARCH PUBLICATIONS AND CONFERENCES

He published 11 articles in peer-reviewed magazines, and appeared professionally at 30 conferences with a direct bearing on environmental work

ACADEMIC AND PROFESSIONAL QUALIFICATIONS MR J.P. DE VILLIERS

<u>YEAR</u>	<u>Qualification</u>	<u>Institution</u>	<u>Field of Study</u>
1993	BA	PU FOR CHE	Geography, Economics
2006	B.Sc.(Honn sCum Laude	North-West University	Environmental Management
2007	M.Sc	North-West University	Geography

1994	HED	PU FOR CHE	Geography Economics
------	-----	------------	------------------------

ACADEMIC AND PROFESSIONAL QUALIFICATIONS ME J.E. DU PLOOY

YEAR	Qualification	Institution	Field of Study
1999	BA	PU FOR CHE	Geography, Tourism
2000	BA(Honns) Cum Laude	PU FOR CHE	Geography
2002	Masters in Environmental Management (MEM)	PU FOR CHE	Environmental Management
2001	Aquabase Intro	AQUABASE	Hydrology
2001	Geomedia Professional	INTERTECH	GIS
2001	Map Info	SPATIAL TECHNOLOGY	GIS

EXPERIENCE OF THE CONSULTANCY

Over a period of 12 years (1996-2008), this consultancy has successfully applied for, and obtained positive ROD's for more than 180 projects.

The company was involved (from 1992-1994) in evaluation of 114 applications for the subdivision of land, 23 applications for resort developments, and 54 applications for business rights for the Department of Agriculture, Conservation and the Environment - North West Province.

The consultancy is qualified to undertake professional studies in waste management and is still involved in the development of waste disposal- (solid and liquid effluent), and emission studies. These studies are conducted both academically and practically. This work relates to mine waste, domestic waste and effluent as well as to the monitoring of waste disposal. Environmental audits in this respect are undertaken on a regular basis.

