Case ID: 1452

mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

Private Bag X6093, Kimberley, 8300, Tel: (053) 807 1700, Fax: (053) 8325 631
First Floor. Liberty Corner, 29-31 Curry Street, Kimberley 8301

From: Directorate: Mineral Regulation: Northern Cape **Date:** 24 January 2011
Enquiries: Ms. M.S Makoele Email:maphakiso.makoele @dmr.gov.za
Ref: NC 30/5/1/2/3/2/1/295 EM

SA HERITAGE RESOURCES AGENCY
RECEIVED
21 FEB 2011

The Director
South African Heritage Resources Agency
PO Box 4637
CAPE TOWN
8000

Attention: MRS NONOFHO NDOBOCHANI

CONSULTATION IN TERMS OF SECTION 40 OF THE MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT 2002, (ACT 28 OF 2002) FOR ENVIRONMENTAL SCOPING REPORT FOR MINING RIGHT APPLICATION IN RESPECT OF IRON ORE; PYROXENITE; COPPER ORE; ZINC ORE; MANGANESE ORE; FERROUS AND BASE METALS ON PORTION 114 A PORTION OF PORTION 107 OF THE FARM 703 SITUATED IN MAGISTERIAL DISTRICTS OF KURUMAN, NORTHERN CAPE REGION.

APPLICANT: AQUILA STEEL SOUTH AFRICA (PTY) LTD

Attached herewith, please find a copy of an EMP received from the above-mentioned applicant, for your comments.

It would be appreciated if you could forward any comments or requirements your Department may have to this office and to the applicant before **21 February 2011** as required by the Act.

Consultation in this regard has also been initiated with other relevant State Departments. In an attempt to expedite the consultation process please contact this office to make arrangements for a site inspection or for any other enquiries with regard to this application.

Your co-operation will be appreciated.

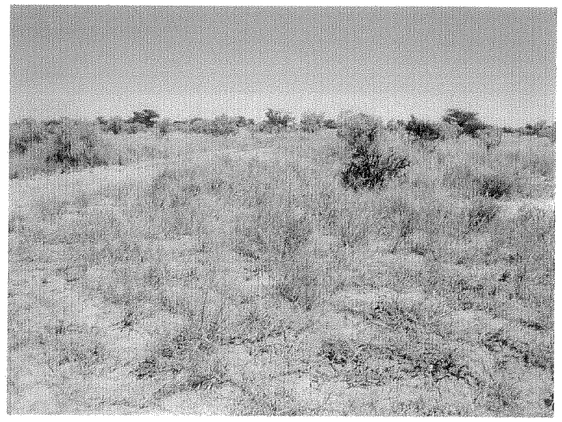
.....
REGIONAL MANAGER: MINERAL REGULATION
NORTHERN CAPE REGION

AQUILA STEEL (S.AFRICA) PTY LTD

GRAVENHAGE MANGANESE PROJECT

DEVELOPMENT OF A MANGANESE MINE, HOTAZEL

SCOPING REPORT



Synergistics
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Project Number:	S0280
Report Number:	1
Revision Number:	1
Report Status:	Final for Submission to DMR
Date:	20 January 2011
Prepared By:	Zama Khumalo
Authorised By:	Kerry Fairley

Working Together

Name of Project:	Gravenhage Manganese Project
Reference No.:	S0280
DMR Reference No.:	(NC) 30/5/1/2/2/295 MR
Name of Report:	Scoping Report
Date:	20 January 2011
Version:	Draft for Client Review
Abstract:	*Aquila Steel (S. Africa) Pty Ltd a wholly owned subsidiary of Aquila Resources is proposing to develop a new open pit and underground mining operation approximately 45 km north of Hotazel. The mine is anticipated to produce approximately 1.5 Mt of manganese ore per annum. Ore extracted from the mine will be exported to international markets.* *A scoping and environmental impact assessment is required in support of the following applications:* • *Mining Right Application (Minerals and Petroleum Resources Development Act No 28 of 2002)* • *Environmental Authorisation Application (National Environmental Management Act No 107 of 1998)* • *Waste Management Licence Application (National Environmental Management: Waste Act No 59 of 2008)* • *Atmospheric Emission Licence Application (National Environmental Management: Waste Act No 59 of 2009).* *This document comprises the Scoping Report compiled in accordance to the National Environmental Management Act (No 107 of 1998) and the Minerals and Petroleum Resources Development Act (No 28 of 2002).*
Name of Applicant:	Aquila Steel (S. Africa) Pty Ltd
Responsible Person:	Michael Halliday
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E-mail:	mhalliday@aquilaresources.com.au
Environmental Consultants:	Synergistics Environmental Services (Pty) Ltd
Responsible Person:	Kerry Fairley and Zama Khumalo
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E-mail:	kerry@synergistics.co.za or zama@synergistics.co.za
Land Owners:	Hauman Testementary Trust (Mrs Hauman)

S0280 20 January 2011

AQUILA (S. AFRICA) PTY LTD

GRAVENHAGE MANGANESE PROJECT

SCOPING REPORT

EXECUTIVE SUMMARY

Aquila Steel (S. Africa) Pty Ltd a wholly owned subsidiary of Aquila Resources Limited is proposing to develop an open pit and underground mine of the Farm Gravenhage 703/114 in the Northern Cape Province. The proposed development will be located approximately 45 km north of Hotazel within an area currently under the jurisdiction of the John Taolo Gaetsewe District Municipality. A mining right application was submitted on the 14th of December 2010 to the Northern Cape Department of Mineral Resources and accepted by the Department on 22 December 2010.

Mining is currently planned to occur in four phases where phases 1 and 2 will largely involve open pit mining anticipated to last for 7 years and phases 3 and 4 will involve underground mining. It is anticipated that the life of the mine will be 20 years. Mineral processing will involve primary and secondary crushing thereafter the product will go through dry and wet screening. Processed ore will be stored on site prior to transportation. The current plan is to truck ore from site to a siding in Hotazel via the R380. The alternative trucking route to be considered is the secondary road DR3512 located east of the mine. From the siding in Hotazel ore will be railed to Port Elizabeth for export customers.

Support infrastructure will be required at the mine for waste management, fuel supply, water and sanitation, dirty and clean water management, tailings management, power supply, safety and security and administration.

A scoping and environmental impact assessment (EIA) process is required in support of the mining right application process as well as other environmental approvals required for support infrastructure. The following approvals will be required in accordance to environmental legislation. :

- *Environmental Authorisation Application (National Environmental Management Act, NEMA, No 107 of 1998);*

- *Waste Management Licence Application (National Environmental Management: Waste Act, NEM: WA, No 59 of 2008); and*
- *Atmospheric Emission Licence Application (National Environmental Management: Air Quality Act, NEM: AQA, No. 39 of 2009)*
- *Water Use Licence (National Water Act No. 36 of 1998)*

Synergistics Environmental Services (Pty) Ltd has been appointed as independent environmental consultants responsible for undertaking the EIA required in support of the environmental applications. This report presents the result of the scoping process which is the first phase of the environmental impact assessment process. This report has been compiled in accordance to requirements from the Minerals and Petroleum Resources Development Act No 28 of 2002 and the National Environmental Management Act No 107 of 1998.

The scoping process was undertaken to establish the baseline environment of the project area, identify and notify potential interested and affected parties for the project and to identify potential impacts of the project. The following methodology was undertaken during the scoping phase:

- *Collation of baseline: Data was collated through reading documentation on the area, internet searches, site visits and initial baseline information provided by specialist.*
- *Public Consultation: This process involved site and press notification, identification of Interested and Affected parties, circulation of background information documents and project information sharing meetings.*
- *Authority Consultation: Submission of applications for waste management and NEMA listed activities.*

The project area is located in a semi-arid climatic region in an area locally referred to as the Kalahari Desert. This area has very little topographical deviation and vegetation classification as Kathu Bushveld with Acacia erioloba (Camel Thorn) and Boscia albitrunca (Shepherd's Tree) as the dominant trees on site. The main rivers in the area are the Kuruman River (located 13 km south west) and the Molopo River (located 30 km north west). The soils in the area are Augrabies, Prieska, Coega, Mantagu, Addo, Etosha, Oakleaf, Dundee, Namib and Glenrosa.

The projects impacts are discussed in Table 8.1 of the report and the main project impacts are listed below:

- *Impacts on air quality due to construction and operational activities;*
- *Impacts on groundwater due to mine operational activities;*
- *Disturbance to local communities due to development of the new mine; and*
- *Disturbance of protected trees.*

During the initial public consultation process the following issues of concern were raised:

- *Impacts to groundwater due to mining operations*
- *Decrease in ambient air as a result of excessive dust from the mine*
- *Increase in noise levels*
- *Inadequate consultation with the community*
- *Increase in traffic on public roads*
- *Rehabilitation of the project area*

Detailed impact assessment will be undertaken during the EIA phase, where the Environmental Assessment Practitioner does not have sufficient expertise, specialist input will be sought to assist with impact assessment. The following specialist studies will be undertaken during the EIA phase:

- *Air quality baseline monitoring (monthly);*
- *Air quality modelling and impact assessment;*
- *Groundwater baseline monitoring (quarterly);*
- *Geohydrological modelling and impact assessment;*
- *Noise impact assessment;*
- *Soils and land capability assessment;*
- *Heritage impact Assessment;*
- *Initial palaeontological impact assessment;*
- *Faunal (including only reptiles, birds, mammals and protected arachnids);*
- *Vegetation assessment;*
- *Traffic impact assessment; and*
- *Social impact assessment.*

Conclusions on the mine's environmental impacts will be given in the EIA report.

AQUILA (S. AFRICA) PTY LTD

GRAVENHAGE MANGANESE PROJECT

SCOPING REPORT

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AQUILA STEEL (S. AFRICA) PTY LTD

GRAVENHAGE MANGANESE PROJECT

SCOPING REPORT

1 INTRODUCTION

1.1 Introduction

Aquila Steel (S. Africa) Pty Ltd (Aquila) a wholly owned subsidiary of Aquila Resources Limited is proposing to develop an open pit and underground manganese mining operation in the Northern Cape Province. The Gravenhage Manganese Project will be located on Farm Gravenhage 703/114 approximately 45 km north of Hotazel (Refer to Figure 1.1 and 1.2). It is anticipated that the mine will involve the production of approximately 1.5 Mt of ore per annum with primary and secondary crushing, wet screening, stockpiling and the blending of the ore. The ore will be trucked to a siding in Hotazel and loaded onto wagons to be railed to port for export to customers. Mining activities are expected to last between 20 years.

Synergistics Environmental Services (Pty) Ltd has been appointed as independent environmental consultants responsible for conducting the scoping and environmental impact assessment (EIA) required in support of the required environmental authorisations.

This report presents the results of the scoping process undertaken as the first phase of the EIA process required in support of the following:

- Mining Right Application (Minerals and Petroleum Resources Development Act, MPRDA, No 28 of 2002);
- Environmental Authorisation Application (National Environmental Management Act, NEMA, No 107 of 1998);
- Waste Management Licence Application (National Environmental Management: Waste Act, NEM: WA, No 59 of 2008); and
- Atmospheric Emission Licence Application (National Environmental Management: Air Quality Act, NEM: AQA, No. 39 of 2009)

In addition a water use licence application will be completed for water related activities at the mine listed in Section 21 of the National Water Act (NWA) No 36 of 1998. An integrated water and waste management plan will be prepared in support of the water use licence applications.

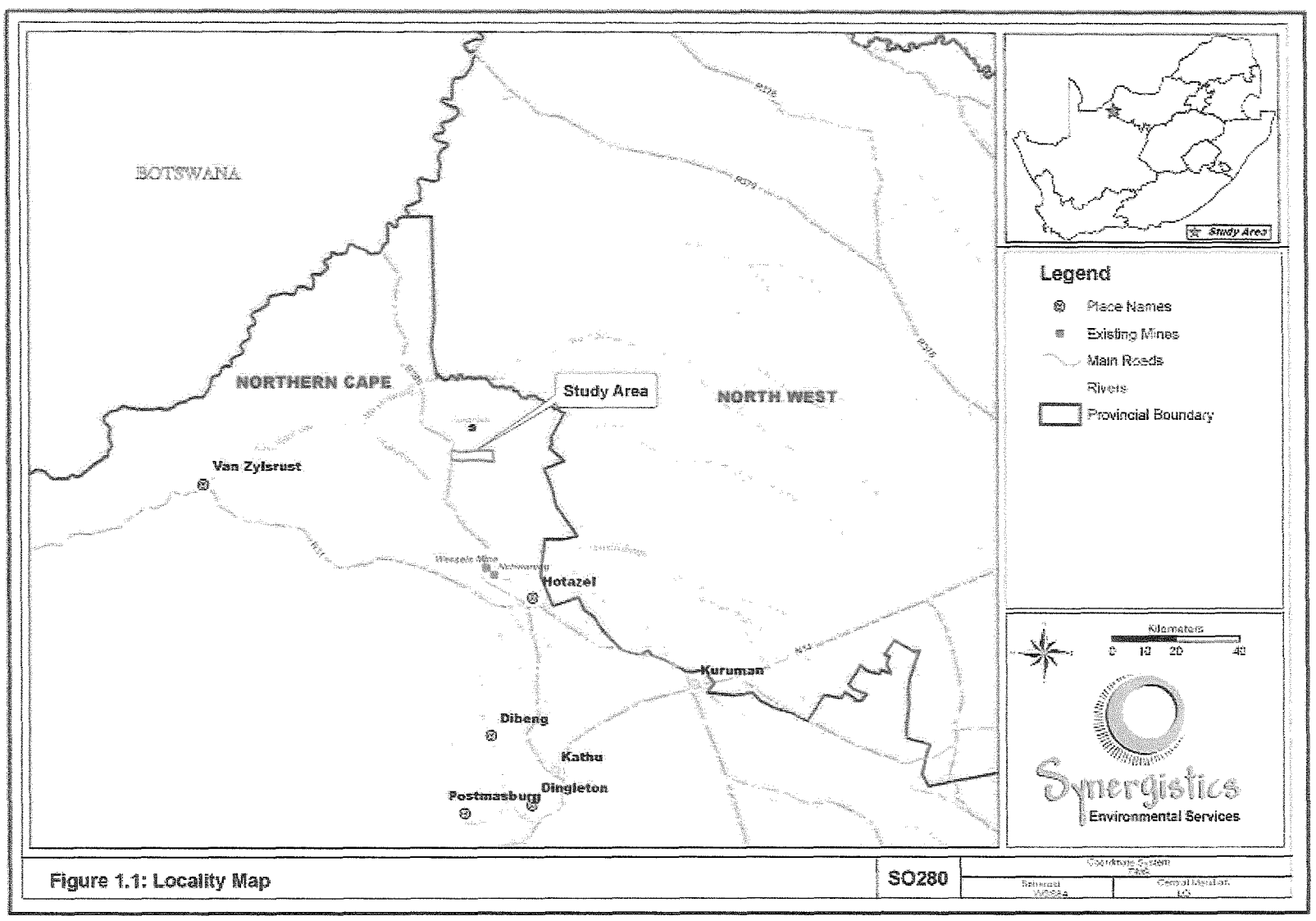


Figure 1.1: Locality Map

2 ACTIVITIES REQUIRING ENVIRONMENTAL AUTHORISATION

2.1 Activities requiring Authorisation in terms of the Mineral and Petroleum Resources Development Act No 28 of 2002 (MPRDA)

In terms of Section 39 (1) of the MPRDA:

> *Every person who has applied for a mining right in terms of Section 22 must conduct an environmental impact assessment and submit an environmental management programme within 180 days of the date on which he or she is notified by the Regional Manager to do so.*

2.2 Activities requiring Authorisation in terms of National Environmental Management Act No 107 of 1998 (NEMA)

Regulation 386 and 387 of the National Environmental Management Act No 107 of 1998 (NEMA) lists activities which require environmental authorisation prior to construction. Table 1 below lists activities that require authorisation in terms of NEMA prior to commencement. The following NEMA listed activities will be undertaken as part of the mine development:

Table 1: Regulation 386 Listed Activities for the Gravenhage Project

NEMA REGULATION	DESCRIPTION OF ACTIVITY	
Regulation 386, 21 April 2006	1 The construction of facilities or infrastructure, including associated structure or infrastructure, for	
	(b)	The above ground storage of 1 000 tons or more but less than 100 000 tons of ore.
	(l)	The transmission and distribution of electricity above ground with a capacity of more than 33 kilovolts and less than 120 kilovolts.
	(n)	The off-stream storage of water including dams and reservoirs, with a capacity of 50 000 cubic metres or more, unless such storage falls within the ambit of the activity listed in item 6 of Government Notice No. R. 387 of 2006.
	12: The transformation or removal of indigenous vegetation of 3 hectares or more or of any size where the transformation or removal would occur within a critically endangered or an endangered ecosystem listed in terms of section 52 of the National Environmental Management: Biodiversity Act 2004 (Act No. 10 of 2004)	
	13 The abstraction of groundwater at a volume where any general authorisation issued in terms of the National Water Act, 1998 (Act No. 36 of 1998) will be	

	exceeded.
	14 The construction of masts of any material or type and of any height, including those used for telecommunication broadcasting and radio transmission, but excluding- (a) masts of 15 metres and lower exclusively used (i) by radio amateurs; or (ii) for lighting purposes (b) flag poles; and (c) lightning conductor poles
	15 The construction of a road that is wider than 4 metres or that has a reserve wider than 6 metres, excluding roads that fall within the ambit of another listed activity or which are access roads of less than 30 metres long.
	16 The transformation of undeveloped, vacant land or derelict land to- establish infill development covering an area of 5 hectares or more, but less than 20 hectares; or residential, mixed, retail, commercial, industrial or institutional use where such development does not constitute infill and where the total area to be transformed is bigger than 1 hectare.

Table 2: Regulation 387 Listed Activities for the Gravenhage Manganese Project

NEMA REGUALTION	DECRIPTION OF ACTIVITY	
Regulation 387, 21 April 2006	1 The construction of facilities or infrastructure, including associated structure or infrastructure, for-	
	(c)	The aboveground storage of dangerous goods, including petrol, diesel, liquid petroleum gas or paraffin, in containers with a combined capacity of 1 000 cubic metres or more at any one location or site including the storage of one or more dangerous goods, in a tank farm.
	(e)	any process or activity which requires a permit or licence in terms of legislation governing the generation or release of emissions, pollution, effluent or waste and which is not identified in Government Notice No R. 386 of 2006
	(h)	The manufacturing, storage or testing of explosives, including ammunition, but excluding licensed retail outlets and the legal end use of such explosives.
	3 The construction of filling stations, including associated structures and infrastructure, or any other facility for the underground storage of a dangerous good, including petrol, diesel, liquid petroleum gas and paraffin.	
	20 Any development activity, including associated structure and infrastructure,	

	where the total area of the developed area is, or is intended to be 20 hectares or more.

2.3 Activities requiring Authorisation in terms of NEM: WA

The National Environmental Management: Waste Act No 59 of 2008 requires that activities listed in Notice 718 must be licenced in terms of Section 45 of the act. A waste management licence application will be submitted for activities listed in Table 3 below:

Table 3: Applicable NEM:WA listed activities for Gravenhage Manganese Project

ACTIVITY NUMBER	ACTIVITY DESCRIPTION
Category A: Activity 1	*"the storage, including the temporary storage, of general waste at a facility that has the capacity to store in excess of 100 m^3 of general waste at any one time, excluding the storage of waste in lagoons."*
Category A: Activity 2	*"the storage including the temporary storage of hazardous waste at a facility that has the capacity to store in excess of 35 m^3 of hazardous waste at any one time, excluding the storage of hazardous waste in lagoons."*
Category B: Activity 7	*"the treatment of effluent, wastewater or sewage with an annual throughput capacity of more than 15 000 cubic metres or more."*

2.4 Activities requiring Authorisation in terms of National Environemntal Management: Air Quality Act No. 39 of 2004 (NEM:AQA).

Notice 248 of NEM:AQA lists activities requiring an atmospheric emissions licence. Category 2: subcategory (2.2) activity will be undertaken at the mine. Description of the activity is given below:

Category 2: Petroleum Industry, the production of gaseous and liquid fuel as well as petrochemicals from crude oil, gas or biomass

(2) Subcategory 2.2: Storage and Handling of Petroleum Products

Description:	Petroleum product storage tanks and product transfer facilities, except those used for liquefied petroleum gas
Application	All permanent immobile liquid storage tanks larger than 500 cubic metres cumulative tankage capacity

	at a site		
Substance or mixture of substances		**Plant Status**	**Mg/Nm³ under normal conditions of 273 Kelvin and 101.3 kPa**
Common Name	**Chemical Symbol**		
Total volatile organic compounds from vapour recovery/destruction units.	N/A	New	150
		Existing	150
			g/Nm³ under normal conditions of 273 Kelvin and 101.3 kPa
Total volatile organic compounds from vapour recovery destruction units (non thermal treatment) (Thermal treatment)	N/A	New	40
		Existing	40

2.5 Activities requiring Authorisation in terms of National Water Act No. 36 of 1998 (NWA).

Section 21 of the National Water Act No 36 of 1998 lists water uses that require licencing prior to commencing. An integrated water use licence application will be submitted to the Northern Cape Department of Water Affairs for the following water uses at the mine:

21 (b) storing water

21 (g) disposing of waste in a manner which may detrimentally impact on a water resource

21 (j) removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people

3 TERMS OF REFERENCE

Synergistics Environmental Services (Pty) Ltd (Synergistics) has been appointed, as independent environmental consultant, to undertake an EIA in support of the necessary environmental authorisations required for the construction and operation of the Gravenhage Manganese Mine.

Scoping and environmental impact reporting is required in support of the mining right application, environmental authorisation, waste management licence and the atmospheric emissions licence. The EIA process will be undertaken in accordance to Regulation 385 Chapter 3 of National Environmental Management Act No. 107 of 1998 (NEMA) and Part 3 of Regulation 527 of the Minerals and Petroleum Resources Development Act (MPRDA) No 28 of 2008. **It should be noted that since the application for authorisation under NEMA was made and accepted on 14 May 2010 under Regulation 385 (21 April, 2006), in terms of Section 76 (1) of Regulation 543 (18 June 2010), this application must despite the repeal of these regulations be dispensed with in terms of the previous NEMA regulations as if those regulations were not repealed.**

The EIA process is divided into three processes namely Scoping process, Environmental Impact Assessment (EIA) process and the development of the Environmental Management Programme (EMP). This report documents the results of the Scoping process.

Scoping involves the identification of environmental issues and concerns associated with the proposed development. This includes initial consultation with interested and affected parties to identify public and stakeholder issues of concern. The Scoping process culminates in the development of the terms of reference for further work to be undertaken in the EIA phase aimed at addressing the issues identified. The Scoping Report is prepared in accordance to Section 29 of Regulation 385 of NEMA and Section 49 of Regulation 527 of the MPRDA.

The second phase, EIA process, involves detailed investigations of the environmental issues and the identification of impacts. Mitigation measures required to reduce significant impacts are identified. A report will be prepared in accordance to Section 32 of Regulation 385 of NEMA and Section 50 of Regulation 527 of the MPRDA.

The third phase will involve the development of the environmental management programme (EMP) which will detail environmental management actions required to implement mitigation measures identified in the EIA process. The EMP will be drafted in accordance to Section 34 of Regulation 385 of NEMA and Section 51 of Regulation 527 of the MPRDA. The EMP report will be combined with the EIA report.

The draft scoping report (this report) will be issued for review by interested or affected parties and the relevant environmental authorities. The authorities responsible for administrating approval of this report will be:

- Northern Cape Department of Environment and Nature Conservation;

- Northern Cape Department of Mineral Resources; and
- The National Department of Environmental Affairs.

The following authorities will provide comment on the report:

- Northern Cape Department of Water Affairs;
- Northern Cape Department Agricultural, Land Reform and Rural Development;
- Northern Cape Department of Agriculture, Forestry and Fisheries;
- South African Heritage Resources Agency; and
- Northern Cape Department of Roads and Public Works.

4 APPLICABLE LEGISLATION AND GUIDELINES

Table 4.1: List of Applicable Legislation and Guidelines Consulted

	Legislation	Regulations / Guidelines	Description / Requirement	Project Implication
EIA Process and Listed Activities	National Environmental Management Act No 107 of 1998	Regulation 543	Pending applications and appeals Section 76 (1) An application submitted in terms of the previous NEMA regulations and which is pending when the new Regulations take effect, must despite the repeal of those regulations be dispensed with in terms of those previous NEMA regulations as if those previous NEMA regulations were not repealed.	The EIA process to be followed is to be in terms of Regulation 385 (21 April 2006).
		Regulation 385)	Chapter 3 Part 3: Application subject to scoping and environmental impact reporting Chapter 6 Public Participation Process Chapter 7 Appeals	Scoping and Environmental Impact Assessment must be undertaken in accordance to Regulation 543
		Regulation 386 Listing Notice 1	Lists Activities requiring an environmental impact assessment	Environmental authorisation must be obtained prior to commencement with listed activities
		Regulation 387 Listing Notice 2	Lists activities requiring a basic environmental assessment	Environmental authorisation must be obtained prior to commencement with listed activities
Mining	Minerals and Petroleum Resources Development Act No 28 of 2002	MPRDA Regulations 527	Chapter 2 Part 3: Environmental Regulations for Mineral Development, Petroleum Exploration and Production. Chapter 2 Part 4: Pollution Control and Waste Management Regulation	EIA must be undertaken prior to operations and an Environmental Management Programme must be developed for the mine.

	Legislation	Regulations / Guidelines	Description / Requirement	Project Implication
Biodiversity	National Environmental Management: Biodiversity Act 10 of 2004	Regulation 151 Publication of critically endangered, vulnerable and protected species	No person may carry out a restricted activity involving a specimen of a listed threatened or protected species without a permit.	A permit application must be submitted to the Northern Cape Department of Environment and Nature Conservation (DNEC) for the capturing of protected species on site.
		Regulation 151 Publication of critically endangered, vulnerable and protected species	No person may carry out a restricted activity involving a specimen of a listed threatened or protected species without a permit.	A permit application must be submitted to the Northern Cape Department of Environment and Nature Conservation for chopping, culling or picking of protected species.
	National Forests Act No 84 of 1998	Notice 835 List of Protected tree species under the Act	No person may carry out a restricted activity on any protected tree except if there is a licence granted by the minister.	A licence must be obtained prior to removing any protected trees on site.
Waste Management	National Environmental Management: Waste Act	Regulation 718	Lists waste management activities that require a waste management licence prior to construction and operation.	A waste management licence must be submitted to DNEC for general waste activities and to the National Department of Environmental Affairs for hazardous waste.
Water Use	National Water Act	Section 21	Lists water uses that require a licence prior to commencement	Application for a water use licence must be submitted to DWA for triggered activities

	Legislation	Regulations / Guidelines	Description / Requirement	Project Implication
Heritage Resources	National Heritage Resources Act	Section 38	Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as: (c) any development or other activity which will change the character of a site- (i) exceeding 5000 m² in extent	South African Heritage Resources Agency (SAHRA) has to be notified of the proposed development.
		Section 38(2)	The responsible heritage resources authority must within 14 days of receipt of a notification in terms of subsection (1) – (a) if there is reason to believe that heritage resources will be affected by such development, notify the person who intends to undertake the development to submit an impact assessment report.	Heritage Impact Assessment is required for the project
Air Quality	National Environmental Management: Air Quality Act	Notice 248	Lists activities that require an atmospheric emissions licence prior to construction.	An atmospheric emissions licence must be submitted to DNEC for an AEL for listed processes
Noise		Section 34	Minister may prescribe national standards to: -control noise in general, by specific machinery, activities or in specified places or areas; -for determining definition for noise and maximum levels of noise.	Applicant is to adhere to the national standards for noise.

5 METHODOLOGY

5.1 Objectives

The objectives of the scoping process for the environmental impact assessment for the Gravenhage Manganese Project were to:

Collate project and baseline environmental information;

Establish legislative requirements and guidelines applicable to the project;

Identify landowners, relevant national and regional authorities, local authorities, stakeholders and any other Interested and Affected Parties (IAPs);

Establish and IAP and stakeholder database;

Inform landowners, relevant national and regional authorities, local authorities, stakeholders and IAPs of the proposed development;

Collate issues of concern and document these issues for consideration during the EIA;

Identify and describe potential social and environmental impacts for the project;

Identify feasible alternatives to be investigated during the Environmental Impact Assessment process; and

Identify specialist input required for the EIA and determine the plan of study for the EIA.

5.2 Information Collation

The data sources used in the scoping assessment are listed in Table 3.2.

	Sources of Information
Project Description	Aquila Resources, April 2009 Economic Evaluation Study: Kalahari Manganese Field Gravenhage Project (Report S21-RP-001 Rev P10)
Identification of Alternatives	Aquila Resources, April 2009 Economic Evaluation Study: Kalahari Manganese Field Gravenhage Project (Report S21-RP-001 Rev P10) Consultation with representatives from Aquila Steel (S.Africa)
Climate	www.agis.agric.za
Air Quality	Northern Cape State of the Environment Report 2004: Atmosphere and Climate Specialist Report.
Topography	Site visits undertaken between March 2010 and December 2010. Google Earth imagery Topocadastral Map 2622DD Wayland's Pan
Geology and Soils	Soils and Land Capabilities Report for the Gravenhage Manganese Project, Ian Jones (2010)

	Sources of Information
Groundwater	Department of Water Affairs website Project meetings with groundwater specialists for the project (Jones & Wagner)
Surface Water	Site visit undertaken on the 9th of March 2010 Topocadastral Map 2622DD Wayland's Pan
Land Capability and Land Use	Soils and Land Capabilities Report for the Gravenhage Manganese Project, Ian Jones (2010)
Ecology	Faunal Report for the Gravenhage Project:, Beryl Willson
Protected Areas & Sensitive Sites	Sensitivity Maps for the Northern Cape
Noise	Site visit undertaken on the 9th of March 2010
Cultural Heritage	Heritage Impact Report, Johnny van Schalkwyk
Visual	Site Visit undertaken on the 9th of March 2010
Social and Economic	Social and Labour Plan for the Gravenhage Manganese Project

5.3 Public Consultation

In support of the mining right and environmental applications for the proposed mining development, a public participation process (PPP) is required in order to notify and collate issues of concern from IAPs. PPP during the scoping process was undertaken in accordance with EIA Regulations 385 (21 May 2006) and Guideline 4: Public Participation (May 2006). The activities undertaken during the PPP process are described below.

5.3.1 Identification of Interested and Affected Parties

An initial database of surrounding landowners was obtained from Aquila based on based on information collated during prospecting work that has been undertaken in the area. This database was expanded based on responses to press advertisement, networking and referrals, the identification of authorities with jurisdiction over activities to be undertaken at the mine and the local municipality. Response sheets were attached to the background information document requesting IAPs to supply details other people who may have interest on the project. Refer to Appendix 1 for interested and Affected Database.

5.3.2 Notification of Interested and Affected Parties

IAPs were notified by email and registered post and were asked for preferred method of communication. Responses received from IAPs which is attached as Appendix 2. . Proof of notification is attached as Appendix 3.

5.3.3 Press and Site Advertisement

Press advertisements were placed in the Kalahari Bulletin (9 June 2010) in English and the Volksblad (8 June 2010) in Afrikaans. Notices were placed at the entrance to the Farm Gravenhage 703/114 (site), at Black Rock Recreational Club, on the notice board at the Black Rock Store; at the intersection of the R380 and the road to Block Rock, at the Hotazel Shop and at the Hotazel Post office.

Press advertisements informed persons of the proposed development, the development location and provided details as to where further information could be obtained. Site notices informed persons of the proposed development, included a map indicating the site location as well as details of the public information sharing meeting. Proof of site and press notification is given in Appendix 4..

5.3.4 Circulation of Background Information Documents

Background Information Documents (BID) containing general information on the project were circulated to IAPs via email, facsimile or registered post prior to the public information sharing meeting on 15 July 2010. BIDs were available in English, Afrikaans and Tswana. A response sheet was included in the BID. Refer to Appendix 5 for copies of the BIDs.

5.3.5 Public Information Sharing Meeting

A public information sharing meeting was held on 15 July 2010 at Black Rock Recreational Club. IAPs were notified of the meeting via telephone, written invitations and through site notices. Local authorities as well as environmental authorities were invited to the meeting. A total of 36 people were invited and 24 people including representatives from Aquila and Synergistics attended the meeting. The meeting was facilitated by Synergistics Environmental Services. Minutes of the meeting are given in Appendix 6.

5.4 Authority Consultation

Two environmental applications were submitted to environmental authorities prior to commencement with PPP:

Environmental Authorisation: For activities listed under Regulation 386 and 387 under the National Environmental Management Act No 107 of 1998;

Waste Management Licence Application: For waste activities listed in Regulation 718 of the National Environmental Management: Waste Act No 59 of 2004

Other potentially affected authorities were notified of the proposed development by circulating notification letters together with BIDs. The following authorities have been identified for the project:

Northern Cape Department of Mineral Resources;
Northern Cape Department of Water Affairs;
Northern Cape Department of Environment and Nature Conservation;
Northern Cape Department of Agriculture, Forestry and Fisheries;
National Department of Environmental Affairs;
National Department of Agriculture, Forestry and Fisheries;
South African Heritage Resources Agency;
John Taolo Gaetsewe District Municipality
Northern Cape Department of Roads and Public Works

6 PROJECT OVERVIEW

6.1 Project Motivation

6.1.1 Need and Desirability

Prospecting activities undertaken by Aquila have intersected significant zones of manganese mineralisation with high grade levels. Access to the project area is good, consisting of main bitumen covered roads and secondary gravel roads. Rail access is also available from Hotazel to Port Elizabeth. Power links also occur in close proximity to the resource.

6.2 Project Alternatives

6.2.1 Accommodation

John Taolo Gaetsewe District Municipality is not in support of the establishment of new mine villages in the Hotazel area. As a result the mine is looking at constructing houses in the existing town of Hotazel or surrounding townships. An investigation of the number of houses required for the mine is being undertaken in order to develop a feasible housing alternative for the mine.

6.2.2 Transportation of Ore

Options for the transportation of ore from the site involve:

- Using the provincial road R 380
- Using the secondary road east of the mining area DR3512

Preliminary results of the traffic study have revealed that the DR3512 will not be suitable for the transportation of ore. The assessment of this alternative will be provided in the final EIA report.

6.2.3 Location of Surface Infrastructure

Aquila has developed a preliminary layout plan for the mine. Although the location of the pit is fixed as a result of accessing the mineral reserves, alternatives will be considered as far as practicable for the location of waste sites as well as plant and administration infrastructure based on the findings of the EIA studies and in order to minimise impacts.

6.2.4 Final Land Use Alternatives

Final land use alternatives for the project will be considered as part of the EIA phase of the projects as part of the closure and rehabilitation planning.

6.2.5 No-go Alternatives

The no-go alternative will involve not undertaking the Gravenhage Manganese Project. This alternative will mean that negative environmental impacts associated with the proposed mining operations will not be realised. However, the socio-economic benefits associated with mining will also not be realised. This alternative will be assessed further in the EIA phase.

6.3 Project History

Aquila Steel (S. Africa) Pty Ltd was granted a prospecting right and an approval for the environmental management plan by the Northern Cape Department of Mineral Resources in 2007. The right was granted for the prospecting of base metals on the following farms:

- Portion 114 (PTN of PTN 107)
- Portion 103 Gravenhage,
- Portion 108 Tevrede
- Portion 32 Akdoorn
- Portion 6 (a PTN of PTN 59) Stillewoning
- Portion 59 Mirage
- Portion 41 Rosebank
- Portion 75 (PTN of PTN 41)
- Portion 3 (Vooruitzicht)
- Portion 49 (Mollersvill)
- Portion 43 (Eersbegint of farm no 703)
- Portion 1 and the remaining extent of Grafton 709
- Far Boerdraai 228

Prospecting activities have revealed a manganese resource ore on Farm Gravenhage 703/114 can be mined economically. Aquila is now in the process for applying for a mining right for Farm Gravenhage 703/144. Refer to Figure 4 for the mining right application area.

6.4 Proposed Mine Plan

6.4.1 Description of the Ore Body

The manganese resource is 5 m thick and covers an approximate area of 175 ha. Over large parts of the resource the seam is split by a sill of approximately 1.5 m thick leaving two manganese seams that have to be mined separated from the sill. The manganese resource is described in 6 blocks (see Figure 6.1). Table 6.1 below indicates the depths of the ore body and the grade of the resource at each block.

Table 6.1: Manganese Resource at Gravenhage Project

Block Number	Depth	High Grade (ktonnes)	Medium Grade (ktonnes)	Low Grade (ktonnes)	48 Plus (ktonnes)
1	150 to 200 m	80	500	2 450	260
2	100 to 150 m	410	440	1 730	1 400
3	50 to 80 m	3 540	3 000	1 750	540
4	80 to 100 m	65	500	900	0
5	70 to 100 m	280	850	6 400	0
6	80 to 100 m	0	0	7400	0

Mining will be divided into 4 phases, the high grade ore will be targeted first. The mining will commence via open pit methods and this will produce predominantly medium and high grade ore for the first 7 years. Large quantities of high grade ore are located in Block 1 and the mining of other blocks will result in a decrease in the tonnage of medium and high grade ore. The mining of Block 6 will result in the exclusive production of low grade ore.

6.4.2 Mine Schedule

Phase 1: Mining will commence through open cut via Block 3 at an average depth of 57 m. There will be initial pre-stripping to open a pit floor of 500 m by 100 m. Removal of the Kalahari sand will occur by either bowl scrapers or 90 tonne trucks to expose the Banded Ironstone Formation (BIF) which is 5 m above the ore body. The overburden will be discarded 200 m to the north of the pit. Upon exposure of the BIF the bulk sand movers will open the second block (500 m by 100 m) of pit floor down dip (south) of the first block.

Phase 2: Once the BIF is exposed smaller equipment will be used for drilling and blasting where the BIF and the sill will be removed in order to access the top and bottom manganese seams. Open pit mining will occur for a further 67 m opening 5 more blocks of 100 x 100 m pit floor. The manganese that will be exposed during this process will amount to approximately 2 million tonnes. The ore will be selectively mined producing 1 million tonnes of saleable manganese in the first year. The short term pit occupying an area of approximately 35 ha will be used during this phase (Refer to Figure 6.2).

Phase 3: Between 3 – 7 years of mining production from open pit will be reduced and gradually replaced by underground production within a 7 year period. Figure 6.3 indicates the super pit (105 ha) anticipated during the 7 year period from mining. Underground mining will initially occur from the longwalls exposed by the open cut. Bord and pillar mining method will be used to advance 100-150 m in northern and southerly direction using ultra-low profile LHDs focusing on high grade areas. Mining activities will also extend in an easterly direction for 500 m. A 1 000 m decline will be driven westwards from the pit floor to maximum depth of 200 m where the highest grade of manganese will be located.

Phase 4: Once the mining of Block 1 is completed, mining of Blocks 1 and 2 will be undertaken by decline access. When mining activities move down the decline, ventilation will be required, probably by raise-boring a ventilation shaft. Upon depletion of Blocks 1 and 2 the mining of Block 5 will commence and this block will be accessed by decline to 70 m. Finally the operation will drive by decline 500 m south-westerly directions into Block 4. Block 6 will be mined last producing exclusively low grade ore.

A contractor will be appointed to provide, install and construct facilities supporting underground mine such as the primary crusher facility, skip loading system, two working shafts, ventilation and the underground workshop. A contractor will also próvide mining equipment, consumables and labour to carry out mining. The mine will be responsible for drilling, blasting, loading and hauling ore to primary crusher as well as crushing and managing shaft operations.

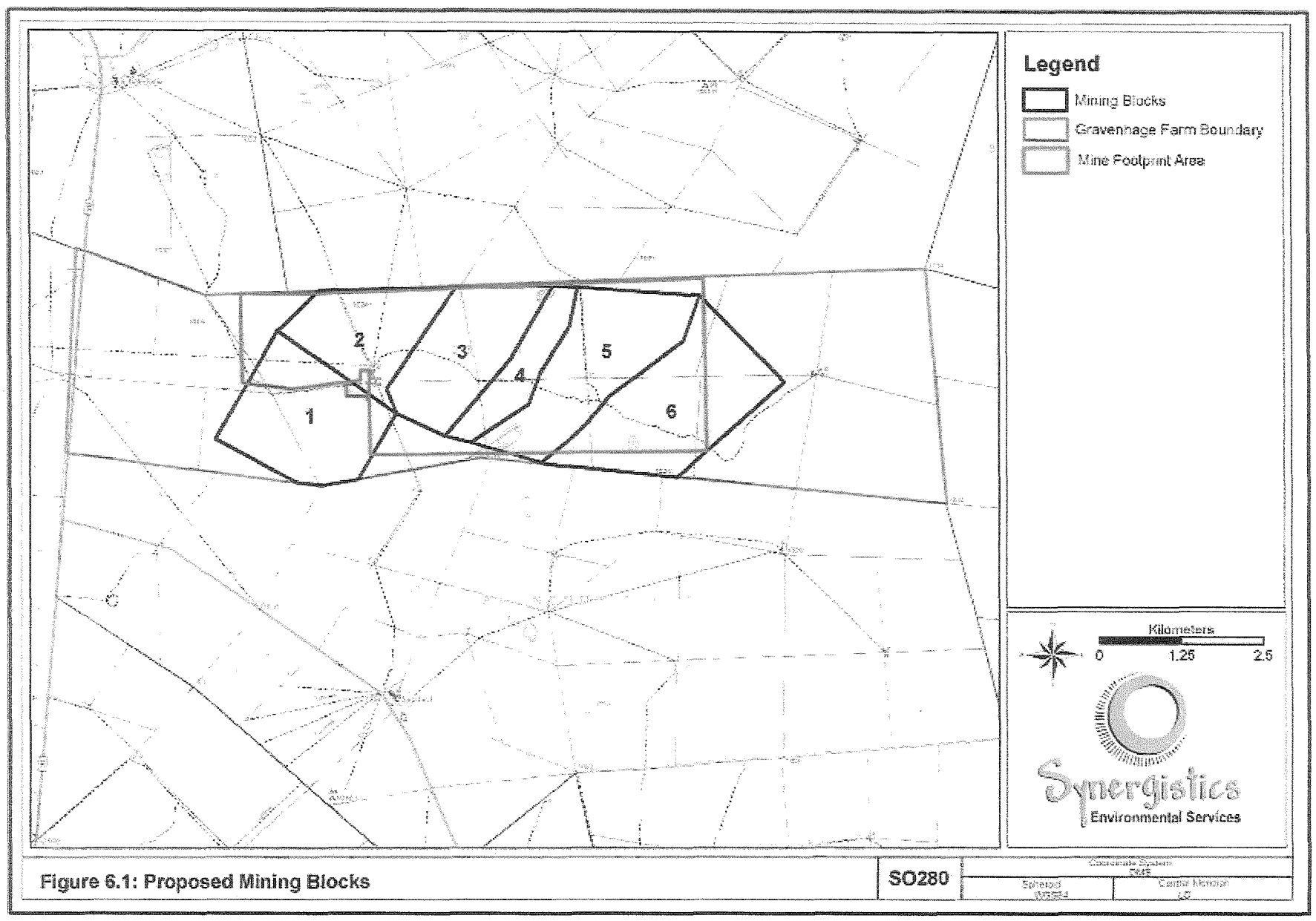
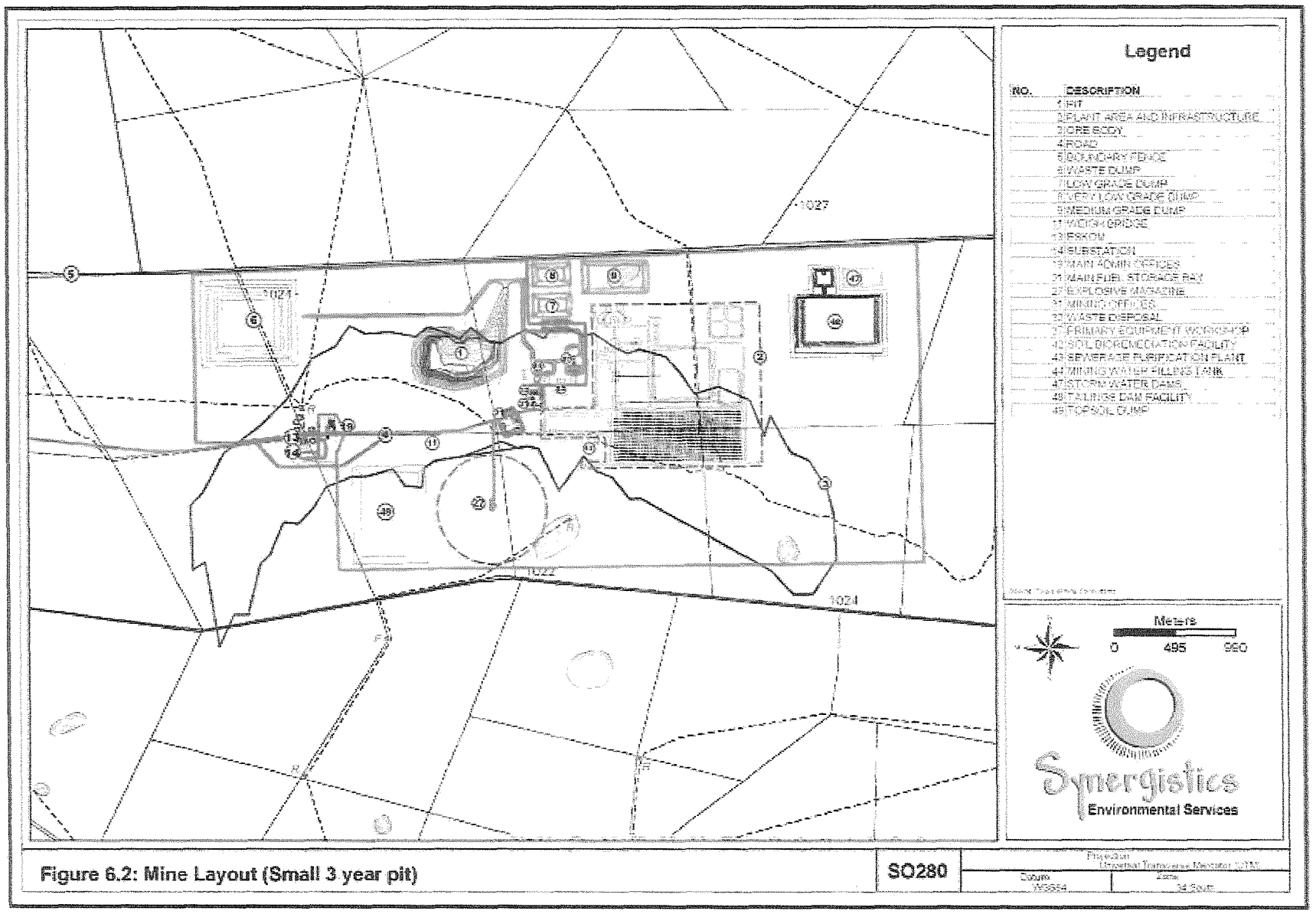


Figure 6.1: Proposed Mining Blocks


Legend
NO. DESCRIPTION
1 PIT
2 PLANT AREA AND INFRASTRUCTURE
3 ORE BODY
4 ROAD
5 BOUNDARY FENCE
6 WASTE DUMP
7 LOW GRADE DUMP
8 VERY LOW GRADE DUMP
9 MEDIUM GRADE DUMP
10 HIGH GRADE
11 ESKOM
12 SUBSTATION
13 MAIN ADMIN OFFICES
14 MAIN FUEL STORAGE BAY
25 EXPLOSIVE MAGAZINE
31 MINING OFFICES
32 WASTE DISPOSAL
37 PRIMARY EQUIPMENT WORKSHOP
42 SOIL BIOREMEDIATION FACILITY
43 SEWERAGE PURIFICATION PLANT
44 MINING WATER FILLING TANK
47 STORM WATER DAMS
48 TAILINGS DAM FACILITY
49 TOPSOIL DUMP
Meters
0 495 990
Synergistics
Environmental Services
1027
1021
1024
Figure 6.2: Mine Layout (Small 3 year pit)
SO280

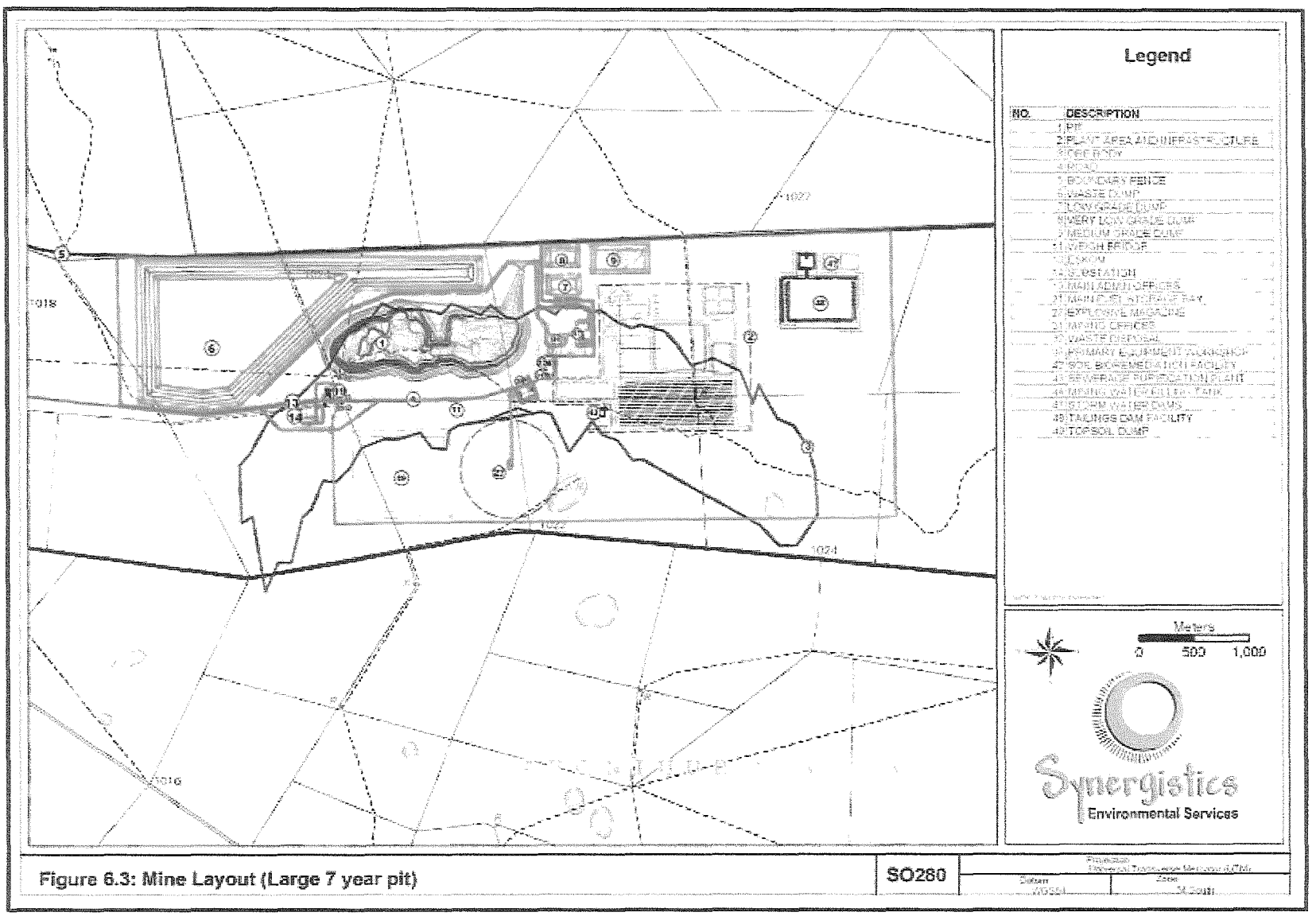


Figure 6.3: Mine Layout (Large 7 year pit)

SO280

6.4.3 Processing

During the mining of Block 3, ore will be transported to ore handling systems at portals for tramming distance of 200m. As mining moves to other blocks, ore will be transported by conveyor or low profile trucks to the primary crusher which will be located in-pit.