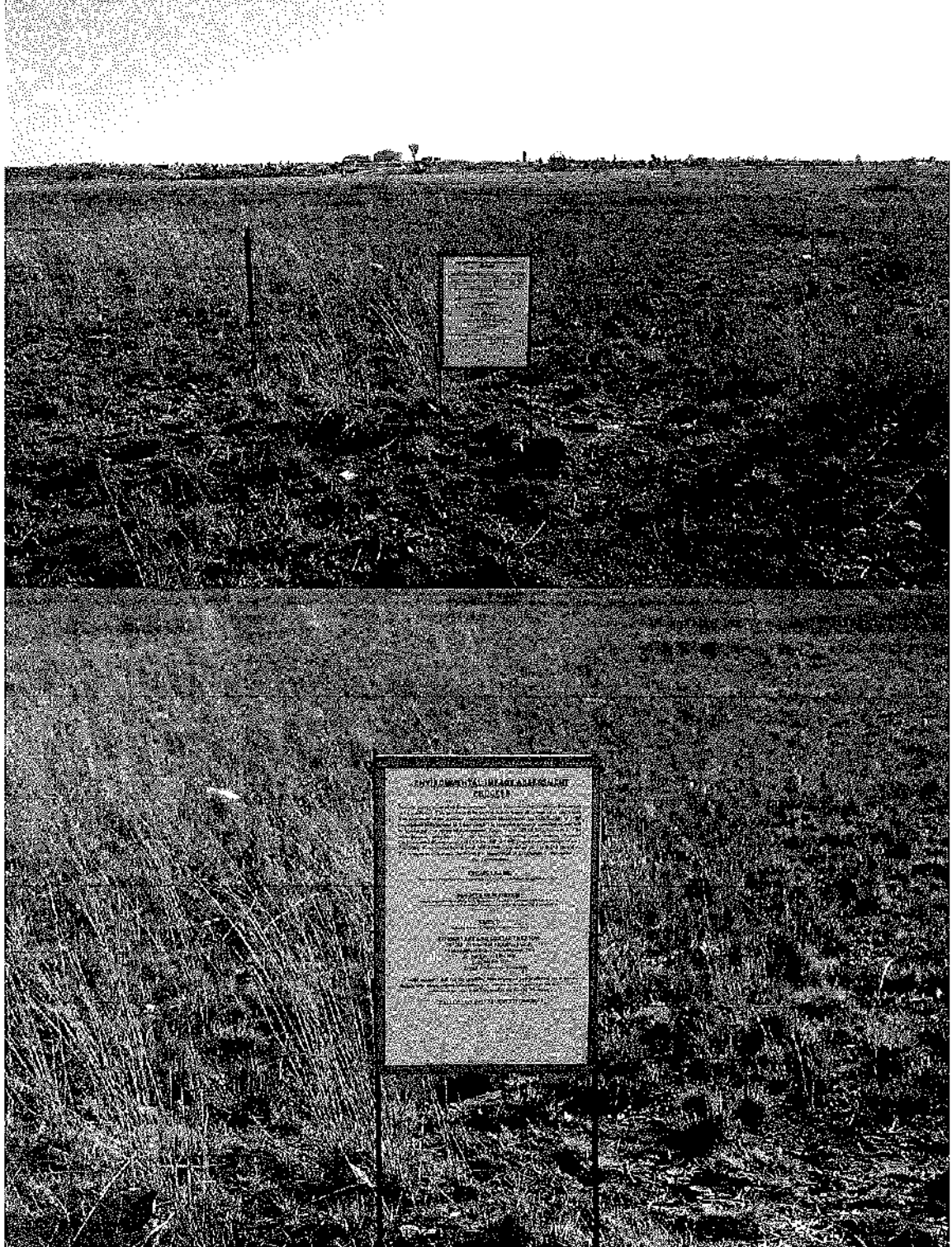
APPENDIX A: NEWSPAPER ADVERTISEMENT

APPENDIX B SITE NOTICE

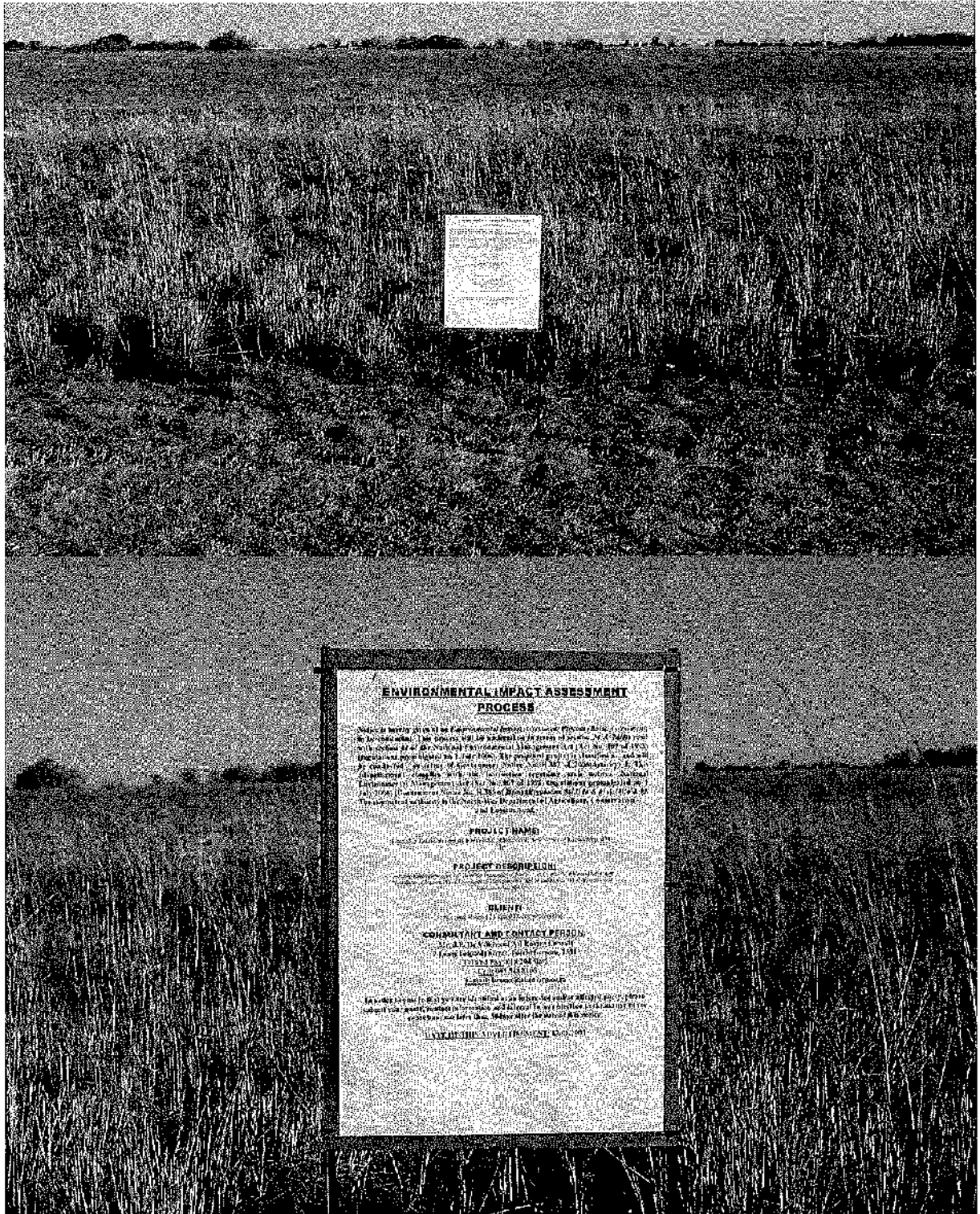
SITE NOTICE AREA A



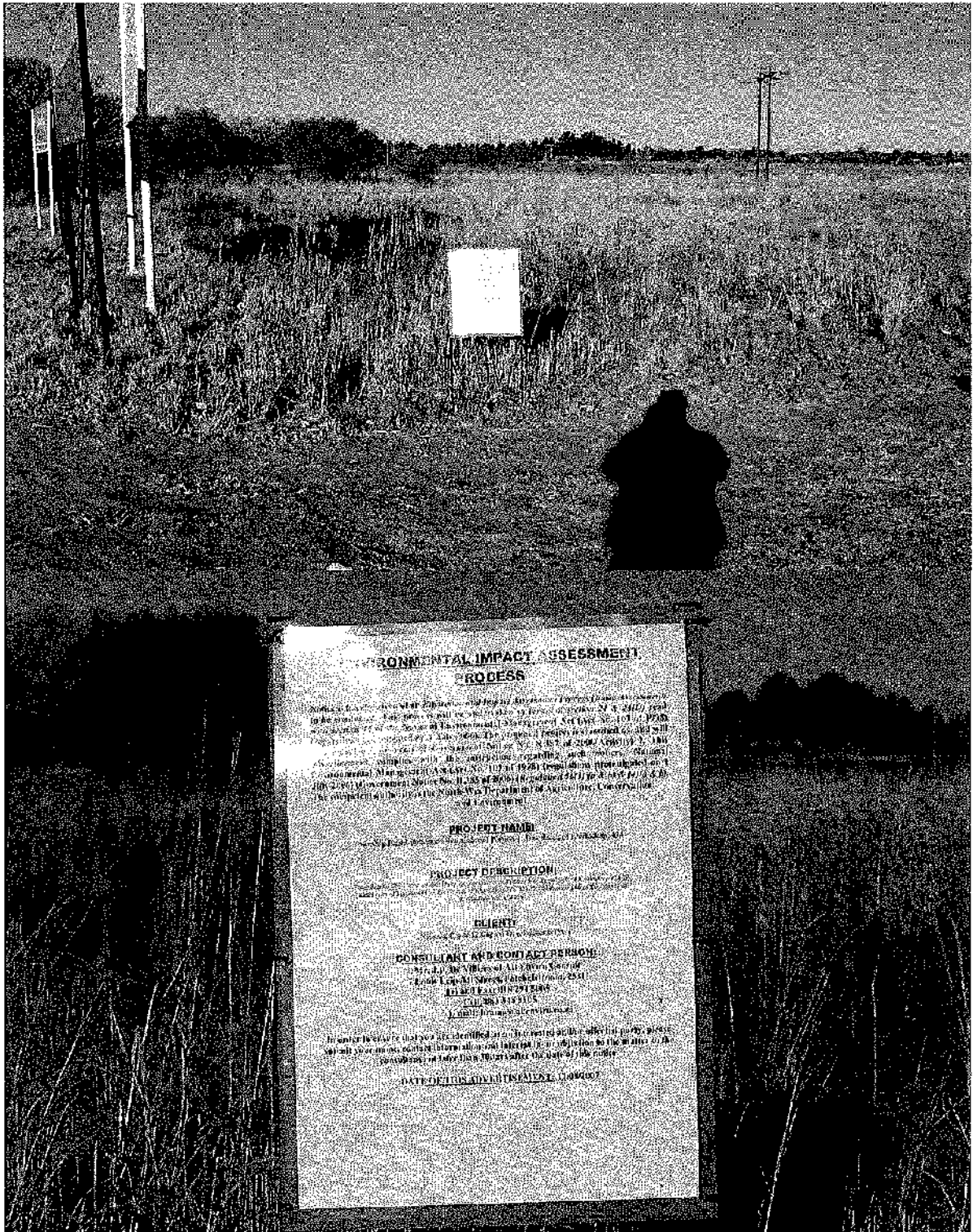
SITE NOTICE AREA B



SITE NOTICE AREA C



SITE NOTICE AREA D



APPENDIX C: REGISTERED MAIL TO INTERESTED AND AFFECTED BODIES



**AB ENVIRO-CONSULT T/A
AB OMGEWINGSKONSULTANTE (BK,CC)**

Reg no. 2000/016653/23

7 Louis Leipoldi Street,
Polchefslroom, 2531
Tel: + 27 (18) 294 5005
Fax: + 27 (18) 294 5005
E-mail:
brama@abenviro.co.za

The Director Agriculture (DACE)
Private Bag X2039
Mmabatho
2735
Tel: 018 389 5111

17/08/2007

Sir/Madam

**ENVIRONMENTAL IMPACT ASSESSMENT PROCESS FOR THE TOWNSHIP
ESTABLISHMENT ON REMAINDER OF PORTION 1, TOWNLANDS OF KLERKSDORP,
424-IP**

AB ENVIRO CONSULT was appointed by National Route 12 Capital Developments (Pty) Ltd to submit an application to the Department of Agriculture, Conservation, and Environmental Affairs, North West Province for the above mentioned proposed development.

Attached please find a notification of the proposed development for your comments. We must receive your comments within a period of 30 days from the date of this letter. In the event of your organisation/department not wishing to comment on this matter, it would be appreciated if we could receive written confirmation thereof to enable us to continue with the finalisation of the application.

If no response is however received from your Department/organisation within the said time, it will be assumed that your department/organisation does not wish to comment in this matter and the application will be processed further.

Please do not hesitate to contact us should any further information or clarification be required.

Yours sincerely,

PROF. A.B. DE VILLIERS AB ENVIRO-CONSULT

71



**AB ENVIRO-CONSULT T/A
AB OMGEWINGSKONSULTANTE (BK,CC)**

Reg no. 2000/016653/23

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Patchedstroom, 2531
Tel: + 27 (0) 294 5005
Fax: + 27 (0) 294 5005
E-mail:
broma@abenviro.co.za

The Director Conservation (DACE)
Private Bag X2039
Mmabatho
2735
Tel: 018 389 511

17/08/2007

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Yours sincerely,

PROF. A.B. DE VILLIERS *AB ENVIRO-CONSULT*

72



7 Louis Leipoldt Street,
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Tel: + 27 (18) 294 5005
Fax: + 27 (18) 294 5005
E-mail:
brama@abenviro.co.za

The Municipal Manager
Southern District Municipality
P/Bag X 5017
Klerksdorp
2570

AB ENVIRO-CONSULT T/A
AB OMGEWINGSKONSULTANTE (BK,CC)

Reg no. 2000/016653/23

17/08/2007

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PROF. A.B. DE VILLIERS

AB ENVIRO-CONSULT

73



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AB OMGEWINGSKONSULTANTE (BK,CC)**

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Fax: + 27 (18) 294 5005
E-mail:
brama@abenviro.co.za

The Municipal Manager
Po Box 99
Klerksdorp
2570
Tel: 018 4068466

17/08/2007

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PROF. A.B. DE VILLIERS

AB ENVIRO-CONSULT

74



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AB OMGEWINGSKONSULTANTE (BK, CC)**

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7 Louis Leipoldt Street,
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Tel: + 27 (18) 294 5005
Fax: + 27 (18) 294 5005
E-mail:
bramc@abenviro.co.za