A primary crusher will reduce the ore to an acceptable size of 120 mm in pit. Ore will be transported into the jaw crusher by the vibrating scalping feeder which allows 120 mm particles to bypass the crusher. The crusher will discharge 99% of acceptable ore size of 120 mm. The crushed ore will then be transported for secondary crushing. At the secondary crusher ore will be reduced to -75 mm and will also undergo dry screening. Dust extraction will be provided at both crushers and transfer points.

The dry product will then be sent for wet screening to produce a lumpy product of 75 mm and fine product of 5 mm which will be stockpiled and blended on site. All slurry produced during wet screening will be transported to a tailings dam.

6.4.4 Transportation of Ore

Ore will be trucked to Hotazel via the existing R380 road to the west of the mining area. This road is only tarred from Hotazel to Black Rock, hereafter it has approximately 20 km gravel road leading to the Gravenhage Manganese Project site. An alternative transportation route is east of the plant on the existing secondary road DR3512, of which 8 km is tarred and remaining 32 km is gravel. It is currently planned that ore will be taken to an existing siding at Hotazel and loaded onto wagons to Port Elizabeth for export customers.

6.4.5 Supporting Infrastructure

A preliminary layout plan for the mine as indicated in Figure 6.2 and 6.3 shows the location of the supporting infrastructure anticipated at the mine.

6.4.5.1 Tailings Management

During the processing of the ore, slurry will be produced as a result of screening and dust extraction which will be transported to the tailings facility.

6.4.5.2 Stormwater Management

A dirty and clean water management system will have to be developed for the mine especially for dirty areas where stormwater can be contaminated. A stormwater management plan will be developed for the mine and design of the required infrastructure will be provided in the final EIA report.

6.4.5.3 Power Supply

An Eskom substation will be constructed for transmitting power at the plant. A new powerline will be constructed connecting to the existing national grid wooden T-Frame pylons over a distance of 30 km.

6.4.5.4 Safety and Security

A boundary fence will be constructed which is likely to comprise a 1.8 m high fence. There will be a main gate south west of the plant which will be provided with security gate and turnstiles. High light lighting masts will be installed at the mine to ensure safe workings at night. The specifications on the lighting system will be determined at a later stage.

6.4.5.5 Administration

The following administrative facilities will be required at the mine:

- A general administrative block with offices, meeting room, reception, strong room, dining area, toilet, human resource training centre, medical room and a small kitchen.
- A change house with shower facilities for the process plant personnel, drivers and mine workers; and
- A laboratory building with offices, organic analysis room, balance room, metallurgical laboratory, wet analytical laboratory, XRF room, and a large sample preparation and storage section.

6.4.5.6 Sanitation

A sewage treatment plant will be constructed to cater for approximately 600 construction workers as well as the operational workforce which is estimated to comprise approximately 500 persons.

6.4.5.7 Communication

It is anticipated that a cell phone mast will be constructed for communication purposes at the mine.

6.4.5.8 Workshop Area

A workshop area will be developed for the repairing of heavy and light motor vehicles. This area will comprise of an engineering workshop, spare and consumables warehouse and open storage area and a waste oil collection and a service area for vehicles i.e. LDV and 4x4s.

6.4.5.9 Waste Management

The mine will result in the generation of hazardous as well as general waste. Mine waste will be discarded at designated waste dumps including overburden/waste rock dumps and a tailings facility. A general waste site will be developed at the mine for the disposal of general waste. All recyclable waste will be stored at a refuse and scrap collection area for recycling. Hazardous waste will be temporarily stored on site for disposal at a licenced hazardous waste facility. All waste storage facilities will be licenced in accordance with NEM: WA.

6.4.5.10 Fuel Supply

A fuel supply area for heavy vehicles and light vehicles will be developed on site.

6.4.5.11 Staff Accommodation

During the construction phase, staff will be accommodated on site. A temporary accommodation village will be developed on site for approximately 600 workers. Alternatives are currently being considered for the accommodation of staff during the operation phase. Houses may be constructed in Hotazel with consultation with the municipality.

6.4.5.12 Explosives Magazine

A magazine will be required for the storage of explosives to be used during blasting activities. The magazine will be located away from the plant area to ensure safety during mining activities.

6.4.5.13 Transportation Requirements at the Mine

Roads will be required for access to the mine, the hauling of ore and waste rock at the mine as well as the movement of light vehicles around the site. It is anticipated that 90 tonne trucks will be required for the transportation of ore and waste within the site.

Alternatives are currently being investigated in terms of air travel. These include the use of the airstrip at Black Rock or the development of a new airstrip at Gravenhage.

6.4.5.14 Water Abstraction and Supply

Water for the mine will be sourced from groundwater resources. Studies are currently being undertaken to investigate the amount of water required for the mining operations as well as the amount of groundwater resources available to the mine. The need for dewatering to allow for mining to continue is also being investigated.

7 DESCRIPTION OF THE BASELINE ENVIRONMENT

7.1 Regional Locality

The project area is located approximately 45 km north of Hotazel town on Farm Gravenhage 703/114 in the Northern Cape Province. The site falls in an area that is under the jurisdiction of John Taolo Gaetsewe District Municipality. The major towns in the area are Kuruman (Capital), Kathu, Sishen and Hotazel. The district municipality is divided into three local municipalities: Gamagara Municipality, Ga-Segonyana Municipality and Moshaweng Local Municipality as well as the TGDM District Management Area. The project area falls within the John Taolo Gaetsewe District Municipality District Management Area which will in future be incorporated into Moshaweng Local Municipality.

7.2 Geology

The geology of the municipality forms part of the Griqualand West and Olifantshoek Geological Sequence covered under quaternary and tertiary Kalahari sands. Figure 7.2 illustrates the geology of the region.

In the Gravenhage Basin (Gravenhage) the overall structure are similar to that in the main Kalahari basin in that the sequence dips at a shallow angle to the west. The most common feature however is the myriad of northeast-southwest trending dykes of uncertain age. Some of these dykes caused down-faulting and/or may have intruded. Figure 7.3 provides the general stratigraphy on site.

The manganese resource at the site is 5 m thick and covers an approximate area of 175 ha. Over large parts of the resource the seam is split by a sill of approximately 1.5 m thick leaving two manganese seams that have to be mined separated by the sill.

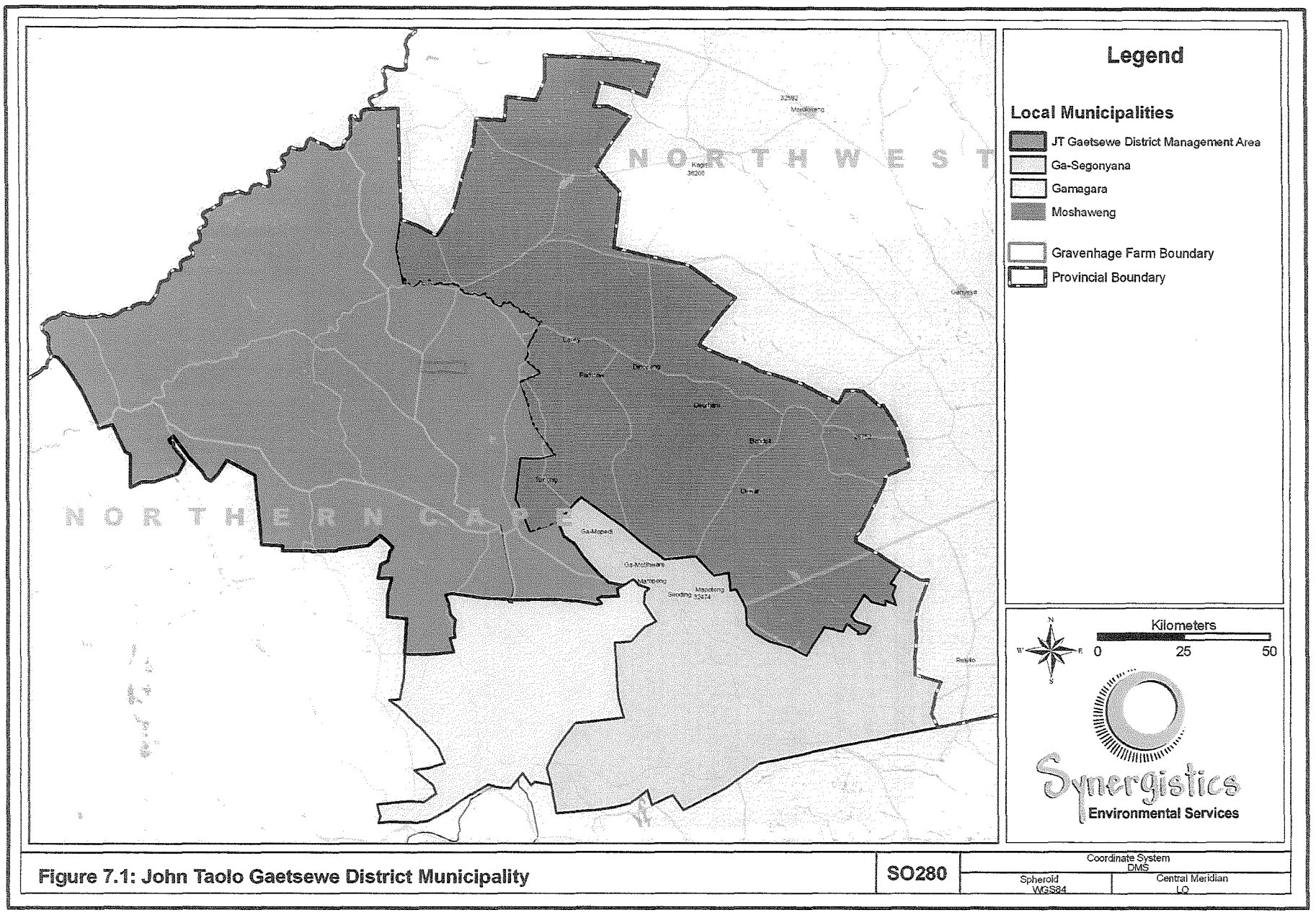
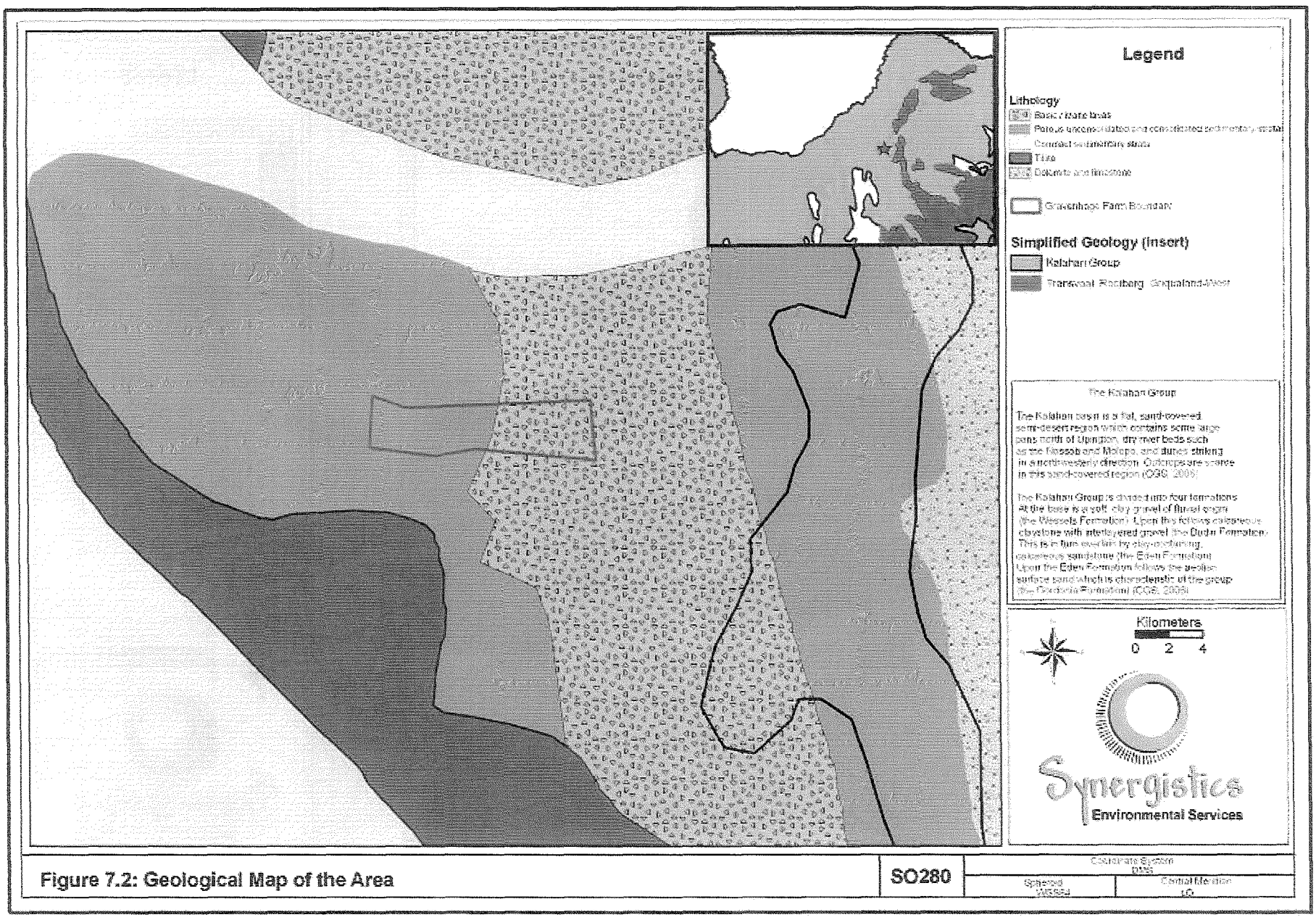


Figure 7.1: John Taolo Gaetsewe District Municipality

SO280	Coordinate System: DMS	
	Spheroid: WGS84	Central Meridian: LO


Legend
Lithology
Basic / mafic rocks
Gravenhage Farm Boundary
Simplified Geology (insert)
Kalahari Group
The Kalahari Group
The Kalahari basin is a flat, sand-covered
semi-desert region which contains some large
pans north of Upington, dry river beds such
as the Nossob and Molopo, and dunes sinking
in a northwesterly direction. Outcrops are scarce
in this sand-covered region (CGS, 2009).
The Kalahari Group is divided into four formations.
At the base is a soft clay gravel of fluvial origin
(the Wessels Formation). Upon this follows calcareous
claystone with interlayered gravel (the Dubis Formation).
This is in turn overlain by clay-containing,
calcareous sandstone (the Eden Formation).
Upon the Eden Formation follows the younger
surface sand which is characteristic of the group
(the Gordonia Formation) (CGS, 2009).
Kilometers
0 2 4
Synergistics
Environmental Services
Figure 7.2: Geological Map of the Area
SO280

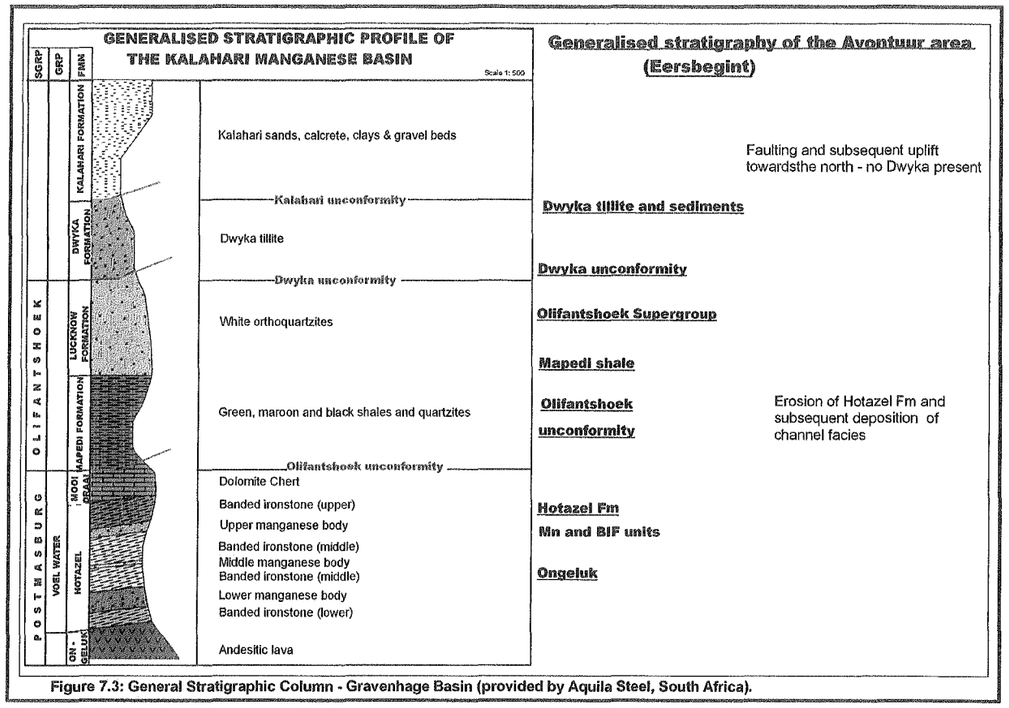


Figure 7.3: General Stratigraphic Column - Gravenhage Basin (provided by Aquila Steel, South Africa).

7.3 Soils

The soils on site can be broadly categorised into three groupings with those associated with the shallow ephemeral pans, the shallow sands on a calcrete or host rock base and the deep sands. The shallow to very shallow sands are poorly structured fine to very fine grained sandy loam associated with in situ-materials of rocky outcropping confined to the north western side of the mining area. The soils are founded on hard rock base and return poor vegetation cover predominantly Montegu, Mispah, Glenrosa form soils with very shallow Fernwood forms.

The second category of stratified soils make up the majority of the better established but immature base/unconsolidated materials and are generally deeper than 1 200 mm to more than 1 500 mm. These vary in texture from fine grained silt to highly sorted sand. The third group is similar to the stratified layer but is much younger (immature) and wind derived. This group lacks stratification. The last group presents complex moderately shallow to deep calcrete rich sands that vary in composition.

The major soil types in the area include those of the orthic phase Augrabies, Prieska, Coega, Montagu, Addo, Etosha, Oakleaf, Dundee, Namib and Glenrosa.

7.4 Topography

The site is located in an area locally known as the Kalahari Desert which forms part of the inland plateau of South Africa. The landscape in the Kalahari Desert is undulating as a result of permanent Kalahari sand dunes. There is very little topographic deviation on the site varying between 1 025 m to 1 200 m above mean sea level. The topography on site is relatively flat sloping slightly from north east to the south west. There are no significant topographical features on the site. Several depressions occur on the site in the form of pans.

7.5 Climate

The regional climate is semi-arid to arid. Hotazel normally receives approximately 223 mm of rain per annum, with most rainfall occurring mainly during summer and occurs as thunderstorms. The highest rainfall is received in February (50 mm) and the lowest rainfall is received in June (0 mm). Temperature ranges from 19.1 ºC in June and 33.2 ºC in January. Wind directions taken from the Kuruman weather station indicate that the predominant wind direction is from the south-southeast and the south east. Other significant winds are from the north to north west, west and east.

The nearest weather station to the site is approximately 90 km in Kuruman, although the data may be used in the EIA processes this data will be limited in providing a clear understanding of weather conditions on site. As a result a weather station has been set up on site to monitor weather conditions. Representative weather data will be included in the final EIA report.

7.6 Ecology

The project is located within the Savanna Biome with vegetation type classification as Kathu Bushveld (Mucina & Rutherford, 2006). This vegetation type has medium-tall tree layer with the protected trees *Acacia erioloba* (Camel Thorn) and *Boscia albitrunca* (Shepherds Tree) as prominent trees interspersed with *Schmidtia spp*. and *Stipagrostis spp*. The endorheic pans within the area are considered to be sensitive habitats in terms of species diversity and the potential linkage points on migratory routes during seasonal rainfall periods. During the initial site visit by the zoological specialist it was observed that approximately five of these endorheic pans may be disturbed by mining activities (Refer to Figure 7.5). It can be expected that faunal species of conservation importance do occur on the site including mammals (including Ground Pangolin and African Wild Cat), birds (including Tawny Eagle and Secretary Bird), reptiles (including Rock Monitor) and amphibians (including Giant Bullfrog). Invertebrates of conservation importance such as the Horned Baboon Spider and the Starburst Baboon Spider are also likely to occur on the site.

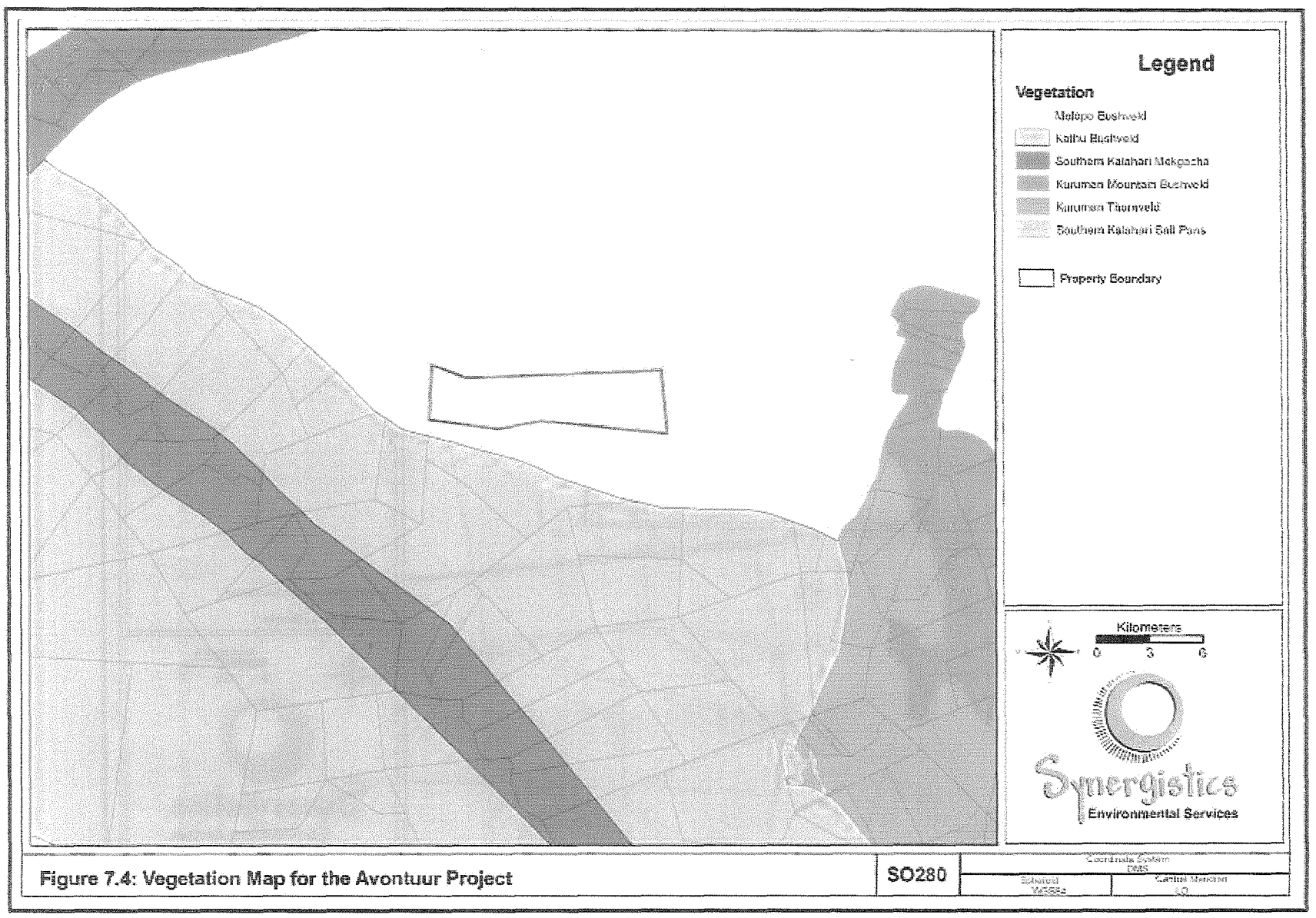


Figure 7.4: Vegetation Map for the Avontuur Project | SO280

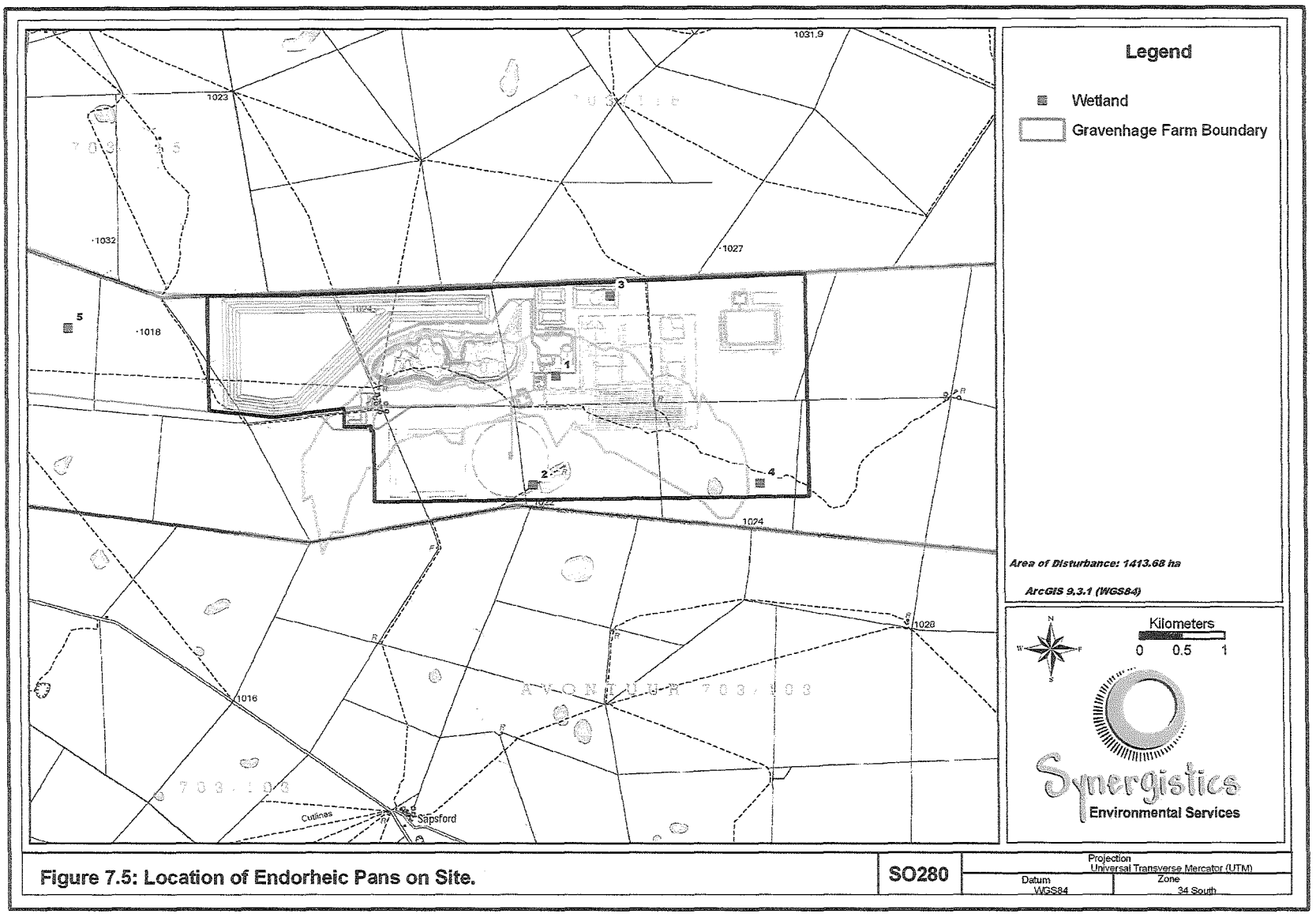


Figure 7.5: Location of Endorheic Pans on Site. | **SO280**

7.7 Protected Areas and Sensitive Sites

There are no formally protected areas located in close proximity to the site. The endorheic pans located on site and surrounds are considered to be sensitive as a result of the likely importance that they play in the local ecology.

7.8 Water Resources

7.8.1 Surface Water Resources

The proposed site lies within the Lower Vaal Water Management Area and falls within quaternary catchment area D41M and secondary catchment area D4 (id 19) and primary catchment area D1. The main rivers in the vicinity of the site are the ephemeral Kuruman and Molopo Rivers which flow only after heavy rains. The Kuruman River is located approximately 13 km south west of the proposed site and joins the Molopo River approximately 30 km west north west of the site. Both these rivers drain into the Orange River to the south west of the site.

7.8.2 Groundwater Resources

Regional Groundwater Uses

Groundwater resources in the Lower Vaal Water Management Area are largely used for mining, agricultural and domestic activities. Mining activities largely require the pumping of groundwater to allow for safe mine workings and for use in mining processes. This pumping has resulted in localized dewatering at areas such as Sishen.

Almost all farm units in the WMA are dependent on groundwater for domestic use and stock watering these farm units have relatively low impacts on a regional scale however large scale irrigation has resulted in overutilization of the groundwater resources which is associated with lowering of water tables. Table 6 below shows the estimated abstraction volumes for irrigation in WMA.

Table 2: Estimated Abstraction Volumes for irrigation in the Lower Vaal Water Management Area

Name	Estimated abstraction (million m^3/annum)
Coetzersdam/Louwna	40
Kuruman	5
Sishen	17
Bestwood	1

Name	Estimated abstraction (million m³/annum)
Tosca	18
Pering/Lykso	8
Kudumane	2
Danielskuil	1
Stella	1
Sannieshof	2
Ottosdal	2
Delareyville	5
Totals	102

Domestic use of groundwater in the WMA is supplied by boreholes within the municipal grounds. The total urban population dependent on the resources was estimated to be 140 000 residents in 1996 which may have increased over the years (Refer to Table 7). Groundwater use by a small rural settlement takes place in the western portion of the WMA which occurs from primary or porous aquifers from the Kalahari Group where quality and yields are often variable and not good.

Table 3: Groundwater Utilisation for Domestic Use

GROUNDWATER UTILISATION OF LOCAL MUNICIPALITIES		
Town	Residents	Annual Abstraction (million m³/annum)
Bankara Bodulong	5 520	0.19
Danielskuil	2 700	0.12
Dibeng	300	0.01
Groenwater	300	0.01
Holpan	100	0.00
Jennhaven	200	0.01
Kathu	5192	0.64
Kono	200	0.01
Kuruman+WW	11 000	2.02
Majeng	300	0.01
Postmasburg	32 100	0.86
Schmidtsdrift	500	0.01
Amalia		0.21

Schweizer Reneke		0.90
Gamotlatla		0.04
Lichtenburg		4.20
Itsoseng		2.20
Ottosdal	18 000	0.88
Sannieshof	15 000	0.25
Stella		0.12
Vryburg	20 000	4.38
Delarey	20 000	1.80
Reivilo	5 000	0.10
Setla-Kgobi North		0.37
Setla-Kgobi South		0.60
Ganyesa/Kudumane		2.30
Total	**136 412**	**33.24**

Groundwater Qualities for the Lower Vaal Water Management Area

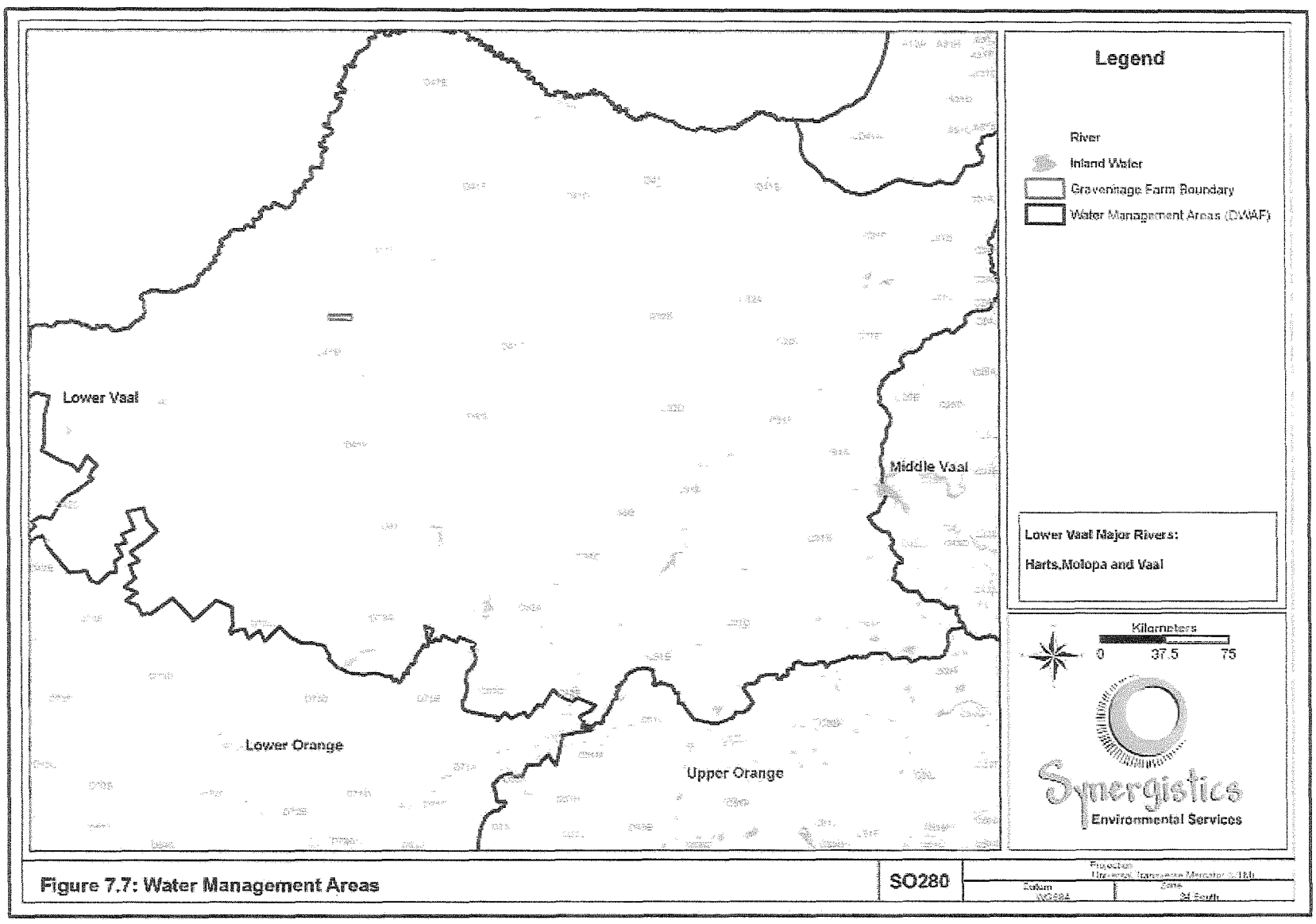
The main contaminant of concern as a result of agricultural activities are nitrates as they are very soluble and do not bind to soils, nitrates/nitrites are likely to remain in water until consumed by plants and other organisms. Areas of intense cultivation are major contributors in terms of inorganic nitrates through ammonium nitrate and potassium nitrate which is used in fertilisers and organic nitrates from feedlots. Other sources of concern are pesticides and herbicides. Domestic urban groundwater contaminants are from poorly managed sewage treatment works, landfill sites and on site sanitation especially from informal settlements. Sources of pollutants from mines are from tailings and overburden dumps with high sulphur content, drainage from mine working and waste heaps can be acidic and can contain high concentrations of dissolved heavy metals.

There are approximately 180 monitoring points throughout the WMA which serve two levels of monitoring namely Level 1 National monitoring network and Level 2 Regional. Monitoring at these points is undertaken for water levels and ambient water quality. There are two monitoring points north west of the site and south west of the site. The main challenges facing DWA in this WMA is with regard to the management and allocation of groundwater resources at the high abstraction irrigation areas.

7.9 Air Quality

The Northern Cape Province has a great number of mining operations that impact on air quality. The main anthropogenic source of ambient particulate matter is the mining industry and other industries such as brickworks, lime and cement factories, incinerators, crematoriums and sinter plants. Pollution monitoring in the Northern Cape is uncoordinated as most monitoring is undertaken by individual industries. Other major sources of air pollution are from the unrehabilitated asbestos mines which pose a great health risk for communities. In the Northern Cape State of the Environment Report: Atmosphere and Climate Report (2004) it is reported that there are no major industries emitting NO_2 or SO_2. Only 6 % of the Northern Cape households use coal as the domestic fuel but 18 % use paraffin increasing exposure to indoor NO_2 pollution.

Current mining development operating in the vicinity of the proposed Gravenhage Project are Mamatwan, Wessels, Nchwaning and Gloria Mine which may contribute to increased dust fallout and ambient particulate matter in the area. Air quality at the site is currently under investigation and results will be included in the final EIA report.


Legend
River
Inland Water
Gravenhage Farm Boundary
Water Management Areas (DWAF)
Lower Vaal
Middle Vaal
Lower Orange
Upper Orange
Lower Vaal Major Rivers:
Harts,Molopa and Vaal
Kilometers
0
37.5
75
Synergistics
Environmental Services
Figure 7.7: Water Management Areas
SO280

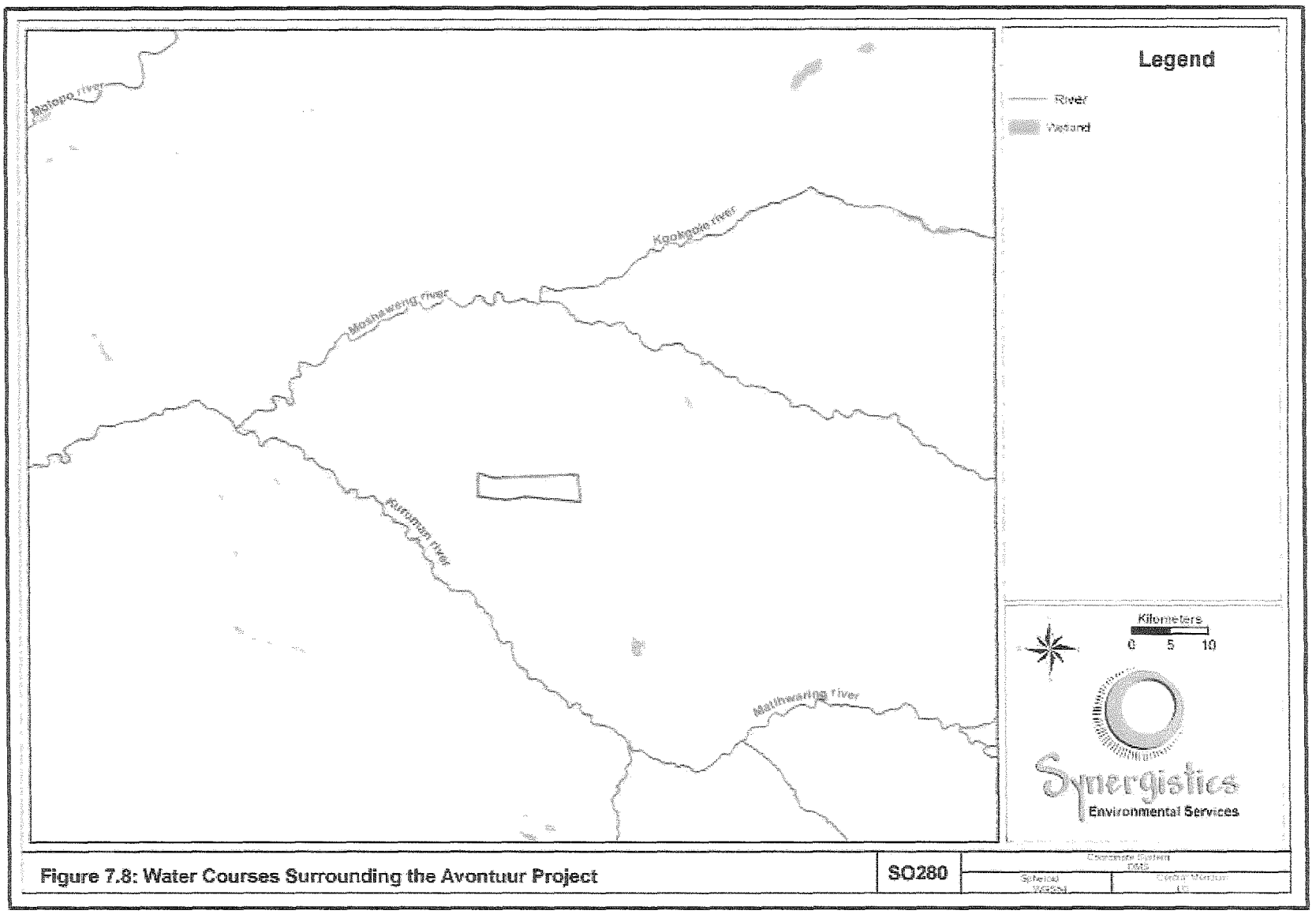


Figure 7.8: Water Courses Surrounding the Avontuur Project | **SO280**

7.10 Noise

The area in which the mine will be located is relatively secluded with low noise levels. The current sources of noise within the immediate vicinity of the proposed mining area emanate from prospecting and farming activities. Sources of noise in the surrounding area are largely from the surrounding mine activities and from traffic on the R380. Detailed information on the baseline noise levels will be given in the final EIA report.

7.11 Cultural Heritage

The history of the area reveals evidence of early occupation during the Stone Age most of which dates to the Early Stone Age particularly in areas where there are hills within the vicinity of Kathu. Late Stone Age sites are less prevalent in the area. The earliest people to occupy the area during the Iron Age were Tswana speaking. With the annexation of Tswana areas by the British in 1885, a number of reserves were set up for Tswana people to stay in.

Early explorers, hunters, traders and missionaries travelled through the area on their way to Kuruman on what was later referred to as the "Missionary Road". Prospecting of minerals, especially diamonds, occurred in the area and although knowledge on iron ore deposits was available, it was only during the 1940's that iron and manganese mines were established.

No sites of cultural significance or graves are known to occur on the site. A heritage impact study and paleontological investigations will be undertaken to investigate heritage resources on site.

7.12 Social and Economic Environment

John Taolo Gaetsewe District Municipality has approximately 182 towns and settlements, 86% of which are rural villages with little economic activity. The main economic activities in the municipality are mining and government services. The project area will in future be under the administration of Moshaweng Local Municipality which is a critically impoverished municipality.. Education levels are low and services such as water, electricity, sanitation and housing are limited.

The project area is surrounded by privately owned farms with agricultural activities as the main economic activity. The area is largely used for the farming of cattle, sheep and game. There are four operating mines in the area namely Mamatwan, Wessels, Nchwaning and Gloria which are involved in the mining of manganese (Refer to Figure 7.7 for location).

The Northern Cape government is currently promoting agriculture and tourism as alternative economic activities and the John Taolo Gaetsewe District Municipality has identified this as their goal and the plan for improving economic conditions in the area.

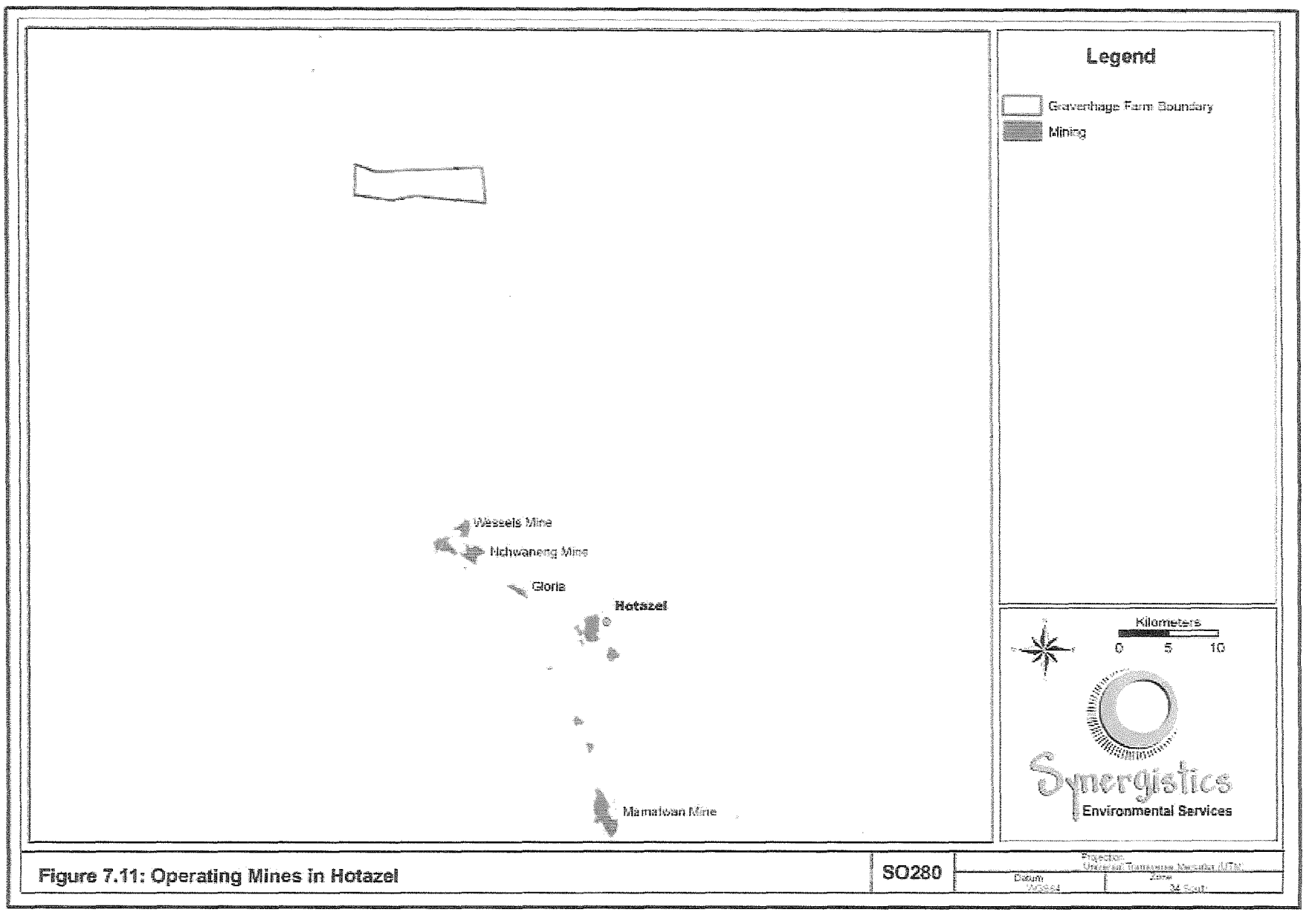


Figure 7.11: Operating Mines in Hotazel

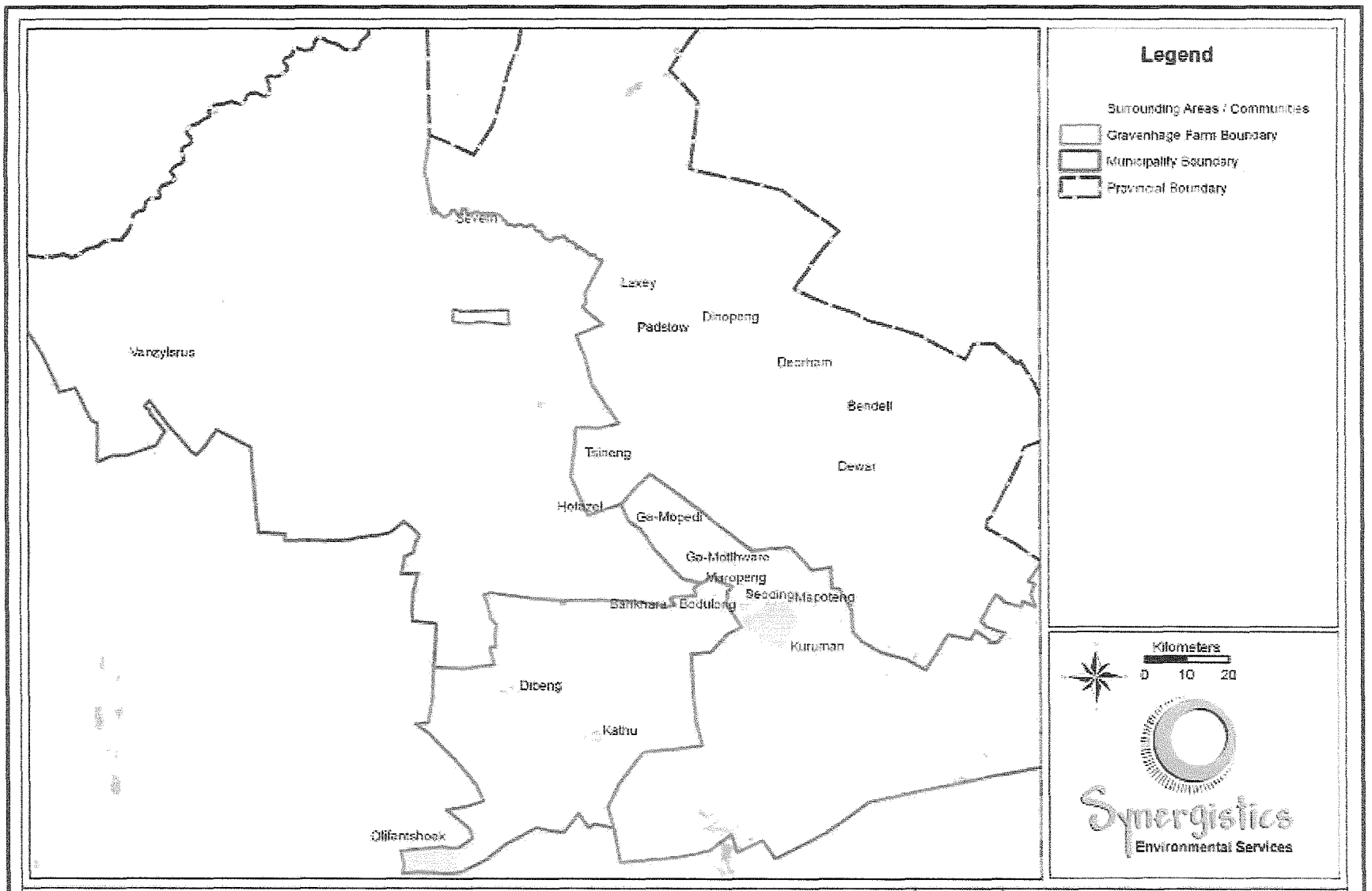


Figure 7.12: Surrounding Communities for the Avontuur Manganese Project | **SO280**

8 ANTICIPATED ENVIRONMENTAL AND SOCIAL IMPACTS

A summary of the potential impacts of the project and the scope of work required to assess these impacts is given in Table 8.1.

IMPACT	IMPACT SOURCE	COMMENT	SCOPE OF WORK FOR EIA / FURTHER WORK
CLIMATE			
Contribution to climate change	Emission of greenhouse gases (GHGs) from vehicles and machinery used on site.	The project will not have a significant contribution to GHG emissions, however efforts should be made to minimise such emissions where practicable.	Emissions inventory to be established for the mine during the air quality impact study. Measures for the minimisation of GHG emissions to be investigated.
TOPOGRAPHY			
Change in the natural topography.	Development of the mining pit, development of overburden stockpiles, waste rock dumps and tailings facility.	This impact is likely to be significant given the flat nature of the baseline topography. Opportunities for backfilling are likely to be limited by the fact that underground workings will need to be accessed via the open pit.	Consideration to be given to geomorphic design of stockpiles and waste rock dumps. Opportunities for backfilling are to be considered during mine planning.
NOISE			
Increase in ambient noise levels.	Operation of machinery, movement of vehicles and blasting during construction and operation.	Noise receptors in the area are limited to the surrounding farmers.	Noise Impact study to be undertaken, assessment of noise impacts on receptors. Mitigation measures to be identified if unacceptable impacts identified.
AIR QUALITY			
Increase in ambient dust levels.	Site clearance, earth moving activities, entrainment from vehicles moving along gravel roads, stockpiles and dumps as well as blasting during construction and operation.	This impact is likely to be significant given the arid climatic conditions. Increased dust levels may lead to secondary impacts such as increased traffic hazards, decrease in palatability of grazing land, possible loss of faunal and floral habitats and public nuisance. Health risks to surrounding communities are likely to be limited given the low number of	Emissions inventory to be developed and the contribution of various sources to fallout dust and PM10s to be identified. Air quality modelling to be undertaken to determine the possible dispersion of pollutants from sources. Mitigation measures to address impacts on traffic, land capability, ecology and surrounding

IMPACT	IMPACT SOURCE	COMMENT	SCOPE OF WORK FOR EIA / FURTHER WORK
		receptors.	communities to be identified.
SOILS			
Loss of available soil.	Soil stripping to allow for the establishment of the mine.	Large volumes of soil will need to be stripped to allow for the construction of mine infrastructure and to allow access to mineral resources.	Soil specialist study will be undertaken to determine the type and volume of soils that will be disturbed. The suitability of soils for rehabilitation is to be investigated. A soil balance is to be undertaken to determine the volumes of soil required and available for rehabilitation at the mine. A soil management plan is to be developed to allow for the appropriate stripping, stockpiling and management of soils to promote effective use in rehabilitation.
Contamination of soils.	Spillage of material with potential to pollute during the construction and operation of the mine.	Key contaminants include hydrocarbons such as fuels, oils and greases stored on site and used in machinery and vehicles during both the construction and operation phases.	Sources of contamination will be identified and mitigation measures to prevent spillages as well as emergency procedures for clean-up will be identified.
GEOLOGY			
Loss of geological resource	Removal of ore for processing and export.	Feasibility study will address the economical mining and processing of ore.	This impact is an inevitable consequence of mining and cannot be mitigated.
SURFACE WATER			
Disturbance of surface water resources	Disturbance of pans due to development of mine and associated infrastructure as well as secondary impacts associated with mining (e.g. dust fallout, increased run-off, discharges, seepage). Erosion of exposed surface due to stormwater run-off.	There are no watercourses in the area of impact. There are however a number of pans likely to be of importance in ecosystem function.	Pans within the area are to be mapped. Ecological importance of pans to be investigated. Mitigation measures for reducing the significance of the impact on pans to be identified. Stormwater management infrastructure is to be investigated and included in management measures during construction and operation.
Contamination of surface water resources.	Contamination of stormwater run-off with sediment and other chemical contaminants originating on site during both construction	There are no watercourses in close proximity to the site.	Sources of contamination are to be identified. Measures for the management of stormwater, discharges and seepage are to be put in place as

IMPACT	IMPACT SOURCE	COMMENT	SCOPE OF WORK FOR EIA / FURTHER WORK
	and operation.		part of the environmental management measures.
GROUNDWATER			
Contamination of groundwater resources	Seepage of contaminants from sources originating during construction and operational activities at the mine.	Seepage sources could possibly include waste rock dumps, tailings facility, exposed ore, workshops etc.	Sources of contamination are to be identified (including geochemical characterisation of waste and ore). Transport modelling of major contaminants to be included in geohydrological modelling. Baseline monitoring to be undertaken to establish pre-mining conditions. Mitigation measures to be identified to address impacts.
Impact on aquifer recharge	Dewatering to allow for safe underground mining.	Mining will continue below the water table and dewatering may be required to access workings below these levels.	Groundwater investigations to be undertaken to identify aquifer parameters. Geohydrological modelling to be undertaken to determine dewatering requirements. Mitigation measures to be identified to address impacts.
Impact on groundwater resources for surrounding farmers	Dewatering and contamination of groundwater resources may result in such resources not being available to surrounding users.	Local farmers currently rely on groundwater for agricultural activities.	Groundwater users to be identified and geohydrological modelling to address impacts on such users. Magnitude and extent of the dewatering cone as well as the transport of contaminants to be predicted through geohydrological modelling. Baseline monitoring (including groundwater levels and quality) to establish pre-mining conditions.
ECOLOGY			
Loss of systems, habitats or species of conservation importance	Clearance of the mining footprint area. Disturbance of floral and faunal habitats due to the development of the mine. Secondary impacts disturbing ecological habitats (such as noise, fallout dust, contamination of resources, etc).	Species of conservation importance do occur in the area to be disturbed by the mine.	Systems, habitats and species of conservation importance occurring in the area are to be identified and mapped. Layout alternatives which promote the preservation of the above are to be given due consideration.

IMPACT	IMPACT SOURCE	COMMENT	SCOPE OF WORK FOR EIA / FURTHER WORK
			Mitigation and management measures to be identified for unavoidable impacts.
ARCHAEOLOGY & CULTURAL HERITAGE			
Disturbance of sites of archaeological importance	Site clearance, deposition of overburden, waste and earth moving activities to allow for the construction of mine infrastructure and the development of the mine.	There are no visible site of archaeological importance on site.	Sites of heritage, palaeontological or archaeological importance are to be identified and mapped. Heritage impact assessment to be completed in accordance with the requirements of the National Heritage Act. Layout alternatives which promote the preservation of the above are to be given due consideration. Mitigation and management measures to be identified for unavoidable impacts.
SOCIAL & ECONOMIC ENVIRONMENT			
Risk of increase in social ills (crime, trespassing, fires, damage to private property)	Influx of people into area seeking employment.	Crime statistics in the area.	Risks to be identified in Social Impact Assessment. Mitigation measures to reduce risks to acceptable levels to be identified.
Contribution to employment and local economy	Opportunities for the employment of local persons and engagement of local procurement.	Skilled people around the mine are currently employed by existing mines. Education and skills levels are low at the nearest community where labourers could be sourced.	Identification of skills availability and opportunities for employment of local persons. Mitigation measures to be identified to promote local employment and procurement. Incorporation of community upliftment projects as detailed in the Social and Labour Plan.
LAND USE AND LAND CAPABILITY			
Loss of land with grazing potential	Change of land use from livestock grazing to mining.	The area is currently used for cattle grazing.	The land capability needs to be investigated and understood in order to assess the significance of the impact. Land management plan to be developed. Closure objectives are to be defined at the outset and mine planning and rehabilitation planned with

IMPACT	IMPACT SOURCE	COMMENT	SCOPE OF WORK FOR EIA / FURTHER WORK
			these objectives in mind.
Reduction in land capability of surrounding areas.	Impact on groundwater availability. Dust dispersion from operations at the mine.	Impact on neighbouring groundwater resources and dust deposition on surrounding grazing areas would render the land less suitable for livestock farming.	Results of groundwater and air quality modelling will be used to assess the significance of the impact.
VISUAL ENVIRONMENT			
Disturbance of natural views and sense of place.	View of construction and mining operations from surrounding receptors	Receptors in the area are limited.	Visual receptors to be identified. Lines of site to be determined. Mitigation measures to be identified as required.
TRAFFIC			
Compromise in safety for motorists.	Increase in heavy vehicles using public roads.	Traffic from the mine will make use of public roads to the siding in Hotazel.	Traffic impact study to be undertaken to assess safety risks as a result of increase in traffic flow.
Damage to road pavement.	Increase in heavy vehicles using public roads.	Public roads are currently used be heavy vehicles from operating mines.	Traffic impact study to be undertaken to assess impacts of heavy trucks on public roads. Mitigation measures to be identified.

9 RESULTS OF PUBLIC CONSULTATION

9.1 Collation of Issues and Concerns

During the first phase of public participation interested and affected parties were afforded an opportunity to present any issues of concern regarding the proposed mining development. Issues of concern were raised through the following methods:

- Response to the background information document; and
- Response at a public information sharing meeting.

9.2 Synthesis of Issues Raised

Table 9.1: Question and Response Report

DATE	NAME	ADDRESS	COMMENTS	TRANSLATION	RESPONSE
14/07/2010	Deon Holon	Bus 1157, Kuruman, 8460 hoonde@gmail.com	Huidige kwessies is water en stof	My current issue is with water and dust	Water requirements at the mine are still being established. It is understood that local farmers rely on groundwater as the source of water supply and thus impacts on groundwater will be an important issue. A groundwater study will be undertaken to determine the sensitive receptors for groundwater impacts and impacts on groundwater will be established. An air quality impact study will be undertaken to assess dust impacts on site
			Asked if there will be additional roads associated with the development of houses e.g. at Madibeng		Should additional houses and support infrastructure be required for the mine, this will form a separate EIA.
			MTN have an approved communication tower maybe Aquila should liaise with MTN to expedite the process of constructing the mast.		Comment noted
			Indicated that groundwater resources are currently impacted on and farming is not possible on the land, he also indicated that these impacts are not limited to immediate neighbours only.		Groundwater specialist study will be undertaken to assess project impacts on groundwater
			Requested that the municipality must be included during the upgrading of roads to ensure that this is done to standard.		municipality will be consulted on the developments at the mine and on any area that the municipality has jurisdiction

14/07/2010	Mev. EH Hauman	13 Milner Str, Belgravva, Rby,8301 ehhauman@gmail.com	Impak op wild boerdery teling, gedrag ens Impak op toeriste bedryf	Impact on game farm breeding, behaviour Impact on the tourist industry.	Specialist studies such as air quality, noise and groundwater will be undertaken to establish impacts to surrounding communities. These studies will then be used to assess social impacts for surrounding communities. Impacts on local economic activities will be assessed.
			stof, geraas aansien, ens	Dust, noise,	An airquality and noise assessment will be undertaken to understand the mine's impacts and identify mitigation measures.
			Diefstal in omliggende omgewing agv verhoogte toevloei van werkers	Theft due to the increase of workers in the surrounding areas.	Security measures will be investigated for the mine and surrounding farmers.
			Questioned if there were any projects that have been stopped as a result of the environmental impact assessment process		There have been some mines that have been stopped an example is the mine in the Eastern Cape that was stopped as a result of inadequate consultation.
			Questioned whether comments would still be accepted even after the deadline presented in the Background Information Document		Yes, comments are encouraged and will be accepted throughout the EIA phase.
			Explained that there is a game camp on Caledonia which will be adjacent to the proposed location of the waste rock dump and was concerned on noise and dust impacts on the game farm.		Air quality studies and noise studies will be undertaken to identify project impacts, sensitive noise and dust receptors will alsó be identified for the project.
			Wanted to know on how annual reports for the mine can be accessed		these can be accessed from Aquila's website
			Questioned if there were other resources being considered for future prospecting work to be done		It was indicated that 5 years of future prospecting work to be done
			Questioned If the mine dumps will be levelled		It was indicated that this is unlikely however the slopes need to be modified to ensure that vegetation can establish
			What will be done to the land after mining		The land will be rehabilitated and will probably be sold for farming in the future. The areas surrounding the mining disturbances will need to be managed
			Rehabilitasie se sukses tov drakrag se herstel tot aanvanklike vlakke		
14/07/2010	Louis Hauman	Bus 1369, Kuruman, 8460 louis@soetvlakte.co.za			
			Stof impak	Dust Impacts	
			Ongewensde effekte op arbeidsmark en teenwoordigheid van misdaad-vestiging van mense oral	Unwanted effects on the labour market and presence of crime-due to people everywhere.	A social impact study will be undertaken in order to understand potential social impacts of the project.

28/07/2010	Willem P van der Walt	P O Box 151 Santoy, 1068 wwalt@lantic.net	As geaffekteerde het ek het die vergadering op Woensdag 14:07:10 bygewoon. Aangesien alle lede van Lehating Agri deur die beoogde mynbedrywighede geaffekteer word, het ek die lede op hul vergadering 21:07:10 ingelig. Die meeste van hulle het nie kennis gedra het van die verrigtinge op 14:07:10 nie. **Ek het opdrag ontvang om namens die geaffekteerde lede van wat op 'n meerdere of mindere mate geraak word, die volgende raakpunte deur te gee, nl.** **Die beoogde myn is in 'n ariede gebied waarin produsente uitsluitlik weiding produseer. Dit word op in die een of ander vorm van rooivleis bemark. Die volgende hulpbronne is dus baie belangrik, nl.** . 1 **Grondwater:** Die heersende watertafel is ±100 meter. · Grondwater studies het uitgewys dat grootskaalse water onttrekking die water tafel aansienlik verswak in die omgewing en veral in die westelike omgewing daarvan. · Myn bedrywighede kan dus totale onproduktiwiteit van die gebied tot gevolg hê. 2. **Stof as gevolg van verhoogde verkeer** · Daar word aangedui dat die pad op gegradeer sal word. Sou dit 'n gruispad wees kan dit lei tot negatiewe pad veiligheid en weidings produksie · Die beplande produksie sal tot gevolg hê dat 1,5 miljoen ton erts vervoer moet word. Teen 33 ton per vragmotor sal dit lei tot verkeer wat die huidige pad nie kan dra nie. · Om gedurende 260 werksdae per jaar 1,5 m ton erts te vervoer met 33 ton vragmotors (45,455 per jr) beteken 175 vragmotors per dag heen en weer met ander woorde 350 vragmotors daagliks op die pad. · Tesame met die beoogde bedrywighede sal dit lei tot verdere verhoogde verkeersdruk · Duisende tonne stof sal dus versprei word wat	As an affected party I attended the meeting on Wednesday 14:07:10. As all the members of Lehating Agri are affected by the mentioned mining activities I informed them at their meeting on the 21:07:10. Most of them said that they were not aware of the meeting that took place on the 14:07:10. The members who are affected in some way have the following concerns and gave me permission to convey them, they are: The proposed mine is in an arid area where producers only produce pasture. It gets promoted through a form of red meat. The following resources are thus very important, namely. 1. **Groundwater** The prevalent water table is ±100 meter. - Groundwater studies showed that large-scale water extraction will severely weaken the water table in the area especially in the western region. - Mining activities can thus cause total unproductivity of the area as a result. 2. **Dust resulting from increased traffic** - There is indication that the road will be upgraded. If this will be a gravel road it will lead to negative road safety and grazing production. - The planned production will result in 1,5 million tons of ore that will need to be transported. With 33 ton per truck this will lead to traffic the road will not be able to handle. - To transport 1,5 tons of ore 260 working days per year with 33 ton trucks (45,455 per year) means 175 trucks per day to and from the mine that is 350 trucks on the road a day. - Together with the proposed practises this will lead to a further increase in traffic. - Tons of dust will thus be spread that could lower grazing capacity. - The dust layer will negatively impact plant photosynthesis, reduce water penetration that will reduce pasture growth. - The result will be a lower income for the producers.	Members of the Lehating Agri will be included in the Interested and Affected Parties database. Groundwater studies will be undertaken to determine the sensitive receptors and the mine's impacts on groundwater to sensitive farmers. An air quality impact study will be undertaken for the project to determine sensitive receptors and the mine's impacts on sensitive receptors. Mitigation measures will be developed for the management of identified impacts.

			3. **Veiligheid van inwoners** Verhoogde voete van mense lei tot verhoogde diefstal syfers en veiligheid van inwoners kan negatief beïnvloed word. Die volgende lede van Lehating Agri is geaffekteerdes, nl.	3. **Safety of residents** Increase in population leads to the increase of theft and safety of residents can be negatively influenced. The following members of the Lehating Agri is affected parties, namely.	A social impact assessment study will be undertaken to determine the risks to safety to surrounding farmers. Once safety risks are understood measures to minimise and manage these risks will be identified. Members of the Lehating Agri will be included in the interested and affected parties' database.
14 July 2010	Gerrie van der Westhuizen	P O Box 1480, Kuruman 8460	Raised the following questions: whether waste rock will be suitable for road construction instead of constructing new borrow pits for the road construction, whether the safety and security will be addressed in the social impact study.		This will be investigated.
			Will safety and security be addressed in the social impact study		Yes this will be included in the assessment
			Road must be designed for the carrying capacity of heavy vehicles.		A traffic study is being undertaken to determine impacts to traffic and current road design.
			He requested that the municipality must be provided with an opportunity to comment on the social and labour plan and the social impact assessment report and that an impact of dewatering on van Zylsrus must be considered		Groundwater studies will sensitive receptors. All EIA and SLP documentation will be forwarded to the municipality for commenting
			He also raised the following issues of concern: that the . He also advised that no further housing developments will be permitted outside of existing housing establishments.		Consultation will be undertaken with the municipality to determine the best suitable areas for the construction of houses.
14 July 2010	H.P Venter	P O Box 8, Hotazel, 8499	What will the water consumptions be at the mine.		This is not yet known as the mine is currently being planned
			He suggested that the upgrading of roads will be important since it is likely that the people from Mafikeng will work at the mine.		Suggestions noted.
			He also indicated that dust affects the grazing capacity of the land and this must be addressed in the EIA.		An air quality study will be undertaken to establish the dust impacts of the project.
14 July 2010	Bonolo Lekwa		How will documentation be made available to the public,		It was indicated that documents are circulated in

			different media must be used as not everybody has access to internet.		accordance to the types of access that communities have. It was also indicate that it is best to contact registered IAPs directly to establish the preferred method.
			Where will water be sourced for the mine		Water needs for the plant are still unknown however it is likely that water will be sourced from dewatering activities.
			Indicated that Aquila should appoint and environmental manager who will assist with the implementation of the environmental management measures.		It was indicated that an independent person will also be required by the community who will represent their concerns as the mine's environmental manager will not always be trusted.
14 July 2010	Louw van der Walt	Pepperboom Avenue, Hotazel 8490	Raised concern with the environmental monitoring after EIA are completed.		The environmental management programme is a legal document which will require monitoring reporting to authorities on Environmental management
14 July 2010	J Markram	P O Box 95, Kuruman, 8460	Requested that regular meetings must be held to provide persons an opportunity to raise issues.		This has been acknowledged and community communication procedure will be developed during the operational phase.
14 July 2010	Mrs van der Walt	Pepperboom Avenue, Hotazel 8490	Indicated that Assuming is expanding and it would be important to consult with the surrounding mines in order to understand cumulative impacts on groundwater.		Communication with surrounding mines will be undertaken during the EIA phase and cumulative impacts will be considered in the EIA.
			How long will the EIA process take.		Approximately 12 months

10 PLAN OF STUDY FOR ENVIRONMENTAL IMPACT ASSESSMEN

10.1 Process and Schedule

The proposed EIA process, public consultation activities, and the associated timeline are shown in Figure 10.1. The assessment process has been developed to ensure that it complies with the EIA regulations and MPRDA Regulations and the associated guidelines (see Section 3).

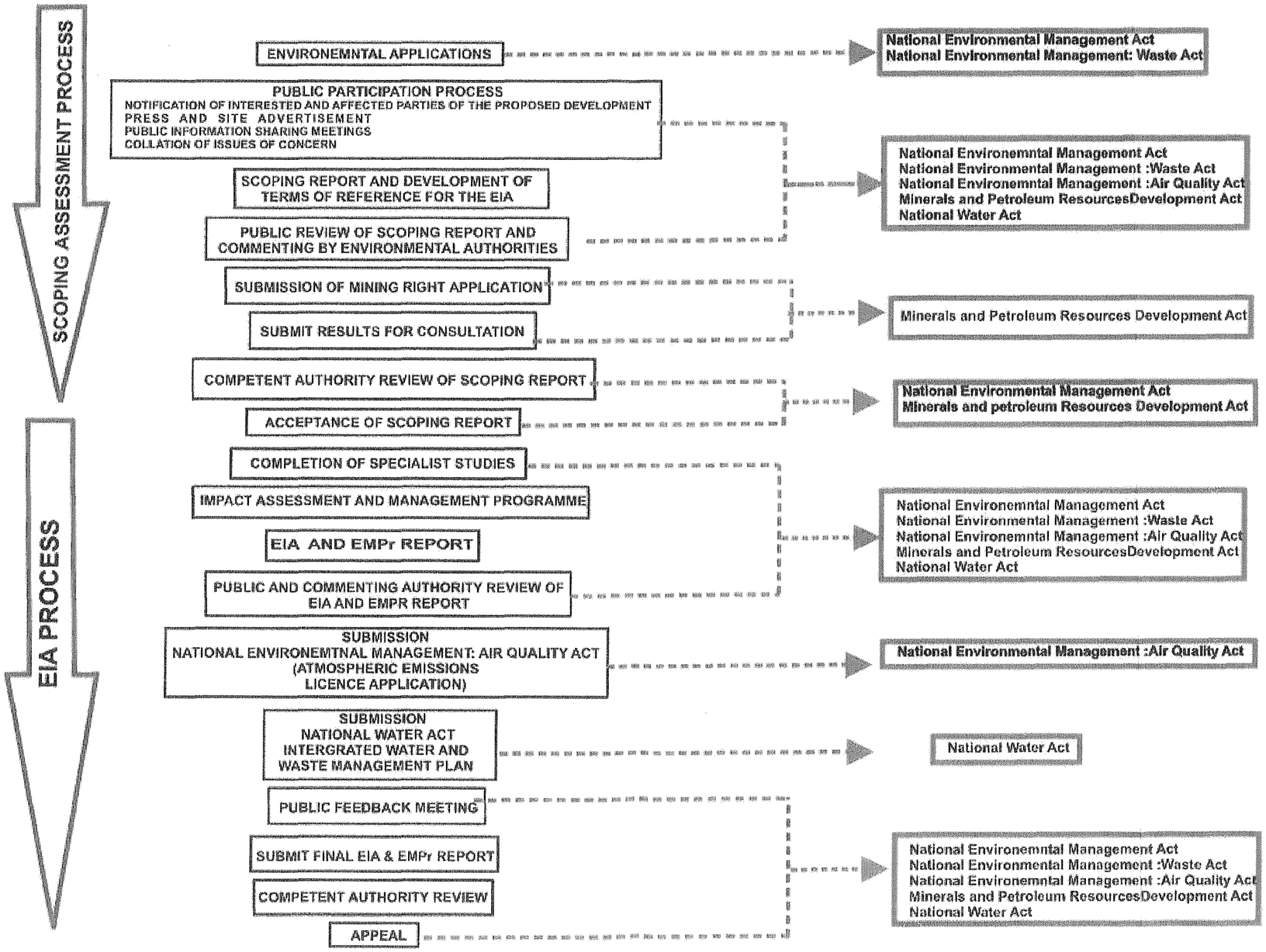


Figure 10.1: EIA Process

					Once these impacts area understood mitigation and management measures will be identified for impacts.
			Versteuring van omgewing met mynhope	Mine Dumps leading to the disturbance of the environment.	This impact will be further investigated during the EIA phase
			Vernietiging van paaie	Desrtuction of roads.	A traffic impact study is currently being undertaken to understand the project's traffic impact and impacts on road design.
			Natuur beinvloeding- ek is in ekotorisme besigheid	Effect on nature – I am in the ecotourism industry.	Specialist studies such as air quality, noise and groundwater will be undertaken to establish impacts to surrounding communities. These studies will then be used to assess social impacts for surrounding communities. Impacts on local economic activities will be assessed.
			Raised concern that environmental consultants may be dismissed should the applicant not agree with environmental management strategies suggested and this may result in the neglect of the farmers.		An environmental management programme will be developed which will be available for public review, this document will be legally binding for the mining operation.
			Raised concern that the prospecting boreholes are not closed which may lead to groundwater contamination which means that management measures are not implemented by the mine		It was suggested that a forum be developed where the community communicates with the mine to ensure good relations between both parties.
			what is the depth of the ore body		The ore body is approximately 60m deep.
14/07/2010	Rorisang Mcvigar	P.O. Box 2575, Kuruman, 8460 rorisangmcvigarleboko@yahoo.com -	My company names is Mcvigar Construction and Trading		You will be registered as an interested and affected party
			Raised concern regarding the road conditions between Gravenhage Mine and Hotazel as current conditions on the road are dangerous due to the generation of the dust and the addition of trucks from the mine will contribute to additional dust production.		Traffic studies together with air quality studies will be undertaken for the project. These studies will determine the projects impacts on traffic and air quality.
	Elsa Wloschawsky	BHP Billiton 6 Hollard Street JHB,2001	Please register Samancor Manganese (Pty) Ltd as represented by me as interested and affected party-		Samancor Manganese will be registered

10.2 Alternatives

Project alternatives are discussed in Section 6.1, the following alternatives will be further considered in the EIA process:

Accommodation of staff during operation phase;
Transportation of Ore;
Location of surface infrastructure at the mine;
Final Landuse plan for the mining area; and
No-go Alternative

10.3 Impact Assessment Method

10.3.1 Impact Ranking Criteria

The criteria used for assessing the significance of the impact are given in Tables 8.1. The impact assessment method takes into account the current environment, the details of the proposed project and the findings of the specialist studies. Cognisance has been given to both positive and negative impacts that may result from the development. The significance of the impact is dependent on the consequence and the probability that the impact will occur.

impact significance = (consequence x probability)

Where:

consequence = (severity +extent)/2

and

severity = [intensity +frequency + duration]/3

Each criterion is given a score from 1 to 5 based on the definitions given in Table 10.1. Although the criteria used for the assessment of impacts attempts to quantify the significance, it is important to note that the assessment is generally a qualitative process and therefore the application of this criteria is open to interpretation. The process adopted has thus involved the application of scientific measurements and professional judgement to determine the significance of environmental impacts associated with the project. The assessment thus largely relies on experience of the environmental assessment practitioner (EAP) and the information provided by the specialists appointed to undertake studies for the EIA.

Where the consequence of an event is not known or cannot be determined, the "precautionary principle" has been adhered to and the worst-case scenario assumed. Where possible, mitigation measures to reduce the significance of negative impacts and enhance positive impacts have been recommended. The detailed actions, which are required to ensure that mitigation is successful, are provided in the EMP which will form part of the EIA report.

Consideration has also been given to the phase of the project during which the impact occurs. The phase of the development during which the impact will occur has also been noted to assist with the scheduling and implementation of management measure.

Table 10.1: Criteria for assessing significance of impacts

SEVERITY CRITERIA

INTENSITY = MAGNITUDE OF IMPACT	RATING
Insignificant: impact is of a very low magnitude	1
Low: impact is of low magnitude	2
Medium: impact is of medium magnitude	3
High: impact is of high magnitude	4
Very high: impact is of highest order possible	5

FREQUENCY = HOW OFTEN THE IMPACT OCCURS	RATING
Seldom: impact occurs once or twice	1
Occasional: impact occurs every now and then	2
Regular: impact is intermittent but does not occur often	3
Often: impact is intermittent but occurs often	4
Continuous: the impact occurs all the time	5

DURATION = HOW LONG THE IMPACT LASTS	RATING
Very short-term: impact lasts for a very short time (less than a month)	1
Short-term: impact lasts for a short time (months but less than a year)	2
Medium-term: impact lasts for the for more than a year but less than the life of operation.	3
Long-term: impact occurs over the operational life of the Gravenhage Manganese Project	4
Residual: impact is permanent (remains after mine closure)	5

EXTENT = SPATIAL SCOPE OF IMPACT/ FOOTPRINT AREA / NUMBER OF RECEPTORS	RATING
Limited: impact affects the mining area	1
Small: impact extends to surrounding farmers	2
Medium: impact the whole of John Taolo Gaetsewe District Municipality	3
Large: impact affects the Northern Cape Province	4
Very Large: The impact crosses provincial boundaries	5

PROBABILITY

PROBABILITY = LIKELIHOOD THAT THE IMPACT WILL OCCUR	RATING
Highly unlikely: the impact is highly unlikely to occur	0.2
Unlikely: the impact is unlikely to occur	0.4
Possible: the impact could possibly occur	0.6
Probable: the impact will probably occur	0.8
Definite: the impact will occur	1

IMPACT SIGNIFICANCE

NEGATIVE IMPACTS

≤1	Very low	Impact is negligible. No mitigation required.
>1≤2	Low	Impact is of a low order. Mitigation could be considered to reduce impacts. But does not affect environmental acceptability.
>2≤3	Moderate	Impact is real but not substantial in relation to other impacts. Mitigation should be implemented to reduce impacts.
>3≤4	High	Impact is substantial. Mitigation is required to lower impacts to acceptable levels.
>4≤5	Very High	Impact is of the highest order possible. Mitigation is required to lower impacts to acceptable levels. Potential Fatal Flaw.

POSITIVE IMPACTS

≤1	Very low	Impact is negligible.
>1≤2	Low	Impact is of a low order.
>2≤3	Moderate	Impact is real but not substantial in relation to other impacts.
>3≤4	High	Impact is substantial.
>4≤5	Very High	Impact is of the highest order possible.

10.3.2 Project Phases

The Gravenhage Manganese Project is currently in the planning phase, where the feasibility of the project is being investigated. Mining right and other environmental authorisations will be applied for during this phase. The planning phase started in 2007 and is anticipated to end in 2011.

The construction phase will commence after the mining right and environmental authorisations have been obtained. It is anticipated that the construction will commence in the beginning of 2012 and will last for approximately 15 months.

Mining operations will commence in 2013. The mine will operate for between 20 – 30 years.

10.3.3 Cumulative Impacts

Cumulative impacts of the mine will be assessed by determining the contribution that the Gravenhage Project will make to the regional impact that an aspect has on the environment. The significance of the impact will be assessed under the following headings in the cumulative impact assessment:

Without Project:	The impact significance of surrounding activities without the Gravenhage Project's contribution;
The Project:	This is based on the impact significance of the Gravenhage Project only in the operational phase, assuming mitigation is successfully implemented.
With the Project:	This is overall impact on the environment as a result of surrounding activities and the Gravenhage Project.

Information will be collated on other approved projects in the area to try and obtain and understanding of future cumulative impacts. A qualitative judgement on baseline impacts will be undertaken.

10.3.4 Mitigation Measures

A **no net loss** approach will be adopted in terms of the management of impacts at the Gravenhage Project (see Figure 10.2):

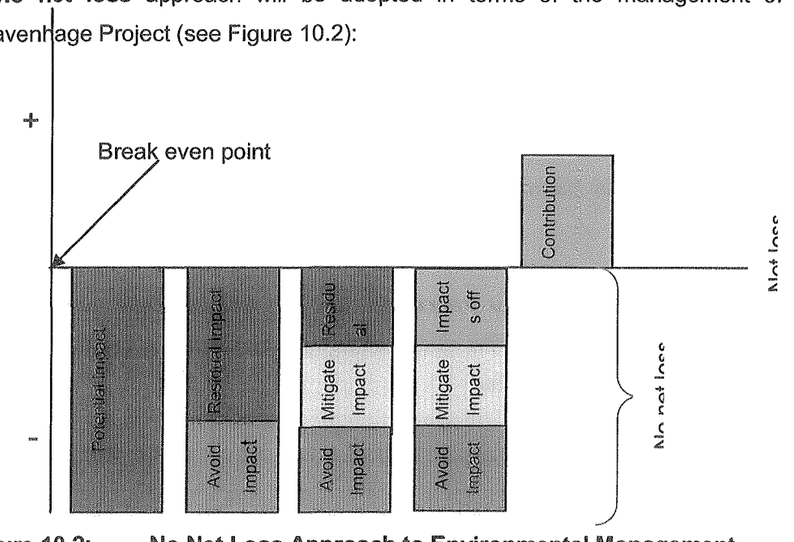


Figure 10.2: No Net Loss Approach to Environmental Management

Avoidance – impacts are to be avoided where practicable e.g. through the implementation of alternatives including alternative locations or technologies;

Mitigation – should it not be possible to avoid all impacts, the remaining impacts are to be mitigated to acceptable levels.

Offset – should it not be possible to avoid and mitigate all impacts to acceptable levels it will be necessary to offset the remaining impacts. Suitable offsets will need to be identified.

Mitigation measures for significant impacts which cannot be avoided will be identified. The impacts will be ranked before and after the implementation of the mitigation measures. Consideration will also be given to the confidence level that can be placed on the successful implementation of the mitigation level as follows:

- **High Confidence:** mitigation measure easy and inexpensive to implement.
- **Medium Confidence:** mitigation measure expensive or difficult to implement.
- **Low Confidence:** mitigation measure expensive and difficult to implement.

Where mitigation is not sufficient to reduce the impact to acceptable levels offsets will need to be identified.

10.4 Specialist Studies

Where the EAP does not have sufficient expertise or information in a particular field to adequately determine the baseline environmental conditions or to assess the impacts, specialists in those fields will be appointed to provide the necessary information required to facilitate the EIA.

Specialist studies for the project will be required to assess impacts on air quality, groundwater resources, social environment, ambient noise levels, soils and land capabilities, traffic, heritage resources, paleontological resources, flora and fauna.

Detailed terms of reference for each specialist study are given in Appendix 7. The following specialist studies will be undertaken in support of the EIA:

Air quality baseline monitoring (monthly);
Air quality modelling and impact assessment;
Groundwater baseline monitoring (quarterly);
Geohydrological modelling and impact assessment;
Noise impact assessment;
Soils and land capability assessment;
Heritage impact Assessment;

Initial paleontological impact assessment;
Faunal (including only reptiles, birds, mammals and protected arachnids);
Vegetation assessment;
Traffic impact assessment; and
Social impact assessment.

10.5 EIA Team

The environmental assessment practitioners and specialists that will be involved in the EIA process are given in Table 10.3. Curriculum vitae of practitioners and specialists are given in Appendix 8.

10.6 Consultation Process

10.6.1 Public Consultation

A public participation process will be undertaken in accordance to Regulation 385 Section 56 and the Guideline 4: Public participation in support of the EIA Regulation, 2005 and the new draft public participation guideline will also be taken into consideration. The public will be allowed an opportunity to review the environmental report prior to be submitted to authority and will be invited to public meetings and all comments received during the review period will be included in reports for authority review. A meeting will be arranged to present the results of the EIA to the public. Registered interested and affected parties will be required to respond to provide comments on the scoping and EIA report.

10.6.2 Environmental Authorities

10.6.2.1 Authority Meeting

It is anticipated that meetings will be required with the following authorities:

Northern Cape Department of Environment and Nature Conservation
Northern Cape Department of Mineral Resources
Northern Cape Department of Water Affairs
Department of Agriculture

10.6.2.2 Site Visit

Site visits will be arranged for environmental authorities upon request.

Table 10.2: EIA and Specialist Team

	Project Role	Name	Qualifications	Affiliation	Experience (years)
ENVIRONMENTAL ASSESSMENT PRACTITIONER	Project Management Quality Control	Kerry Fairley	BSc Honours (Botany) Pr. Sci. Nat CEAPSA	Synergistics Environmental Services	12
	Report Writing Client Liaison Authority Liaison Public Consultation	Zama Khumalo	BA (Geography)	Synergistics Environmental Services	4
SPECIALISTS	Climate and Air Quality	Hanlie Liebenberg-Enslin	Msc (Air Pollution Exposure Evaluation in the Vaal Triangle using GIS)	Airshed Planning Professionals	12
	Noise	Nicolette Krause	BEng (Mechanical Engineering)	Airshed Planning Professionals	5
	Geohydrology	Marius van Biljon	Msc Geohydrology	Jones & Wagner Consulting Engineers	23
	Geochemistry	John Glendinning	MSc (Geochemistry)	Jones & Wagener Consulting Engineers	12
	Soils & Land Capability	Ian Jones	BSc (Geol) Pri.Sci.Nat. CEAPSA	Earth Science Solutions	31
	Traffic	Rod Strong	Msc Transport Planning and Engineering	WSP Consulting Engineers	23
	Heritage Studies	Johnny van Schalkwyk	D.Litt et Phil (Anthropology)	National Cultural Heritage Museum	30
	Paleontological Studies	Barry Millsteed		BM Geological Services	
	Vegetation Survey	Tania Anderson	Masters in Environmental Management	Tania Anderson	21
	Faunal Studies	Beryl Wilson	Msc Zoology	McGregor Museum	23
	Social Impact Assessment	Gerrie Muller	MBA	Metago Strategy4Good	24
	Paleontological Studies	Dr Barry Millsteed	Phd Geology	BM Geological Services	

11 CONCLUSIONS

A detailed assessment of environmental impacts identified in Section 7 will be conducted during the EIA process. During this process the public will be afforded an opportunity to comment and provide any further issues of concern. Conclusions on the environmental impacts of the project will be given in the final EIA report.