Clnr. J.J. Le Grange
Po Box 99
Klerksdorp
2570

17/08/2007

Sir/Madam

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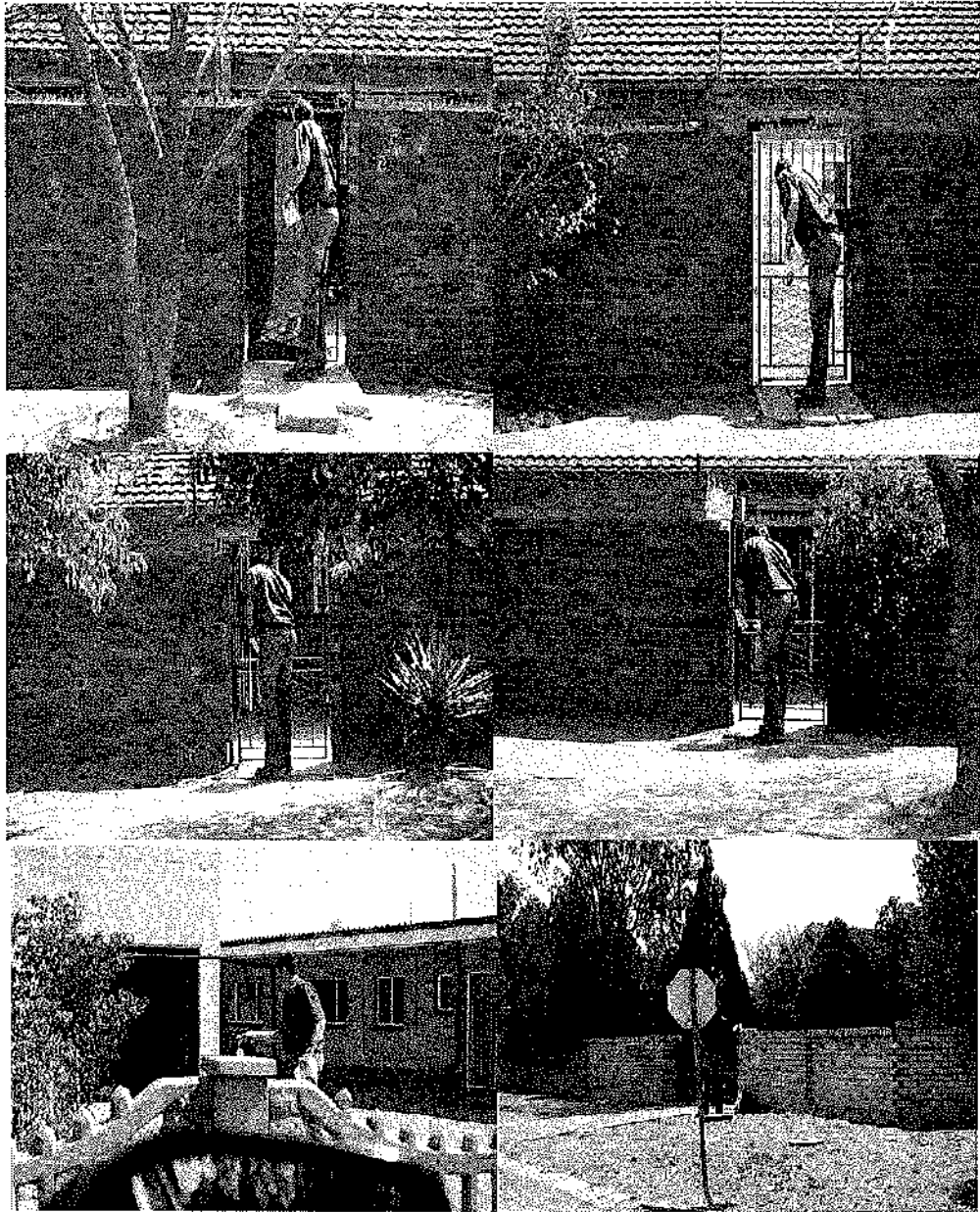
Please do not hesitate to contact us should any further information or clarification be required.