Appendix 1: Interested and Affected Parties

AVONTUUR MANGANESE PROJECT: AUTHORITIES CONTACT LIST											
Title	**Name**	**Surname**	**Affiliation**	**Email**	**Postal Address**	**Town**	**Code**	**Telephone**	**Fax**	**Mobile**	**Physical Ad.**
AUTHOITIES											
Ms	Thizwikoni	Ramavhona	Department of Environmental Affairs	tramavhona@deat.gov.za	Private Bag X447	Pretoria	00 01	(012) 310 3142/3284	(012) 310 3753		Fedsure Building, 315 Pretorius, Pretoria
Mr	Humphrey	Ndindani	Dept of Environmental Affairs and Nature Conservation	ndindanih@yahoo.com				(053) 712 0702	(053) 712 0936	(072) 981 2792	48 Steward Street, Kuruman 8460
Mr	Gerrie	van der Westhuizen	John Taola Gaetswene District Management Area.	gerriebdw@kgalagadi.gov.za/vaderwesthuizen@taolagaetswene.gov.za	P O Box 1480	Kuruman	8460	(053) 712 1001	(053) 712 2502		4 Federal Building, Mynbou Street, Kuruman
Ms.	Dorcas	Moremi	Moshaweng Ward 1 councillor (Madibeng Village)		Private Bag X117	Mothibistad	8475	(053) 773 9300	(043) 773 9350	(082)8292507	Madiben Village, House No 167E
Mr.		Monageng	Supervises community development workers in DMA							(082)9227367	
Ms		Saayman	Department of Social Development		Private Bag X3008	Postmasburg	8420	533 132 141	(053) 313 2557		
Ms	F	Einkamerer	Department of Agriculture	feinkamerer@yahoo.com				(053) 712 0139	(053) 712 1999		
Mr	Itumeleng	Bulane	Dept Transport, Roads and Public Works	leechal@vodamail.co.za	P O Box 3132	Kimberley	8300	(053) 861 9626	(053) 861 9600		
Ms	Neo	Leburu	DWA	leburun@dwa.gov.za					(053 802 0500		
Ms	Mariagrazia	Galimberti	South African Heritage and Resources Agency (Impact Assessor)	mgalimberti@sahra.org.za	P O Box 4637	Cape Town	8000	(021) 462 4502	(021) 462 4509		

AVONTUUR MANGANESE PROJECT: AUTHORITIES CONTACT LIST

Title	Name	Surname	Affiliation	Email	Postal Address	Town	Code	Telephone	Fax	Mobile	Physical Ad.
Mr	Boeta	Swart	WRP	boetas@wrp.co.za	P O Box 1522	Brooklyn Square	00 75	(012) 346 3496	(012) 346 9956		Upper Level Block 5, Green Park Estate, George Storrar Drive, Groenkloof, Pretoria, South Africa.
SURROUNGING LANDOWNERS											
Mr	Louis	Hauman	Soetvlakte	lois@soetvlakte.co.za	P O Box 1369	Kuruman	8460	(083) 251 5334	(086) 651 6861		
Mrs	E.H	Hauman	Farm 703CaledoniaGravenhage 114		Milner Str 13, Bellgravia,	Kimberely	8301	053 751 1442 /	(053)7511630	832 515 335	
Mr	GC	Olivier Boerdery (Pty) Ltd	Farm 703Avontuur R/E, 103	avontuur@harpago.co.za				537 511 416		835 662 393	
Mr	Fransonette	du Plessis	Farm 703 Tevereden 108		PO Box 25,	Santoy	8491	537 511 421		780 331 604	
Mr	Hendrik	du Plessis	Farm 703 Haakdoorn 32	engeladup@vodamail.co.za	PO Box 950,	Kuruman	8460	537 511 389		823 090 646	
Mr	Louw	van der Walt	Farm 703 Stillewoning 60	louw.vanderwalt@bhpbilliton.com	P O Box 188	Santoy	8491	053 751 1411 /	(053)7411422	824 932 857	
Mr	John	Markram (Johnny)	Farm 703 Vooruitzicht 31	marita.markam@gmail.com	PO Box 95,	Kuruman	8460			072 080 6843 / 082 301 0623	
Ms	Johanna Barbra & Maria	de Klerk	Farm 703 Mirage R/E, 59		PO Box 174,	Hotazel	8490	537 511 428			
Mr	Andre	de Klerk	Farm 703 Rosebank 41		PO Box 174,	Hotazel	8490	537 511 428			
Mr	Johanna Barbra & Maria	de Klerk	Farm 703 Portion 75	kransduin@gmail.com	PO Box 817,	Kuruman	8460	527 122 275		083 451 4020 / 082 412 1195	
Mr		Mollersville Boerdery Trust	Farm 703 Mollersville 49		PO Box 759,	Kathu	8446		(053) 7515404	724 777 835	
Mr	Hendrik Petrus	Venter	Farm 703 Eersbegint 43		PO Box 8,	Hotazel	8490		(053)7411610	825 077 716	
Mr	Hendrik Petrus	Venter	Grafton 709 Remainder Extent R/E		PO Box 8,	Hotazel	8490		(053)7411610	825 077 716	

AVONTUUR MANGANESE PROJECT: AUTHORITIES CONTACT LIST

Title	Name	Surname	Affiliation	Email	Postal Address	Town	Code	Telephone	Fax	Mobile	Physical Ad.
Mr	Everhardus Johannes	Kruger	Grafton 709 Portion 1					537 234 681			
Mr	Deon	Hoon	Severn Boere Vereniging	hoonde@gmail.com	P O Box 1157	Kuruman	8460	(083) 399 0400			
Mr	Ronni	du Plooy	Mophephe 710 Remainder Extent R/E		PO Box 275,	Kathu	8446	053 751 1396 /	(053)7233091	845 881 150	
Mr	Johanna Barbra & Maria	de Klerk	Mophephe 710 Portion 1		PO Box 174,	Hotazel	8490	537 511 428			
Mr	Willem	van der Walt	Plaas Eksodus buurplaas Farm Exedus Farmers Union?	wwalt@lantic.net	P O Box 151	Santoy	8491		(086) 675 9406	(073) 788 1068	
SURROUNDING MINES											
Mr	Sechaba	Letaba	Black Rock Mine (Mchwaning and Gloria)	sechabal@brmo.co.za	P.O. Box 187	Santoy	8491	(053) 751 5555			Blackrock Mine Operation
Ms	Babra	Mudaznapabwe	Black Rock Mine (Mchwaning and Gloria)	babram@brmo.co.za	P.O. Box 187	Santoy	8491	(053) 751 5555			Blackrock Mine Operation
Ms	Marina	Schoeman	Black Rock Mine (Mchwaning and Gloria)	marinas@brmo.co.za	P.O. Box 187	Santoy	8491	(053) 751 5555			Blackrock Mine Operation
Ms	Jacquiline	Parker	Wessels Mine and Mamatwan Mine (BHP Billiton)	jaco-lien.parker@bhpbilliton.com	P.O. Box 1118	Santoy	8491	(053) 742 2104 or 053 742 2000			Pepperboom Avenue, Hotazel, 8490
Mr	Jaison	Rajan	Samancor Manganese, BHP Billiton (Manager Mineral Resources)	Jaison.Rajan@bhpbilliton.com	1 Peperboom Avenue	Hotazel	8490	(053) 742 2195	(086) 606 5015	(083) 348 7242	
Ms	Elsa	Wloschowsky	Manager Mining Rights Manganese (BHP Billiton)	Elsa.Wloschowsky@bhpbilliton.com	6 Hollard Street	Johannesburg	2001	(011) 376 3504	(011) 688 4504		
Mr	Bonolo	Lekwa	Assmang Manganese (BlackRock Mine Operations)	bonolol@brmo.org.za	P O Box 187	Santoy	8491	(053) 751 5302	(086)6230957	(082) 739 1909	
Mr	Michiel	Kemink	Lehateng Mining (Pty) Ltd	mkemik@lehating.com	12 Kareekraal Elgoraigne X3	Centurion	157	(011) 954 1785			

AVONTUUR MANGANESE PROJECT: AUTHORITIES CONTACT LIST

Title	Name	Surname	Affiliation	Email	Postal Address	Town	Code	Telephone	Fax	Mobile	Physical Ad.
Mr	Tirwane	Mathibe	Assmang Manganese (BlackRock Mine Operations)	tiriwanem@brmo.co.za	P O Box 187	Santoy	8491		(086)6230957	(079) 896 7382	
PUBLIC											
Ms	Ida	Kgaodi			P O Box 1907	Kuruman	1907			(071) 343 8725	
Ms	Gosestemang	Motsoagole			P O Box 1272	Kuruman	8460			(078) 724 7157 or 082 795 3914	
Ms	Maureen									(076 2112159 or 078 997 0296	
Mr	Lentjie	Dibalabua								(072) 144 4732	
Mr		Manageng								(082) 922 7376	
Mr	Rorisang McVigar	Leboko	Madibeng (Serven)	rorisangmcvigarleboko@yahoo.com	P O Box 2575	Kuruman	8460	(079) 197 9248 or (079) 145 6088			
Mr	Nkokame Evacious	Leboko	Madibeng (Serven)		P O Box 2575	Kuruman	8460	(079) 197 9248 or (073) 031 0602			
Ms	Ingrid	Gaborokwe			P O Box 1280	Kuruman	8460	(072) 382 2301			
Mr	Craig	Stockhill	Aquila Steel (S.Africa)	craigs@performancepartners.co.za				27-11-803 4252 (w)		+27-83 569 1848 (m)	
Lehating Agri											
Mr	de Klerk	A J	Welkom		Posbus 174	Hotazel	8490				
Mr	de Waal	A G	Grootdrink		Posbus 75	Santoy	8491				
Mr	du Plessis	CJH	Tevrede		Posbus 25	Santoy	8491				
Mr	du Plessis	F	Tevrede		Posbus 25	Santoy	8491				
Mr	du Plessis	FW	Goedgenoeg		Posbus 1079	Kuruman	8460				
Mr	du Plessis	H J	Wanganella		Posbus 128	Santoy	8491				
Mr	du Plessis	H S	Haakdoorn	engeladup@vodamail.co.za	Posbus 950	Kuruman	8460				
Mr	Kriek	J J	Doorndraai	jjkriek@goggaconnect.co.za	Haakbos str 18	Kathu	8446				
Mr	Lamprecht	H J	Mecca		Posbus 17	Santoy	8491				
Mr	Le Roux	LT	Witbank		Posbus 65	Hotazel	8490				
Mr	Noeth	G A	Simondium		Posbus 169	Santoy	8491				
Mr	Pienaar	J	Afskeid		P/s X441	Hotazel	8490				
Mr	Pretorius	JP	Santa Rosa	jacquesp1@telkomsa.net	Posbus 348	Kuruman	8460				
Mr	Reynecke	J L	Nchwaning	jlr@isat.co.za	Posbus 158	Santoy	8491				
Mr	Sterling	M	Victory	sunstar@lantic.net	Posbus 1935	Kuruman	8460				
Mr	Stols	GJ	Boerdraai		Posbus 49	Dibeng	8463				

AVONTUUR MANGANESE PROJECT: AUTHORITIES CONTACT LIST

Title	Name	Surname	Affiliation	Email	Postal Address	Town	Code	Telephone	Fax	Mobile	Physical Ad.
Mr	Strauss	W	Wessels		Posbus 387	Kuruman	8460				
Mr	Theart	G	Olivewood	gert.theart@vodamail.co.za	Posbus 234	Hotazel	8490				
Mr	Theart	J C	Witputs	thotalodge@gmail.com	Posbus 224	Hotazel	8490				
Mr	Theart	J J F	Olivewood		Posbus 234	Hotazel	8490				
Mr	Theart	M	Witputs	thotalodge@gmail.com	Posbus 224	Hotazel	8490				
Mr	van der Walt	J L	Stillewoning		Posbus 188	Santoy	8491				
Mr	van der Walt	L P	Olivepan	stillewoning@gmail.com	Posbus 336	Hotazel	8490				
Mr	van der Walt	P J	Dibiaghomo		Posbus 169	Kuruman	8460				
Mr	van der Walt	W P	Harefield	wwalt@lantic.net	Posbus 151	Santoy	8491				
Mr	Visser	EM	Boomplaas	esther.v@gijima.com	Posbus 7214	Centurion	140				

Appendix 2: Proof of Notification of IAPs

List of REGISTERED LETTERS
Lys van GEREGISTREERDE BRIEWE
(With an insurance option/met 'n versekeringsopsie)

Post Office

Full tracking and tracing/Volledige volg en spoor

Name and address of sender
Naam en adres van afsender SYNERGETICS ENVIRO SERVICES
C4 WESSELS RIVONIA

Enquiries/Navrae
Toll-free number
Tolvry nommer
0800 111 502

No	Name and address of addressee Naam en adres van geadresseerde	Insured amount Versekerde bedrag	Insurance fee Versekeringsgeld	Postage Posgeld	Service fee Diensgeld	Affix Track and Trace customer copy Plak Volg-en-Spoor-kliëntafskrif
1	L.J. FINKAMER PO BOX 31 KURUMAN 8460					REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za RD 398 296 963 ZA CUSTOMER COPY 301028R
2	TEBOGO MAHAPA PO BOX 30684 BRAAMFONTEIN JHB					REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za RD 398 296 950 ZA CUSTOMER COPY 301028R
3	DR GWEN RAMAKGOPA PO BOX 6338 PTA 0001					REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za RD 398 296 932 ZA CUSTOMER COPY 301028R
4	AFFROX 39 ROGER DYASON ROAD PTA WEST (ASU PLANT)					REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za RD 398 296 929 ZA CUSTOMER COPY 301028R
5	DR ABDUL RAHMAN 37 SOUR STREET PVT BAG 785 MARSHALL TOWN					REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za RD 398 296 946 ZA CUSTOMER COPY 301028R
6	JASON SCHEFFLER, PO Box 868 FERNDALE 2160					REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za RD 398 296 977 ZA CUSTOMER COPY 301028R
7						
8						
10						
	Total Totaal	R	R	R	R	

Number of letters posted
Getal briewe gepos .....

Signature of client
Handtekening van kliënt .....

Signature of accepting officer
Handtekening van aanneembeampte .....

Date stamp
2128 RIVONIA P.O. 08 JUL 2010
Datumstempel

The value of the contents of these letters is as indicated and compensation is not payable for a letter received unconditionally. Compensation is limited to R100,00. No compensation is payable without documentary proof. Optional insurance of up to R2 000,00 is available and applies to domestic registered letters only.

Die waarde van die inhoud van hierdie briewe is soos aangedui en vergoeding sal nie betaal word vir 'n brief wat sonder voorbehoud ontvang word nie. Vergoeding is beperk tot R100,00. Geen vergoeding is sonder dokumentêre bewys betaalbaar nie. Opsionele versekering van tot R2 000,00 is beskikbaar en is slegs op binnelandse geregistreerde briewe van toepassing.

AFLCT

701248

List of REGISTERED LETTERS
Lys van GEREGISTREERDE BRIEWE
(With an insurance option/met 'n versekeringsopsie)

Post Office

Full tracking and tracing/Volledige volg en spoor

Name and address of sender
Naam en adres van afsender Synergistics Env Services
54 JESSELS RIVONIA

Enquiries/Navrae
Toll-free number
Tolvry nommer
0800 111 502

No	Name and address of addressee Naam en adres van geadresseerde	Insured amount Versekerde bedrag	Insurance fee Verseke-ringsgeld	Postage Posgeld	Service fee Diensgeld	Affix Track and Trace customer copy Plak Volg-en-Spoor-klientafskrif
1	Ms Barbara Mudzanapabwe P O Box 187					REGISTERED LETTER (with a domestic insurance option) RD 398 297 164 ZA A BOOK COPY
2	Santoy 8491					
3	Ms Gosestemang Nobsoagole PO Box 1272					REGISTERED LETTER (with a domestic insurance option) RD 398 296 985 ZA A BOOK COPY
4	Kuruman 8460					
5	Mr J F Van Staden PO Box 486					REGISTERED LETTER (with a domestic insurance option) RD 398 297 005 ZA A BOOK COPY
6	Upington 8800					
7	Ms Thizwilkani Ramavhona Private bag X447					REGISTERED LETTER (with a domestic insurance option) RD 398 297 014 ZA A BOOK COPY
8	Pretoria 001					
9	Ms Dorcas Moremi Private bag X117					REGISTERED LETTER (with a domestic insurance option) RD 398 297 045 ZA A BOOK COPY
10	Mothibistad 8475					
	Total Totaal	R	R	R	R	

Number of letters posted
Getal briewe gepos 5

Signature of client
Handtekening van kliënt

Signature of accepting officer
Handtekening van aanneembeampte

Date Stamp/Datumstempel
S.A. POST OFFICE
BRANCH MANAGER
06 JUL 2010
RIVONIA 2128
S.A. POST OFFICE

The value of the contents of these letters is as indicated and compensation is not payable for a letter received unconditionally. Compensation is limited to R100,00. No compensation is payable without documentary proof. Optional insurance of up to R2 000,00 is available and applies to domestic registered letters only.

Die waarde van die inhoud van hierdie briewe is soos aangedui en vergoeding sal nie betaal word vir 'n brief wat sonder voorbehoud ontvang word nie. Vergoeding is beperk tot R100,00. Geen vergoeding is sonder dokumentêre bewys betaalbaar nie. Opsionele versekering van tot R2 000,00 is beskikbaar en is slegs op binnelandse geregistreerde briewe van toepassing.

List of REGISTERED LETTERS
Lys van GEREGISTREERDE BRIEWE
(With an insurance option/met 'n versekeringsopsie)

Post Office

Full tracking and tracing/Volledige volg en spoor

Name and address of sender
Naam en adres van afsender SYNERGISTICS ENV SERVICES
64 WESSELS RIVONIA

Enquiries/Navrae
Toll-free number
Tolvry nommer
0800 111 502

No	Name and address of addressee Naam en adres van geadresseerde	Insured amount Versekerde bedrag	Insurance fee Versekeringsgeld	Postage Posgeld	Service fee Diensgeld	Affix Track and Trace customer copy Plak Volg-en-Spoor-klientafskrif
1	Mr Gerrie van der Westhuizen PO Box 1480					REGISTERED LETTER (with a domestic insurance option) RD 398 297 062 ZA A BOOK COPY
2	Kuruman 8460					
3	Dr Antonieta Jeradino PO Box 4637					REGISTERED LETTER (with a domestic insurance option) RD 398 297 080 ZA A BOOK COPY
4	Cape Town 8000					
5	Ms Jacquiline Parker PO Box 1178					REGISTERED LETTER (with a domestic insurance option) RD 398 297 102 ZA A BOOK COPY
6	Santoy 8491					
7	Ms Saayman PO Box 702					REGISTERED LETTER (With a domestic insurance option) RD 398 296 994 ZA A BOOK COPY
8	Postmasburg 8420					
9	Mr Sechaba Letaba PO Box 187					REGISTERED LETTER (with a domestic insurance option) RD 398 297 028 ZA A BOOK COPY
10	Santoy 8491					
	Total Totaal	R	R	R	R	

Number of letters posted
Getal briewe gepos 5

Signature of client
Handtekening van kliënt

Signature of accepting officer
Handtekening van aanneembeampte

Date stamp

S.A. POST OFFICE LTD
BRANCH MANAGER
06 JUL 2010
RIVONIA 2128
S.A. POST OFFICE LTD

The value of the contents of these letters is as indicated and compensation is not payable for a letter received unconditionally. Compensation is limited to R100,00. No compensation is payable without documentary proof. Optional insurance of up to R2 000,00 is available and applies to domestic registered letters only.

Die waarde van die inhoud van hierdie briewe is soos aangedui en vergoeding sal nie betaal word vir 'n brief wat sonder voorbehoud ontvang word nie. Vergoeding is beperk tot R100,00. Geen vergoeding is sonder dokumentêre bewys betaalbaar nie. Opsionele versekering van tot R2 000,00 is beskikbaar en is slegs op binnelandse geregistreerde briewe van toepassing.

List of REGISTERED LETTERS
Lys van GEREGISTREERDE BRIEWE
(With an insurance option/met 'n versekeringsopsie)

Post Office

Full tracking and tracing/Volledige volg en spoor

Name and address of sender
Naam en adres van afsender .... SYNERGISTICS ENV SERVICES
64 WESSELS RIVONIA

Enquiries/Navrae
Toll-free number
Tolvry nommer
0800 111 502

No	Name and address of addressee / Naam en adres van geadresseerde	Insured amount / Versekerde bedrag	Insurance fee / Versekeringsgeld	Postage / Posgeld	Service fee / Diensgeld	Affix Track and Trace customer copy / Plak Volg-en-Spoor-kliëntafskrif
1	Mr John Markram PO Box 95					REGISTERED LETTER (with a domestic insurance option) RD 398 297 059 ZA A BOOK COPY
2	Kuruman 8460					
3	Ms Johanna Barbara & Maria de Klerk PO Box 174					REGISTERED LETTER (with a domestic insurance option) RD 398 297 076 ZA A BOOK COPY
4	Hotazel 8490					
5	Mr Hendrik Petrus Venter PO Box 8					REGISTERED LETTER (with a domestic insurance option) RD 398 297 031 ZA A BOOK COPY
6	Hotazel 8490					
7	Mr Ronni du Plooy PO Box 275					REGISTERED LETTER (with a domestic insurance option) RD 398 297 116 ZA A BOOK COPY
8	Kathu 8446					
	Mollersville Boerdery trust PO Box 759					REGISTERED LETTER (with a domestic insurance option) RD 398 297 181 ZA A BOOK COPY
10	Kathu 8446					
	Total / Totaal	R	R	R	R	

Number of letters posted
Getal briewe gepos 5

Signature of client
Handtekening van kliënt .... [signature]

Signature of accepting officer
Handtekening van aanneembeampte .... [signature]

Date stamp

S.A. POST OFFICE LTD
BRANCH MANAGER
06 JUL 2010
RIVONIA 2128
S.A. POST OFFICE LTD

The value of the contents of these letters is as indicated and compensation is not payable for a letter received unconditionally. Compensation is limited to R100,00. No compensation is payable without documentary proof. Optional insurance of up to R2 000,00 is available and applies to domestic registered letters only.

Die waarde van die inhoud van hierdie briewe is soos aangedui en vergoeding sal nie betaal word vir 'n brief wat sonder voorbehoud ontvang word nie. Vergoeding is beperk tot R100,00. Geen vergoeding is sonder dokumentêre bewys betaalbaar nie. Opsionele versekering van tot R2 000,00 is beskikbaar en is slegs op binnelandse geregistreerde briewe van toepassing.

List of REGISTERED LETTERS
Lys van GEREGISTREERDE BRIEWE
(With an insurance option/met 'n versekeringsopsie)

Post Office

Full tracking and tracing/Volledige volg en spoor

Name and address of sender
Naam en adres van afsender SYNERGISTICS ENV SERVICES
69 LOEWEN RIVONIA

Enquiries/Navrae
Toll-free number
Tolvry nommer
0800 111 502

No	Name and address of addressee Naam en adres van geadresseerde	Insured amount Versekerde bedrag	Insurance fee Verseke-ringsgeld	Postage Posgeld	Service fee Diensgeld	Affix Track and Trace customer copy Plak Volg-en-Spoor-klientafskrif
1	Ms Johanna Barbara & Maria de Klerk PO Box 917					REGISTERED LETTER (with a domestic insurance option) RD 398 297 093 ZA A BOOK COPY
2	Kuruman 8460					
3	Mr Andre de Klerk PO Box 174					REGISTERED LETTER (with a domestic insurance option) RD 398 297 195 ZA A BOOK COPY
4	Hotazel 8490					
5	Mr Fransonette du Plessis PO Box 25					REGISTERED LETTER (with a domestic insurance option) RD 398 297 147 ZA A BOOK COPY
6	Santoy 8491					
7	Mr Jacobus Hauman 18 Milner street					REGISTERED LETTER (with a domestic insurance option) RD 398 297 204 ZA A BOOK COPY
8	Bellgravia Kimberely 8361					
	Mr Boeta Swart PO Box 1522					REGISTERED LETTER (with a domestic insurance option) RD 398 297 178 ZA A BOOK COPY
10	Brooklyn Square 0075					
	Total Totaal	R	R	R	R	

Number of letters posted
Getal briewe gepos 5

Signature of client
Handtekening van kliënt

Signature of accepting officer
Handtekening van aanneembeampte

Date stamp

S.A. POST OFFICE LTD
BRANCH MANAGER
06 JUL 2010
Datumstempel
RIVONIA 2128
S.A. POST OFFICE LTD

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List of REGISTERED LETTERS
Lys van GEREGISTREERDE BRIEWE
(With an insurance option/met 'n versekeringsopsie)

Post Office

Full tracking and tracing/Volledige volg en spoor

Name and address of sender
Naam en adres van afsender SYNERGISTICS ENV SERVICES
64 RIGEL CRESCENT, RIVONIA

Enquiries/Navrae
Toll-free number
Tolvry nommer
0800 111 502

No	Name and address of addressee Naam en adres van geadresseerde	Insured amount Versekerde bedrag	Insurance fee Versekeringsgeld	Postage Posgeld	Service fee Diensgeld	Affix Track and Trace customer copy Plak Volg-en-Spoor-klientafskrif
1	Mr Hendrik du Plessis PO Box 950					REGISTERED LETTER (with a domestic insurance option) RD 398 297 133 ZA A BOOK COPY
2	Kuruman 8460					
3	Ms Ingrid Gakaroknwe PO Box 1260					REGISTERED LETTER (with a domestic insurance option) RD 398 297 218 ZA A BOOK COPY
4	Kuruman 8460					
5	Ms Ida Kgaodi PO Box 1907					REGISTERED LETTER (With a domestic insurance option) RD 398 297 120 ZA A BOOK COPY
6	Kuruman 1907					
7	Ms Marina Schoeman PO Box 187					REGISTERED LETTER (with a domestic insurance option) RD 398 297 155 ZA A BOOK COPY
8	Santoy 8491					
9						
10						
	Total Totaal	R	R	R	R	

Number of letters posted
Getal briewe gepos 4

Signature of client
Handtekening van kliënt .....

Signature of accepting officer
Handtekening van aanneembeampte .....

Date stamp

S.A. POST OFFICE LTD
BRANCH MANAGER
06 JUL 2010
Datumstempel
RIVONIA 2128
S.A. POST OFFICE LTD

The value of the contents of these letters is as indicated and compensation is not payable for a letter received unconditionally. Compensation is limited to R100,00. No compensation is payable without documentary proof. Optional insurance of up to R2 000,00 is available and applies to domestic registered letters only.

Die waarde van die inhoud van hierdie briewe is soos aangedui en vergoeding sal nie betaal word vir 'n brief wat sonder voorbehoud ontvang word nie. Vergoeding is beperk tot R100,00. Geen vergoeding is sonder dokumentêre bewys betaalbaar nie. Opsionele versekering van tot R2 000,00 is beskikbaar en is slegs op binnelandse geregistreerde briewe van toepassing.

List of REGISTERED LETTERS
Lys van GEREGISTREERDE BRIEWE
(With an insurance option/met 'n versekeringsopsie)

Post Office

Full tracking and tracing/Volledige volg en spoor

Name and address of sender
Naam en adres van afsender SYNERGISTICS 64 WESSELS RD
RIVONIA, PO BOX 1832 RIVONIA 2128

Enquiries/Navrae
Toll-free number
Tolvry nommer
0800 111 502

No	Name and address of addressee Naam en adres van geadresseerde	Insured amount Versekerde bedrag	Insurance fee Versekeringsgeld	Postage Posgeld	Service fee Diensgeld	Affix Track and Trace customer copy Plak Volg-en-Spoor-klientafskrif
1	MNR JACOBUS HAUMAN, MILNER STR 13, BELLGRAVIA, KIMBERLEY 8301					REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za RD 398 297 297 ZA CUSTOMER COPY 301028R
2	JOHANNA DE KLERK, PO BOX 174, HOTAZEL 8490					REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za RD 398 297 283 ZA CUSTOMER COPY 301028R
3	HENDRIE PETRUS VENTER, POSBUS 6 HOTAZEL 8490					REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za RD 398 297 235 ZA CUSTOMER COPY 301028R
4	ANDRE DE KLERK, POSBUS 174 HOTAZEL 8490					REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za RD 398 297 221 ZA CUSTOMER COPY 301028R
5	FRANSONETTE DU PLESSIS, PO BOX 25 SANTOY 8491					REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za RD 398 297 249 ZA CUSTOMER COPY 301028R
6	JOHN MARKRAM, PO BOX 95 KURUMAN 8460					REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za RD 398 297 252 ZA CUSTOMER COPY 301028R
7	MOLLERSVILLE BOERDERY, PO BOX 759 KATHU, 8446					REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za RD 398 297 266 ZA CUSTOMER COPY 301028R
8						
9						
10						
	Total Totaal	R	R	R	R	

Number of letters posted
Getal briewe gepos 7

Signature of client
Handtekening van kliënt .....

Signature of accepting officer
Handtekening van aanneembeampte .....

RIVONIA P.O
Date stamp
05 JUL 2010
2128
Datumstempel

The value of the contents of these letters is as indicated and compensation is not payable for a letter received unconditionally. Compensation is limited to R100,00. No compensation is payable without documentary proof. Optional insurance of up to R2 000,00 is available and applies to domestic registered letters only.

Die waarde van die inhoud van hierdie briewe is soos aangedui en vergoeding sal nie betaal word vir 'n brief wat sonder voorbehoud ontvang word nie. Vergoeding is beperk tot R100,00. Geen vergoeding is sonder dokumentêre bewys betaalbaar nie. Opsionele versekering van tot R2 000,00 is beskikbaar en is slegs op binnelandse geregistreerde briewe van toepassing.

05/07/10

Date: 1 July 2010
Ref: S0280

Attention:

Synergistics
Environmental Services

PO Box 1822
Rivonia, 2128
Tel: +27 (0)11 807 8225
Fax: +27 (0)11 807 8226
synergy@synergistics.co.za

Zama Khumalo
zama@synergistics.co.za

Dear

NOTIFICATION OF ENVIRONMENTAL IMPACT ASSESSMENT

Avontuur Manganese Project
(Development of a Manganese Mine, Hotazel, Northern Cape)

Aquila Steel (S Africa) Pty Ltd is in the process of applying for a mining right for the mining of manganese on Farm Gravenhage 703/144 located approximately 60 km north of Hotazel. You are hereby notified that Synergistics Environmental Services (Pty) Ltd has been appointed as independent environmental consultants responsible for undertaking the Environmental Impact Assessment in support of the following application:

- Mining Right Application (Minerals and Petroleum Resources Development Act No 28 of 2002)
- Environmental Authorisation Application (National Environmental Management Act No 107 of 1998)
- Waste Management Licence Application (National Environmental Management: Waste Act No 59 of 2009)
- Atmospheric Emission Licence Application (National Environmental Management: Air Quality Act No 39 of 2004)
- Water Use Licence Application (National Water Act No 36 of 1998).

Please find attached to this letter a Background Information Document providing further information on the proposed mine development. Should you have any issues of concern, question or comments please submit these in writing to:

Directors: KC Fairley, ME Els Wolmarans & MG Hemming
Synergistics Environmental Services (Pty) Ltd
South Africa Registered No. 2003/030216/07

Synergistics Environmental Services
Zama Khumalo
Post: P O Box 1822
Rivonia
2128
Email: zama@synergsitics.co.za
Fax: 011 807 8226

For Synergistics Environmental Services

Zama Khumalo
B.A (Geography)
Environmental Scientist

Appendix 3: Responses from IAPs

Terugvoer vel
Avontuur Manganese projek
Ontwikkeling van 'n mangaanmyn naby Hotazel, Noord Kaap

Zama Khumalo
Synergistics Environmental Services
Faks: 011 807 8226
Epos: zama@synergistics.co.za
Posbus 1822, Rivonia, 2128

Name en van:	Willem P van der Walt
Plaasnaam/organisasie:	**Harefield plaas nr. 232 & Eksodus, Plaas nr. Porsie 104 Eksodus Porsie van Porsie 103 van Plaas nr. 703**
Adres:	Posbus 151, Santoy - 8491
Telefoon:	
Sel nr.:	073 788 1068 & 082 805 3958
Faks:	086 675 9406
Epos:	wwalt@lantic.net
Datum:	27:07:10

Handtekening:

In watter taal sal u korrespondensie wil ontvang (merk asb)? Engels **Afrikaans X**

Indien u weet van enige persone wat gekontak moet word oor die projek, sal u asb hul besonderhede verskaf:

Naam en Van:
Plaasnaam/organisasie
Telefoon:
Sel nr.:
Faks:
Epos:

Kwessies, bekommernisse of vrae
(Gebruik addisionele blaaie indien nodig)
ALLE KOMMENTAAR MOET ONS BEREIK TEEN 30 Julie 2010

As geaffekteerde het ek het die vergadering op Woensdag 14:07:10 bygewoon.

Aangesien alle lede van Lehating Agri deur die beoogde mynbedrywighede geaffekteer word, het ek die lede op hul vergadering 21:07:10 ingelig. Die meeste van hulle het nie kennis gedra het van die verrigtinge op 14:07:10 nie.

Ek het opdrag ontvang om namens die geaffekteerde lede van wat op 'n meerdere of mindere mate geraak word, die volgende raakpunte deur te gee, nl.

Die beoogde myn is in 'n ariede gebied waarin produsente uitsluitlik **weiding produseer**. Dit word op in die een of ander vorm van **rooivleis bemark**. Die volgende hulpbronne is dus baie belangrik, nl.

1. **GRONDWATER**
   - Die heersende watertafel is ±100 meter.
   - Grondwater studies het uitgewys dat grootskaalse water onttrekking die water tafel aansienlik verswak in die omgewing en veral in die westelike omgewing daarvan.
   - Myn bedrywighede kan dus totale onproduktiwiteit van die gebied tot gevolg hê.

2. **STOF AS GEVOLG VAN VERHOOGDE VERKEER**
   - Daar word aangedui dat die pad op gegradeer sal word. Sou dit 'n gruispad wees kan dit lei tot negatiewe pad veiligheid en weidings produksie
   - Die beplande produksie sal tot gevolg hê dat 1,5 miljoen ton erts vervoer moet word. Teen 33 ton per vragmotor sal dit lei tot verkeer wat die huidige pad nie kan dra nie.
   - Om gedurende 260 werksdae per jaar 1,5 m ton erts te vervoer met 33 ton vragmotors (45,455 per jr) beteken 175 vragmotors per dag heen en weer met ander woorde 350 vragmotors daagliks op die pad.
   - Tesame met die beoogde bedrywighede sal dit lei tot verdere verhoogde verkeersdruk
   - Duisende tonne stof sal dus versprei word wat weidingskapasiteit sal verlaag.
   - Die stoflagie sal negatief op plant fotosintese inwerk, water indringing verlaag wat weidingsgroei sal verlaag
   - Die resultaat sal dus verlaagde inkomste vir die produsente beteken.

3. **VEILIGHEID VAN INWONERS**
   - Verhoogde voete van mense lei tot verhoogde diefstal syfers en veiligheid van inwoners kan negatief beïnvloed word.

Die volgende lede van Lehating Agri is geaffekteerdes, nl.

Van	Naam		Adres			
de Klerk	A J	Welkom	Posbus 174	Hotazel	8490	
de Waal	A G	Grootdrink	Posbus 75	Santoy	8491	
du Plessis	CJH	Tevrede	Posbus 25	Santoy	8491	
du Plessis	F	Tevrede	Posbus 25	Santoy	8491	
du Plessis	FW	Goedgenoeg	Posbus 1079	Kuruman	8460	
du Plessis	H J	Wanganella	Posbus 128	Santoy	8491	
du Plessis	H S	Haakdoorn	Posbus 950	Kuruman	8460	engeladup@vodamail.co.za

Kriek	J J	Doorndraai	Haakbos str 18	Kathu	8446	jjkriek@goggaconnect.co.za
Lamprecht	H J	Mecca	Posbus 17	Santoy	8491	
Le Roux	LT	Witbank	Posbus 65	Hotazel	8490	
Noeth	G A	Simondium	Posbus 169	Santoy	8491	
Pienaar	J	Afskeid	P/s X441	Hotazel	8490	
Pretorius	JP	Santa Rosa	Posbus 348	Kuruman	8460	jacquesp1@telkomsa.net
Reynecke	J L	Nchwaning	Posbus 158	Santoy	8491	jlr@isat.co.za
Sterling	M	Victory	Posbus 1935	Kuruman	8460	sunstar@lantic.net
Stols	GJ	Boerdraai	Posbus 49	Dibeng	8463	
Strauss	W	Wessels	Posbus 387	Kuruman	8460	
Theart	G	Olivewood	Posbus 234	Hotazel	8490	gert.theart@vodamail.co.za
Theart	J C	Witputs	Posbus 224	Hotazel	8490	thotalodge@gmail.com
Theart	J J F	Olivewood	Posbus 234	Hotazel	8490	
Theart	M	Witputs	Posbus 224	Hotazel	8490	thotalodge@gmail.com
van der Walt	J L	Stillewoning	Posbus 188	Santoy	8491	
van der Walt	L P	Olivepan	Posbus 336	Hotazel	8490	stillewoning@gmail.com
van der Walt	P J	Dibiaghomo	Posbus 169	Kuruman	8460	
van der Walt	W P	Harefield	Posbus 151	Santoy	8491	wwalt@lantic.net
Visser	EM	Boomplaas	Posbus 7214	Centurion	0140	esther.v@gijima.com

08266

Vertrou u neem bogenoemde sake op in u omgewingsimpak studie

Groetnis

Willem van der Walt

TERUGVOER VEL
AVONTUUR MANGANESE PROJEK
ONTWIKKELING VAN 'N MANGAAN MYN NABY HOTAZEL, NOORD KAAP

Stuur voltooide terugvoer vel: Zama Khumalo
Synergistics Environmental Services
Faks: 011 807 8226
Epos: zama@synergistics.co.za
Posbus 1822, Rivonia, 2128

Naame en Van:	Me. Fransonette du Plessis
Plaas naam/~~organisasie~~:	Teurede
Adres:	Posbus 25 Santoy 8491
Telefoon:	
Sel nr:	078 033 1604 of 073 2170548
Faks:	
Epos:	
Datum:	22 Julie 2010
Handtekening:	F. du Plessis

In watse taal sal U korrespondensie wil ontvang (merk asb)? Engels [ ] Afrikaans [X]

Indien U van enige persone wee t wat gekontak moet word oor die projek, sal U asb hul besonderhede verskaf:

Naam en Van:		
Plaas naam/organisasie		
Telepfoon:		
Selfoon:		
Faks:		
Epos:		

Kwessies, bekommernisse of vrae
(gebruik addisionel blaaie indien nodig)

ALLE KOMMENTAAR MOET ONS BEREIK TEEN 30 JULIE 2010

1 Water is die lewensaar om ons luilplaas te benut wat weiding is
2. Pad: die opgradering van die grondpad sal nie help nie, gesien in die lig van die tonnemaat wat vervoer moet word nie
(b) Ek beweeg niet daar oor die pad as gevolg van grond wat weerskante van die pad is niet 'n veiligheidsrisiko
(c) Die Stof van die pad verlaag die drakrag van die weiding Die plante se ontkieming en fotosintese word beïnvloed deur die stoflaag Ek het 14,8 km wat geaffekteer sal word
3 Die personeel en belanghebbendes se beweging gaan ons veiligheid beïnvloed, waar ons gewoond was aan baie veilig omstandighede

RESPONSE SHEET
AVONTUUR MANGANESE PROJECT
DEVELOPMENT OF A MANGANESE MINE, HOTAZEL, NORTHERN CAPE

Return completed sheet to: Zama Khumalo
Synergistics Environmental Services
Fax: 011 807 8226
E-mail: zama@synergistics.co.za
PO Box 1822, Rivonia, 2128

Name and Surname:	KORISANG MCVIGAR LEBOKO
Farm name/organisation:	MADIBENG (SEVERN)
Address:	P.O. BOX 2575 KYALAMI
Telephone:	079197 9248 / 079145 6088
Cell phone:	079197 9248
Fax:	
E-mail:	korisangmcvigarleboko@yahoo.com
Date:	14/07/2010
Signature:	

What is your preferred language of correspondence (please tick)? English [X] Afrikaans [ ]

If you know of someone who should be informed of the project, please provide us with their contact details:

Name and Surname:	ONKOKAME LEBOKO	
Farm name/organisation:	MADIBENG	
Telephone:	079197 9248	
Cell phone:	0730310602	
Fax:		
E-mail:	korisangmcvigarleboko@yahoo.com	

ISSUES, CONCERNS AND QUESTIONS
(use additional pages if required)

ALL COMMENTS MUST REACH US BY 30 JULY 2010

My Company NAMES is MCVIGAR CONSTRUCTION AND TRADING.

TERUGVOER VEL

AVONTUUR MANGANESE PROJEK

ONTWIKKELING VAN 'N MANGAAN MYN NABY HOTAZEL, NOORD KAAP

Stuur voltooide terugvoer vel: Zama Khumalo
Synergistics Environmental Services
Faks: 011 807 8226
Epos: zama@synergistics.co.za
Posbus 1822, Rivonia, 2128

Naame en Van:	Mev. E-H. Hauman
Plaas naam/organisasie:	Gracehage
Adres:	13 Milnerstr, Belgravia, Kby. 8301.
Telefoon:	0824959589.
Sel nr:	
Faks:	053 8328567
Epos:	ehhauman@gmail.com.
Datum:	16/7/10.
Handtekening:	[signature]

In watse taal sal U korrespondensie wil ontvang (merk asb)?

Engels		Afrikaans	X

Indien U van enige persone wee t wat gekontak moet word oor die projek, sal U asb hul besonderhede verskaf:

Naam en Van:		
Plaas naam/organisasie		
Telepfoon:		
Selfoon:		
Faks:		
Epos:		

Kwessies, bekommernisse of vrae

(gebruik addisionel blaale indien nodig)

ALLE KOMMENTAAR MOET ONS BEREIK TEEN 30 JULIE 2010

(1) Impak op wildboerdery - teling, gedrag ens.
(2) Impak op toeriste bedryf - stof, geraas, aansien ens.
(3) Diefstal in omliggende omgewing a.g.v. verhoogde toeloop v. werkers.
(4) Rehabilitasie se sukses t.o.v. drakrag. Se herstel tot aanvaarbare vlakke.

TERUGVOER VEL

AVONTUUR MANGANESE PROJEK

ONTWIKKELING VAN 'N MANGAAN MYN NABY HOTAZEL, NOORD KAAP

Stuur voltooide terugvoer vel:

Zama Khumalo
Synergistics Environmental Services
Faks: 011 807 8226
Epos: zama@synergistics.co.za
Posbus 1822, Rivonia, 2128

Naame en Van:	Deon Hoon
Plaas naam/organisasie:	Severn Boerevereniging
Adres:	Posbus 1157 Kuruman 8460
Telefoon:	0833990400
Sel nr:	
Faks:	
Epos:	hoonde@gmail.com
Datum:	14/07/2010
Handtekening:	[illegible]

In watse taal sal U korrespondensie wil ontvang (merk asb)?

Engels		Afrikaans	X

Indien U van enige persone wee t wat gekontak moet word oor die projek, sal U asb hul besonderhede verskaf:

Naam en Van:		
Plaas naam/organisasie		
Telepfoon:		
Selfoon:		
Faks:		
Epos:		

Kwessies, bekommernisse of vrae

(gebruik addisionel blaaie indien nodig)

ALLE KOMMENTAAR MOET ONS BEREIK TEEN 30 JULIE 2010

Huidige kwessies
1) Water
2) Paaie
3) Behuising van arbeiders
4) Stof
5) Kommunikasie MTN het reeds toring op Skimmelberg goedgekeur om te bou maar kom nie so ver nie.

TERUGVOER VEL
AVONTUUR MANGANESE PROJEK
ONTWIKKELING VAN 'N MANGAAN MYN NABY HOTAZEL, NOORD KAAP

Stuur voltooide terugvoer vel: Zama Khumalo
Synergistics Environmental Services
Faks: 011 807 8226
Epos: zama@synergistics.co.za
Posbus 1822, Rivonia, 2128

Naame en Van:	Louis Hauman
Plaas naam/organisasie:	Soetvlakte
Adres:	Posbus 1369, Kuruman, 8460
Telefoon:	083 251 5334
Sel nr:	083 251 5334
Faks:	0866 51 6861
Epos:	louis@soetvlakte.co.za
Datum:	14/7/10
Handtekening:	[signature]

In watse taal sal U korrespondensie wil ontvang (merk asb)?

Engels		Afrikaans	X

Indien U van enige persone wee t wat gekontak moet word oor die projek, sal U asb hul besonderhede verskaf:

Naam en Van:		
Plaas naam/organisasie		
Telepfoon:		
Selfoon:		
Faks:		
Epos:		

Kwessies, bekommernisse of vrae
(gebruik addisionel blaaie indien nodig)

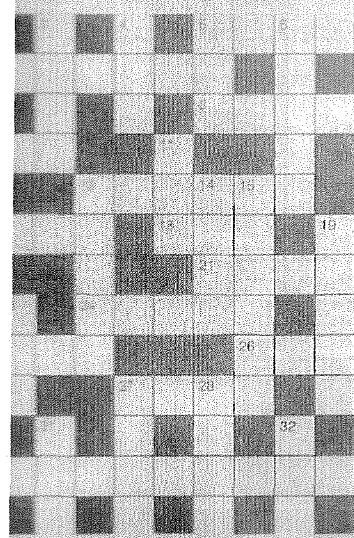
ALLE KOMMENTAAR MOET ONS BEREIK TEEN 30 JULIE 2010

- Water monitering
- Stof impak
- Ongewensde effekte op arbeidsmark & teenwoordigheid van misdaad - vestiging van mense oral!
- Versteuring van omgewing met mynhope.
- Vernietiging van paaie
- Natuur beïnvloeding - ek is in ekotoerisme besigheid.

Appendix 4: Press and Site Notification

BALJU BLOEMFONTEIN-OOS, ELLENBERGER & KAHTS, ALEXANDRALAAN 36, BLOEMFONTEIN voetstoots en vir kontant aan die hoogste bieder geregtelik verkoop word, nl:
1 x SITKAMERSTEL
1 x KOMBUISEENHEID
1 x TV-STAANDER
1 x YSKAS
1 x TV
GETEKEN te **BLOEMFONTEIN** op hierdie **28 MEI 2010.**
PROKUREUR VIR EISER
GS BOTHA McINTYRE & VAN DER POST
BARNESSTRAAT 12

10 641



13. Sightless (5)
14. Tolerate, endure (4)
15. Surpasses (6)
17. Ruminant mammal (4)
19. Game between local teams (5)
23. Born (3)
25. Soft leather (5)
27. Principal (4)
28. Complete extent (4)
30. Weaken (3)
31. Engage in pugilism (3)
32. Pixie (3)

Solution of 10 640

Across: 4. Defeat; 7. Massacre; 8. Beetle; 10. Grime; 13. Rare; 14. Aura; 15. Here; 16. Rut; 17. Dial; 19. Clot; 21. Fantastic; 23. Rims; 24. Tusk; 26. Set; 27. Tree; 29. Echo; 32. Feed; 33. Usher; 34. Recipe; 35. Landmine; 36. Versus.

Down: 1. Omega; 2. Astir; 3. Safe; 4. Debar; 5. Free; 6. All but; 9. Erects; 11. Rub; 12. Madam; 13. Related; 15. Hat; 16. Roc; 18. Instep; 20. Likes; 21. Fit; 22. Sue; 23. Recede; 25. The; 28. Reels; 30. Chain; 31. Order; 32. Fins; 33. Undo.

11 612

KENNISGEWING VAN OMGEWINGS IMPAK ASSESERING PROSES

GRAVENHAGE PROJEK: ONTWIKKELING VAN 'N MANGAAN MYN NABY HOTAZEL: NOORD KAAP

Aquila Steel (Suid Afrika) (Pty) Ltd, 'n ondergeskikte van Aquila Resources Limited, beoog om 'n mangaan myn op die Plaas Gravenhage 703 / 114 te ontwikkel. Die plaas Gravenhage 703/ 114 is ongeveer 60 km noord van Hotazel in die Noord Kaap Provinsie. Die voorgestelde myn beplan 'n produksie van ongeveer 1.5 miljoen ton erts per jaar tydens 'n leeftyd van 15 tot 20 jaar.

Aansoeke vir omgewings goedkeuring vir die projek sal gerig word aan die volgende staats departemente:

- Departement van Mineraal Hulpbronne, onder Afdeling 22 van die Mineraal en Petroleum Hulpbron Ontwikkeling Wet No 28 van 2002. (Myn Reg Aansoek)
- Departement van Waterwese, onder Afdeling 21 van die Nasionale Water Reg No 36 van 1998. (Geintegreerde Water Gebruiks Lisensie)
- Departement van Omgewingsake en Natuurbewaring of die John Taola Gaetswene Distrik Munisipaliteit, onder Afdeling 38 van die Nasionale Omgewings Bestuur: Lug Kwaliteit Reg No 39 van 2004. (Atmosferiese Uitlating Lisensie)

Aansoeke vir gelyste aktiwiteite in terme van Regulasie 386 en 387 van die Nasionale Omgewings Bestuur Wet, nr 107 van 1998 (Verw. C/JTG/HOT/MANG1/2010) sowel as aansoek vir Afval Bestuurs Lisensie onder die Nasionale Omgewings Bestuurs Afval Wet (Verw 2/9/11/L288/9) s gerig aan die departement van Omgewingsake- & Natuurbewaring.)

Synergistics Environmental Services (Pty) Ltd is aangestel as die onafhanklike omgewings konsultante verantwoordelik vir die onderneming van omgewings impak evaluerings proses wat benodig is deur die verskeie staats departemente om besluit te maak in terme van goedkeuring vir die projek. Die omgewings evaluerings proses sluit in die opstel van bestek studie verslag sowel as omgewings impak studie verslag waarby die potensiele omgewing en sosiale impakte geidentifiseer word en mitigerende metodes in plek gesit word.

Indien U meer inligting aangaande die projek wil ontvang of deelneem in die omgewings impak evaluerings proses kan U die volgende persoon kontak:

Zama Khumalo
Synergistics Environmental Services (Pty) Ltd
Tel: (011) 807 8225
Fax: (011) 807 8226
Email: zama@synergistics.co.za
Postal Address: P o Box 1822, Rivonia, 2128

Synergistics Environmental Services

REAGEER ASB. VOOR 26 JULIE 2010 OP HIERDIE KENNISGEWING

Free State Legislature

INVITATION TO TENDER

FREE STATE LEGISLATURE WINTER PROJECT

The Free State Provincial Legislature facilitates the winter project to enable public representatives to contribute in a practical way to improving the lives of

GEKLASSIFISEERD

paying the right social grant, to the right person at the right time and place. NJALO!

sassa

INVITATION FOR SUPPLIERS TO EXPRESS THEIR INTEREST FOR THE ISSUING OF SOCIAL RELIEF OF DISTRESS (SRD)

An invitation to express interest is hereby extended to all retailers/general dealers in various regions, at both district and local levels, for the issuing of Social Relief of Distress (SRD) through the redemption of a voucher system for identified beneficiaries.

SASSA desires to obtain the service of suppliers to issue goods to Social Relief of Distress beneficiaries. The service provider will be appointed as independent service provider on the terms and conditions of the service level agreement.

Enquiries for Northern Cape: Technical enquiries please contact Jeffrey Khalipa on 053 802 4900, Supply Chain Management enquiries please contact Mrs Thelma Moitse 053 802 7707 and Ms Tebogo Sitsili 053 802 7733

Equiries for Western Cape: Technical enquiries please contact Munroe Jeftha on 021 469 0393
Supply Chain Management enquiries please contact Mr Oliver Van Wyk on 021 469 0365

The closing time and date for the submission of applications is 11:00 on the 30 June 2010

Interested parties are requested to collect relevant documents at the following offices

Frances Baard District(NC) Ms Tebogo Sitsili	Pixley Ka Seme District (NC) Mr Thanduxolo Jobe	Siyanda District (NC) Mr Shimane Mokoena
8th Floor, Du Toitspan Building 95-97 Du Toitspan Road Kimberley, 8301, Tel no: 053 802 7733	Cnr. Main and Schreiner Street De Aar, 7000 Tel no:053 632 6000	27 Scott Street, Old Orange Building, Private Bag X5911 Upington, 8800, Tel: 015 291 7406
John Taolo Gaetsewe District (NC) Ms Gopolang Moeti	**Namakwa District (NC) Ms Annelerie Oppel / Mr Samuel Ruiter**	**Western Cape Regional Office (WC) Mr. Oliver Van Wyk**
13-17 Mahindra Building Main Road, Kuruman, 8460 Tel No: 053 714 3533	No5 Hospitaal Street Springbok, 8240 Tel no: 027 718 1757	Golden Acre, Adderly Street, Cape Town, Private Bag X9189, Cape Town, 8000, Tel: 021 469 0365

JT 0069

NOTIFICATION OF ENVIRONMENTAL IMPACT ASSESSMENT PROCESS
GRAVENHAGE PROJECT: DEVELOPMENT OF A MANGANESE MINE, HOTAZEL NORTHERN CAPE

Aquila Steel (South Africa) (Pty) Ltd, a subsidiary of Aquila Resources Limited, intends mining manganese ore deposits on the Farm Gravenhage 703 / 114, located approximately 60 km north of Hotazel in the Northern Cape Province. The proposed mine will involve the production of approximately 1,5 million tons of ore per annum over a period of 15 to 20 years.

Applications will be made to the following government departments for environmental approval of the project:

- Department of Mineral Resources, under Section 22 of the Minerals and Petroleum Resources Development Act No 28 of 2002 (Mining Right Application)
- Department of Water Affairs, under Section 21 of National Water Act No 36 of 1998 (Integrated Water Use Licence)
- Department of Environmental Affairs and Nature Conservation or John Taola Gaetswene District Municipality, under the Section 38 of the National Environmental Management: Air Quality Act No 39 of 2004 (Atmospheric Emissions Licence)

Applications have been made to the Department of Environmental Affairs and Nature Conservation under National Environmental Management Act No 107 of 1998 for activities listed in terms of Regulation 386 and 387 (Ref: NC/JTG/HOT/MANG1/12/2010) and to the National Department of Environmental Affairs for a Waste Management Licence Application for waste related activities (Ref 12/9/11/L288/9).

Synergistics Environmental Services (Pty) Ltd has been appointed as independent environmental consultants responsible for undertaking the necessary work required to inform the above authority of potential impacts and to gain their decisions. A scoping and environmental impact assessment (EIA) process will be completed in order to identify potential environmental and social impacts of the development and to establish the possible mitigation measures.

Should you wish to find out more about the project or participate in the EIA process, please contact:

Zama Khumalo
Synergistics Environmental Services (Pty) Ltd
Tel. 011 807 8225
Fax: 011 807 8226
E-mail: zama@synergistics.co.za
Postal Address: PO Box 1822, Rivonia 2128

Synergistics Environmental Services

PLEASE RESPOND TO THIS ADVERT BEFORE 26 JULY 2010

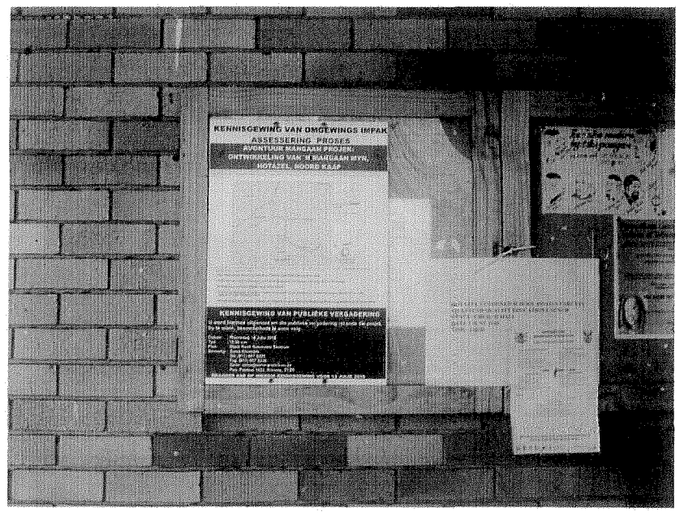
SYNERGISTICS/KB/91EF

KENNISGEWINGS

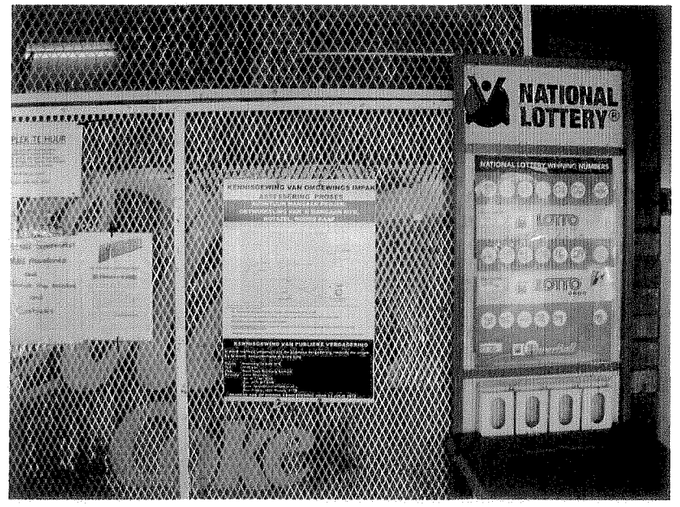
BETREKKINGS

Quality Controller (Fixed-term contract)

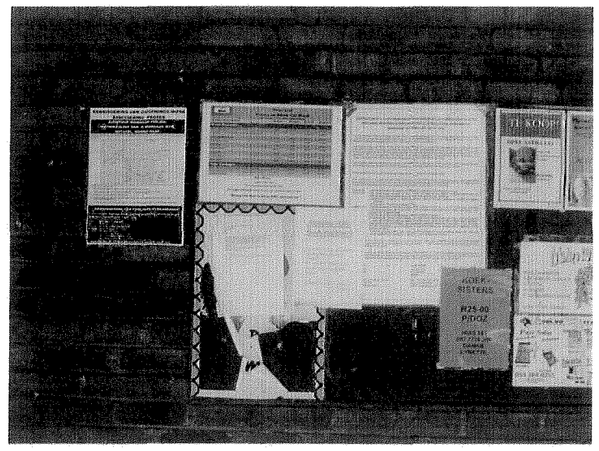
PROOF OF SITE NOTIFICATION



Notice at Hotazel Post Office



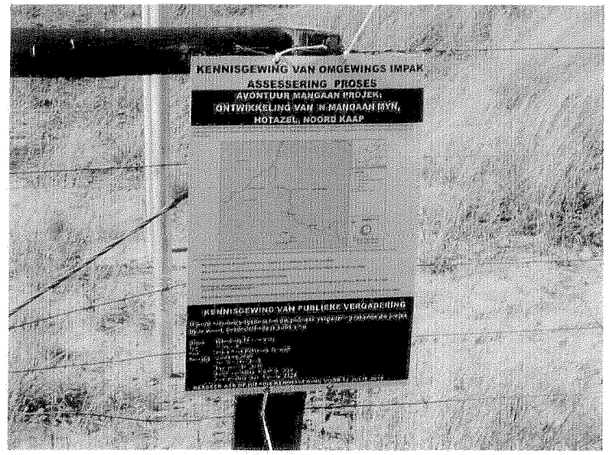
Notice at Hotazel Shops



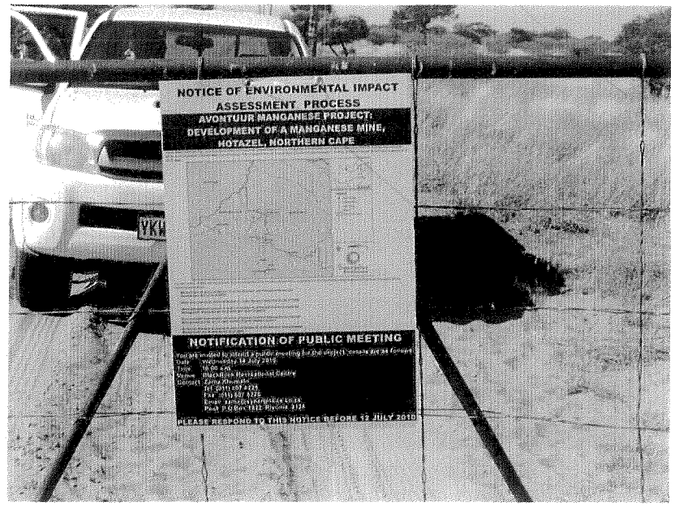
Notice at BlackRock Shops

Notice at BlackRock Recreational Club

Site Notice at the turn off to Wessels Mine



Site Notice at the Boundary of the Site



Notice at the entrance to the Farm Gravenhage 703/114

Appendix 5: Background Information Document

POROJEKE YA AVONTUUR MANGANESE
KAGO YA MOEPOWAMANKANESE, HOTAZEL, KAPA BOKONE
TOKOMANE YA TSHEDIMOSETSO YA LEMORAGO

MATSENO

Aquila Steel (S Africa) Pty Ltd (Aquila) e e leng setlamopotlana se se ruilweng ka botlalo ke Aquila Resources Limited ga jaana se mo tseleng ya go tlhotlhomisa kgonagalo ya go epa kwa Grahenhage Resource e e mo polasing ya Gravenhage 703/144 e ka phopholetso e leng 60 km kwa bokone ba Hotazel mo Porofenseng ya Kapa Bokone. Porojeke ya Avontuur Manganese e tlaa nna mo lefelong le le welang mo taolong ya Mmasepala wa Kgaolo ya John Taola Gaetswene (Leba Setshwantsho sa 1).

Porojeke ya Avontuur Manganese e tlaa akaretsa go epa 1.5 Mt ya mankanese ka ngwaga ka lobakak lwa dingwaga di le 15 go ya go di le 20. Llaga e e seng boteng e tlaa epiwa pele, go dirisiwa mokgwa wa go epa wa mokoti o o bulegileng. Morago ga moo go tlaa fitlhelelwa dillaga tse di kwa teng mme di tlaa epiwa ka mekgwa ya go epa ka kwa tlase ga lefatshe.

Phetolo ya ditswammung e tlaa akaretsa go thuga le go fefera mo go tlaa direlwang mo lefelong la kepo. Manya tlaa thothelwa kwa Hotazel ka terena gore a tle a romelwe kwa ntle ag naga.

Aquila e mo tseleng ya go tsenyetsa porojeke e lekwalokopo la go nna le tshwanelo ya go epa. Kopo e e tlaa tsenngwa go ya ka Karolo ya 22 ya molao wa Tlhabololo ya Diminerale le Metswedithuso ya Peteroleamo (No 28 wa 2002) go Lefapha la Metswedithuso ya Diminerale la Kapa Bokone.

BOIKAELELO BA TOKOMANE

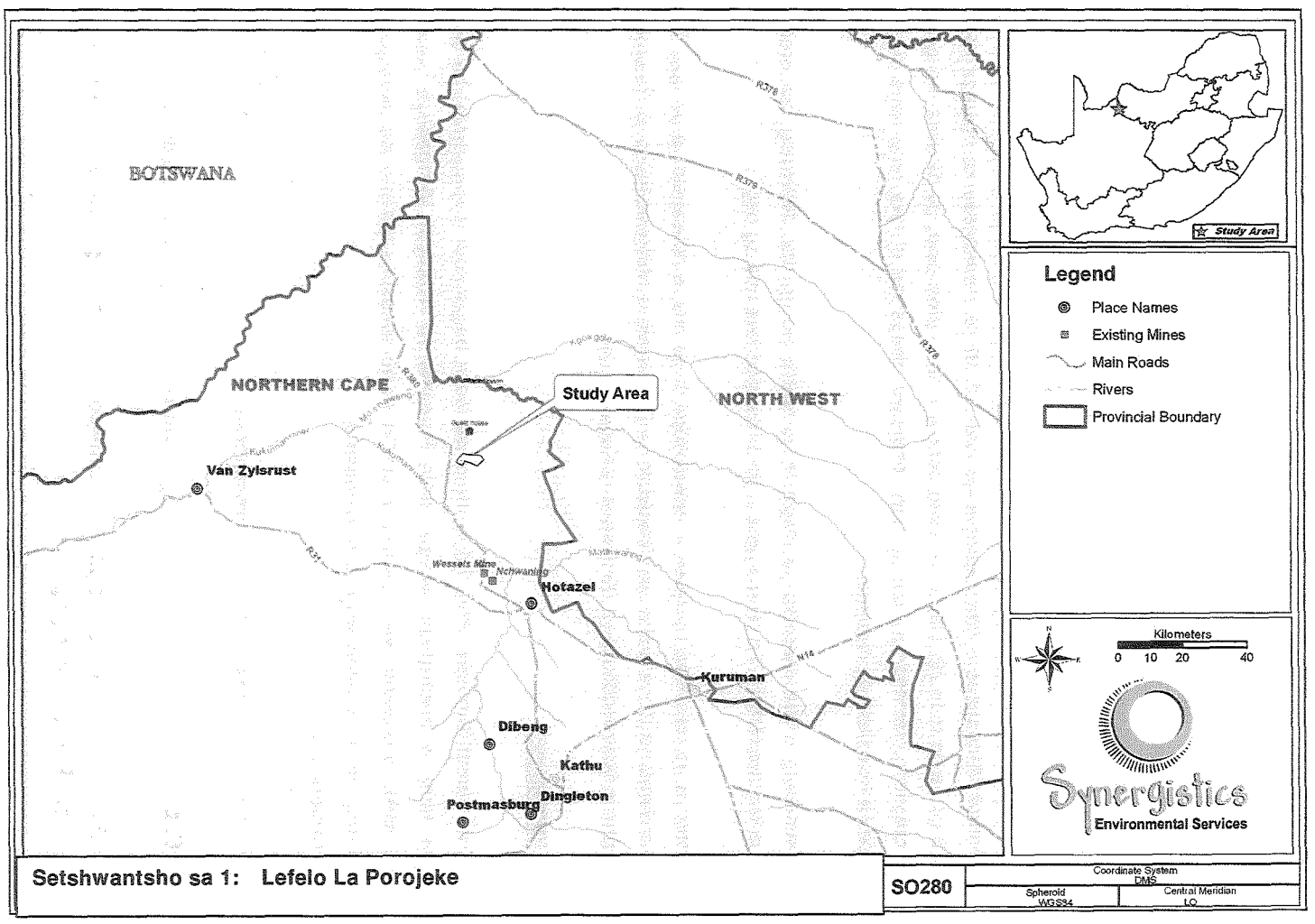
Synergistics Environmental Services (Pty) Ltd e tlhomilwe jaaka bagakolodi (consultants) ba tikologo ba ba ikemetseng ba ba nang le boikarabelo jwa go direla Porojeke ya Avontuur Manganese tshekatsheko ya kamo ya tikologo (EIA). Boikaelelo jwa tsamaiso e ya EIA ke go sekaseka dikamo tsa tikologo le tsa loago tse di ka kgonagalang tse di ka amanngwang le porojeke e.

Boikaelelo jwa tokomane e ke:

- Go go itsise ka porojeke ya Avontuur Manganese;
- Go tlhalosa ditlhokego tsa semolao tebang le Melao ya Tikologo ya Aforika Borwa:
- Go go fa tšhono ya go ikwadisa jaaka mokgatlhegi le moamegi (interested or affected party (IAP)) le gore tseye karolo mo tiregong ya EIA;
- Go go fa tšhono ya go botsa dipotso le go tlhagisa dikgang kgotsa matshwenyego;

Synergistics
Environmental Services

LEFELO LA POROJEKE

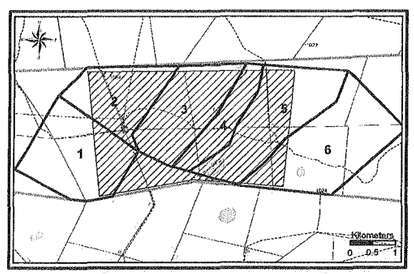


TLHALOSO YA POROJEKE

DINTLHAKAKARETSO TSA POROJEKE

Tirego ya go Epa

Go epa g tlaa simolola ka mekgwa ya go epa mokoti o o bulegileng mme se se tlaa ntsha mankanese ya moleng jo bo fa gare go ya go jo bo kwa godimi mo dingwageng tsa ntlha tse 5 tsa moepo. Dingwga tse di setsetseng tse 10 o ya go tse 15 di tlaa akaretsa go epa ka af tlase ga lefatshe go dirisiwa segolo mekgwa ya boto le pilara.



Setshwantsho sa 2: Diboloko tse Moepo wa Avontuur tse di tshitshintsweng

Kgato ya 1: Kgato ya ntlha e tlaa akaretsa go epa ga ntlha ga Boloko ba . Tloso yam mu le Motlhaba wa Kalahari e tlaa dirwa go upolola
Banded Ironstone (BIF) le llaga ya ntlha ya manya a mankanese.

Kgato ya 2: BIF e tlaa tlosiwa mo kgatong ya bobedi go upolola laga ya mankanese, e e tlaa epiwang ka mekgwa ya mokoti o o bulegileng go tswa kwa bokwatlaseng ba moepo.

Kgato ya 3: Mo kgatong e, kepo ya mokoti o o bulegileng e tlaa emisediwa ka iketlo ka kepo ya ka fa tlase ga lefatshe. Kepo ya ka fa tlase ga lefatshe e tlaa fitlhelelwa go tswa mangopeng a a mo leboteng le le kwa godimo a kepo ya open cut mining mme morago ga moo go tlaa dirisiwa kepo ya doto le pilara go tsweletsa go epa ka fa tlase ga lefatshe.

Kgato ya 4: Kgato ya 4 e tlaa akaretsa go epiwa ga Diboloko tsa 1,2,4,5 le 6 go dirisiwa mekgwa ya go epa ya ka fa tlase ga lefatshe.

Phetolo

Phetolo ya manya e tlaa akaretsa thugo ya ntlha, thugo ya bobedi, phefero ya go omile le phefero ya go le metsi. Morago manya a tlaa kokoanngwa go ka ka kereiti ya one mo segotlong sa kokoanyo. Go ntshiwa ga lorole go ltaa direlwa thogo ya ntlha le ya bobedi. Seretse se se dirwang ka phefero e e metsi se tlaa thothelwa kwa mogobeng wa seretse.

Thwalo

Manya a tlaa thothelwa kwa Hotazel ka tsela e e teng ya R380 go ya kwa Bophirima ba lefelo la go epa. Manya otlhe a tlaa isiwa kwa seteišenepotlaneng kwa Hotazel mme a tlaa tsenngwa mo matorokong go isiwa kwa bareking baba a romelang kwa ntle.

Ditlhokego tsa Dithulaganyetso Mafaratlhatlha

Dithulaganysetso st mafaratlhatlha tse di latelang le tsone di tlaa tlhokafala mo tshegetsong ya ditiro tsa moepo:

- mogala wa motlakase wa 22 kV & dijenereitara tsa tshoganyetso.
- Lefelo la phetolo ya leswe la mantle;
- Lefelo la polokelo ya matlakala le mantseka;
- Lefelo la polokelo ya leokwane;
- Ditlamelo tsa tlhaeletsano;
- Ditlamelo tsa metsi a pula a a kgokologang & taolo ya kgotlelo;
- Dikago tsa tsamaiso tsa kakaretso tse di nang le diofisi le mafelo a go phaka diriri;
- Ntlo ya go fetola diaparo le matlwana a botlhapelo le boitiketso.
- Mafelo a bodirelo, a polokelo le lefelo la paakanyo ya dirori
- Laboratori.
- Marobalo a mophato wa baagi mo lefelong la kepo.
- Marobalo a babereki mo Hotazel gongwe le mo dikgaolong tse di mabapi

TSHEKATSHEKO YA KAMO YA TIKOLOGO (EIA)

TIREGO YA THEBOLELO TIKOLOGO

Tshekatsheko ya Kamo ya Tikologo (EIA) e tlaa dirwa jaaka go kailwe mo Setshwantshong sa 3. EIA e tlaa tlhokiwa go pakela dikopo tse di latelang tsa semolao:

- Kopo ya Tshwanelo ya go Epa (Molao wa Molao wa Tlhabololo ya Diminerale le Metswedithuso ya Peteroleamo No 28 wa 2002)
- Kopo ya Thebolelo ya Tikologo (Taolo ya Tikologo ya Bosetshaba Act No 107 of 1998)
- Kopo wa Laesense ya Taolo ya Matlakala (Taolo ya Tikologo ya Bosetšhaba: Molao wa Matlakala No 59 wa 2009)
- Kopo ya Laesense ya Kueletso mo Lefaufaung (Taolo ya Tikologo ya Bosetšhaba: Molao wa Boleng ba Mowa No 39 wa 2004)
- Kopo ya Laesense ya Tiriso ya Metsi (Molao wa Metsi wa Bosetšhaba No 36 wa 1998).

TLHOTLHOMISO YA TIKOLOGO

Tlhotlhomiso ya tikologo e akaretsa go kaiwa ga dikgang tsa konokono tsa tikologo tse di tshwanetseng go tlhotlhomisiwa mo EIA. Se se tlaa akaretsa therisano le bakgatlhegi le baamegi (IAPs) gore go tle go kaiwe merero ya bone le matshwenyego. Go tlaa nna le kopano ya setšhaba. Bogolo ba tiro ya dithutopatlisiso bo tlaa bewa. Pego ya Tlhotlhomiso e tlaa bewa gore setšhaba se e sekaseke se be se tshwaele mo go yone.

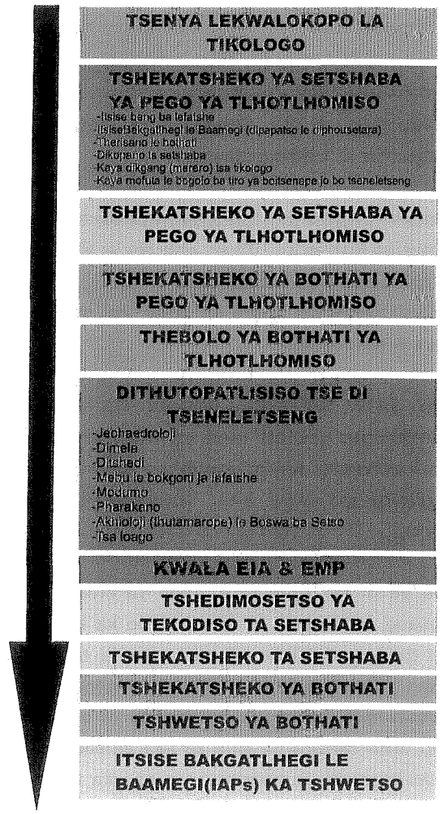
TSHEKATSHEKO YA KAMO YA TIKOLOGO (EIA)

EIA e akaretsa tero ya tlhotlhomiso ka baitseanape ba ba farologaneng ba tikologo le tshekatsheko ya dikamo tsa tikologo le loago ts aporojeke. Tshedimosetso ya tekodiso e tlaa fiwa setšhaba tebang le diphitlhelelo tsa tshekatsheko.

THUAGANYO YA TAOLO YA TIKOLOGO

Environmental Management Programme (EMP)

EMP e akaretsa go kwalwa mo go tseneletseng ga dikgato tsa taolo (tsamaiso), tse di tlhokegang go netefatsa gore go ngotliwa dikamo ts aporojeke le gore go okediwa dikamo tsa yone tse di molemo. Pego ya EIA le EMP di tlaa nna teng gore di sekasekwe ke setšhaba le go tshwaelwa ka ga tsona



Setshwantsho sa 3: Tirego ya EIA

TIREGO YA BOTSAYAKAROLO JWA SETŠHABA

O KA TSAYA KAROLO JANG MO TIREGONG YA EIA?

O ka tsaya karolo mo tiregong ya EIA ka:

- Go ikwadisa jaaka motho yo o "Kgatlhegang le yo o Amegang";
- Go re fa dintlha ts abatho ba bangwe ba ba ka kgatlhegelang kgotsa ba amiwang ke porojeke;
- Go tla dikopanong tsa setšhaba;
- Go lere dikgang tsa gago matshwenyego le dipotso tse di kwadilweng kwa go Synergistics; le
- Go sekaseka dipego le go re fa tshedimosetso ya tekodiso le tshwaelo

KITSISO KA KOPANO YA SETŠHABA

LETLAHA: 14 Phukwi 2010
LEFELO: Blackrock Recreational Sports Centre
NAKO: 10:00 am
MOGOLAGANI: Zama Khumalo
Mogala: (011) 807 8225
Fekese: (011) 807 8226
Imeili: zama@synergistics.co.za

TSWEETSWEE TLHOMAMISA GO TSENELA GA GAGO 12 PHUKWI 2010

LETLHARE LA DIKARABO
POROJEKE YA AVONTUUR MANGANESE
KAGO YA MOEPO WA MANKANESE, HOTAZEL, KAPA BOKONE

Busetsa letlhare le le tladitsweng go: Zama Khumalo
Synergistics Environmental Services
Fekese: 011 807 8226
Imeili: zama@synergistics.co.za
PO Box 1822, Rivonia, 2128

Leina le Sefane:	
Leina la Polasa/Setheo:	
Aterese:	
Mogala:	
Selefounu:	
Fekese:	
Imeili:	
Letlha:	
Tshaeno:	

Ke puo efe e ratang go tlhaelediwa ka yone? (tsweetswee tshwaya)?

English		Afrikaans	

Fa o itse mongwe yo a <u>tshwanetseng go itsisiwe ka porojeke e, tsweetswee re fe dintlha tsa gagwe tsa kgolagano.</u>

Leina le Sefane:		
Leina la Polasa/Setheo:		
Mogala:		
Selefounu:		
Fekese:		
Imeili:		

DIKGANG, MATSHWENYEGO LE DIPOTSO
(dirisa ditsebe tse dingwe fa go tlhokega)

DITSHWAELO TSOTLHE DI TSHWANETSE GO FITLHA KWA GO RONA E SENG GO FETA LETLHA LA 30 PHUKWI 2010

AVONTUUR MANGAAN PROJEK

ONTWIKKELING VAN `N MANGAAN MYN NABY HOTAZEL, NOORD KAAP

AGTERGROND INFORMASIE DOKUMENT

INLEIDING

Aquila Steel (S Africa) Pty Ltd (hierna Aquila), wat besit word deur Aquila Resources Limited, is tans in die proses besig met `n ondersoek na die moontlik ontginning van dieGravenhage mangaan hulpbron op die plaas Gravenhage 703/144, ongeveer 60 km noord van Hotazel in die Noord-Kaap provinsie. Die Avontuur Mangaan Projek word gevind in die John Taola Gaetswene Distrik Munisipaliteit (verwys na Figuur 1).

Die Avontuur Mangaan Projek behels die ontwikkeling van 'n myn wat ongeveer 1.5 Mt mangaan erts per jaar oor `n tydperk van 15 tot 20 jaar sal myn. Die vlak soom sal aanvanklik gemyn word deur middel van oopgroef myn metodes, gevolg deur die dieper soom wat bewerk sal word deur ondergrondse myn metodes.

Prosesseering van die mangaan sluit in breking en skermings prosesse wat sal plaasvind op die myn terrein.Die erts sal deur swaertrokke na die Hotazel treinspoor vervoer word waarby dit per trein uitgevoer sal word

Aquila is tans in die proses om aansoek vir die mynregte vir die projek te bekom. Die aansoek word ingedien in terme van Afdeling 22 van die Minerale & Petroleum Hulpbron Ontwikkelings Wet (Nr. 28 van 2002) aan die Noord Kaap Departement van Mineraal Hulpbronne.

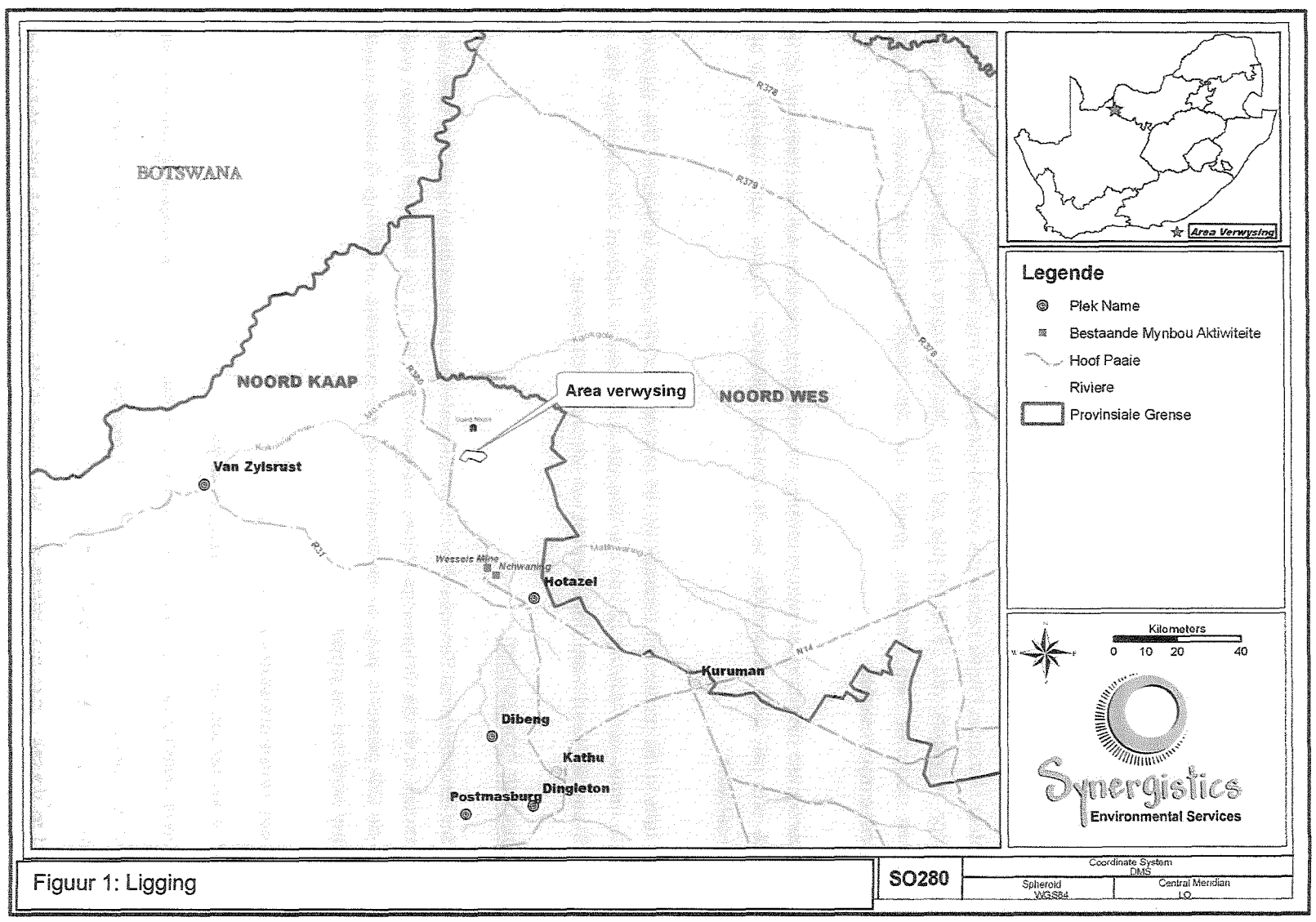
DOEL VAN DIE DOKUMENT

Synergistics Environmental Services (Pty) Ltd is aangestel as onafhanklike omgewings konsultante wat verantwoordelik is vir die Omgewings Impak Assesseering(OIA) vir die Avontuur Mangaan projek. Die doel van die OIA proses is gerig op die identifisering van potensiele omgewings & sosiale impakte wat geassosieer word met die projek.

Die doel van hierdie dokument is om:

- U in kennis stel van Avontuur Mangaan projek.
- Verduideliking van die wetlike vereistes in terme van omgewings wetgewing van Suid Afrika;
- U te voorsien met die geleentheid om te registreer as geintresseerde & geaffekteerde party (IAP) en sodoende betrokke te raak in die OIA proses.
- U te voorsien met die geleentheid waar vrae gevra kan word asook bespreking van enige bekommernisse.

PROJEK LIGGING



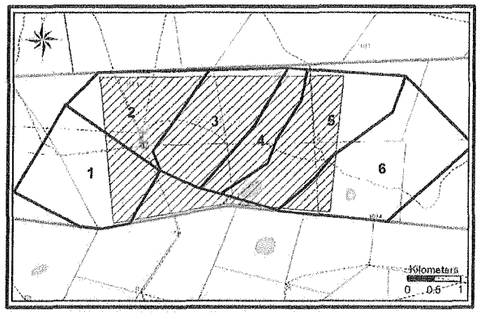
Figuur 1: Ligging

PROJEK BESKRYWING

PROJEK OORSIG

Myn Proses

Myn werke sal begin deur middel van oopgroef metodes en produksie sal oorheers word deur medium tot hoë graad mangaan erts vir ongeveer die eerste 5 jaar van die myn se bestaan. Die oorblywende 10 tot 15 jaar sal ondergrondse myn werke wees wat meestal pilaar myn metodes behels.



Figuur 2: Beplande Avontuur Myn Area

Fase 1: Die eerste fase behels die mynvan blok 3. Verwydering van die oortolgige materiaal en Kalahari sand sal onderneem word vir die blootstelling van Gebande Ystererts Formasies (GYF) asook die eerste soom mangaan erts

Fase 2: Die GYF sal verwyder word gedurende die tweede fase om so die mangaan soom te ontbloot, wat daarna deur tradisionele oopgroef metodes gemyn sal word.

Fase 3: Gedurende hierdie fase sal die oopgroef mynwerke stelselmatig vervang word deur ondergrondse myn werke. Ondergrondse myn werke sal onstaan deur toegang te verkry deur die wal van die oopgroef werke en hiernamaals sal pilaar mynwerke in gebruik word vir die ondergrondse werke.

Fase 4: Hierdie fase behels die myn van Blokke 1, 2, 4, 5 en 6 deur middel van ondergrondse myn metodes.

Prosesseering

Die prosesseering van die erts sluit in die primere en sekondere breking van erts asook droeë en nat skerming. Erts sal geberg word volgens die graad of kwaliteit daarvan. Stof ekstraksie sal vir primere sowel as sekondere breking voorsien word. Slik wat gedurende die nat skerming ontstaansal na `n slikdam op die myn terrein vervoer word.

Vervoer

Erts sal deur middel van swaer voertuie na Hotazel vervoer word via die bestaande R380 pad aan die weste van die myngrens. Alle erts sal na `n treinspoor kanting in Hotazel geneem word waar dit op treinwaens gelaai sal word vir uitvoer na die kliente mark.

Infrastruktuur Benodighede

Die volgende infrastruktuur word benodig vir die effektiewe myn van die erts :

- 22 kV kraglyn en nood krag opwekkers
- Riool werke;
- Afval & skroot storings area;
- Brandstof stoorings area;
- Kommunikasie fasiliteite;
- Stormwater afloop & besoedelings beheer fasiliteite;
- Algemene Administratiewe kantore asook parkeer area;
- `n Aantrek en ablusie fasiliteit.
- Werkswinkels, store en diensarea vir voertuie;
- Labratorium;
- Tydelik akkomodasie vir die konstruksie werksmag op terrein.
- Akkomodasie vir operasionele werksmag in en omringende die Hotazel area.

PUBLIEKE DEELNAME PROSES

OMGEWINGS GOEDKEURING PROSES

`n Omgewings Impak Assesseering (OIA) sal onderneem word soos verduidelik in Figuur 3. Die OIA sal vereis word word in ondersteuning van die volgende regs aansoeke:

- Myn Reg Aansoek (Mineraal & Petroleum Hulpbron Ontwikkelings Wet, Nr 28 van 2002)
- Omgewings Magtigings Aansoek (Nasionale Omgewingsbestuur Wet, Nr 107 van 1998)
- Afval Bestuurs Lisensie Aansoek (Noord Kaap Departement van Omgewingsake en Natuur Beskerminge DONB)
- Atmosferiese Uitlaat Lisensie Aansoek (Nasionale Omgewingsbestuur Lugkwaliteitsl Wet Nr 59 van 2009)
- Water Gebruiks Lisensie Aansoek (Nasionale Water Wet Nr 36 van 1998).

Omgewings Bestek Studie

`n Bestek studie behels die identifiseering van sleutel omgewings kwessies wat in die OIA ondersoek word. Dit behels die konsultasie met IAP's om sodoende hul kwessies en bekommernisse te identifiseer. `n Publieke vergadering sal gehou word om publike bekommernisse en kwessies te identifieseer. Die bestek studie sal bepaal watter spesialis studies van toepassing gaan wees vir die projek .Die bestek studie verslag sal beskikbaar gemaak word vir publieke oorsig en kommentaar.

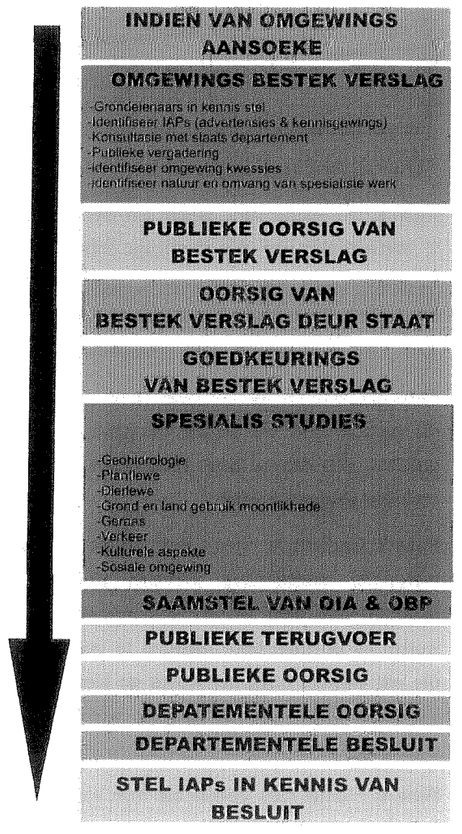
Omgewings Impak Assesseering

Die OIA behels die onderneming van ondersoeke deur verskillende omgewings spesialiste wat gemik is veral op die omgewing en sosiale impakte van die projek. Terugvoer oor die spesialiste se bevindings sal aan die publiek gegee word sodra dit afgehandel is.

Omgewings Bestuur Program (OBP)

Die OBP bestaan uit dokumentasie wat noukeurige maatstawwe beskryf hoe om negatiewe impakte van die projek to mitigeer en om positiewe impakte te bevoordeel.

Die OIA verslag en die OBP sal beskikbaar gestel word vir publieke oorsig en kommentaar.



Figuur 3: **OIA Proses**

PUBLIEKE DEELNAME PROSES

Hoe kan U betrokke raak in die OIA proses?

U kan betrokke raak deur volgende te doen:

- Registreer as `n geintresseerde en Geaffekteerde party
- Deur ons te voorsien van kontak besonderhede van persone wat geintresseerde of geaffekteer word deur die projek;
- Bywoning van publieke vergadering(s);
- Enige kwessies, bekommernisse of vrae aan Synergistics te verksalin skrif; en
- Nasien van verslae en lewering van kommentaar en terugvoer..

KENNISGEWING VAN PUBLIEKE VERGADERING

DATUM: 14 Julie 2010
PLEK: Blackrock Rekreasie Sports Sentrum
TYD: 10:00
Bevestig: Zama Khumalo
Tel: (011) 807 8225
Faks: (011) 807 8226
Epos: zama@synergistics.co.za

BESPREEK U BYWONING VOOR 12 JULY

TERUGVOER VEL
AVONTUUR MANGANESE PROJEK
ONTWIKKELING VAN 'N MANGAAN MYN NABY HOTAZEL, NOORD KAAP

Stuur voltooide terugvoer vel: Zama Khumalo
Synergistics Environmental Services
Faks: 011 807 8226
Epos: zama@synergistics.co.za
Posbus 1822, Rivonia, 2128

Naame en Van:	
Plaas naam/organisasie:	
Adres:	
Telefoon:	
Sel nr:	
Faks:	
Epos:	
Datum:	
Handtekening:	

In watse taal sal U korrespondensie wil ontvang (merk asb)?

Engels		Afrikaans	

Indien U van enige persone wee t wat gekontak moet word oor die projek, sal U asb hul besonderhede verskaf:

Naam en Van:		
Plaas naam/organisasie		
Telepfoon:		
Selfoon:		
Faks:		
Epos:		

Kwessies, bekommernisse of vrae **(gebruik addisionel blaaie indien nodig)** **ALLE KOMMENTAAR MOET ONS BEREIK TEEN 30 JULIE 2010**

AVONTUUR MANGANESE PROJECT

DEVELOPMENT OF A MANGANESE MINE, HOTAZEL, NORTHERN CAPE

BACKGROUND INFORMATION DOCUMENT

INTRODUCTION

Aquila Steel (S Africa) Pty Ltd (Aquila) a wholly owned subsidiary of Aquila Resources Limited is currently in the process of investigating the feasibility of mining the Gravenhage Resource located on the farm Gravenhage 703/144 approximately 60 km north of Hotazel in the Northern Cape Province. The Avontuur Manganese Project will be located in the area which falls within the jurisdiction of the John Taola Gaetswene District Municipality (Refer to Figure 1).

The Avontuur Manganese Project will involve the mining of approximately 1.5 Mt of manganese ore per annum over a period of 15 to 20 years. The shallow seam will be mined initially, using open pit mining methods. Thereafter, the deeper seams will be accessed and mined by underground methods.

Processing including crushing and screening will take place on site. The ore will then be trucked to Hotazel for export via rail.

Aquila is in the process of applying for the mining right for the project. This application will be submitted in terms of Section 22 of the Minerals and Petroleum Resources Development Act (No 28 of 2002) to the Northern Cape Department of Mineral Resources.

PURPOSE OF THE DOCUMENT

Synergistics Environmental Services (Pty) Ltd has been appointed as independent environmental consultants responsible for undertaking the environmental impact assessment for the Avontuur Manganese Project. The purpose of the EIA process is to assess the potential environmental and social impacts associated with the project.

The purpose of this document is to:

- Inform you of the Avontuur Manganese Project;
- Explain the legal requirements in terms of the Environmental Laws of South Africa;
- Provide you with an opportunity to register as an interested or affected party (IAP) and become involved in the EIA process;
- Provide you with an opportunity to ask questions and raise issues or concerns;

Synergistics
Environmental Services

PROJECT LOCATION

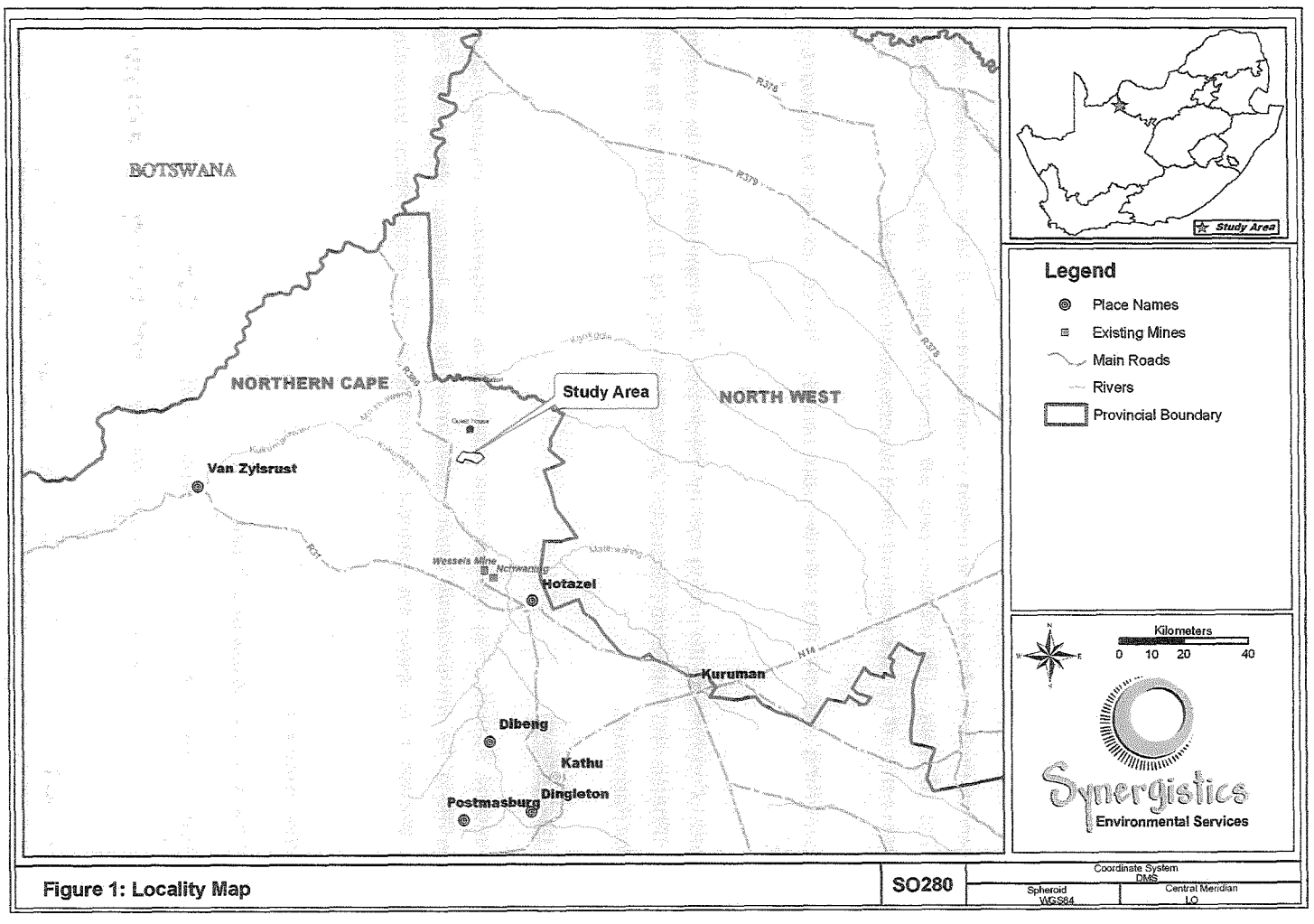


Figure 1: Locality Map

SO280

Coordinate System: DMS
Spheroid: WGS84
Central Meridian: LO

PROJECT DESCRIPTION

PROJECT OVERVIEW

Mining Process

Mining will commence via open pit methods and this will produce predominantly medium and high grade manganese ore for the first 5 years of the life of the mine. The remaining 10 to 15 years will involve underground mining mainly by board and pillar methods.