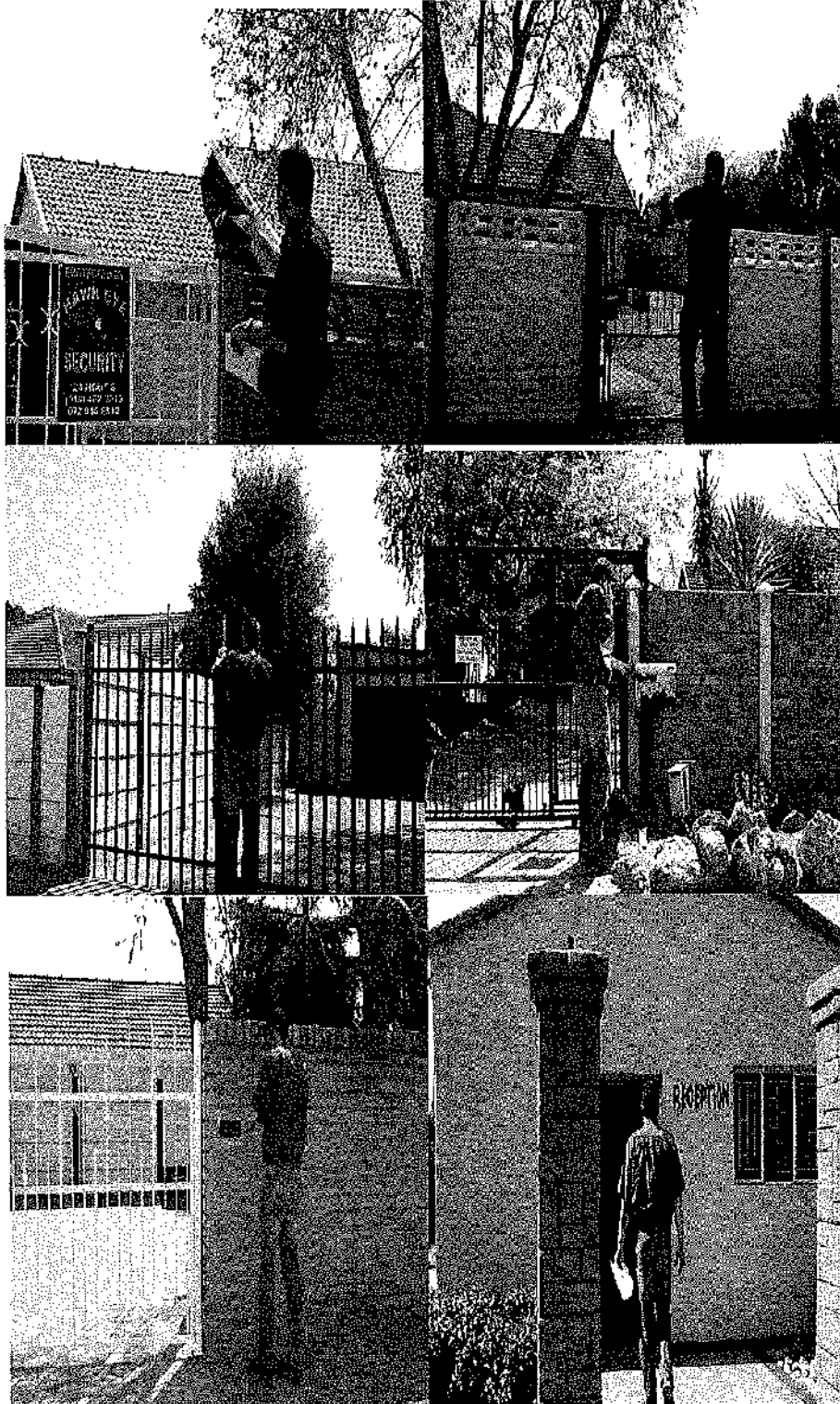
Yours sincerely,

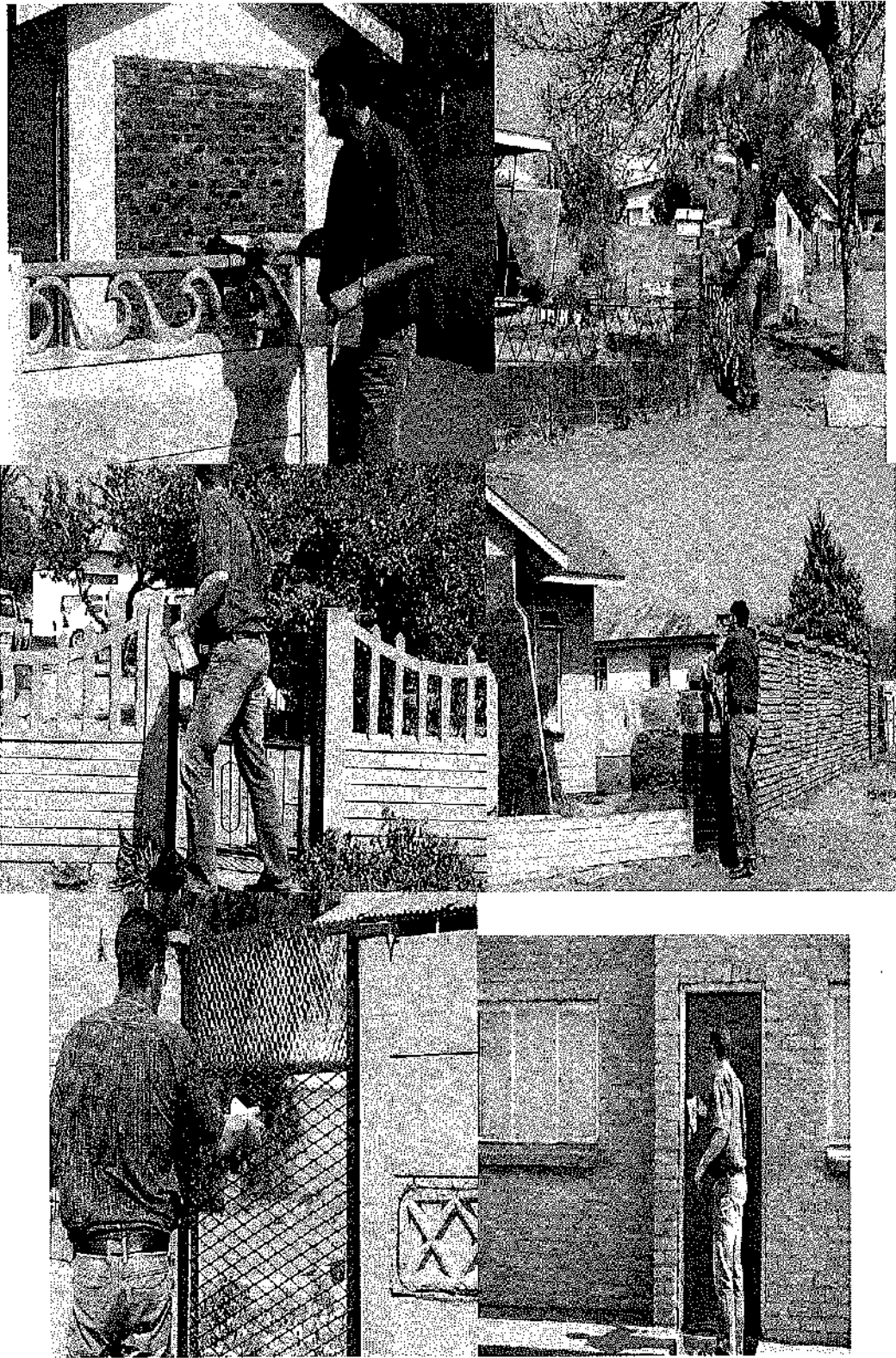
PROF. A.B. DE VILLIERS