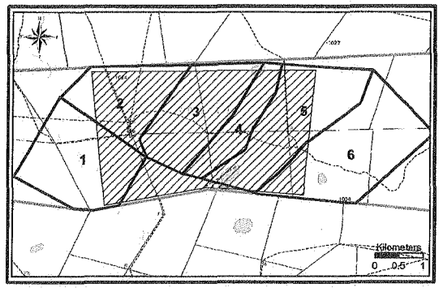


Figure 2: Avontuur Proposed Mine Blocks

Phase 1: The first phase will involve the initial mining of Block 3. Removal of overburden and Kalahari sand will be undertaken to expose the Banded Ironstone (BIF) and the first seam of manganese ore. **Phase 2:** The BIF will be removed during the second phase to expose the manganese seam, which will be mined by traditional opencast methods from the pit floor.

Phase 3: During this phase open pit mining will be gradually replaced by underground production. Underground mining will be accessed from declines in the high wall of the open cut mining and thereafter bord and pillar mining will be used to advance the underground mining.

Phase 4: Phase 4 will involve the mining of Blocks 1,2,4,5 and 6 using underground mining methods.

Processing

The processing of the ore will include primary crushing, secondary crushing, dry screening and wet screening. Ore will then be stockpiled according to grade at the stockpile yard. Dust extraction will be provided for the primary and secondary crusher. Slurry produced during wet screening will be transported to a slurry pond.

Transportation

Ore will be trucked to Hotazel via the existing R380 road to the west of the mining area. All ore will be taken to a siding at Hotazel and loaded onto wagons for export customers.

Infrastructural Requirements

The following infrastructure will be also required in support of the mining operations:

- 22 kV powerline & emergency generators.
- A sewage treatment works;
- Refuse & scrap storage areas;
- Fuel storage area ;
- Communication facilities;
- Stormwater run-off & pollution control facilities;
- General administrative blocks with offices & parking areas;
- A change house and ablutions.
- Workshops, stores and service area for vehicles
- A laboratory.
- Accommodation for the construction workforce on site.
- Accommodation for the operational workforce in Hotazel and possibly surrounding areas.

ENVIRONMENTAL IMPACT ASSESSMENT

ENVIRONMENTAL APPROVAL PROCESS

An Environmental Impact Assessment (EIA) will be undertaken as illustrated In Figure 3. The EIA will be required in support of the following legal applications:

- Mining Right Application (Minerals and Petroleum Resources Development Act No 28 of 2002)
- Environmental Authorisation Application (National Environmental Management Act No 107 of 1998)
- Waste Management Licence Application (National Environmental Management: Waste Act No 59 of 2009)
- Atmospheric Emission Licence Application (National Environmental Management: Air Quality Act No 39 of 2004)
- Water Use Licence Application (National Water Act No 36 of 1998).

Environmental Scoping

Scoping involves the identification of key environmental issues to be investigated in the EIA. This will involve the consultation with IAPs in order to identify their issues and concerns. A public meeting will be held. The scope of work for specialist studies will be developed. The Scoping Report will be made available for public review and comment.

Environmental Impact Assessment

The EIA involves the undertaking of investigations by various environmental specialists and the assessment of the environmental and social impacts of the project. Feedback will be given to the public of the findings of the assessment.

Environmental Management Programme (EMP)

The EMP involves the documentation of detailed management measures, required to ensure that negative impacts of the project are minimised and positive impacts are enhanced.

The EIA Report and the EMP will be made available for public review and comment.

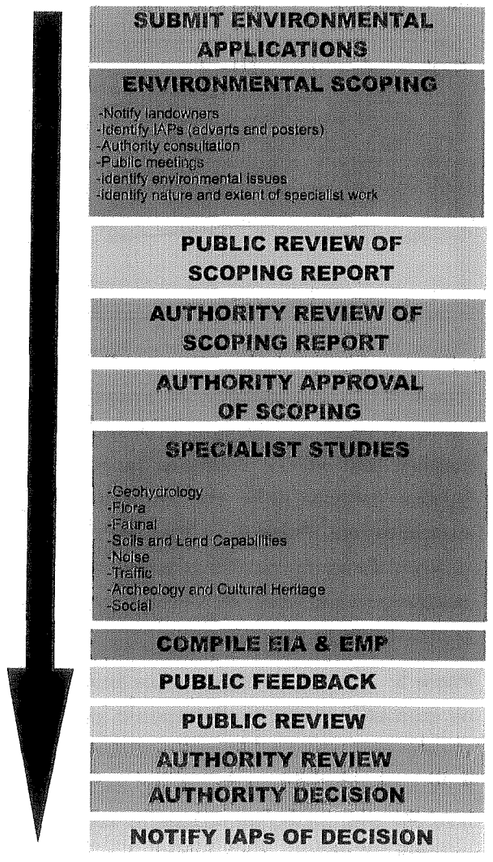


Figure 3: EIA Process

PUBLIC PARTICIPATION PROCESS

HOW CAN YOU GET INVOLVED IN THE EIA PROCESS?

You can get involve in the EIA process by:

- Registering as an "Interested and Affected Party";
- Providing us with details of other persons that may be interested in or affected by the project;
- Attending public meetings;
- Submitting your issues, concerns and questions in writing to Synergistics; and
- Reviewing reports and providing feedback and comment.

NOTIFICATION OF PUBLIC MEETING

DATE:	**14 July 2010**
VENUE:	**Blackrock Recreational Sports Centre**
TIME:	**10:00 am**
CONTACT:	**Zama Khumalo**
	Tel: (011) 807 8225
	Fax: (011) 807 8226
	Email: zama@synergistics.co.za

PLEASE CONFIRM ATTENDANCE BEFORE 12 JULY 2010

RESPONSE SHEET
AVONTUUR MANGANESE PROJECT
DEVELOPMENT OF A MANGANESE MINE, HOTAZEL, NORTHERN CAPE

Return completed sheet to: Zama Khumalo
Synergistics Environmental Services
Fax: 011 807 8226
E-mail: zama@synergistics.co.za
PO Box 1822, Rivonia, 2128

Name and Surname:	
Farm name/organisation:	
Address:	
Telephone:	
Cell phone:	
Fax:	
E-mail:	
Date:	
Signature:	

What is your preferred language of correspondence (please tick)? English ☐ Afrikaans ☐

If you know of someone who should be informed of the project, please provide us with their contact details:

Name and Surname:		
Farm name/organisation:		
Telephone:		
Cell phone:		
Fax:		
E-mail:		

ISSUES, CONCERNS AND QUESTIONS **(use additional pages if required)** **ALL COMMENTS MUST REACH US BY 30 JULY 2010**

Appendix 6: Minutes of the Public Information Sharing Meeting

AVONTUUR MANGANESE PROJECT
MINUTES OF THE PUBLIC INFORMATION MEETING
Development of a Manganese Mine, Hotazel, Northern Cape

Date: 14 July 2010
Time: 10h00
Venue: Blackrock Recreational Sport Centre

Present:

Louis Hauman	LH	Soetvlakte
Lizbe Hauman	LizH	Gravenhage
Deon Hoon	DH	Severn Boere Vereniging
Gerrie van der Westhuizen	GvdW	John Taolo Gaestwene District Municipality
Bonolo Lekwa	BL	Assmang Manganese Black Rock Mine Operations
Tiowane Mathilbe	TM	Assmang Manganese Black Rock Mine Operations
Dorcas Moremi	DM	Ward Councillor (ward 1) Madibeng Village, Moshaweng Municipality
Louw van der Walt	LvdW	Stillewoning
J Markram	JM	Voortzicht
HP Venter	HP	Saltrim Ranches
Willem P van der Walt	W vdW	Plaas Eksodus buurplaas
Rorisang McVigar Leboko	RML	Madibeng (Severn)
Evacious Leboko	EL	Madibeng
Wendy Williams	WW	Aquila Steel (S. Africa) Pty Ltd
Su-Marie Erasmus	SM	Aquila Steel (S. Africa) Pty Ltd
Mike Halliday	MH	Aquila Steel (S. Africa) Pty Ltd
Tobie Nortje	TN	Aquila Steel (S. Africa) Pty Ltd
Sipho Mpumlwana	SM	Motjoli Resources (Pty) Ltd [Partner in Rakana JV with Aquila]

Jimmy Shiganga	JS	Motjoli Resources (Pty) Ltd [Partner in Rakana JV with Aquila]
Craig Stockhill	CS	Performance Partners [Contratcted by Aquila as Project Manager to Avontuur Manganese Project]
Deon Rossouw	DR	Aquila Steel (S. Africa) Pty Ltd
Mashadi Monaledi	MM	Metago Strategy4good
Zama Khumalo	ZK	Synergistics Environmental Services
Kerry Fairley	KF	Synergistics Environmental Services
Divan van der Merwe	DvdM	Synergistics Environmental Services

RECORD OF DISCUSSIONS

1. INTRODUCTION AND PURPOSE OF THE MEETING

1.1 Divan vd Merwe (DvdM) commenced the meeting by confirming that it was in order that the meeting to be chaired in Afrikaans. He indicated that he would translate into English should there be a need and that the attendees should stop him should he need to translate anything. The meeting agreed that this was in order.

1.2 Representatives of Synergistics, MetagoStrategy4Good and Aquila Resources introduced themselves to the meeting.

1.3 DvdM explained that the purpose of the meeting was to:

- Inform interested and affected parties of the proposed development;
- Explain the environmental impact assessment (EIA) process; and
- To collate issues and concerns for inclusion in the EIA process.

1.4 DvdM explained that this was the beginning of the EIA process and that the aim was to get an understanding of the public issues and concerns. He emphasised that it would not be possible to give all the answers at this stage as the EIA studies are still to be undertaken.

1.5 DvdM indicated that this would not be the only opportunity to ask questions and that the persons present would be consulted throughout the process. The consultants would be available to address issues throughout the process.

2. PROJECT DESCRIPTION

2.1 Deon Rossouw (DR) commenced the presentation with explaining more about Aquila.

2.2 DR gave an overview of the Aquila management based in Australia (see attached presentation).

2.3 DR discussed the mining operations and projects and in Western Australia and Queensland including coal and iron ore mining operations. Maps of the location of the projects in were presented (see attached presentation).

2.4 DR indicated that Aquila has 3 projects in Botswana which together are termed the Arsenjo Energy Project.

2.5 DR explained that in South Africa is known as Aquila Steel, which forms part of Aquila Resources an Australian company.

2.6 DR indicated that Aquila Steel have offices in Thabazimba and near Groblershoop.

2.7 DR explained that a while back the government took a decision to export iron-ore through Saldanha, manganese through Port Elizabeth and coal through Richards Bay.

2.8 The Avontuur Project is the northern most Aquila project in the Northern Cape. Other projects include the Kathu Project between Mamatwan and Sishen, a project to the South of Kolomela Mine and the fourth between Marydale and Prieska namely the Orange River Project.

2.9 DR gave the background to the Avontuur Project. The prospecting rights were issued in February 2007 and in the same year an aerial magnetic survey was undertaken. Drilling commenced in September 2007.

2.10 DR explained the location of the ore body on the farm Gravenhage (see attached presentation).

2.11 DR explained that the manganese is divided into two sections in the ore body. There is diabase that divides the ore body. He indicated that the ore body consists of circa 65 million tonnes of ore. Certain of approximately 17.4 million tonnes of manganese ore,and this could change in future with further exploration results.

2.12 Louis Haumann (LH) questioned the depth of the ore body, the top layer and the lower layer. DR indicated that there is 50 m of sand and 10 m of calcrete that overlies the ore body. Thus there is approximately 60 m to the edge of the ore body which then extends to about 350 to 360 m.

2.13 DR presented the initial layout of the mining operation. He explained that the area will be fenced and access will be via the existing route.

First 7 years have open pit operations. There will be a waste rock dump at the border of LH's farm. There will be offices and workshops as well as slurry ponds. There will be a large topsoil stockpile for the purpose of rehabilitation. There will be stockpile areas for the mixing of the ore grades.

2.14 95% of manganese mined is used in the steel-making process. 5% is used for metallurgical purposes and chemical industry.

2.15 South Africa has 80% of the worlds' manganese reserves. However, South Africa only sells 14% of the world's manganese.

2.16 DR presented photos showing the rehabilitation of the prospecting boreholes.

2.17 Mining will be by open pit with inclines into the ore body. The processing will include primary and secondary crushing followed by washing and sizing. Washing results in the slimes that will be placed in slimes dams.

2.18 The indication at present is that the mine will use 2 MW of power and Aquila is currently negotiating with Eskom, but this might may change in future..

2.19 No train line will be constructed as the expense is R 8 million per kilometre, which is not feasible for a mine of this size. The ore may thus be transported by road to a siding at Hotazel.

2.20 At the mine the ore will be loaded and then transported to Hotazel. Options could exist to rail the ore to Port Elizabeth and possibly Saldanha.

2.21 H Venter (HV) questioned about the water consumption of the mine. DvdM indicated that this would be addressed later.

2.22 DR indicated that for the open pit operations there will be approximately 300 employees. For the underground section there will be approximately 450 people. The questions regarding sourcing of people and where they will be housed are part of the studies that are to be done for the project.

2.23 DR presented some photographs of manganese crystals.

3. ENVIRONMENTAL LEGISLATIVE REQUIREMENTS

3.1 DvdM explained that consideration has to be given to the Minerals and Petroleum Resources Development Act, the National Water Act, the National Environmental

Management Act as well as the waste act and the air quality act that fall under the National Environmental Management Act. These acts require that certain studies are done and approvals have to be given under these acts before the project can commence. All acts prescribe that an environmental impact assessment is required before the project can commence.

3.2 DvdM explained that the EIA is made up of three parts: scoping study; environmental impact assessment and environmental management programme.

3.3 DvdM explained that the scoping study involves getting an overview of the environment and the environmental issues and from this a plan of study for the EIA is drafted. The public participation process forms part of the Scoping which includes identifying interested and affected parties and involving them in the process. Alternatives are identified e.g. alternative transport routes. Specialist studies required are identified and specialist incorporated into the project team.

3.4 The environmental impact assessment used the findings of the specialist studies to rate the significance of the impacts. The environmental management programme indicates how the impacts are to be managed.

3.5 Lizbe Haumann (LizH) questioned if there are any projects that have been stopped as a result of the environmental impact assessment process. Kerry Fairley (KF) indicated that recently a mine the Eastern Cape was stopped due to inadequate consultation of the communities. LH indicated that there is concern that the mining companies get their mining rights regardless of the negative impact it might have on the environment. He emphasised that there needs to be an understanding between the farmers and Aquila from the beginning otherwise there will be conflict. He noted the burning issues as being water (most concerning and in his view the largest impacting aspect of them all), Dust (from trucks) and Road damage (from usage). He indicated that environmental issues will cost Aquila money and we need to be honest and open with each other as to how these are going to be addressed. He indicated that there are already high impacts on groundwater as a result of mining operations in the area. He used Kumba Iron Ore's Sishen Mine as an example. He also mentioned the impact on the Gamagara River.

3.6 HV indicated that there is no study on the dust from movement of vehicles. He explained that the dust affects the grazing capacity of the land and this must be addressed.

3.7 DvdM indicated that all reports will be made available for public review and Synergistics will be available to discuss issues and to make sure these are

addressed.

3.8 LH raised the concern that it is possible that Aquila could get rid of Synergistics and appoint new consultants if they don't like the manner in which issues are being addressed.

3.9 DvdM explained that once the environmental management programme is approved this becomes law and it must be implemented.

3.10 DR indicated that Aquila can't go ahead without the mining right application without the environmental impact assessment and the impact assessment will not be approved if the public haven't been properly consulted.

3.11 DvdM indicated that studies that are planned will address the following: dust; lowering of the water table; clearance of vegetation; heritage; land use; traffic and noise.

3.12 DvdM presented the specialists to be involved in the project (see attached presentation).

3.13 He indicated that dust fallout and PM10 monitoring will be undertaken. There will be a dispersion modelling undertaken to predict the dispersion of dust. If dust levels at the boundaries are too high then additional mitigation will need to be included.

3.14 There will be groundwater study looking at water levels and water quality. It is likely that there will be dewatering and this will be modelled to determine the extent of the impact. The impacts on the farmer's water resources will be assessed by this mean.

3.15 There will be a socio-economic study looking at impacts of the influx of persons for the mine.

3.16 Fauna and flora studies will identify sensitive species and habitats.

3.17 Studies will look at the pre-mining land capability and this will provide input into the rehabilitation studies in order that the rehabilitation can be planned to return the land as far as possible to the pre-mining state.

3.18 A traffic impact assessment will be undertaken. Heritage resources on the site will also be identified. The impact of noise on the environment will also be assessed including the identification of noise receptors.

3.19 All specialist studies will be made available for public review.

3.20 Deon Hoon (DH) indicated that there will be additional roads associated with the development of houses e.g. at Madibeng. KF indicated that if there is going to be an extension to separate housing development there would need to be a separate impact assessment for that development. KF suggested that the municipality were opposed to the development of housing away from Hotazel and that future housing would be an extension to the existing town. Gerrie vd Westhuizen (GvdW) confirmed that this was the case and that Hotazel Local Municipality is the closest formalised area to Gravenhage. He indicated that housing developments should be near Hotazel in line with the municipality strategy on housing development and stated that the municipality will insist on developments at Hotazel. He requested that the housing needs be identified as early as possible.

3.21 H Venter (HV) indicated that persons from Madibeng will work at the mine. He suggested that the upgrading of the roads is thus a critical issue.

3.22 DvdM explained that public participation process. He indicated that to participate through registering as an interested and affected party. He indicated that if you fill in the register of submit a response form, you will be registered as an interested and affected party.

3.23 Bonolo Lekwa (BL) questioned how the documentation will be made available to the public. DvdM indicated that if you are registered you will be notified by post. KF indicated that depending on the project it can be decided how best to make the documents available. The documents are made available on the internet. Hard copies can also be made available to persons who do not have internet access as well as CD copies. BL emphasised that different media must be used as not everybody has access to the internet. KF indicated that it would be best to contact registered persons once the reports are available in order to confirm the best means of making the information available.

3.24 DvdM indicated that initial issues need to be submitted by 30 July 2010.

3.25 LizH questioned as to whether comments will still be accepted after 30 July 2010. DvdM indicated that to be included in the Scoping Report, comments are to be submitted by that date. However, there will be further opportunities to comment and raise issues. Issues can be raised at any time within the process.

4. QUESTIONS AND DISCUSSION

4.1 LizH indicated that there is a game camp (farm Caledonia) located immediately

adjacent to where the waste rock dump will be located and that the impacts of noise and dust on the game need to be assessed.

4.2 BL asked where water will be sourced for the mine. DR indicated that the water needs of the plant are not known as the plant has not been designed as yet. DvdM indicated that the water supply would most probably be sourced from the dewatering activities at the mine.

4.3 GvdW indicated that the impact on water supply boreholes at van Zylsrus would need to be considered. DvdM indicated that this would form part of the groundwater study. DR added that monitoring of boreholes will have taken place over a few years by the time the mining commences. KF asked that the farmers work with the geohydrologists with respect to finding out the location and use of boreholes.

4.4 Louw van der Walt (LvdW) raised concern that several impact assessments have been done but there is no one monitoring compliance. DvdM indicated that the management programme is a legal document.

4.5 LH raised concern that the prospecting boreholes are not closed and this can lead to groundwater contamination. This emphasises that measures are simply not implemented. The concern is about management in accordance with the agreements made with the local persons.

4.6 DvdM indicated that it may be useful to establish a forum as they have at Kolomela Mine where every two months the mine manager is available to address issues raised by the neighbouring farmers. DR indicated that issues must be brought to the attention of the Aquila personnel. DvdM asked that there should be suggestions from the community as how to manage issues going forward.

4.7 JM indicated that the attendance at meetings gets less and less and the process of consultation ends. He agreed that regular meeting is a suitable means for providing persons an opportunity to raise issues.

4.8 There was a request that the project description be given in English. It was agreed that the presentation would be repeated after the meeting in English.

4.9 DH indicated that if the groundwater resources are impacted on, farming is not possible on the land. He also indicated that the impacts are not limited to the immediate neighbours. DvdM indicated that the groundwater model will provide an indication of the extent of the groundwater impact. If the mine company changes the new company will also be responsible for monitoring and rehabilitation.

4.10 DR indicated that rehabilitation funds need to be made available for rehabilitation prior to the issuing of the mining right. The funds will be available even if Aquila goes bankrupt. The information is available in the financial statements.

4.11 Mrs vd Walt indicated that Assmang are expanding (Current 1.8 Mt/ann to 12 Mt/ann in 2012) and it will important to consult with surrounding mines. This is especially important in terms of the cumulative groundwater impact. KF indicated that the cumulative impact is very important and the information on groundwater impacts from surrounding mines will need to be considered. DR indicated that Assmang needs to also go through an impact assessment process.

4.12 Mrs vd Walt questioned how long the EIA process takes. DvdM indicated that the process is long and will take approximately 9 to 12 months.

4.13 DH requested that the municipality be involved in ensuring that road upgrades be done to standard. DvdM indicated that there are national standards for roads.

4.14 GvdW indicated that the road networks are not designed for the carrying of heavy vehicles. The traffic also causes other social impacts. KF suggested that the road development and maintenance is the responsibility of the roads authority.

4.15 HV suggested that in the past there were indications that the road passed Avontuur was to be tarred. Perhaps there is a possibility given the new mine that the road can perhaps be tarred. DR suggested that it needs to be considered as the maintenance of the gravel road may be such that it is worthwhile to tar the road. The roads authority need to be informed.

4.16 GvdW indicated that if persons are sourced from Madibeng it will relieve pressure on housing. There is an environmental management programme for the municipal area and this will be made available. It was requested that the municipality give input into the socio-economic impact assessment as well as into the social and labour plan. The municipality will fall under Moshaweng Local Municipality after the next election. Aquila should join the mining sector working group. GvdM questioned about the visual impacts as the Kalahari has tourism potential and much money has been spent on tourism. The question of landfill availability needs to be looked at carefully. The Development Facilitation Act needs to be looked at. In addition the secondary benefits of mining needs to be addressed by further beneficiation taking place in the region rather than being exported. The municipality want to know where the people will live and emphasised that skills need to be retained in the community.

4.18 Moshadi Monaledi (MM) indicated that MetagoStrategy4Good have been consulting with the municipality with respect to projects that can be included in the social and labour plan.

4.19 Rorisang Leboko (RL) raised the issue regarding the road condition between Avontuur Mine and Hotazel. Concern was also raised regarding the dust generated due to mine traffic. DvdM indicated that a traffic impact study will be done as well as an air quality study. It was requested that Aquila source labour from local areas. Infrastructure development should also be developed in the area. Local procurement was also emphasized.

4.20 BL indicated that Aquila should have an environmental manager that will assist Aquila with the implementation of environmental management measures. DR indicated that Aquila Steel has about 8 people in South Africa. Aquila is currently setting up a head office with the necessary expertise including an environmental manager. Sipho Mpumlwana (SM) said it is important that the community has access to independent person who can act on their behalf regarding environmental issues. The community will not trust the environmental manager from the mine as that person acts on behalf of the mine. BL indicating that there needs to be an environmental manager as this is the correct way to operate as a responsible company.

4.21 Mrs vd Walt indicated that the health impacts associated with manganese need to be looked at as well as health services in the areas. It was explained that there are no health services such in the area.

4.22 DH indicated that MTN have an approved tower that still needs to be developed. Perhaps Aquila should liaise with MTN to expedite this process.

4.23 LizH asked how she can get access to the Annual Report. It was indicated that it is available on the Aquila website.

4.24 LizH asked whether there are any other resources that are being considered for future mining. DR indicated that there is 5 years of future prospecting work to be done. The life of mine for Avontuur Project is more than 15 years, but less than 30 years. A mining right can only be issued for 30 years. The mining right application is only for the farm Gravenhage.

4.25 LizH asked what will happen to the land after mining. DR indicated that the land will be rehabilitated and will probably be sold for farming in the future. DvdM indicated that the areas surrounding the mining disturbance will need to be managed. The impact assessment will address what should be done with to

mitigate the impacts.

4.26 LizH questioned if the mine dumps will be levelled. DvdM indicated it is unlikely. The slopes need to be modified to ensure that vegetation can establish. DR indicated that the topsoil will be stripped to be used for rehabilitation. LizH indicated that such areas will not be suitable for farming.

4.27 GvdW questioned if safety and security is being addressed in the social impact study. MM responded that all aspects of social development will be addressed included safety and security.

4.30 GvdW questioned if the waste rock would be suitable for road construction as it would be a greater impact if additional borrow pits need to be used.

A question was raised on why local products are exported and not used in the area of extraction to ensure economic growth.

5. CLOSURE AND WAY FORWARD

5.1 DvdM indicated that the comments for the scoping phase need to be submitted by 30 July 2010.

5.2 KF reminded those present that all persons interested in hearing the project description presentation in English should stay behind and the project team would be willing to run through the project description again.

Minutes compiled by:

Kerry Fairley
Synergistics Environmental Services
Director
22 November 2010

PLEASE SUBMIT COMMENTS OR CORRECTIONS TO THE MINUTES BEFORE 7 DECEMBER 2010 TO:

Zama Khumalo
Avontuur Manganese Project

Synergistics Environmental Services (Pty) Ltd
Fax: 011 807 8226
Email: zama@synergistics.co.za

AVONTUUR-MANGAANPROJEK
NOTULE VAN DIE OPENBARE INLIGTINGSVERGADERING

Ontwikkeling van 'n Mangaanmyn, Hotazel, Noord-Kaap

Datum: 14 Julie 2010
Tyd: 10h00
Plek: Blackrock-ontspanningsportsentrum

Teenwoordig:

Louis Hauman	LH	Soetvlakte
Lizbe Hauman	LizH	Gravenhage
Deon Hoon	DH	Severn Boerevereniging
Gerrie van der Westhuizen	GvdW	John Taolo Gaestwene-distriksmunisipaliteit
Bonolo Lekwa	BL	Assmang Manganese Black Rock Mine Operations
Tiowane Mathilbe	TM	Assmang Manganese Black Rock Mine Operations
Dorcas Moremi	DM	Wyksraadslid (Wyk 1) Madibeng Village, Moshaweng-munisipaliteit
Louw van der Walt	LvdW	Stillewoning
J Markram	JM	Voortzicht
HP Venter	HP	Saltrim Ranches
Willem P van der Walt	W vdW	Plaas Eksodus buurplaas
Rorisang McVigar Leboko	RML	Madibeng (Severn)
Evacious Leboko	EL	Madibeng
Wendy Williams	WW	Aquila Steel (S. Africa) Edms Bpk
Su-Marie Erasmus	SM	Aquila Steel (S. Africa) Edms Bpk
Mike Halliday	MH	Aquila Steel (S. Africa) Edms Bpk

Tobie Nortje	TN	Aquila Steel (S. Africa) Edms Bpk
Sipho Mpumlwana	SM	Motjoli Resources (Edms) Bpk [Vennoot in Rakana gesamentlike onderneming met Aquila]
Jimmy Shiganga	JS	Motjoli Resources (Edms) Bpk [Vennoot in Rakana gesamentlike onderneming met Aquila]
Craig Stockhill	CS	Performance Partners [Deur Aquila gekontrakteer as Projekbestuurder vir die Avontuur-mangaanprojek]
Deon Rossouw	DR	Aquila Steel (S. Africa) Edms Bpk
Mashadi Monaledi	MM	MetagoStrategy4good
Zama Khumalo	ZK	Synergistics Environmental Services
Kerry Fairley	KF	Synergistics Environmental Services
Divan van der Merwe	DvdM	Synergistics Environmental Services

REKORD VAN BESPREKINGS

1. INLEIDING EN DOEL VAN DIE VERGADERING

1.1 Divan vd Merwe (DvdM) begin die vergadering deur te bevestig dat dit in orde is dat die vergadering in Afrikaans gelei word. Hy dui aan dat hy in Engels sal vertaal indien nodig en dat die aanwesiges hom moet stop as hy iets moet vertaal. Die vergadering kom ooreen dat dit in orde is.

1.2 Verteenwoordigers van Synergistics, MetagoStrategy4Good en Aquila Resources stel hulself aan die vergadering voor.

1.3 DvdM verduidelik dat die doel van die vergadering is om –

- belanghebbende en geaffekteerde partye in te lig oor die voorgestelde ontwikkeling;
- die omgewingsimpakbepaling (OIB)-proses te verduidelik; en
- kwessies en kwellings in te win vir insluiting in die OIB-proses.

1.4 DvdM verduidelik dat dit die begin van die OIB-proses is en dat die doel is om 'n begrip van die openbare kwessies en kwellings te kry. Hy beklemtoon dat dit nie moontlik is om in hierdie stadium ál die antwoorde te verstrek nie omdat die OIB-studies nog gedoen moet word.

1.5 DvdM dui aan dat dit nie die enigste geleentheid sal wees om vrae te stel nie en dat die persone teenwoordig dwarsdeur die proses geraadpleeg sal word. Die konsultante sal dwarsdeur die proses beskikbaar wees om aan kwessies aandag te gee.

2. PROJEKBESKRYWING

2.1 Deon Rossouw (DR) begin die aanbieding deur meer oor Aquila te verduidelik.

2.2 DR gee 'n oorsig van Aquila se bestuur, wat in Australië gebaseer is (kyk aangeheg).

2.3 DR bespreek die mynboubedrywighede en projekte in Wes-Australië en Queensland, insluitende steenkool- en ysterertsmynbedrywighede. Kaarte van die ligging van die projekte word vertoon (kyk aangeheg).

2.4 DR sê Aquila het drie projekte in Botswana wat saam die Arsenjo-energieprojek genoem word.

2.5 DR verduidelik dat die maatskappy in Suid-Afrika as Aquila Steel bekend staan, wat deel uitmaak van Aquila Resources, 'n Australiese maatskappy.

2.6 DR sê Aquila Steel het kantore in Thabazimbi en naby Groblershoop.

2.7 DR verduidelik dat die regering 'n tyd gelede besluit het om ystererts deur Saldanha, mangaan deur Port Elizabeth en steenkool deur Richardsbaai uit te voer.

2.8 Die Avontuur-projek is die noordelikste Aquila-projek in die Noord-Kaap. Ander projekte sluit in die Kathu-projek tussen Mamatwan en Sishen, 'n projek suid van die Kolomela-myn en die vierde tussen Marydale en Prieska, naamlik die Oranjerivierprojek.

2.9 DR gee die agtergrond vir die Avontuur-projek. Die prospekteerregte is in Februarie 2007 uitgereik, en in dieselfde jaar is 'n lugmagnetiese opname gedoen. Boorwerk het in September 2007 begin.

2.10 DR verduidelik die ligging van die ertsliggaam op die plaas Gravenhage (kyk aangeheg).

2.11 DR verduidelik dat die mangaan in twee afdelings in die ertsliggaam verdeel is. Daar is diabaas wat die ertsliggaam verdeel. Hy sê die ertsliggaam bestaan uit ongeveer 65 miljoen ton erts. Hulle is seker van nagenoeg 17,4 miljoen ton

mangaanerts, en dit kan in die toekoms verander na aanleiding van verdere eksplorasieresultate.

2.12 Louis Haumann (LH) vra oor die diepte van die ertsliggaam, die bolaag en die onderste laag. DR sê daar is 50 m sand en 10 m kalkreet bo-oor die ertsliggaam. Dit is dus ongeveer 60 m tot by die ertsliggaam, wat dan tot ongeveer 350 tot 360 m strek.

2.13 DR verduidelik die aanvanklike uitleg van die mynbedrywigheid. Hy verduidelik dat die gebied omhein sal word en dat toegang via die bestaande roete sal wees.

Die eerste sewe jaar sal oopgroefmynbou wees. Daar sal 'n afvalrotshoop by die grens van LH se plaas wees. Daar sal kantore en werkwinkels asook flodderdamme wees. Daar sal 'n groot bogrondhoop wees vir rehabilitasie. Daar sal voorraadhoopgebiede wees vir die meng van die ertsgrade.

2.14 95% van die mangaan wat ontgin word, word in die staalvervaardigingsproses gebruik. 5% word vir metallurgiese doeleindes en in die chemiese nywerheid gebruik.

2.15 Suid-Afrika het 80% van die wêreld se mangaanreserwes. Suid-Afrika verkoop egter net 14% van die wêreld se mangaan.

2.16 DR toon foto's van die rehabilitasie van die prospekteerboorgate.

2.17 Mynbou sal deur die oopgroefproses geskied, met skuins gange tot in die ertsliggaam. Prosessering sal insluit primêre en sekondêre vergruising, gevolg deur was en groottesortering. Die wasproses lei tot die slik wat in slikdamme gestort sal word.

2.18 Die huidige aanduiding is dat die myn 2 MW krag sal gebruik, en Aquila onderhandel tans met Eskom, maar dit kan in die toekoms verander.

2.19 Geen spoorlyn sal gebou word nie, want die koste is R8 miljoen per kilometer, wat nie doenlik is nie vir 'n myn van hierdie grootte. Die erts sal dus padlangs na 'n sylyn by Hotazel vervoer word.

2.20 By die myn sal die erts gelaai en dan na Hotazel vervoer word. Daar kan opsies wees om die erts per trein na Port Elizabeth en moontlik Saldanha te vervoer.

2.21 H Venter (HV) stel 'n vraag oor die waterverbruik van die myn. DvdM dui aan dat dit later bespreek sal word.

2.22 DR sê vir die oopgroefbedrywighede sal daar ongeveer 300 werknemers wees. Vir

die ondergrondse deel sal daar sowat 450 mense wees. Die vrae oor waar die mense gekry sal word en waar hulle gehuisves sal word, is deel van die studies wat as deel van die projek gedoen moet word.

2.23 DR wys 'n paar foto's van mangaankristalle.

3. VEREISTES VAN OMGEWINGSWETGEWING

3.1 DvdM verduidelik dat oorweging geskenk moet word aan die Wet op Minerale en Petroleum Hulpbronne, die Nasionale Waterwet en die Wet op Nasionale Omgewingsbestuur asook die wetgewing oor afval en luggehalte wat onder die Wet op Nasionale Omgewingsbestuur val. Hierdie wette vereis dat sekere studies gedoen moet word en dat goedkeuring gegee moet word voordat die projek kan begin. Al die wette vereis 'n omgewingsimpakbepaling voordat die projek kan begin.

3.2 DvdM verduidelik dat die OIB uit drie dele bestaan: 'n omvangbepalingstudie, 'n omgewingsimpakbepaling en 'n omgewingsbestuursprogram.

3.3 DvdM verduidelik dat die omvangbepalingstudie behels dat 'n oorsig gekry word van die omgewing en die omgewingskwessies, en op grond hiervan word 'n studieplan vir die OIB opgestel. Die proses van openbare deelname maak deel van die omvangbepalingsfase uit, wat behels dat belanghebbende en geaffekteerde partye geïdentifiseer en by die proses betrek word. Alternatiewe word geïdentifiseer, bv. alternatiewe vervoerroetes. Spesialisstudies wat nodig is, word geïdentifiseer en spesialiste word in die projekspan opgeneem.

3.4 Die omgewingsimpakbepaling gebruik die bevindings van die spesialisstudies om die belangrikheid van die impakte te bepaal. Die omgewingsbestuursprogram toon hoe die impakte bestuur moet word.

3.5 Lizbe Haumann (LizH) vra of daar enige projekte is wat gestop is as gevolg van die omgewingsimpakbepalingsproses. Kerry Fairley (KF) sê 'n myn in die Oos-Kaap is onlangs gestop as gevolg van gebrekkige oorlegpleging met die gemeenskappe. LH sê daar bestaan kommer dat die mynmaatskappye hulle mynregte kry ongeag die negatiewe impak wat dit op die omgewing kan hê. Hy beklemtoon dat daar vanuit die staanspoor 'n verstandhouding tussen die boere en Aquila moet wees, anders sal daar konflik wees. Hy noem die brandende kwessies van water (die sorgwekkendste en na sy mening die grootste impakaspek van almal), stof (van vragmotors) en padskade (deur gebruik). Hy sê omgewingskwessies gaan vir Aquila geld kos en ons moet eerlik en openhartig met mekaar wees oor hoe dit hanteer gaan word. Hy sê daar is reeds groot impakte op grondwater as gevolg

van mynboubedrywighede in die gebied. Hy noem Kumba Iron Ore se Sishenmyn as 'n voorbeeld. Hy noem ook die impak op die Gamagararivier.

3.6 HV meld dat daar geen studie oor die stof van bewegende voertuie is nie. Hy verduidelik dat die stof die weidingskapasiteit van die grond beïnvloed en dit moet aandag kry.

3.7 DvdM sê alle verslae sal beskikbaar gestel word vir insae deur die publiek, en Synergistics sal beskikbaar wees om kwessies te bespreek en seker te maak dat dit aandag kry.

3.8 LH noem die besorgdheid dat Aquila van Synergistics ontslae kan raak en nuwe konsultante aanstel as hy nie hou van die manier hoe kwessies hanteer word nie.

3.9 DvdM verduidelik dat sodra die omgewingsbestuursprogram goedgekeur is, dit wet word en toegepas moet word.

3.10 DR sê Aquila kan nie sonder die aansoek vir mynregte en sonder die omgewingsimpakbepaling voortgaan nie, en die impakbepaling sal nie goedgekeur word as die publiek nie behoorlik geraadpleeg is nie.

3.11 DvdM sê die studies wat beoog word, sal die volgende dek: stof; verlaging van die watertafel; verwydering van plantegroei; erfenis; grondgebruik; verkeer en geraas.

3.12 DvdM stel die spesialiste bekend wat by die projek betrek gaan word (kyk aangeheg).

3.13 Hy sê die voorkoms van stof en PM10-monitering sal gedoen word. Verspreidingsmodellering sal gedoen word om die verspreiding van stof te voorspel. As stofvlakke by die grense te hoog is, sal bykomende versagtingsmaatreëls ingesluit moet word.

3.14 'n Grondwaterstudie sal gedoen word om na watervlakke en watergehalte te kyk. Dit is waarskynlik dat daar ontwatering sal wees, en dit sal gemodelleer word om die omvang van die impak te bepaal. Die impakte op die boer se waterhulpbronne sal op dié wyse bepaal word.

3.15 Daar sal ook 'n sosio-ekonomiese studie gedoen word om te kyk na impakte van die instroming van mense vir die myn.

3.16 Studies van die fauna en flora sal sensitiewe spesies en habitatte identifiseer.

3.17 Studies sal kyk na die grond se vermoë voor mynbou, en dit sal insette verskaf vir die rehabilitasiestudies sodat die rehabilitasie beplan kan word om die grond so ver

moontlik tot die voormynboutoestand te herstel.

3.18 'n Verkeersimpakbepaling sal gedoen word. Erfenishulpbronne op die terrein sal ook geïdentifiseer word. Die impak van geraas op die omgewing sal ook bepaal word, insluitende die identifikasie van geraasontvangers.

3.19 Alle spesialisstudies sal vir openbare insae beskikbaar gestel word.

3.20 Deon Hoon (DH) sê daar sal bykomende paaie wees wat met die ontwikkeling van huise gepaardgaan, bv. by Madibeng. KF sê as daar 'n uitbreiding van afsonderlike behuising gaan wees, sal daar 'n afsonderlike impakbepaling vir daardie ontwikkeling moet wees. KF sê die munisipaliteit is gekant teen die ontwikkeling van behuising weg van Hotazel en dat toekomstige behuising 'n verlenging van die bestaande dorp sal wees. Gerrie vd Westhuizen (GvdW) bevestig dat dit die geval is en dat die Hotazel plaaslike munisipaliteit die naaste geformaliseerde gebied aan Gravenhage is. Hy sê behuisingontwikkelings moet naby Hotazel wees in ooreenstemming met die munisipaliteit se strategie oor behuisingsontwikkeling, en hy sê die munisipaliteit sal aandring op ontwikkelings by Hotazel. Hy vra dat die behuisingsbehoeftes so vroeg as moontlik geïdentifiseer word.

3.21 H Venter (HV) sê persone van Madibeng sal op die myn werk. Hy sê die opgradering van die paaie is dus 'n kritieke kwessie.

3.22 DvdM verduidelik die proses van openbare deelname. Hy sê mense kan deelneem deur as 'n belanghebbende en geaffekteerde party te registreer. Hy sê as jy die register invul of 'n antwoordvorm indien, sal jy as 'n belanghebbende en geaffekteerde party geregistreer word.

3.23 Bonolo Lekwa (BL) vra hoe die dokumentasie aan die publiek beskikbaar gestel gaan word. DvdM sê as jy geregistreer is, sal jy per pos in kennis gestel word. KF sê afhangende van die projek kan daar besluit word wat die beste manier is om die dokumente beskikbaar te stel. Die dokumente word op die internet beskikbaar gestel. Gedrukte dokumente asook CD-eksemplare kan ook beskikbaar gestel word aan persone wat nie internettoegang het nie. BL beklemtoon dat verskillende media gebruik moet word omdat nie almal toegang tot die internet het nie. KF sê dit sal die beste wees om met geregistreerde persone te skakel wanneer die verslae beskikbaar is, sodat die beste manier om die inligting beskikbaar te stel, bevestig kan word.

3.24 DvdM sê aanvanklike kwessies moet teen 30 Julie 2010 voorgelê word.

3.25 LizH vra of kommentaar ook nog na 30 Julie 2010 aanvaar sal word. DvdM sê om

in die Omvangbepalingsverslag opgeneem te word, moet kommentaar teen daardie datum voorgelê word. Daar sal egter verdere geleenthede wees om kommentaar te lewer en kwessies te opper. Kwessies kan te eniger tyd gedurende die proses geopper word.

4. VRAE EN BESPREKING

4.1 LizH sê daar is 'n wildkamp (plaas Caledonia) reg langs waar die afvalrotshoop gaan wees en die impakte van geraas en stof op die wild moet bepaal word.

4.2 BL vra waar water vir die myn gekry gaan word. DR sê die waterbehoeftes van die aanleg is nog nie bekend nie omdat die aanleg nog ontwerp moet word. DvdM sê die watertoevoer sal heel waarskynlik uit die ontwateraktiwiteite van die myn verkry moet word.

4.3 GvdW sê die impak op watertoevoerboorgate by Van Zylsrus sal ondersoek moet word. DvdM sê dit sal deel van die grondwaterstudie uitmaak. DR voeg by dat die monitering van boorgate 'n paar jaar lank gedoen sal wees teen die tyd dat die myn begin. KF vra dat die boere met die geohidroloë moet saamwerk om die ligging en gebruik van boorgate te bepaal.

4.4 Louw van der Walt (LvdW) spreek kommer uit dat verskeie impakbepalings al gedoen is maar daar is nie een moniteringsvoldoening nie. DvdM sê die bestuursprogram is 'n regsdokument.

4.5 LH spreek kommer uit dat die prospekteerboorgate nie toegemaak word nie en dat dit tot besoedeling van die grondwater kan lei. Dit beklemtoon dat maatreëls eenvoudig nie toegepas word nie. Die kommer is oor bestuur in ooreenstemming met die ooreenkomste met die plaaslike mense.

4.6 DvdM sê dit kan nuttig wees om 'n forum te stig soos by die Kolomela-myn, waar die mynbestuurder elke twee maande beskikbaar is om te praat oor kwessies wat deur die naburige boere geopper word. DR sê kwessies moet onder Aquila-personeel se aandag gebring word. DvdM vra daar moet voorstelle uit die gemeenskap kom oor hoe om kwessies vorentoe te hanteer.

4.7 JM sê die bywoning van vergaderings word minder en minder en die proses van oorlegpleging kom tot 'n einde. Hy stem saam dat gereelde vergaderings 'n geskikte manier is om mense 'n geleentheid te bied om kwessies te opper.

4.8 Daar word versoek dat die projekbeskrywing in Engels gegee word. Daar word ooreengekom dat die aanbieding na die vergadering in Engels herhaal sal word.

4.9 DH sê as die grondwaterhulpbronne benadeel word, daar nie op die grond geboer kan word nie. Hy sê ook die impakte is nie tot die onmiddellike bure beperk nie. DvdM sê die grondwatermodel sal 'n aanduiding van die omvang van die grondwaterimpak verskaf. As die mynmaatskappy verander, sal die nuwe maatskappy ook vir monitering en rehabilitering verantwoordelik wees.

4.10 DR sê rehabilitasiefondse moet beskikbaar gestel word vir rehabilitasie voordat die mynreg uitgereik word. Die fondse sal beskikbaar wees selfs al speel Aquila bankrot. Die inligting is in die finansiële state beskikbaar.

4.11 Mev Van der Walt sê Assmang is besig met uitbreiding (tans 1.8 Mt/jaar tot 12 Mt/jaar in 2012) en dit sal belangrik wees om met omliggende myne oorleg te pleeg. Dit is veral belangrik met die oog op die kumulatiewe grondwaterimpak. KF sê die kumulatiewe impak is baie belangrik en die inligting oor grondwaterimpakte van omliggende myne sal in ag geneem moet word. DR sê Assmang moet ook deur 'n impakbepalingsproses gaan.