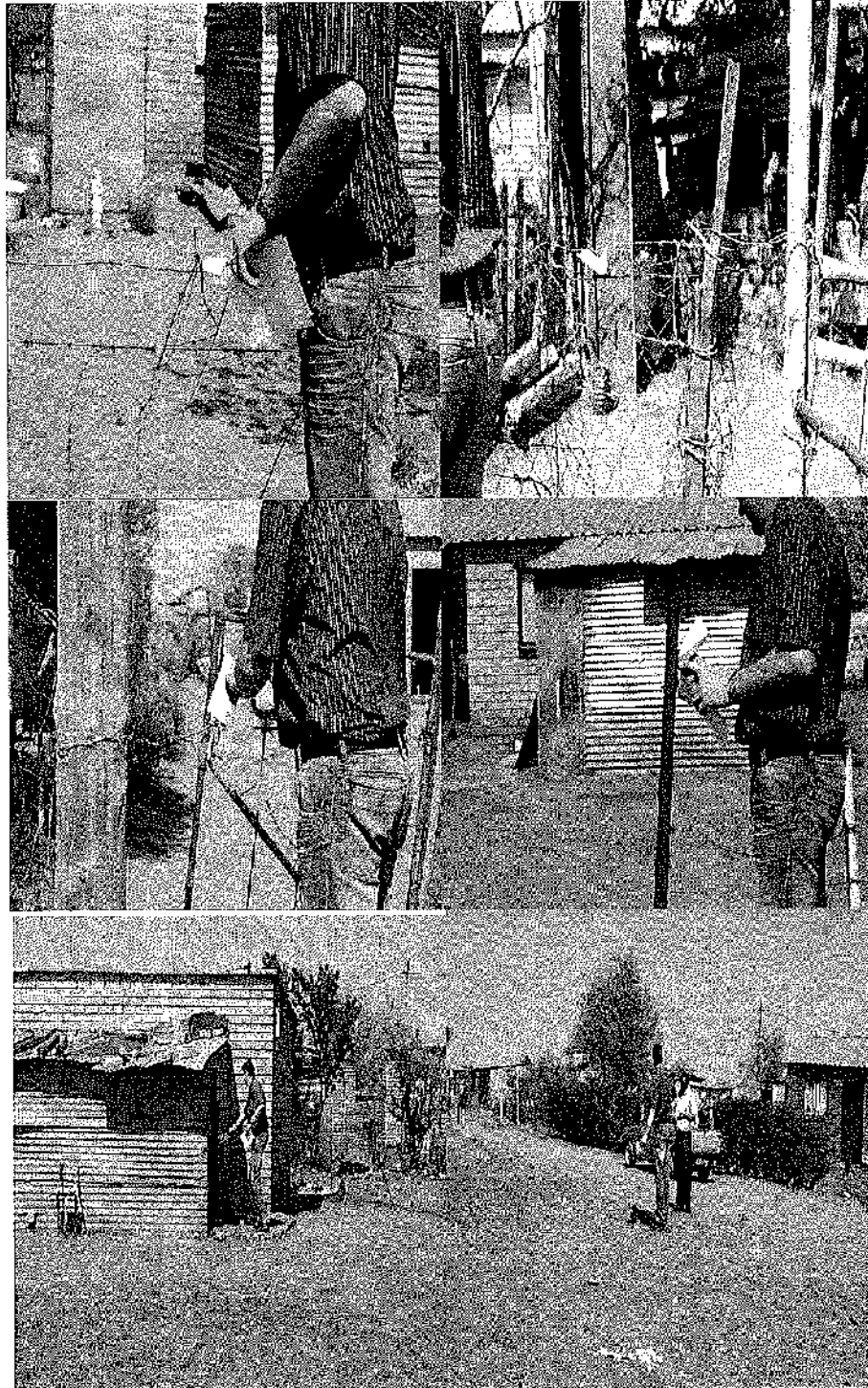
**APPENDIX D:
PROOF OF NOTIFICATION OF INTERESTED
AND AFFECTED PARTIES WITHIN A 100M
RADIUS**



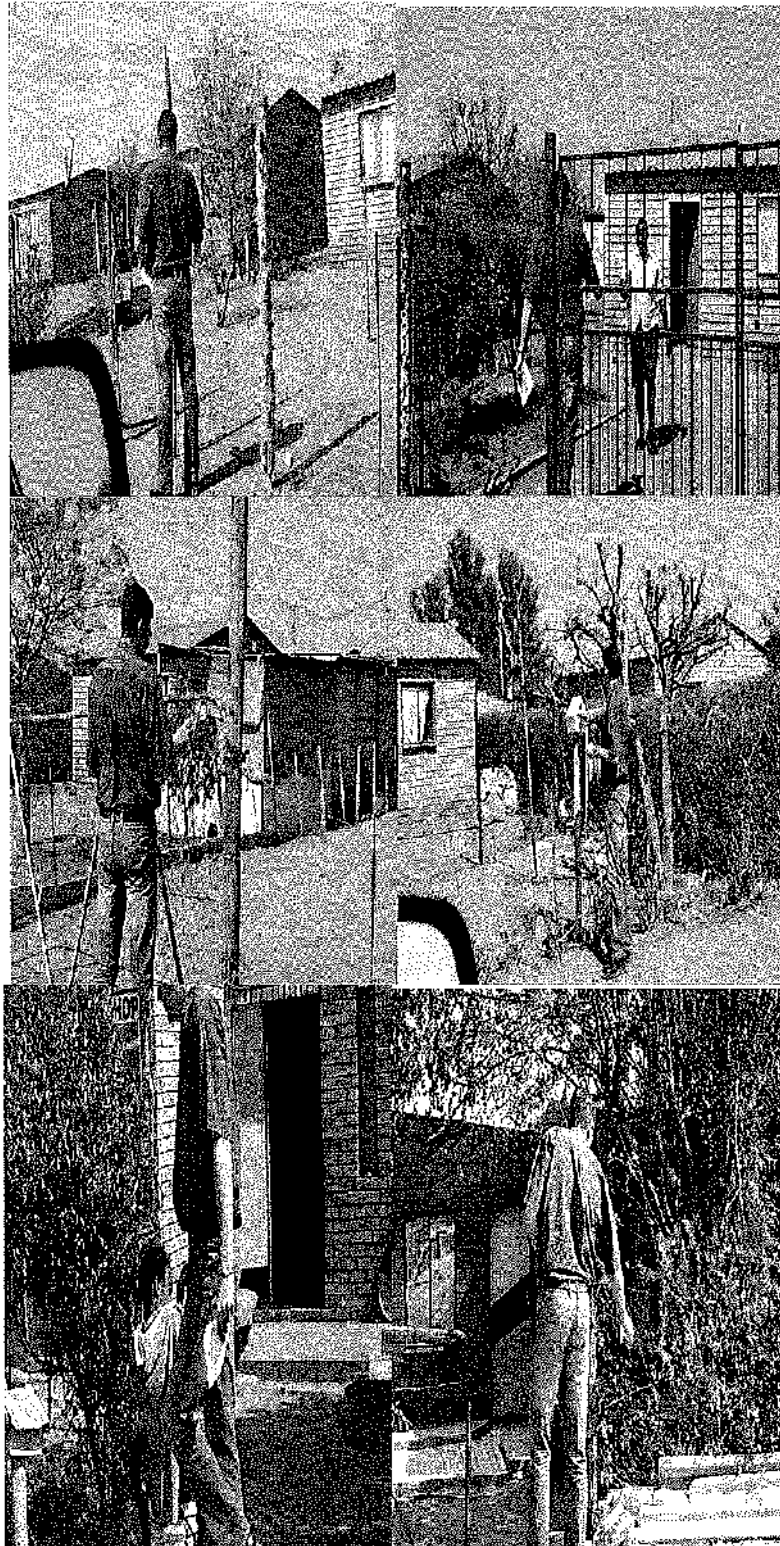




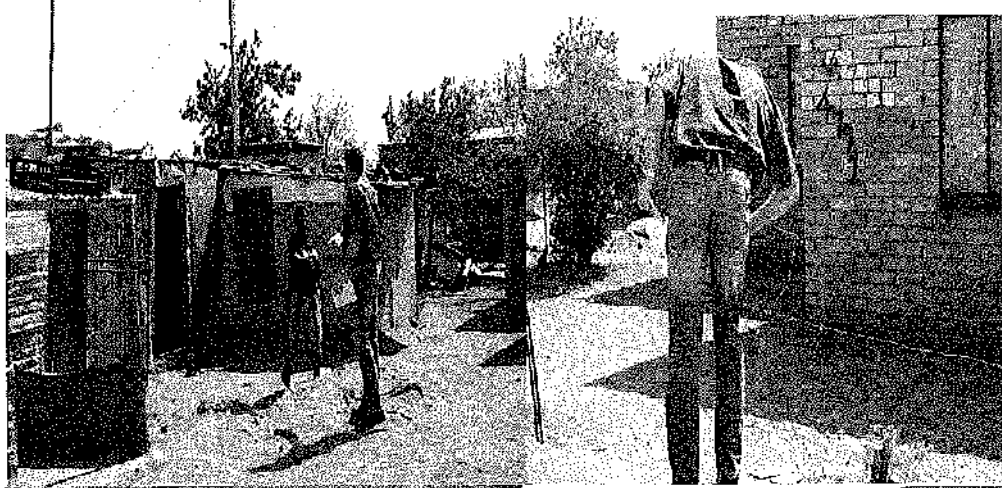






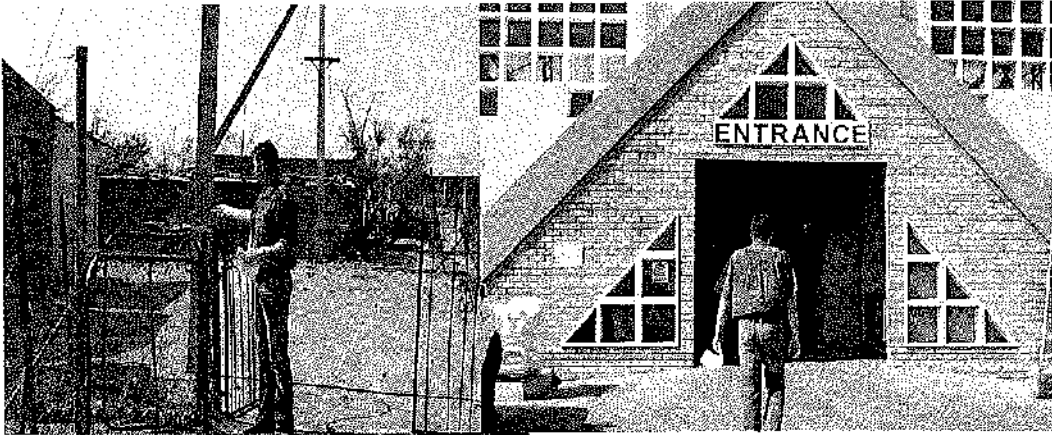




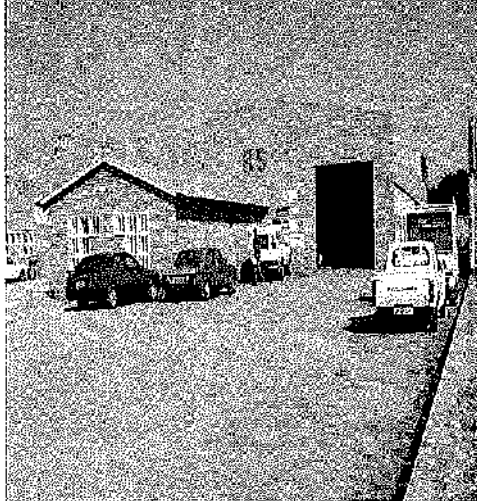
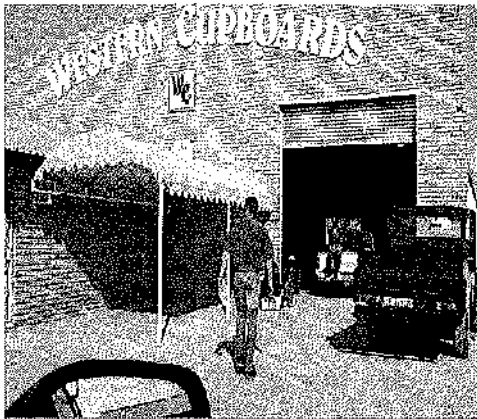
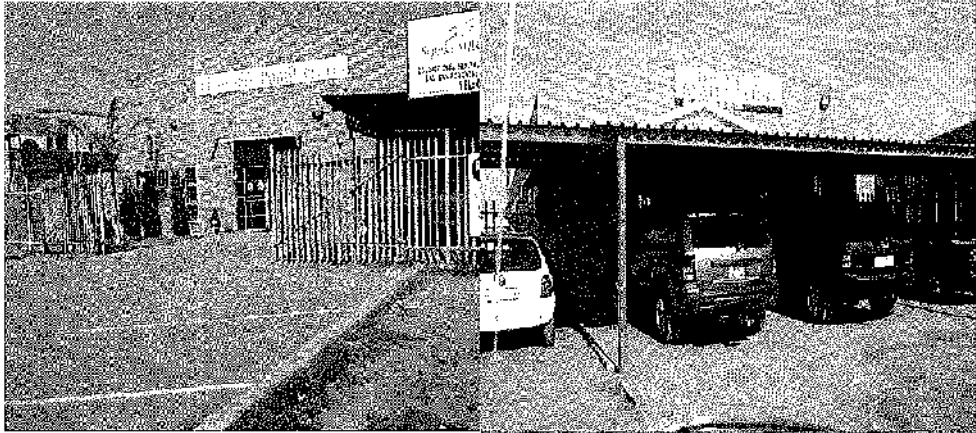


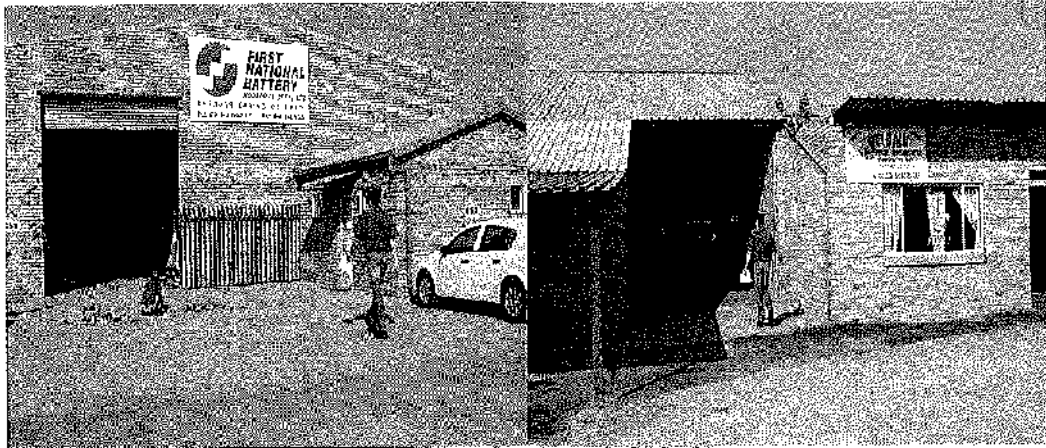


AB ENVIRO-CONSULT









APPENDIX E : GEOTECHNICAL REPORT

APPENDIX F : ENGINEERING SERVICES REPORT

**APPENDIX G
E-MAIL RECEIVED FROM ME. DU PLESSIS**

GOEIE DAG

GRAAG VERLANG EK MEER INLIGTING OOR DIE KENNISGEWING WAT U IN METEOR WEG URANIAVILLE KLERKSDORP OP GESIT HET.

1. WAT BEHELS HIERDIE "TOWNSHIP ESTABLISHMENT" EN WANNEER ?

DIE REDE VIR MY NAVRAAG IS DAT EK EIENDOM IN HIERDIE OMGEWING BESIT IN WOONGEBIED SOWEL AS IN DIE NYWERHEIDSGBIED.

SPOEDIGE REAKSIE SAL WARDEER WORD

DANKIE
B. DU PLESSIS
TEL./FAX: 0184644823
E-MAIL:nwsafes@gds.co.za

Goeie More,

Soos telefonies bespreek gee ek graag meer inligting oor die beplande uitbreiding van die gebied oorkant die huidige industriële gebied.

Die gebied tussen die industriële gebied en Freemanville is geormerk vir "Residensieel 2" ontwikkeling asook vir 'n sekondere skool.

"Residensieel 2" beteken hoër digtheid behuising, byvoorbeeld meenthuse. **Daar word nie voorsiening gemaak vir RDP huise nie.**

Indien daar enige verdere navrae is moet asb nie huiwer om my te kontak nie.

Groete,

JP De Villiers

----- Original Message -----

From: Nw Safes

To: J.P. DE VILLIERS

Sent: Sunday, September 02, 2007 12:33 PM

Subject: TOWNSHIP ESTABLISHMENT IN KLERKSDORP

APPENDIX H ELECTRICAL REPORT

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