4.12 Mev Van der Walt vra hoe lank die OIB-proses duur. DvdM sê dis 'n lang proses en sal ongeveer 9 tot 12 maande neem.

4.13 DH vra dat die munisipaliteit betrek word om te verseker dat paaie tot die standaard opgegradeer word. DvdM sê daar is nasionale standaarde vir paaie.

4.14 GvdW sê die padnetwerke is nie vir swaar voertuie ontwerp nie. Die verkeer veroorsaak ook ander maatskaplike impakte. KF sê die ontwikkeling en instandhouding van paaie is die verantwoordelikheid van die padowerheid.

4.15 HV sê in die verlede was daar aanduidings dat die pad verby Avontuur geteer sou word. Dalk kan die pad nou geteer word as gevolg van die nuwe myn. DR sê dit moet oorweeg word omdat die instandhoudingskoste van die grondpad so hoog kan wees dat lonend kan wees om die pad te teer. Die padowerheid moet in kennis gestel word.

4.16 GvdW sê as mense van Madibeng gekry moet word, sal dit die druk op behuising verlig. Daar is 'n omgewingsbestuursprogram vir die munisipale gebied en dit sal beskikbaar gestel word. Daar word gevra dat die munisipaliteit insette gee oor die sosio-ekonomiese impakbepaling asook die maatskaplike en arbeidsplan. Die munisipaliteit sal na die volgende verkiesing onder die Moshaweng plaaslike munisipaliteit val. Aquila moet by die mynbousektorwerkgroep aansluit. GvdM vra oor die visuele impakte omdat die Kalahari toerismepotensiaal het en baie geld aan toerisme bestee word. Die kwessie van grondvulbeskikbaarheid moet deeglik ondersoek word. Die Wet op Ontwikkelingsfasilitering moet in ag geneem word.

Verder moet die sekondêre voordele van mynbou oorweeg word deur verdere veredeling wat in die gebied moet plaasvind eerder as dat grondstowwe uitgevoer word. Die munisipaliteit wil weet waar die mense sal woon en beklemtoon dat vaardighede in die gemeenskap behou moet word.

4.17 Moshadi Monaledi (MM) sê MetagoStrategy4Good voer gesprekke met die munisipaliteit in verband met projekte wat by die maatskaplike en arbeidsplan ingesluit kan word.

4.18 Rorisang Leboko (RL) opper die kwessie van die toestand van die pad tussen die Avontuurmyn en Hotazel. Kommer word ook uitgespreek oor die stof wat as gevolg van die mynverkeer sal ontstaan. DvdM sê 'n verkeersimpakstudie sal gedoen word, asook 'n luggehaltestudie. 'n Versoek word gerig dat Aquila arbeid uit plaaslike gebiede moet verkry. Infrastruktuurontwikkeling moet ook in die gebied plaasvind. Plaaslike verkryging word ook beklemtoon.

4.19 BL sê Aquila moet 'n omgewingsbestuurder hê wat Aquila sal help met die implementering van omgewingsbestuursmaatreëls. DR sê Aquila Steel het ongeveer agt mense in Suid-Afrika. Aquila is besig om 'n hoofkantoor op die been te bring met die nodige kundigheid, insluitende 'n omgewingsbestuurder. Sipho Mpumlwana (SM) sê dit is belangrik dat die gemeenskap toegang moet hê tot 'n onafhanklike persoon wat namens hulle kan optree wat omgewingskwessies betref. Die gemeenskap sal nie die omgewingsbestuurder van die myn vertrou nie omdat dié persoon namens die myn optree. BL sê daar moet 'n omgewingsbestuurder wees omdat dit die korrekte manier is om te werk as 'n verantwoordelike maatskappy.

4.20 Mev Van der Walt sê die gesondheidsimpakte wat met mangaan gepaardgaan, moet oorweeg word, asook gesondheidsdienste in die gebied. Daar word verduidelik dat daar geen gesondheidsdienste as sodanig in die gebied is nie.

4.21 DH sê MTN het 'n goedgekeurde toring wat nog ontwikkel moet word. Dalk moet Aquila met MTN skakel om die proses te bespoedig.

4.22 LizH vra hoe sy toegang tot die jaarverslag kan kry. Daar word gesê dat dit op Aquila se webwerf beskikbaar is.

4.23 LizH vra of daar enige ander hulpbronne is wat vir toekomstige ontginning oorweeg word. DR sê daar is vyf jaar van toekomstige prospekteerwerk wat gedoen moet word. Die lewensduur van die Avontuur-projek is meer as 15 jaar maar minder as 30 jaar. 'n Mynreg kan net vir 30 jaar uitgereik word. Die mynregaansoek is net vir die plaas Gravenhage.

4.24 LizH vra wat gaan na mynbou met die grond gebeur. DR sê die grond sal gerehabiliteer word en sal waarskynlik in die toekoms vir boerdery verkoop word. DvdM sê die gebiede rondom die mynversteuring sal bestuur moet word. Die impakbepaling sal kyk wat gedoen moet word om die impakte te versag.

4.25 LizH vra of die mynhope gelyk gemaak sal word. DvdM sê dit is onwaarskynlik. Die hellings sal verander moet om te verseker dat plante daar sal groei. DR sê die bogrond sal verwyder word om vir rehabilitasie gebruik te word. LizH sê sulke gebiede sal nie vir boerdery geskik wees nie.

4.26 GvdW vra of veiligheid en sekuriteit in die studie oor maatskaplike impakte ondersoek sal word. MM sê alle aspekte van maatskaplike ontwikkeling sal gedek word, insluitende veiligheid en sekuriteit.

4.27 GvdW vra of die afvalrots geskik sal wees vir padboudoeleindes, want die impak sal groter wees as bykomende leengroewe gebruik moet word.

Die vraag word gestel hoekom plaaslike produkte uitgevoer word en nie in die gebied waar dit ontgin word, gebruik word om ekonomiese groei te verseker nie.

5. AFSLUITING EN DIE PAD VORENTOE

5.1 DvdM sê die kommentaar vir die omvangbepalingsfase moet teen 30 Julie 2010 voorgelê word.

5.2 KF herinner almal teenwoordig dat almal wat die aanbieding van die projekbeskrywing in Engels wil hoor, moet agterbly en die projekspan sal met graagte die projekbeskrywing herhaal.

Notule saamgestel deur:

Kerry Fairley
Synergistics Environmental Services
Direkteur

22 November 2010

VERSKAF KOMMENTAAR OP OF REGSTELLINGS VAN DIE NOTULE ASB VOOR 7 DESEMBER 2010 AAN:

Zama Khumalo
Avontuur-mangaanprojek
Synergistics Environmental Services (Edms) Bpk
Faks: 011 807 8226
E-pos: zama@synergistics.co.za

Appendix 7: Specialist Terms of Reference

Specialist Study:	Air Quality Assessment
Specialist	Hanlie Liebenberg-Enslin Airshed Planning Professionals (Pty) Ltd
Terms of Reference	**Activities**
Data review	• Identify possible sources of existing information and negotiate access, if necessary. • Review initial project information. • Review of national and international standards and guidelines of relevance to the project. • Analyse aerial photo/satellite image to identify potentially sensitive receptors. • Determine the limitations and assumptions of the study.
Baseline data	• Establish a baseline dust monitoring network including a PM10 sampler and 8 dust fallout buckets. • Dust monitoring to include background dust fallout levels. • PM10 sampling to be undertaken on a basis of 1 day out of every 6 days and analysed for the presence of heavy metals. • Dust fallout data to be collected on a monthly basis and analysed for the presence of heavy metals. • Dust monitoring to commence as soon as possible to maximise the amount of baseline data collated for the EIA.
Collection and preparation of meteorological data files for model input	• Regional climatic and site specific atmospheric dispersion potential to be established using existing data sources from SAWS (closest weather station at Kuruman). • On site data to be collated by the installation of an on-site weather station. • On-site weather station to be installed as soon as possible to be installed as soon as possible to maximise site data to be incorporated in the modelling. • Preparation of meteorological data files for model ready input i.e. use of primary data and calculated data e.g. mixing heights.
Preparation of emissions inventory and model setup	• Sources of airborne pollutants to be identified and quantified. • The dispersion model requires emissions input data i.e. rate of release of pollutants into the atmosphere and incorporation of other input data to prepare a model ready input data files.
Dispersion modelling of	• The US EPA AERMOD dispersion model or UK ADMS3 is to be

emissions for baseline and construction and operational conditions with and without mitigation	used for dispersion simulations. • Dispersion simulations of PM10, particulate concentrations, gaseous concentrations and dust fallout from the identified construction, operations and transport are to be undertaken. • Baseline and modelled concentrations will be depicted on maps. • Predicted ground level concentrations of particulates will be stated, specifically for nearby sensitive receptors • Attention will be given to dust entrainment on private roads. • Attention will be given to emissions from bulk fuel storage areas (listed under NEM: AQA).
Impact assessment	• Evaluation of the potential human health and environmental impacts. • Potential ground level concentrations to be screened against SA national ambient air quality standards and international air quality guidelines (where applicable).
Mitigation	• Once equipped with the impact assessment and compliance evaluation, mitigation and management measures will be identified. • Target control efficiencies will be identified. • Feasible best available control options will be identified.
Deliverables	• A specialist air quality impact assessment report. • Specialist report will form an Appendix to the EIA Report.

Specialist Study:	Geohydrological Assessment
Specialist	Marius van Biljon Jones & Wagener Consulting Engineers (Pty) Ltd
Terms of Reference	**Activities**
Data collation and review	• An initial visit to the site will be undertaken in order to obtain information on site conditions, logistics, information on the relationship of the ore body to the regional geology and surface drainage and to available site information.
Hydro census	• Existing boreholes will be identified on site and neighbouring farms. • Water level readings will be taken both on site and on immediately neighbouring farms. • Water quality samples will be taken from selected boreholes on site and on immediately neighbouring farms. • Ground water usage in the area will be determined.
Determination of aquifer parameters.	• Suitable boreholes on site will be pump/slug tested as appropriate. • Suitable boreholes on neighbouring farms will be pump tested if considered necessary. • Only if sufficient information cannot be obtained will new boreholes be drilled. .
Conceptual model	• The data collected will be interpreted and used to prepare a site specific conceptual model of the dynamics of the groundwater system, including aquifer distribution, role of structure and groundwater flow directions. • The conceptual model will provide basic input into the numerical groundwater modelling.

Numerical model	• FeFlow will be used for the numerical modelling.
	• Inputs into the model will include:
	  • Conceptual groundwater model;
	  • Surface topography;
	  • Water levels, hydraulic gradients and flow directions;
	  • Quantified aquifer parameters;
	  • Site layout;
	  • Geochemical characteristics; and
	  • Climatic data.

Determination of	• Identification of the need for dewatering based on numerical

dewatering requirements	model. • Determination of potential inflows into the planned open pit and underground workings. • Design of the optimum dewatering facility (if required).
Baseline data	• A groundwater monitoring network will be established on site and surrounds. • Groundwater sampling (including water levels and quality samples) will be undertaken on a quarterly (seasonal) basis.
Impact Assessment	• Identification of impacts on other users including volumes and quality. • Identification of the location of possible decant points after closure. • Simulation of pit lake formation at closure. • Prediction of impact on groundwater over the life of the mine and 50 years after closure.
Mitigation	• Identification of mitigation measures to address impacts on users.
Deliverables	• Description of geohydrological regime. • Geohydrological mapping. • Groundwater balance. • Recommendations for dewatering (if required). • Specialist geohydrological impact assessment report (to be included as an appendix to the EIA Report).

Specialist Study:	Geochemical Assessment
Specialist	John Glendinning Jones & Wagener Consulting Engineers (Pty) Ltd
Terms of Reference	**Activities**
Data collation and review	• An initial visit to the site will be undertaken in order to obtain information on site conditions, the nature of the country rock, ore body and regional geology. • Information on geological profiles will be reviewed. • Available information on the chemical composition of the rock material will be reviewed.
Geochemical characterisation	• Indicative samples of the ore and waste materials will be obtained. • These samples will be subjected to leach testing and Acid Base Accounting.
Deliverables	• Identification of potential groundwater pollution sources. • Characterisation of pollutants for inclusion in transport modelling to be undertaken as part of the geohydrological modelling. • The results of this component of the work will be included in the specialist geohydrological impact assessment report.

Specialist Study:	Soils and Land Capability Assessment
Specialist	Ian Jones Earth Science Solutions (Pty) Ltd
Terms of Reference	**Activities**
Data review	• Review initial project information. • Analyse aerial photo/satellite image to identify potentially sensitive receptors. • Determine the limitations and assumptions of the study.
Baseline data	• Soil sampling within the footprint area will be undertaken as required. This was based on a 300m-500m grid. • Soils will be classified in terms of the Taxonomic Soil Classification System. • Land Capability will be determined using the Chamber of Mines Guidelines and Canadian Land Inventory System.
Impact assessment	• Impacts on soils and land capability will be identified.
Mitigation	• Mitigation for the management and conservation of soils will be identified including recommendations for management of soils, stockpiling and rehabilitation planning.
Deliverables	• Mapping of soil on site; and • Soil management and rehabilitation plan. • Specialist soil and land capability report. This will form an appendix to the EIA Report.

Specialist Study:	Traffic Impact Assessment
Specialist	Rod Strong WSP Consulting Engineers (Pty) Ltd
Terms of Reference	**Activities**
Site Inspection	• A comprehensive site inspection will be undertaken of the site and surrounding environs.

Data collection	• The following baseline information will be collated:
	  • Traffic counts at selected intersections;
	  • Trip making characteristics of local residents and mine employees;
	  • Road pavement information; and
	  • Geometric details of intersections.
	• Identification of existing management and control problems.

Trip Generation, Future Conditions and Access Requirements	• Trip generation characteristics of the project will be identified. • The relevant proportion of the contribution of the different categories to future problems will then be assessed. • Access requirements of the site will be determined.
Mitigation	• Mitigation measures to alleviate traffic impacts and to ensure safe traffic management will be identified.
Deliverables	• Mitigation measures and access requirements. • Specialist traffic assessment report. This will form an appendix to the EIA Report.

Specialist Study:	Noise Impact Assessment
Specialist	Nicolette Krause Airshed Planning Professionals
Terms of Reference	**Activities**
Data review	• Identify possible sources of existing information and negotiate access, if necessary. • Review initial project information. • Analyse aerial photo/satellite image to identify potentially sensitive receptors. • Determine the limitations and assumptions of the study.
Baseline data	• Baseline noise measurements to be conducted according to SANS 10103:2008. • Measurements to be taken during the day and night at locations representative of noise climate and sensitive receptors. • Measurements will only be taken during a once-off sampling exercise.
Zone of influence	• The potential zone of influence of noise from the proposed operations will be made based on similar studies and typical known impacts from such operations.
Impact assessment	• Noise impacts will be discussed qualitatively (no noise modelling will be undertaken due to limited number of receptors). • Reference will be made to the noise guideline SANS 10103:2008.
Mitigation	• Noise mitigation measures as recommended by the World Bank will be identified.
Deliverables	• A noise impact assessment report. • Specialist report will form an Appendix to the EIA Report.

Specialist Study:	Faunal Assessment
Specialist	Beryl Wilson McGregor Museum
Terms of Reference	**Activities**
Data review	• Review initial project information. • Review of maps, satellite imagery and reference searches. • Determine the limitations and assumptions of the study.
Baseline data	• Site visit (2 days) to obtain overview of mammal, ornithological, herpetological and arachnid species (only those with conservation status) which may occur on site. • Compilation of species lists. • Identification and mapping of sensitive faunal sites.
Impact assessment	• Assessment of significance of impacts on faunal species and faunal habitats.
Mitigation	• Mitigation measures to reduce impact significance to be identified.
Deliverables	• A faunal impact assessment report. • Specialist report will form an Appendix to the EIA Report.

Specialist Study:	Vegetation Survey
Specialist	Tania Anderson Plant Ecologist
Terms of Reference	**Activities**
Data review	• Review initial project information. • Review of maps, satellite imagery and reference searches. • Determine the limitations and assumptions of the study.
Baseline data	• Two site surveys to be undertaken, one in autumn/end of rainy season) and the other in spring/start of the rainy season. • Identification of habitat types. • Compilation of species lists. • Identification and mapping of sensitive floral sites.
Impact assessment	• Identification of potential impacts on sensitive species, habitats and systems.
Mitigation	• Mitigation measures to reduce impact significance to be identified.
Deliverables	• A vegetation impact assessment report. • Specialist report will form an Appendix to the EIA Report.

Specialist Study:	Heritage Impact Assessment
Specialist	Johnny van Schalkwyk Archaeologist
Terms of Reference	**Activities**
Data review	• Review initial project information. • Review of existing databases and satellite imagery. • Determine the limitations and assumptions of the study.
Baseline data	• Site visit, photographing and mapping of archaeological and heritage sites within the potential footprint areas.
Impact assessment	• Compilation of a map indicating sites of heritage importance within the • Identification of potential impacts on sites of archaeological and cultural heritage importance.
Mitigation	• Mitigation measures to reduce impact significance to be identified.
Deliverables	• A cultural heritage impact assessment report. • Specialist report will form an Appendix to the EIA Report.

Specialist Study:	Palaeontological Impact Assessment
Specialist	Barry Millsteed BM Geological Services
Terms of Reference	**Activities**
Data review	• Review initial project information. • Review of existing databases and satellite imagery. • Determine the limitations and assumptions of the study.
Baseline data	• Site visit, photographing and mapping of palaeontological sites in the footprint area of disturbance.
Impact assessment	• Map production detailing the project area, geology and the location of fossil localities identified.
Mitigation	• Mitigation measures to reduce impact significance to be identified.
Deliverables	• An initial palaeontological impact assessment report. • Specialist report will form an Appendix to the EIA Report.

Specialist Study:	Social Impact Assessment
Specialist	Gerrie Müller Metago Strategy4Good
Terms of Reference	**Activities**

Baseline data	• Information will be collated on:
	  • GDP, household income, poverty profile and development policies in labour areas.
	  • Skill development opportunities, local recruitment and employment.
	  • Government income.
	  • Status of other land development industries, especially tourism and agriculture.
	  • Heritage resources (based on other specialist studies).
	  • Population size and growth, housing demands.
	  • Social services (schools, hospitals, clinics, road infrastructure)

Impact assessment	• Identification of how social and economic life in labour areas will be impacted. • Benefits as a result of the mine's development for the local economy in terms of increased investment, employment and economic activity, will be assessed. • An assessment will be undertaken of how land-owners and dwellers may respond to each impact.
Mitigation	• Identification of alternatives and mitigation for the management of imapcts.
Deliverables	• Social Impact Assessment Report. • Report will form an Appendix to the EIA Report.

Appendix 8: Curriculum Vitae for the Specialist Team

GREGOR TIMOTHY FEIG – CURRICULUM VITAE

Gregor Timothy Feig has more than six years experience in the field atmospheric emissions modelling and assessment. Prior to becoming involved in air quality consultation, he completed a PhD in biogeochemistry at the Max Planck Institute for Chemistry in Mainz, Germany, where he focused on gas exchange fluxes between the Plant/Soil system and the Atmosphere. Gregor joined Airshed Planning Professionals in October 2009 on returning to South Africa.

1. Current Affiliation

Airshed Planning Professionals (Pty) Ltd (October 2009-Present)

2. Academic Qualifications

2009 **PhD** Johannes Gutenberg University Mainz (*Magna Cum Laude*) in Earth Systems Sciences, research conducted at the Max Planck Institute for Chemistry; Biogeochemistry department, Mainz, Germany

Project title: Soil Biogenic emissions of nitric oxide from arid and semi-arid ecosystems

2004 **MSc** University of the Witwatersrand (With Distinction) Environmental Sciences, School of Animal Plant and Environmental Sciences, University of the Witwatersrand, Johannesburg, South Africa

Project title: The effect of altered fire regimes on the soil microbial community composition and activity in the savannas of the Kruger National Park

2001 **BSc Honours** University of the Witwatersrand, Molecular and Cell Biology, School of Molecular and Cell Biology, University of the Witwatersrand, Johannesburg, South Africa

Project title: Morphological and Molecular characterisation of Anthracnose causing fungi from Cassava

2000 **BSc** University of the Witwatersrand, majors in Microbiology and Environmental Science

3. Previous Work Experience

2009 Post doctorial researcher at the Max Planck Institute for Chemistry, Mainz, Germany

2005 Research Assistant to Prof. Mary Scholes, School of Animal, Plant and Environmental Sciences, University of the Witwatersrand, Johannesburg, South Africa

2005 Lecturer (Ethnobotany) Midrand Graduate Institute, Midrand, South Africa

2005 Guest lecturer for Organisation of Tropical Studies (OTS) course in South Africa

2004 Internship Swedish Agricultural University Flakaliedens Forest Research Station, Sweden

4. Workshops and Courses Attended

2007 Surface Emissions and Predictions of Atmospheric Changes, Summer School, held at St Pierre d' Oléron, France, Hosted by GEIA, ESF and CNRS

2005 Theory and Practice of Stable Light Isotope Spectrometry, held at the University of Cape Town

2004 SIDA Workshop titled "Processes, patterns and ecosystem modelling in semi-arid savannas: the use of flux measurements" held in the Kruger National Park

5. Awards

2005-2008 DAAD Scholarship for PhD students

2002-2003 Andrew W. Mellon Foundation- Kruger National Park Plant Ecology Fellowship

2001-2003 University of the Witwatersrand postgraduate merit award

6. Publications and Presentations (full List on request)

2009 Gelfand I, Feig GT, Meixner FX, Yakir D (2009) Afforestation of semi-arid shrubland reduces biogenic NO emissions from soil. *Soil Biology and Biochemistry*

2008 Feig GT, Mamtimin B., Meixner, FX. (2008) Soil Biogenic emissions of nitric oxide from a semi-arid savanna in South Africa. *Biogeosciences* **5** pp 1-16

2008 Ganzeveld L, Eerdekens G, Feig GT, Fisher H, Harder H, Königstedt R, Kubistin D, Martinez M, Meixner FX, Scheeren B, Williams J and Lelieveld J (2008). Boundary Layer Exchanges of Volatile Organic Compounds, Nitrogen Oxides and Ozone during the GABRIEL Campaign. Atmospheric Chemistry and Physics as a contribution to the special issue on the Gabriel campaign. *Atmospheric Chemistry and Physics.* **8** pp 6223-6243

2007 Scholes M.C., de Villiers S., Scholes R.J., Feig G.T. (2007). Integrated approach to nutrient cycling monitoring. *South African Journal of Science*. **103** pp 323-328

2007 Feig G., Scholes, M., Otter L. and Vanlauwe, B. (2007). Nitrogen in Africa. In: Global Climatic Change Processes and Their Impact on Africa: A Synthesized Perspective. Ed: Otter L *et al.* East African Educational Publishers, Nairobi

2008 **Oral presentation** at the European Geophysical Union Congress, Vienna, Austria. Titled: The influence of soil moisture and temperature on the flux of nitric oxide from natural ecosystems. Feig, G.T.; Mamtimin, B.; Andreae, M.O.; J.B. Yu, J.B.; Gelfand; I.; Meixner, F.X.

2008 **Oral presentation** at the European Geophysical Union Congress, Vienna, Austria. Titled: Biogenic emission of nitric oxide from three ecosystems in the Namib Desert: a laboratory study. Feig, G.T.; Andreae, M.O. and Meixner, F.X.

2007 **Oral presentation** at the European Geophysical Union Congress, Vienna, Austria. Titled: Disturbance and Vegetation Properties affect soil biogenic nitric oxide emissions from an arid Kalahari Savanna. Feig, GT and Meixner FX

7. Membership

American Geophysical Sciences Union

Curriculum Vitae – Zamantungwa Khumalo

Full Name	**Zamantungwa (Zama) Zanele Khumalo**
Synergistics	Environmental Scientist
Year of Birth	1983
Nationality	South African
Languages	English, Zulu, Tswana (Verbal), Afrikaans (Verbal-Fair)
Education and Courses	**Currently doing Honours in Geography** UNIVERSITY OF SOUTH AFRICA (UNISA) **Bachelor of Arts(Geography and Industrial Psychology) 2002-2005** UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG
Career Profile	Zama has a BA degree in Geography from the University of the Witwatersrand. She is currently completing her Geography Honours with Unisa. She is responsible for undertaking environmental impact assessments, public participation and project management. Her area of interest lies with environmental management, public engagement in environmental management and corporate social responsibility.
Area of Expertise	Public engagement in environmental management, Environmental Impact Assessments and Undertaking Environmental Management Plan Audits.
Career History	Synergistics Environmental Services (Pty) Ltd –September 2006-Current
Project Experience:	**Exemption Application for the Pipeline Instalation at the Tshepisong West Township,** for City of Joburg Department of Housing, Johannesburg (2006). **Public Participation for the Leeuwpan Coal Mine Project,** for Kumba Coal, Mpumalanga, South Africa (2007). **Public Participation for the Mbila Coal Mining Project:** for Mbila Coal Resources, KwaZulu Natal, South Africa (2007). **Mbila Coal Mining Project: Scoping Report,** for Mbila Coal Resources, Kwazulu Natal, South Africa (2007). **Public Participation for the Magalies Water Pipeline Project**: for Magalies Water, Northwest and Limpopo Province, South Africa (2008). **Basic Assessment for the Sishen South Hazardous Waste Storage Area:** for Sishen Iron Ore Company, Northern Cape, South Africa (2008). **Basic Assessment and Public Participation for a pipeline installation at Droogeheuwel and Middelvlei Township** for Randfontein Local Municipality,

Johannesburg (2008).

Basic Assessment for the Zebetiela Engen One Stop Private Access Road, for Sasol Oil Pty Ltd, Limpopo Province, South Africa (2008).

EMP Auditing and Public Participation for the Magalies Water Pipeline Implementation Project: for Magalies Water, Northwest and Limpopo Province, South Africa (Current).

Basic Assessment and Public Participation for the Upgrading of the City Deep Container Terminal: for Transnet Freight Rail, Johannesburg, (Current).

Basic Assessment for the Sishen South Mine's Temporary Diesel Storage Area: for Sishen Iron Ore Company, Northern Cape (2008).

Environmental Impact Assessment for the Sishen South Sewage Treatment Plant: for Sishen Iron Ore Company, Northern Cape (Current).

Section 24G Application: Application for rectification for unlawfully commencing with a listed activity (2009).

EMP Auditing for the Development of Bulk Water Supply for the Droogeheuwel and Middelvlei Township: Aurecon, Gauteng (2009).

Environmental Control Officer for the Construction of Bulk Sewer and Water Pipeline, VIP Consulting of behalf of Ekurhuleni Metropolitan Municipality (current).

Basic Environemntal Assessment: Upgrading of the Exxaro Letaba Plant, Pretoria West, Exxaro Resources (Current).

Environmental Impact Assessment: Development of a Manganese Mine, Aquila Resources, Northern Cape (Current).

Public Participation Process: Kanyika Niobium Project, Malawi, Globe Metals and Mining (Africa) (Current).

Curriculum Vitae – KERRY FAIRLEY

Full Name:	**Kerry Colleen Fairley**
Synergistics:	Managing Director and Founding Member
Year of Birth:	1972
Nationality:	South African

Education and Courses:

- BSc (Hons) Botany, University of the Witwatersrand, Johannesburg, 1995
- Higher Diploma in Education (Post Graduate), University of the Witwatersrand, Johannesburg, 1994
- BSc Botany and Zoology, University of the Witwatersrand, Johannesburg, 1993.

Courses
- Environmental Management COM 780 – Department of Chemical Engineering, University of Pretoria, 2001.
- Air Quality Management CLK 780 – Department of Chemical Engineering, University of Pretoria, 2001.
- Basic Principles of Ecological Rehabilitation and Closure – Centre of Environmental Management, University of Potchefstroom, July 2003.
- The Design, Construction and Rehabilitation of Mine Tailings Storage Facilities and Landfills for Closure Purposes – Faculty of Engineering and the Built Environment, University of the Witwatersrand, January 2007.

Professional Affiliations and Associations:
Professional Natural Scientist – The South African Council for Natural Scientific Professions (SACNASP)
Environmental Assessment Practitioners of SA (certified by the Interim Certification Board)
Member of International Association for Impact Assessment.

Areas of Expertise:
Environmental assessment, Liability Assessment; Due Diligence, Waste Management; Ecological Surveys; Ecological Management; Environmental Scoping and Environmental Impact Assessment, Environmental Management Plans, Rehabilitation and Closure.

Career History:

Synergistics Environmental Services, from 2004

Director and Founding Member

WSP Walmsley (Pty) Ltd, 2000 to 2003

Senior Environmental Scientist, Environmental Impact Assessment Unit.

Pulles, Howard and de Lange Incorporated, 1999-2000

Environmental Scientist

Bohlweki Environmental (Pty) Ltd, 1998

Environmental Scientist

Professional Profile:

Kerry has over 10 years in environmental consulting. She has been responsible for several integrated environmental management projects in a diverse range of fields. Her responsibilities have included: liability assessments; compliance auditing; specialist ecological surveys; water quality assessment; development of ecological management programmes; public participation programmes; environmental scoping assessment; impact assessment; identification of feasible mitigation measures, closure planning and the development of Environmental Management Plans (EMPs). Kerry has been responsible for the management of environmental teams on large scale environmental impact assessments. Her interests lie strongly in environmental management within the mining sector and she has extensive experience and is actively involved in environmental assessments and management programmes for several mining projects. The focus of her career is to prove the overall benefits of incorporating environmental management into all phases of projects.

Major Project Experience:
Environmental Project Management, EIA and EMP for the development of a greenfield Niobium mining project in the Mzimba District of Malawi (current).

Curriculum Vitae – KERRY FAIRLEY

EIA and EMP for a greenfields manganese mining project near Hotazel, Northern Cape.

Update of the Sishen South Iron Ore Mine EIA, EMP and water use licence on behalf of Kumba Iron Ore Limited (current).

Update of Barberton Gold Mines EIA and EMP (current).

Performance Assessment and update of Closure Liability Costs for the Barberton Gold Mines (current).

EIA and EMP for the Tsumeb Copper Smelter, Namibia (current).

EIA and EMP for a waste management licence for a general waste disposal site at Everite, Klip River (current).

Management and principal consultant on several Basic Assessments and EIAs for infrastructure for the Sishen South Iron Ore Mine in Postmasburg, Northern Cape (current).

Environmental authorisation process for the Sishen Expansion Project 2 for Kumba Iron Ore Limited (delayed to 2010).

Liaibility assessment for Tsumeb Copper Smelter on behalf of Dundee Precious Metals (2009).

Closure costing for mining operations and the Tsumeb Smelter belonging to Weatherly Plc in Namibia (2008).

Scoping, EIA and EMP for the development of direct link railway line between Postmasburg and the Sishen-Saldhana iron ore export line (2009).

Public Consultation and Environmental Management Programmes for Exploration Right Applications for Coal Bed Methane in the Amersfoort, Evander, Welkom and Molteno regions for Badimo Gas.

EMPR amendment of expansion of Leeuwpan Coal Mine, near Delmas on behalf of Kumba Coal (Exxaro).

Environmental Impact Assessment for the Konkola North Copper Project, Zambia. Part of the SRK Project Team responsible for the EIA (2007).

Public Consultation and Environmental Management Programme for the Exploration Right Application in the Evander region for coal bed methane gas on behalf of Badimo Gas (2006)

Part of Kumba Project team offering ongoing environmental input into feasibility, environmental approvals and implementation of the Sishen South Project (2004-2008).

Environmental Management Programme Report (EMPR) amendments for the development of a co-disposal facility for waste rock and tailings as well as the development of a roaster and acid plant as part of the Expansion Project at Nkomati Nickel and PGM Mine, Mpumalanga. Done on behalf of SRK Consulting for African Rainbow Minerals and LionOre (2006).

Environmental Project Management for the environmental approval of the Sishen South Iron Ore Mine, Northern Cape (2005-2006).

Ecological Impact Assessment and Mitigation Measures for the proposed Sishen South Iron Ore Mine, Northern Cape (2005).

Due diligence audit of Welgedacht Exploration Company for The Mineral Corporation (2006).

Due diligence audit for mining and related processes in the chrome and manganese industry. Confidential client (2004).

Compliance audit for Konkola Copper Mine, Zambia (2003).

Environmental assistance to Kumba Resources on environmental issues related to the expansion of the Sishen Mine Plant (2004).

Scoping and closure planning for Sappi Enstra Lime Dams (GB+) site including permit amendment and reinstatement of ROD (2004).

Curriculum Vitae – KERRY FAIRLEY

Environmental Assessment for the Development of a Hazardous Waste Site for the Disposal of industrial waste containing heavy metal contaminants (arsenic, manganese etc) from the Tsumeb Smelter, Namibia (2004).

Assistance given to Ongopolo Mining & Processing Limited in terms of environmental management of their mining operations including The Tsumeb Smelter, Tsumeb Operations, Kombat Mine and Otjihase Mines, Namibia (2000-current)

Ongoing assistance given to African Pioneer Mining in terms of environmental management of their gold mining operations, including monthly water quality assessment and environmental reporting near Barberton, Mpumalanga (2000-2005).

Responsible for Environmental Scoping, Environmental Impact Assessment and Management Plan for the Tschudi Copper/Silver Mine near Tsumeb, Namibia (2003).

Liability Assessment and Closure Costing for Ongopolo Operations including 6 mining operations and the Tsumeb Copper Smelter (2003).

Baseline Ecological Assessment for the proposed Platreef Platinum Mine, Limpopo Province (2003).

Baseline Water Quality Assessment for the proposed Platreef Platinum Mine, Limpopo Province (2002-2004).

Ecological Survey and Identification of Ecological Management Measures for Sishen Mine, Northern Cape (2003).

Undertaken site audits of open cast operations for awards for Excellence in Mining Environmental Management, Gauteng (2002).

Environmental remediation of the Tsumeb Smelter Complex, Tsumeb Namibia. Determination of magnitude and extent of contamination and recommendations for remediation (2001).

Environmental remediation of Otjihase Mine near Windhoek, Namibia. Determination of magnitude and extent of contamination and recommendations for remediation (2001).

First Order Assessment of Environmental Issues relating to the development of a proposed iron ore mine in the Northern Cape Province (2001).

First Order Assessment of Environmental Issues relating to the development of a proposed iron ore mine in the Northern Cape Province (2001)

Environmental Scoping Assessment and Management Plan for Melville Koppies Nature Reserve, Johannesburg (2002).

Development of an Environmental Management Plan for road construction (P101 and S1544) in Qwa-Qwa, Free State (2002).

Development of an Environmental Management Plan for road construction (R59) near Sasolburg, Free State (2002).

The compilation of the construction site EMP and borrow pit EMPRs, and site monitoring for the upgrade of the road from Klaserie to Bush Buck Ridge in the Northern Province (2002).

The development of a construction site EMP for an office development in Sandhurst, Johannesburg (2002).

The compilation of the EMPR and ongoing environmental monitoring at Agnes Gold Mine in Barberton (2001).

The compilation of an Environmental Scoping Report for the development of a Sulphonation Plant in Spartan, Kempton Park (2001).

Research into the environmental impacts of small-scale mining operations, including alluvial diamond mining, gold and sand winning operations on behalf of the Water Research Commission in the view of developing a guideline document for environmental management by these operators (2000).

A Due Diligence Assessment and closure costing for Buchwa Iron Ore Mine in Zimbabwe (2000).

Curriculum Vitae – KERRY FAIRLEY

The development of a Solid Waste Management Strategy for Iscor Heavy Minerals at Richards Bay. This study included an investigation into various waste disposal options, applicable legislation and the application for appropriate licenses and permits (2000).

A Strategic Environmental Assessment (SEA) for future development within Empangeni. An investigation into the geological, soil-related, topographical, hydrological and geohydrological constraints and opportunities for future development (2000).

An EMPR for the expansion of a fluorspar mine in Zeerust. Involved in several of the specialist studies as well as the public participation process (2000).

Facilitation of the public participation process for an EIA undertaken for the development of a Liquid Petroleum Gas Facility in Chamdor, Krugersdorp (2000).

The identification and estimation of costs of rehabilitation actions required for the closure of several mines for Iscor (2000).

Actively involved in the Environmental Scoping Phase for the construction of the N4 Platinum Toll Highway from Pretoria to Lobatse at the Botswana border (1998).

Solid waste management studies for two Metropolitan Councils within Gauteng. These studies were aimed at improving the solid waste collection and disposal services within these constituents (1998).

Environmental scoping studies for proposed developments including waste water treatment works and roads.

The permit application for the development and closure of several landfill sites.

The assessment of current and future development within Mooi and Klip River catchments.

An investigation into the environmental implications of the incineration of municipal waste within a power station in Cape Town.

An investigation into the physical, chemical and biological clogging of leachate drainage systems used in landfill sites. Research undertaken on behalf of Enviroserv.

The use of monolandfills for the disposal of heavy metal wastes. Research undertaken on behalf of Enviroserv.

Publications

Fairley, K. 2004. Closure Costs – a motivation for ongoing environmental management. *Proceedings: Third International Mining and Industrial Waste Management Conference, 2004, Johannesburg, South Africa.*

Fairley, K and Nolte, C. 2006. The Sishen South Project: Going beyond the EIA to Ensure the Protection of the Environment. *International Association for Impact Assessment South Africa, 2006. Pilanesberg, South Africa.*

Fairley, K and van der Merwe, D. A Negative ROD – A Poor Reflection of the Proponent, the Environmental Practitioner or the Environmental Process? *International Association for Impact Assessment South Africa, 2008. Bela Bela, South Africa*

PROFESSIONAL PROFILE

Beryl Wilson

Ethologist & Zoology Head of Department

Work Address

McGregor Museum
Department Sport, Arts & Culture
P.O. Box 316
8300 Kimberley
South Africa

Contact Numbers

+27 (0) 53 – 839 2727 (work)
+27 (0) 53 – 842 1433 (fax)
+27 (0) 83 292 2008 (mobile cell)

PERSONAL DATA

Identity Number	690218 0364 086
Date of Birth	18 February 1969 - Salisbury (Harare, Zimbabwe)
Sex	Female
Martial Status	Single
Driver's Licence	Code 02 (A) and 08 (EB)
Nationality	South African
Languages	English, Afrikaans, basic German
Criminal Offences	None

EMPLOYMENT HISTORY

March 1987 – June 2008	Zoology Collections Manager (Senior Industrial Technician) Zoology Department, McGregor Museum, Department of Sport, Arts & Culture (Northern Cape)
1 May 2007 – June 2008	Acting Zoologist, Zoology Department, McGregor Museum, Department of Sport, Arts & Culture (Northern Cape)
1 July 2008 – Present	Ethologist & Zoology Departmental Head (Natural Scientist), Zoology Department, McGregor Museum, Department of Sport, Arts & Culture (Northern Cape)

ACADEMIC QUALIFICATIONS

National Diploma	Nature Conservation, Technikon SA (1989 - 1992)
Certificate	Freelance Journalism, Intec (1993-94)
BTech Degree	Wildlife Management, Technikon SA (1994-1997)
MTech Degree	Nature Conservation: Dissertation only, Tshwane University of Technology (2010 – current)
BA Degree	Criminal Psychology, Unisa (1998-2001) – Majors in Criminology and Psychology (distinction)
Hons BA	Psychology (with Forensic Criminology), Unisa (2002 – 2004) with the following papers: Research Methodology (distinction); Psychopathology; Psychological Assessment; Physiological Psychology (distinction); Forensic Criminology, Social Psychology (distinction)
MSc	Zoology, Mammal Research Institute, University of Pretoria *(current)* on the Historical and Current distribution patterns of the endangered Black-footed Cat (*Felis nigripes*) with the emphasis on conservation implications.

FIELDS OF INTEREST

- ☑ The distribution patterns (historical and current) of all the zoological fauna of the Northern Cape
- ☑ Human-wildlife conflict situations
- ☑ Ethology (wildlife behaviour) with emphasis on problem behaviour
- ☑ Wildlife journalism
- ☑ Herpetology

CORE FUNCTIONS

- ☑ The curation, maintenance and development of three major zoological collections namely, mammalogy, ornithology and herpetology (reptiles and amphibians), as well as five minor collections.
- ☑ Supervision of the zoology departmental staff
- ☑ Veld and game management of Magersfontein Battlefield Museum
- ☑ Research
- ☑ Environmental Impact Assessments
- ☑ Outreach
- ☑ Publications

SPECIALITIES

- ☑ The fauna (mammal, ornithological, herpetological and arachnological fields) of the arid areas of southern Africa.
- ☑ The only provincially-based and employed expert on herpetology, arachnology and small mammals
- ☑ Black-footed Cat (*Felis nigripes*) specialist – the only one in the country
- ☑ An overall broad-based field naturalist expert
- ☑ Wildlife journalism

FIELDS OF EXPERTISE

- ☑ Fieldwork
- ☑ Specialised taxidermic material preparation
- ☑ Outreach - University level and above
- ☑ Research (ethological, distributional and ecological)
- ☑ Environmental Impact Assessments
- ☑ Pollution evaluation
- ☑ Population censusing
- ☑ Capture, care, translocation and management of wildlife
- ☑ Fire fighting
- ☑ Veld evaluation and assessment
- ☑ Hunting and culling (diurnal and nocturnal)
- ☑ Game counting and aerial census (helicopter and fixed wing)
- ☑ Determination of sex ratios, age ratios and cropping rates
- ☑ Global Positioning System usage and GIS
- ☑ Aerial game darting; mark and recapture programmes
- ☑ Radio tracking (capture, fitting of equipment and tracking)
- ☑ Biological data collection
- ☑ Necropsies
- ☑ Anti-poaching
- ☑ Field habituation for film and documentary purposes
- ☑ Human-Wildlife interaction/situations
- ☑ Wildlife photography
- ☑ Wildlife journalism

CURRENT PROJECTS

- ☑ Black-footed Cat research including MTech dissertation
- ☑ African White-backed Vulture ringing programme
- ☑ Monopeltis DNA and distribution
- ☑ Reptiles and Arachnids of the Northern Cape and surrounding districts
- ☑ Departmental outreach programmes
- ☑ Various EIA projects

LOCAL REFERENCES

Mr L. Jacobson (Ass. Director/Personnel Manager)
McGregor Museum, Kimberley
Contact Number: +27 (0) 53 – 839 2703

Dr C. Anderson (Past Zoologist), Ecologist,
De Beers Ecology Division, Kimberley
Contact Number: +27 (0) 82 788 7759

Curriculum Vitae

MARIUS VAN BILJON

Nationality: South African

Date of birth: 30 March 1964

Physical Address
14 Wildebees Street
Rant en Dal
Krugersdorp
South Africa

Postal Address
PO Box 2635
Noordheuwel x 4
1756
South Africa

Cell: +27 (79) 741 9595
Email: marius.vanbiljon@yahoo.com

OVERVIEW

Marius is a hydrogeologist with 23 years experience in the mining, industrial, waste and environmental disciplines. His area of expertise includes mine water management, in particular deep underground mining environments. Duties included underground drilling, water sealing, pre-cementation, in-situ permeability testing and the development of dewatering programmes. Non-mining experience included waste site characterization, chemical and petrochemical contamination, water supply, environmental auditing and environmental impact assessment.

Relevant project experience includes:

- **Underground Mine Dewatering.** Marius has extensive experience in the development of underground mine dewatering systems, in particular the deep gold mines of South Africa. Generally the underground management of extraneous water includes a combination of water sealing and dewatering.
- **Opencast Mine Dewatering.** Marius has been involved in the design of several dewatering networks for opencast operations. These studies included all aspects such as geophysical studies, drilling, aquifer testing conceptual and numerical modelling.
- **Shaft Pre-Cementation.** Marius has been responsible for pre-cementation prior to shaft sinking at several gold and platinum mines in South Africa. These included conceptual design and supervision of grouting contractors.
- **Mine Closure.** Marius developed flooding models for defunct gold mines in South Africa to allow for the establishment of water management plans and treatment plants prior to the decanting of acid mine water into the environment.
- **Environmental Impact Assessments.** Marius has managed the hydrogeological studies that forms part of the Environmental Impact Assessment process for several greenfields projects. These included mining, industrial and landfill sites.
- **Site Selection.** Marius has identified and assessed sites from a hydrogeological point of view for the disposal of mine tailings and landfill sites. The assessments included all aspects such as desktop review, geological mapping, geophysical studies, drilling and aquifer testing, conceptual

and numerical modelling. In the majority of these sites a background water quality and groundwater monitoring network was established.

- **Groundwater Remediation:** Marius has been involved with the implementation of groundwater remediation systems at industrial and mine sites. He has also managed the ongoing monitoring at selected sites.
- **Water Resource Estimation.** Marius has been involved in all aspects of groundwater resource assessment from field testing to predictive modelling. Clients included housing developers, golf estate developers and mines.

PROFESSIONAL EXPERIENCE

September 2010 – Present **Marius van Biljon Groundwater Consulting**
(Principal Hydrogeologist)

- Geohydrological consultant in gold, platinum and coal mining, environmental and waste management and industrial engineering.
- Services include the following:
  - Development of open cast and deep level water management systems.
  - Mine dewatering and deep level grouting.
  - Permeability testing of in-situ rock in underground workings.
  - Assessments for current and potential impacts of mining, waste and industrial projects on the groundwater quality and borehole yields.
  - Water supply projects and aquifer testing.
  - Drilling supervision and management.
  - Groundwater monitoring.
  - Groundwater modeling.
  - Environmental impact assessments.
  - Mine closure.

August 2009 – September 2010 **Golder Associates Africa (Pty) Ltd (Midrand)**
(Senior Geohydrologist)

- International earth science consultants to the mining industry, environmental and waste management and industrial engineering.
- Services include the following:
  - Development of open cast and underground water management systems.
  - Mine dewatering.
  - Assessments for current and potential impacts of mining, waste and industrial projects on the groundwater quality and borehole yields.
  - Water supply projects and aquifer testing.
  - Drilling supervision and management.
  - Groundwater monitoring.
  - Groundwater modeling.
  - Mine closure.
  - Consultation with authorities.

June 2008 – July 2009 **Golder Associates Australia (Pty) Ltd (Perth)**
(Senior Geohydrologist)

- International earth science consultants to the mining industry, environmental and waste management and industrial engineering.

- Services include the following:
  - Development of open cast and underground water management systems.
  - Mine dewatering.
  - Assessments for current and potential impacts of mining, waste and industrial projects on the groundwater quality and borehole yields.
  - Water supply projects and aquifer testing.
  - Drilling supervision and management.
  - Groundwater monitoring.
  - Groundwater modeling.
  - Mine closure.
  - Consultation with authorities.

July 2002 – June 2008 **Rison Groundwater Consulting**
(Principal Geohydrologist)

- Geohydrological consultant in gold, platinum and coal mining, environmental and waste management and industrial engineering.
- Services include the following:
  - Development of open cast and deep level water management systems.
  - Mine dewatering and deep level grouting.
  - Permeability testing of in-situ rock in underground workings.
  - Assessments for current and potential impacts of mining, waste and industrial projects on the groundwater quality and borehole yields.
  - Water supply projects and aquifer testing.
  - Drilling supervision and management.
  - Groundwater monitoring.
  - Groundwater modeling.
  - Environmental impact assessments.
  - Mine closure.

Sep 1999 – Jul 2002 **Rison Consulting (Pty) Ltd**
(Technical Director)

- Geohydrological consultants in gold, platinum and coal mining, environmental and waste management and industrial engineering.
- Services included the following:
  - Development of open cast and deep level water management systems.
  - Mine dewatering and deep level grouting.
  - Assessments for current and potential impacts of mining, waste and industrial projects on the groundwater quality and borehole yields.
  - Water supply projects and aquifer testing.
  - Drilling supervision and management.
  - Environmental impact assessments.
  - Groundwater monitoring.
  - Groundwater modeling.

Sep 1995 – Aug 1999 **Johannesburg Consolidated Investments Limited (JCI)**
(Group Geohydrologist)

- JCI is an international mining and investment company and at the time owned several gold, platinum, coal and base metal mines as well as several metallurgical plants. I was responsible for all groundwater related issues at the JCI Group companies. These included the following:
  - Development and implementation mine dewatering and water management systems.
  - Groundwater monitoring and compliance to legislation at all waste disposal facilities.
  - Mine closure and water management after closure.
  - Environmental impact assessments.
  - Groundwater monitoring.

Sep 1992 – Sep 1995 **HJ Joel Gold Mine**
(Assistant Chief Geologist)

- HJ Joel Gold Mine is a JCI owned company.
- Responsible for the management of the mine geology department.
- Ore reserve calculations and mine planning.
- Responsible for the design and implementation of a deep mine dewatering program.
- Responsible for the design and implementation of a pre-grouting program for the development of a new shaft system.
- Responsible for the management of drilling and grouting contractors.

Feb 1991 – Sep 1992 **JCI Services (Pty) Ltd**
(Senior Exploration Geologist - Gold)

- Management of gold exploration projects and research into the deposition of gold deposits in the Free State Gold Fields, South Africa.

May 1990 – Feb 1991 **Western Areas Gold Mining Ltd**
(Senior Mine Geologist)

- Management of underground gold mining section, underground mapping, drilling and data interpretation.

Dec 1987 – May 1990 **Western Areas Gold Mining Ltd**
(Mine Geologist)

- Management of underground gold mining section, underground mapping, drilling and data interpretation.

Jan 1986 – Dec 1987 **South African Defense Force**

- Military Service.

EXPERTISE

Management of geohydrological investigations, specifically related to mining.

EDUCATION

1982 – 1984	**Rand Afrikaans University, South Africa (now University of Johannesburg)** BSc degree in Earth Sciences (Majors: Geology and Geography)
1985	**Rand Afrikaans University, South Africa (now University of Johannesburg)** BSc Honors degree in Geology
1994 - 1995	**University of the Free State** MSc (Cum Laude) degree in Geohydrology

PUBLICATIONS Pulles W; Banister S; van Biljon M. (2005) Development of appropriate procedures towards and after closure of underground gold mines from a water management perspective. Water Research Commission Report No. 1215/1/05.

PROFESSIONAL ASSOCIATIONS

Member of the Geological Society of South Africa
Member of Groundwater Division of the Geological Society

SOFTWARE CAPABILITIES

Microsoft Word, Excel, Surfer, ENTEC, ARCVIEW and various specialized geohydrological data acquisition and processing software.

Jones & Wagener
Consulting Civil Engineers
59 Bevan Road PO Box 1434 Rivonia 2128 South Africa
Tel: 00 27 (0)11 519 0200 Fax: 00 27 (0)11 519 0200 email: post@jaws.co.za

CURRICULUM VITAE

10 February 2010

JOHN GLENDINNING

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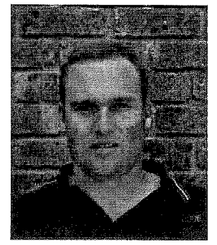


Profession	Environmental Geochemist
Date of Birth	12 March 1974
Position in firm	Technical Director
Years with the firm	12 Years
Nationality	South African
Education / Qualifications	Senior Certificate 1991
	B.Sc. at Rhodes University (Grahamstown) (1995)
	B.Sc. Hons (Geology) at Rhodes University (Grahamstown) (1996)
	M.Sc. Environmental Geochemistry at the University of Cape Town (1997)
Languages	English, Afrikaans
Employers	
1997 – 2002	Jones & Wagener (Scientist)
2003 – 2007	Jones & Wagener (Associate)
2008 –	Jones & Wagener (Technical Director)

Areas of Expertise

Contaminated land assessment

Expertise obtained from assessments on contaminated mining, industrial, petrochemical, radioactive and waste disposal sites. Includes soil, surface water and groundwater contamination assessments, and assessing the need for remediation.

Treatment and mitigation options have been evaluated and implemented on a range of sites.

Professional Affiliations

South African Council for Natural Scientific Professions (400059/02)

South African Institute for Engineering and Environmental Geologists (05/216)

Relevant Experience

Contaminated Land Investigation at Pesticide Production Facilities

Investigation of various pesticide contaminated areas (including arsenic) at the Dow Agrosciences Canelands Factory Site. Remedial options were investigated and implemented – Canelands, Natal – Dow Agrosciences – 2005 to 2008.

Investigation of various contaminated areas (including mercury) at the NCP Chlorchem Factory Site. A range of remedial options were investigated – Chloorkop – NCP Chlorchem – 2005 to 2008.

Investigation of various pesticide contaminated areas at the Dow Agrosciences Berlin Factory Site – Berlin Eastern Cape – Dow Agrosciences – 2006.

Assessment of contamination at an agricultural chemical formulation plant – Bon Accord – Union Carbide South Africa – 2003.

Contaminated Land Investigations at Cyanide / Carbide Production Facilities

Geohydrological investigation at the Calcium Carbide Tailings Dam at the Karbochem Newcastle Factory Site – Newcastle – Karbochem Newcastle – 2004 to 2008.

Investigation into levels of cyanide contamination at the DOW Newcastle Factory Site – Newcastle – DOW Newcastle – 2001.

Investigation of cyanide contamination at the Klipspruit Calcium Cyanide Factory Site. Remedial options were investigated and implemented – Johannesburg – Sasol Chemical Industries – 2001 to 2008.

Contaminated Land Investigations involving the Petrochemical Industry

Assessment of diesel contamination as a result of tank leakage – Bon Accord – Union Carbide South Africa – 2006.

Geohydrological investigation at the proposed land farm area and delineation of the extent of contamination within the Tank Farm at the Natref Refinery – Sasolburg – Natref – 1999 and 2002.

Investigation of baseline contamination on the reclaimed portion of the Luanda Oil Service Centre – Luanda, Angola – Sonils LDA – 2002.

Investigation into the origin and fate of contamination at the Sasol One Factory Site in Sasolburg. The study included a groundwater modelling exercise and an evaluation of human health. Remedial options were also evaluated – Sasolburg – Sasol Chemical Industries – 2007 to 2008.

Investigation into the origin and fate of contamination at Halvepan in Secunda. The study included a groundwater modelling exercise and an evaluation of human health. Remedial options were also evaluated – Secunda – Sasol Chemical Industries – 2007 to 2008.

Contaminated Land Investigations involving the Steel Industry

Geohydrological investigation at the McKinnon Forge Factory Site – Vereeniging – Scaw Metals – 2005.

Geohydrological investigation at Iscor's Dunswart Factory Site – Gauteng – Iscor – 2004.

Investigation into the fate of contaminants from various production plants and waste dumps at the Iscor Steel Works in Vereeniging. The study included a groundwater modeling exercise and detailed human health risk assessment – Vereeniging – Iscor Vereeniging – 2001.

Contaminated Land Investigations involving the Fertiliser Industry

Investigation into the origin and fate of contamination at the Venco Park Factory Site in Sasolburg. The study included a groundwater modelling exercise and an evaluation of human health. Remedial options were also evaluated – Sasolburg – Sasol Chemical Industries – 2007.

Investigation into the origin and fate of contamination at the Sasol Nitro Bunsen Street Factory Site in Sasolburg, with the subsequent investigation into the effectiveness of nitrate biodegradation in groundwater - Sasolburg - Sasol Nitro – 2005 to 2008.

Investigation into the origin and fate of contaminants within the Driefontein Farm, Sasolburg. The study included a groundwater modelling exercise and detailed human health risk assessment. Remedial measures were evaluated and implemented – Sasolburg – Omnia Fertilisers, Karbochem Sasolburg and Sasol Chemical Industries – 2004.

Investigation into levels of nitrate contamination on the western side of Sasol Factory in Sasolburg – Sasolburg – Sasol Chemical Industries – 2002 to 2004.

Contaminated Land Investigations involving Miscellaneous Industrial Sites

Delineation, quantification and classification of buried waste material at the Karbochem Factory Site. Remedial options were also investigated – Sasolburg – Karbochem Sasolburg – 2006.

Assessment of the extent of phthalate contamination at the Isegen Germiston Factory Site – Germiston - Isegen Germiston – 2006.

Geohydrological investigation at the Karbochem Newcastle Factory Site – Newcastle – Karbochem Newcastle – 2006 to 2008.

Assessment of contamination at the Mancozeb and Devchem Plants within the Karbochem Sasolburg Complex – Sasolburg – Dow Agrosciences – 2003.

Investigation into levels of contamination at the Vinyl Compounders Factory – Jacobs, Durban – Sasol Polymers – 2001.

Investigation into levels of contamination at the Sasol Fibres Factory Site – Durban South – Sasol Fibres – 2003.

Contaminated Land Investigation at Mine Sites

Investigation of the geochemistry of a magnetite disposal area at an old Vanadium Mine near Bon Accord - Union Carbide South Africa - 2007.

Investigation into the fate of contaminants from various facilities at the Otjihase Copper Mine and Tsumeb Smelter Complex – Namibia – Ongopolo Mining Company – 2000.

Investigation into the impact of contaminants from various Tar Pit and Fertiliser waste facilities on the underground mine workings at the Sasol Waste Sites in Sasolburg. The study included a groundwater modelling exercise and detailed human health risk assessment. Remedial measures are in the process of being implemented – Sasolburg – Sasol Chemical Industries – 2000 to 2006.

Waste Disposal Facility Management

Implementation of groundwater remedial options at the Holfontein Waste Disposal Facility – Springs – EnviroServ – 2007 to 2008.

Evaluation of the effectiveness of implementing groundwater remedial options at the Holfontein Waste Disposal Facility – Springs – EnviroServ – 2005 to 2006.

Evaluation of monitoring results of leachate, leachate detection, sub-soil seepage, surface water and groundwater at the **Holfontein, Margolis, Nuffield, Rosslyn, Chloorkop, Midrand** - Gauteng – **Aloes** – Eastern Cape – **Vissershok, Bellville** – Western Cape - **Umlazi, Westville, Shongweni** – Kwazulu Natal - and **Movoco** – Mozambique - Waste Disposal Facilities between 2003 and 2008 – EnviroServ.

Review and upgrade of the groundwater monitoring network at the **Holfontein, Margolis, Nuffield, Rosslyn, Chloorkop, Midrand** - Gauteng – **Aloes** – Eastern Cape – **Vissershok** – Western Cape - **Umlazi, Westville, Shongweni** – Kwazulu Natal - and **Movoco** – Mozambique - Waste Disposal Facilities between 2003 and 2008 – EnviroServ.

On-going Water Quality Monitoring

Evaluation of the change in water quality at the Clean-Tech Africa Berlin Factory Site between 2006 and 2008 – Clean-Tech Africa.

Evaluation of the change in water quality at the Everite Klip River Factory Site between 2003 and 2008 – Everite.

Evaluation in the change in water quality at ten of the Tshwane Municipality Metropolitan's waste water treatment works between 2007 and 2008 - Tshwane Municipality.

Evaluation in the change in water quality at the NCP Chlorchem Factory Site between 2004 and 2008 – Chloorkop – NCP Chlorchem.

Evaluation in the change in water quality at the Sasol Solvents Factory Site between 2003 and 2008 – Germiston – Sasol Solvents.

Evaluation in the change in water quality at the Klipspruit Calcium Cyanide Factory in Johannesburg between 2000 and 2008 – Germiston – Sasol Polymers.

Evaluation in the change in water quality at the Devchem Plant within the Karbochem Sasolburg Complex between 2003 and 2008 – Sasolburg – Dow Agrosciences.

Evaluation in the change in water quality at the Union Carbide Bon Accord site between 2003 and 2007. Union Carbide South Africa.

Evaluation in the change in water quality at the Isegen Factory Site between 2002 and 2007– Germiston – Isegen Germiston.

(projects prior to 2001 are available on request)

Declaration

I confirm that the above CV is an accurate description of my experience and qualifications and that, at the time of signature, I am available and willing to serve in the position indicated for me in the Proposal, for the duration and at the locations indicated therein.

10 February 2010

Signature of Staff Member

Date

CURRICULUM VITAE
Johan Abraham van Schalkwyk

PERSONAL PARTICULARS
Date of birth: 14 April 1952
Identity number:520414 5099 08 4
Marital status: Married; one daughter
Nationality: South African

CURRENT POSITION
Head of Research: National Cultural History Museum.

CURRENT ADDRESS
Work:
P O Box 28088, Sunnyside, 0132
Tel: (012) 324 6082; Fax: (012) 328 5173; E-mail: johnny@nfi.museum

Home:
62 Coetzer Ave, Monument Park, Pretoria, 0181
Tel/Fax: 086 611 3902; 076 790 6777; E-mail: jvschalkwyk@mweb.co.za

ACADEMIC QUALIFICATIONS
BA. – 1976 (UP)
BA. (Hons.) Archaeology - 1978 - (with distinction) (UP)
Post Graduate Diploma in Museum Science – 1979 (UP)
BA. (Hons.) Anthropology - 1981 - (with distinction) (UP)
MA. Anthropology – 1985 (UP)
D. Litt et Phil (Anthropology) – 1996 (UNISA)

NON ACADEMIC QUALIFICATIONS
12th HSRC-School in Research Methodology - July 1990
Dept. of Education and Training Management Course - June 1992
Social Assessment Professional Development Course - 1994
Integrated Environmental Management Course, UCT - 1994

EMPLOYMENT RECORD
1978 - present: National Cultural History Museum, Pretoria
1976 - 1977: Archaeology Department, University of Pretoria

PROFESSIONAL EXPERIENCE
1992 - present: Senior researcher: Head of Department of Research. Manage an average of seven researchers in this department and supervise them in their various research projects. Did various projects relating to Anthropology and Archaeology in Limpopo Province, Mpumalanga, North West Province and Gauteng.
1978 - 1991: Curator of the Anthropological Department of the Museum. Carried out extensive fieldwork in both anthropology and archaeology
1976 - 1977: Assistant researcher responsible for excavations at various sites in Limpopo Province and Mpumalanga.

- Curated various exhibitions at different museums. Topics range from ceramics, beadwork and woodcraft to Iron Age archaeology.
- Have done extensive work in the field of heritage impact assessments in Limpopo Province, Gauteng, Mpumalanga, North West Province, KwaZulu-Natal, Western Province, Eastern Province, Botswana, Lesotho and Swaziland.
- Did a number of projects regarding the development of arts and crafts and community tourism – Tlokwa, Hananwa, Swazi.

PROFESSIONAL ACCREDITATION
Association for Southern African Professional Archaeologist: Principal Investigator for Iron Age, Colonial Period and Industrial Heritage. Membership no.: 164.

MEMBERSHIPS
Member, Association for Southern African Professional Archaeologists
Member, Anthropology Southern Africa
Member, African Studies Association, Smithsonian Institute, Washington

PUBLICATIONS
Published more than fifty papers on topics relating to anthropology, archaeology, history and impact assessment in various scientific journals - a complete list can be supplied on request.

HERITAGE IMPACT ASSESSMENT
Did more than 900 impact assessments (archaeological, anthropological and social) for various departments and companies in southern Africa. Projects include roads, pipelines, power lines, power stations, dams, mining, water purification works, historical landscapes, refuse dumps and urban developments. These projects include scoping reports, Phase 1 heritage impact assessments and Phase 2 mitigation projects.

NICOLETTE KRAUSE - CURRICULUM VITAE

Nicolette Krause has five years of experience in air quality impact assessment and management. She is an employee of Airshed Planning Professionals (Pty) Ltd and is involved in the compilation of emission inventories, air pollution mitigation and management, and air pollution impact work. Airshed Planning Professionals is affiliated with Francois Malherbe Acoustic Consulting cc and in assisting with numerous projects she has gained experience in environmental noise measurement, modelling and assessment. Nicolette is in the process of completing a part-time honours degree in Mechanical Engineering at the University of Pretoria specialising in fluid mechanics, vibration and noise and tribology.

1. LANGUAGE CAPABILITIES

Fluent in English and Afrikaans

2. CURRENT AFFILIATION

Airshed Planning Professionals (Pty) Ltd & Francois Malherbe Acoustic Consulting cc (January 2006 to present). Task related experience include:

- Air Quality:
  - Emissions inventory compilation
  - Meteorological data processing and preparation
  - Dispersion model preparation
  - Impact and compliance assessment
  - Air quality and dust management plan preparation
  - Report writing
- Noise:
  - Ambient noise measurement and analysis
  - Noise inventory compilation
  - Noise propagation model preparation
  - Impact and compliance assessment

3. MEMBERSHIPS

- South African Acoustic Institute (SAAI), 2006 to present
- National Association for Clean Air (NACA), 2006 to present

4. ACADEMIC QUALITIFICATIONS

- BEng: (Mechanical Engineering), 2005, *University of Pretoria*
- Currently enrolled for BEng (Hons): (Mechanical Engineering) 2007, *University of Pretoria*; Subjects:
  - Advance Heat and Mass Transfer
  - Advanced Fluid Mechanics
  - Numerical Thermo-flow
  - Advanced Vibration
  - Tribology

4. COURSES COMPLETED AND CONFERENCES ATTENDED

- Course: Air Quality Management. Presented by the University of Johannesburg (March 2006)
- Course: AERMET/AERMAP/AERMOD Dispersion Model. Presented by the University of Johannesburg (March 2010)
- Conference: NACA (October 2007), Attended and presented a paper
- Conference: NACA (October 2008), Attended and presented a paper

5. PREVIOUS TECHNICAL EXPERIENCE

- 2003 Industrial Training at Transwerk (Investigating the effect of the surface roughness of train wheel axles on bearing press fits).
- 2004 Industrial Training Khulanawe Construction (Investigating the possibilities of designing improved petrochemical pumps including a detailed study of patent rights and registration).
- 2005 Final Year Design: Wheelchair access system for Minibuses.
- 2005 Final Year Thesis: Vibration based acceptance tests for production line units.

5. EXPERIENCE WITH REGARDS TO AIR QUALITY AND NOISE IMPACT ASSESSMENTS

- Models applied to date include:
  - CONCAWE (noise propagation model);
  - ADDAS (wind erosion emission model);
  - HIPPO/WRPLOT (wind & pollution rose generation);
  - METREADER (preparing meteorological data for dispersion models);
  - ISCST3 (air dispersion model);
  - ADMS (air dispersion model);
  - AERMOD/AERMET (air dispersion model);
  - CALMET/CALPUFF Suite (air dispersion model);
  - GASSIM (landfill emission estimation model); and
  - WATER9 (waste water treatment plant emission estimation model)
- Industry sectors in which experience have been gained with specific reference to air quality:
  - Iron and steel industry
  - Ferroalloy industry
  - Waste water treatment works
  - General and hazardous waste disposal facilities
  - Opencast and underground mining (coal, chrome, manganese, uranium)
  - Pulp and paper industries
  - Power generation industry
- Industry sectors in which experience have been gained with specific reference to noise:
  - Mining
  - Ferroalloy industry
  - Renewable energy sector (wind and solar energy)
  - Transport and logistics sector

GERRIE MULLER CURRICULUM VITAE

PROFESSIONAL QUALIFICATIONS	B Admin (Development Economics) and MBA (Univ Stellenbosch)
PROFESSIONAL REGISTRATIONS	Institute of Management Consultants SA
EMPLOYMENT RECORD	2007- Director Metago4Good 2000 - 2006 Partner/Corporate Consultant, SRK Consulting 1996 – 2000 Owner Manager, RDC Prescient Consulting 1995 – 1996 Investec Merchant Bank. Financial Consultant. 1990 – 1995 Deloitte Management Consultants Principal Management Consultant. 1986 – 1990 Small Business Development Corporation. Senior Business Adviser.
SPECIALISATION	• Socio-Economic Baseline And Impact Assessments; • Social And Labour Plans • Local Economic Development • Corporate Sustainability Strategy And Organisational Development • Social Entrepreneurship Implementation
RELEVANT PROJECT EXPERIENCE	***Sustainability Consulting*** *1.* Gerrie has undertaken extensive socio-economic impact assessments for regional economies (Lesotho and Eastern Cape) and a large number of mines with a view to determine the best economic development strategy for their local areas. His work focuses on all the sustainable development aspects in the social and economic spheres. Gerrie is particularly strong on quantitative and economic analysis of socio-economic impacts. 2. Social and Labour Plans for nine mining companies in last two years as part of their mining license application. *3.* Compiling two GRI Sustainability Reports, one for First Quantum Minerals (Toronto and London Listed Company) and the other for UMK, a private mine owned by Chancellor House and Renova Resources. *4.* Assisting Nedbank Capital in the implementation of their Green Mining Award competition where he directs the project origination efforts for the competition. ***Strategy Development*** Gerrie has developed corporate strategies for some of the largest companies in South Africa, being Nedbank Capital, Metorex, Bell Equipment, Frame Textiles, Dunlop and Natal Blood Transfusion Services. In addition to this, he has undertaken and continues to undertake strategy development for a large range of mid-tier and growing businesses. Gerrie has also translated his strategy development skills into Corporate Sustainability Strategies and organisational development, having developed the sustainable development strategies and systems implementation for significant clients.

PERSONNEL PROFILE

IAN PETER CONNIE JONES

WORK EXPERIENCE

2005 – Present
Earth Science Solutions (Pty) Ltd
Nelspruit, South Africa - Director

1997 – 2005
Groundwater Consulting Services (Pty) Ltd
Nelspruit, South Africa – Director

1983 – 1997
Aerial Agricultural Services cc.
Barberton, South Africa
Managing Partner and Sole Member

1982 – 1983
Anglovaal Exploration
Barberton, South Africa
Exploration Geologist.

1981 – 1982
African Selection Trust Exploration
Exploration Geologist.

1979 – 1981
Anglovaal Exploration
Upington, South Africa
Exploration Geologist.

EDUCATION

B.Sc. Geology
Natal University, Durban Natal, SA

REGISTRATIONS

Pr.Sci.Nat (Earth Sciences) 400040/08

EAP Certified

Member
Geological Society of South Africa (GSSA)

Member
Barberton GeolSoc

Member
SSSSA

Member
WISA

Director

Ian Jones has been involved with a wide range of earth science related projects, ranging from specialist aspects of exploration geology, to varying aspects of pedological and environmental sciences, including specialized aspects of groundwater and hydrogeological assessments, and has a wealth of experience spanning the Mining, Agricultural (including Forestry) and Industrial fields.

Having worked in South and Southern Africa for the past 33 years, Ian has developed a large amount of experience, most of which is related to the investigation and evaluation of the impacts of development on the environment (soil and water)

Examples of expertise are:

Environmental Monitoring and Hydrogeological evaluation for a variety of Mining and Industrial Developments

A number of Environmental Impact Assessments and water related studies have been undertaken as part of the mine/industries ongoing development and expansion, with the companies direct input to the monitoring of the hydrogeological and hydrology of the client.

The director of ESS has been directly responsible for the monthly and yearly water monitoring of these sites, and has undertaken the baseline EIA's for the development or expansion to the related activities. Specialist assessments of the hydrogeological modelling and geotechnical studies, as well as baseline studies of the soils (Pedology), land capability and land use are included as part of the overall Integrated Waste Management Studies.

Pedological Investigations – Both Reconnaissance & Detailed

Pedological and Hydrogeological investigations for Agricultural and Irrigation Studies. Investigation of the hydrogeological potential of an area and the evaluation of the soils for potential economic farming ventures within South Africa, Kenya, Democratic Republic of the Congo, Central African Republic, Tanzania, Zambia, Mozambique, Lesotho and Swaziland.

Contamination Studies

Investigations involving geophysics, drilling and sampling, for contamination of the groundwater and unsaturated zones around existing developments, and as baseline studies for proposed new developments.

Environmental Investigations

Hydrogeological and pedological assessments of developments and operations to determine the potential environmental impacts, and the development of environmental management programmes.

CONTINUE

Groundwater Resource Development

Investigation and implementation of rural groundwater supply projects in South Africa, and Swaziland.

Design and supervision of the installation of systems for the abstraction of groundwater from alluvial aquifers by means of well points, and screen tube wells.

Regional Hydrogeological Investigation

Regional hydrogeological investigations involving reconnaissance investigations, geophysics, drilling and test pumping for the planning and development and utilization of regional groundwater resources in Southern Africa.

An example is the hydrogeological mapping in Lebowa, and KaNgwane, South Africa during 1995/96.

Mining Related Geology

Geological investigations for coal, silver, base metals and gold (Greenstone and Sedimentary Placer) mineralisation, varying from baseline mineral exploration, exploration evaluation, and the assessment of geophysical data. In addition, we have also been involved in water supplies, groundwater impacts, environmental impact assessments and environmental management programmes for the mining industry.

Waste Disposal Investigations

Hydrogeological and pedological investigation for the identification of new waste sites, as well as the closure of existing solid waste disposal sites for municipalities and institutions in South Africa.

Groundwater monitoring and geophysical surveys for the mapping of contaminant plumes from municipal and mine disposal sites.

Hydrogeological investigations for the licensing of solid waste disposal sites – both general and hazardous disposal sites.

African Experience

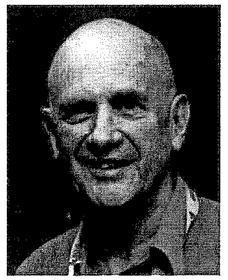
Ian has been involved in a variety of earth science related specialist studies spanning the Southern African continent. The experience ranges from soils and land capability studies for the Copper Mines in Zambia (Lumwana Copper Mines) and the southern DRC (Kinsevere), to specialist environmental, hydrogeological and pedological studies for the Platinum and Nickel prospects on the western shores of Lake Tanganyika, the Eastern Highlands of Tanzania and environmental and water studies for a Gold Mining Venture on the Great Lakes.

CONTINUE

Prospecting for Uranium in the central regions of Tanzania required detailed studies of the soils and land capability as part of the baseline assessment for EIA, and Ian has been involved in the pedological baseline assessment for two major Uranium projects being undertaken in the western central portion of Namibia. The soil and material assessment for the Letseng Diamond Mine rehabilitation plan is ongoing, with small scale soil assessments for the local farming communities being undertaken to assist with erosion control on the highly sensitive soils of the highlands kingdom.

Ian was intricately involved in the hydrogeological evaluation and management of the Four Cities Water Supply Project in Mozambique as part of the French contribution to the rehabilitation program during 2001 – 2003, assessed the possibility of utilizing and implementing an RO Plant for the supply of fresh water to communities in the Seychelles in association with the French Government, and undertook the investigation of a conjunctive use scheme for groundwater and surface water use in the sugar industry in Swaziland and the DRC.

In addition, numerous agricultural projects were assessed to determine the characteristics of the soil and land capability under irrigation in Tanzania (Tanzania Planting Company) and Mauritius, were large areas of land have been assessed on behalf of the sugar industry and Pecan Nut Industry in the central and southern regions of Mozambique. Ian has also been involved in the assessment of irrigation projects in Sierra Leone and the DRC".



WSP SA Civil and Structural Engineers (Pty) Ltd

Key Skills:

- **Traffic Engineering**
- **Traffic Impact Assessments**
- **UrbanTransportation Infrastructure Design**

CURRICULUM VITAE

Strong, Roderick Arthur Glyn

Position:
Senior Engineer

Qualification:

Year	Institution	Qualification
1984	University of Witwatersrand	M.Sc (Transportation Planning and Engineering)
1968	University of Wales	B.Eng (Civil)

Membership:

Status	Organisation	Registration Number	Registration Date
Professional Engineer	Engineering Council of South Africa	790352	04/09/1979
Member	South African Institution of Civil Engineers	26856	10/08/1984

Strengths:
Rod Strong joined WSP Civil and Structural Engineers (Pty) Ltd in November 2005 as a Senior Engineer specialising in traffic engineering, traffic impact assessments and planning and design of urban transportation infrastructure. He is a civil engineer with 42 years of experience in consulting engineering and in national and local government service.

Previously he was with De Leuw Cather Engineers and Planners in Johannesburg whom he joined in May 1987 as an Associate, and became a Director in April 1992. He served for a number of years on the CUTA Ad Hoc Committee on Urban Geometrics from May 1987, and served on the CUTA Public Participation Task Group that produced UTG11. He has presented a number of papers and seminars on road geometric design, public participation and conflict management.

Prior to joining De Leuw Cather, Rod Strong spent 12 years with consultants managing a variety of road design and construction projects for the then Transvaal Roads Department, the Governments of Swaziland and Transkei and the Municipality of Sandton. Before this, he spent four years on the design and construction of major freeways for the British Department of Transport.

Employment Record:
WSP SA Civil and Structural Engineers (Pty) Ltd
Nov 2005 to date Senior Engineer

De Leuw Cather (Now WSP SA Civil and Structural Engineers(Pty) Ltd)
May 1987 to Oct 2005 Director

Experience:

Date	Project	Client	Contract Value (SAR)
Mar 2007 to Mar 2007	Traffic Impact Assessment for Rezoning of Holdings 32 & 33 Beverley A.H.	Helga Schneider & Associates	
Nov 2005 to Oct 2007	Traffic Impact Assessment for Proposed Township, Eveleigh Ext. 36, Boksburg.	Eugene Marais Town Planners	

WSP

Date	Project	Client	Contract Value (SAR)
Nov 2005 to Jun 2006	Traffic Impact Study for Proposed Industrial Township, Crown Ext 12.	I Prop Limited	
Dec 2005 to Apr 2006	Engineering Assistance to Ekurhuleni Metropolitan Municipality Regarding Traffic Engineering and Transportation	Ekurhuleni Metro Municipality Northern Region	
Nov 2005 to Oct 2006	Traffic Impact Study for Proposed Township, Eveleigh Ext 19.	Future Plan Urban Design & Planning Consultants Cc	
Nov 2005 to Oct 2007	Braamfontein Regeneration Project, Detail Design	Johannesburg Development Agency	
Jan 2006 to May 2006	Traffic Impact Study for Proposed Tillbury Business Park, Phase 2.	XG Projects (Pty) Ltd	
Apr 2006 to Sep 2008	Traffic Impact Study for Proposed Expansion of Little Falls Christian Centre.	Little Falls Christian Centre	
Feb 2006 to Dec 2006	Traffic Impact Study for Proposed Closure of a Portion of Molecule Road, Vulcania.	Infraset	
Jan 2006 to May 2006	Traffic Impact Study for Honeydew Manor Extension 20.	Dandera Industries	
Jan 2006 to Feb 2006	St.Stithians School, Peter Place, Access Study	Kantey and Templer Consulting Engineers	
Nov 2006 to Apr 2007	Traffic Impact (Evaluation) Study for East Village, Sunward Park Security Access Restrictions.	East Village Residents Association	
Apr 2006 to Jul 2007	Traffic Impact Study for Proposed Township Bardene Ext. 75.	Cloversgreen Investments (Pty) Ltd	
Mar 2006 to May 2008	Hughes Ext.46 Traffic Impact Study	View Point Developments Cc	
Apr 2006 to Sep 2006	Traffic Impact Study for Proposed Pala Meetse Eco-Reserve, Limpopo Province.	Cymbian Enviro-Social Consulting Services Cc	
May 2006 to Apr 2008	Traffic Impact Study for Proposed Metal Recovery and Slag Processing Plant at Samancor, Meyerton Works.	Alpa Environmental	
Aug 2006 to Feb 2008	Traffic Impact Statement for Proposed Township Goedeburg Ext. 28.	Dorsha Trading	
Oct 2006 to Feb 2007	Traffic Study for Rondebult Road and Trichardt Road Interchanges on the N17 Freeway.	Ekurhuleni Metropolitan Municipality	
Jan 2007 to Nov 2008	Traffic Impact Statement for Proposed Twentyfour Seven Church, North Riding.	Twentyfour Seven Church	
May 2007 to Aug 2007	Fairleads, Benoni, Traffic Impact Study for Security Access Control	Benoni Agricultural Estates Res.Association	
Feb 2007 to Nov 2008	Preliminary Design of New Access to Tiger Brands, Clayville	Geostrategies	
Apr 2007 to	Rosherville X16 and X17 Traffic	I Prop Limited	

Date	Project	Client	Contract Value (SAR)
Feb 2008	Impact Study		
Apr 2007 to Apr 2007	Traffic Impact Statement for Security Access Restrictions At Highway Gardens Ext. 1, Edenvale	Highway Gardens Residents Association	
Apr 2007 to Sep 2007	John Dube Village Traffic Impact Study	VIP Consulting Engineers (Pty) Ltd	
May 2007 to Sep 2008	Bartlett Ext. 96, Traffic Impact Study	Andbuy Investments 111 (Pty) Ltd	
Apr 2007 to Feb 2008	Edenglen Ext. 47 - Erf 1525 - Traffic Impact Study	Checeley Investments Cc	
Jun 2007 to Sep 2007	New Multichoice Customer Care Building : Traffic Impact & Access Study	NMS Communications (Pty) Ltd	
Jun 2007 to Sep 2007	Meadowbrook Close Security Enclosure, Traffic Impact Study	Meadowbrook Close Residents Association	
Jun 2007 to Sep 2007	Sunair Park Ext. 16 Traffic Impact Study	JTJ Projects Cc	
Jun 2007 to Dec 2007	Maponya Mall Traffic Signal Detail Design	Kantey and Templer Consulting Engineers	
Jul 2007 to Nov 2007	Newmarket AH No.44 Traffic Impact Study	A Smart Storage Cc	
Jul 2007 to Feb 2008	Paulshof Ext. 66 Traffic Impact Study	Tyris Realty (Pty) Ltd	
Sep 2007 to Dec 2007	Design of Traffic signals for Mattafin Precinct Road Access System for 2010 World Cup Stadium in Nelspruit, Mpumalanga	Mbombela Local Municipality	
Sep 2007 to Dec 2007	Erf 776 Bryanston Traffic Impact Study	Dr Klaus Doring	
Nov 2007 to Dec 2007	Morehill Ext. 2, Traffic Impact Statement for Renewal of Access Control Measures	Personal Home Security (E.Rand)(Pty) Ltd	
Oct 2007 to Apr 2008	Traffic Impact Study for Premier Hotel Houghton Estate	NV Properties (Pty) Ltd	
Nov 2007 to Jul 2008	Traffic Impact Study for Expansion of New Clydesdale Coal Mine, Mpumalanga	Synergistics Environmental Services	
Dec 2007 to Apr 2008	Traffic Signal Design In Douglasdale Ext.91	Kantey and Templer Consulting Engineers	
Dec 2007 to Apr 2008	Country Club Estates, Johannesburg - Traffic Signal Design	Kantey and Templer Consulting Engineers	
Jan 2008 to Apr 2008	Indigo Place, Kew, Traffic Impact Assessment for Proposed Townhouse Development	True North Developments (Pty) Ltd	
Jan 2008 to Feb 2008	Pomona Ext. 78, Sec.7 Report to Gautrans and Traffic Impact Assessment for Proposed Warehouse Development	True North Developments (Pty) Ltd	
Jan 2008 to Feb 2008	58 Oxford Road Traffic Impact Assessment for proposed Townhouse Development	Sumali Investments 101 (Pty) Ltd	

Date	Project	Client	Contract Value (SAR)
Feb 2008 to Apr 2008	Crown Ext.6 Traffic Impact Assessment for Proposed Industrial Township	Sumali Investments 101 (Pty) Ltd	
Feb 2008 to Apr 2008	Ormonde Ext.49, Traffic Impact Assessment for Proposed Industrial Township	I Prop Limited	
Feb 2008 to May 2008	Goedeberg Ext.37, Traffic Impact Assessment for Proposed Residential Township	Mrs. H Van Der Westhuizen	
Feb 2008 to Jan 2009	Rezoning Erf 126, Eastgate Extension 3, Traffic Impact Assessment for Proposed Rezoning of Industrial Property	Industrial Machinery Supplies (Pty) Ltd	
Mar 2008 to May 2008	Traffic Impact Assessment for Multichoice Campus, Ferndale	NMS Communications (Pty) Ltd	
Oct 2007 to Present	Traffic Impact Assessment for Proposed Metalloys & Alloystream Manganese Plants, Meyerton	Terra Pacis Enviro-Social Consulting Services Cc	
Aug 2008 to Dec 2008	Oakdene Portions 1,2,3 & Remainder of Erf 16 Traffic Impact Assessment for Access to Motor Dealership	Southern Motors (Pty) Ltd	
Jul 2008 to Oct 2008	Stoneridge - Traffic Signal Design	Kantey and Templer Consulting Engineers	
Jul 2008 to Oct 2008	Broadacres and William Nicol Drive- Traffic Signal Design	Kantey and Templer Consulting Engineers	
Aug 2008 to Jan 2009	Valkhoogte Ext. 4 and 13 Traffic Impact Study	Mr. Hercules Lazarides	
Jul 2008 to Nov 2008	Mamatwan Mine Sinter Plant, Northern Cape - Traffic Impact Study	Cymbian Enviro-Social Consulting Services Cc	
Aug 2008 to Oct 2008	Erf 119 Edenburg Traffic Impact Sudy	Blue Beacon Investments 170 (Pty) Ltd	
Jan 2009 to Mar 2009	Crystal Park Ext. 48 Traffic Impact Assessment	Mr. B Collings	
Sep 2008 to Dec 2008	Sharon Park Ext. 2 Traffic Impact Study	Revo Development	
Sep 2008 to Oct 2008	Parktown Erf 917 Traffic Impact Study	Laetma Props 16 (Pty) Ltd	
Sep 2008 to Oct 2008	Rosebank Erf 205, Ptn 1 - Traffic Impact Statement	West Ferry 26 (Pty) Ltd	
Sep 2008 to Oct 2008	Parkwood 360/361 Traffic Impact Statement	Arta Projects Cc	
Sep 2008 to Feb 2009	Indaba Lodge Traffic Impact Study for new hotel	Sandton Indaba Pty	
Oct 2008 to Oct 2008	Hughes Ext. 68 Traffic Impact Study	M & F Giuricich Developments (Pty) Ltd	
Oct 2008 to Jan 2009	Risidale Traffic Impact Study	JAC Property Group	
Oct 2008 to Dec 2008	Eastleigh Ridge Security Enclosure - Traffic Impact Study	Eastleigh Ridge Residents Association	

Date	Project	Client	Contract Value (SAR)
Oct 2008 to Dec 2008	Bryanston Erven 2154 & 2155 - Traffic Impact Study	Riverclub 32 (Pty) Ltd	
Oct 2008 to Feb 2009	Edenburg Portions 22 & 23 - Erf 252 - Traffic Impact Study	King Trade Investments 1001 (Pty) Ltd	
Nov 2008 to Jan 2009	Prop.Sec.Access Restrictions, Glen Marais Traffic Impact Study	Oppivlei Residents Association	
Nov 2008 to Mar 2009	Erven 116,117,118; Ptn.1 of Erf 119, & Erf 120, Melrose, Traffic Impact Study	Microzone Trading 290 Cc	
Dec 2008 to Jan 2009	Remainder of the Farm Driefontein, Section 7 Report for Gautrans	Echo Lake Investment Cc	
Nov 2008 to Apr 2009	Grootvaly Portions 9,51,52,73, & 111, Sec.7 Report for Gautrans	Leon Bezuidenhout Town Planners	
Dec 2008 to Present	Traffic Signal Investigations.& Energy Efficiency of Traffic Signal Installations	Ekurhuleni Metropolitan Municipality	
Feb 2009 to Mar 2009	Vulcania Ext.14 - Traffic Impact Study	Dalmar Beleggings (Pty) Ltd	
Mar 2009 to Apr 2009	Rezoning of Portion 74 of Erf 1, Lonehill, Traffic Impact Study	Crestcom Investments (Pty) Ltd	
May 2009 to May 2009	Public Transport Investigation for Green Star Building Rating, Nedbank Phase 2, Sandton	WSP Energy (Pty) Ltd	
Nov 2005 to Dec 2007	Fashion Square Johannesburg Detail Design	KYD Consulting Engineers (Pty) Ltd	
Sep 2006 to Oct 2007	Main Place Development, Johannesburg, Traffic Impact Study	KYD Consulting Engineers (Pty) Ltd	
Sep 2006 to Feb 2007	Wemmer Pan Residential Development. - Traffic Impact Study	KYD Consulting Engineers (Pty) Ltd	
Nov 2006 to Present	Audit of Traffic Signals for Johannesburg Roads Agency	KYD Consulting Engineers (Pty) Ltd	
Feb 2009 to Mar 2009	Conceptual Planning of new Walter Sisulu University Rail Station,Potsdam	KYD Consulting Engineers (Pty) Ltd	
Jun 2009 to Aug 2009	Traffic Impact Study for Expansion of Sishen Iron Ore Mine, Northern Cape	Synergistics Environmental Services	
Aug 2009 to Oct 2009	Traffic Impact Study for Proposed Rail Link to Kusile Power Station, Mpumalanga	Zitholele Consulting	
Jan 2010 to Mar 2010	Traffic Impact Study for Expansion of Waste Site for Tutuka Power Station, Mpumalaga	Zitholele Consulting	
Current	Traffic Impact Assessment for New Manganese Ore Mine Near Hotazel, Northern Cape	Synergistics Environmental Services	

Details

Tania Anderson
Plant Ecologist
P.O. Box 10469
Beaconsfield
Kimberley
8315
Tel. 053 8392713, Cell 0832567402
E-mail: spothil@gmail.com

Summary of expertise

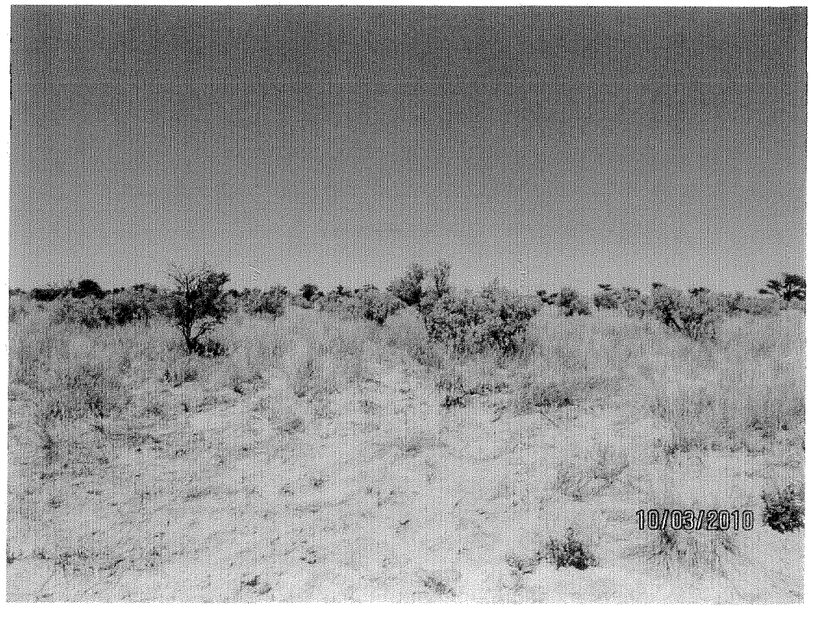
- Qualifications: BSc (1986), BSc. Honours (1987) University of Pretoria, Masters in Environmental Management, UFS (2005).
- 21 years of experience as a Plant Ecologist at the McGregor Museum, Kimberley.
- Published four refereed scientific papers, three technical scientific reports, more than 60 popular articles, four booklets and contributed to and edited a field guide. Contributor to the Red Data list of SA Plants 1996. Presented at numerous conferences.
- Since 1995 been involved in specialist studies for EIAs, and have completed 58 specialist reports.
- Reviewed many EIAs and EMPs for projects in the Northern Cape for NGOs.

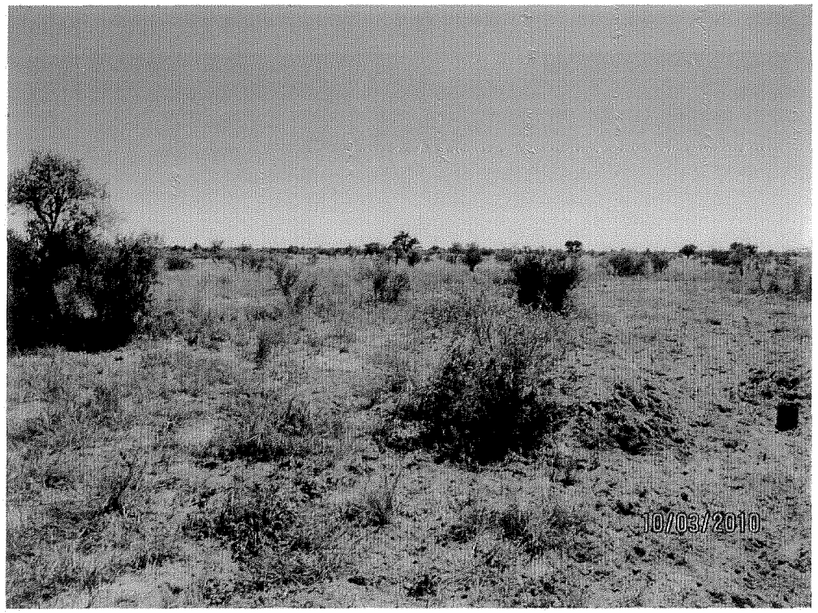
Independence

Tania Anderson has no connection, financial or legal, to the proponent and remuneration for services for this study is not linked to approval by the responsible decision-making authorities. She is an independent consultant and has no business, financial or personal interest in the application other than fair remuneration for work performed for the application. There are no circumstances that compromise the objectivity of this specialist performing such work.

Appendix 9: Site Photos

Site Photos Showing the Current Status of the environment on Farm Gravenhage 703/114

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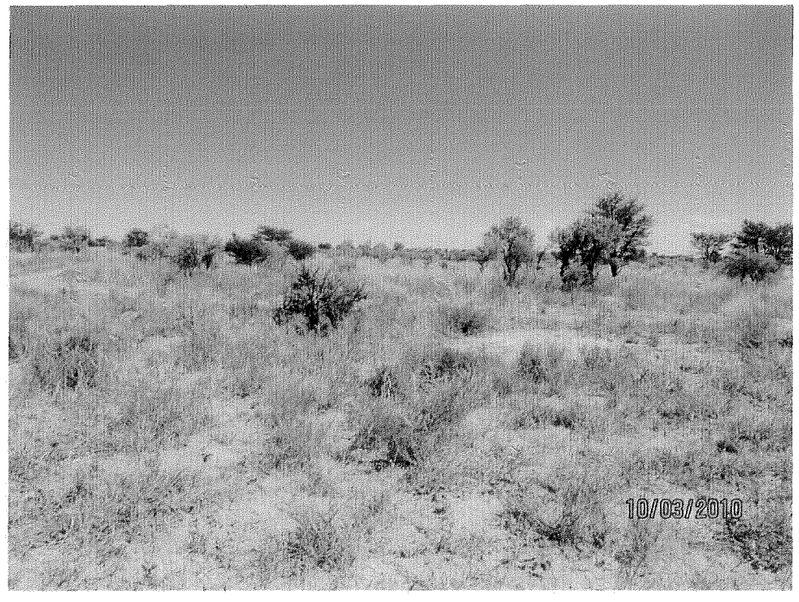
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