

**NGULULU RESOURCES (PTY) LTD,  
PROPOSED NGULULU COAL MINE, DRAFT  
SCOPING REPORT UNDER NEMA, 1998**

**LOCALITY:** PORTION 26 OF THE FARM  
DROOGEFONTEIN 242 IR, DELMAS, MPUMALANGA  
PROVINCE

**MDEDET REF NO:** 17/2/3N-312

**DATE:** SEPTEMBER 2014

**SHANGONI**  
*Management Services (Pty) Ltd*



## DRAFT SCOPING REPORT

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*Management Services (Pty) Ltd*

# PROJECT DETAILS

**Mpumalanga: Department of Economic Development, Environment and Tourism (DEDET)**

**MDEDET Reference No: 17/2/3N-312**

**Project Title: Proposed Ngululu Coal Mine**

**Shangoni Project Number: RES-NGU-13-07-24**

**Compiled by: Mpho Masango**

**Date: September 2014**

**Location: Delmas, Mpumalanga Province**

**Technical Reviewer: Minnette le Roux**



**M Le Roux**

**Quality Reviewer: Brian Hayes**



**RB Hayes (Pr.Eng.)**



# EXECUTIVE SUMMARY

## Background and project description

Ngululu Resources (the Applicant) proposes an opencast coal mine with an estimated 20 years life of mine (LOM) on Portions 26 of the farm Droogefontein 242 IR. The Applicant is in the process of applying for a mining right in terms of the Mineral and Petroleum Resources Development Act (MPRDA), 2002 (Act No. 28 of 2002), for Portions 26, 46 and 47 of the farm Droogefontein 242 IR, although at this stage, no mining activities are planned to take place on Portion 46 and Portion 47 of the farm Droogefontein 242 IR. An Environmental Management Programme (in terms of the MPRDA, 2002) and in support of the mining right application, was submitted to the Department of Mineral Resources in July 2014.

The proposed project site is located approximately 15km south-west of Delmas in the Victor Khanye local Municipality (VKLM), as part of the Nkangala District Municipality (NDM), Mpumalanga Province. No mining activities are currently being undertaken on the proposed site. Ngululu Resources does not currently hold the surface rights of the properties on which it proposes to undertake the activities.

An environmental authorisation application was submitted to Mpumalanga Department of Economic Development, Environment and Tourism (MDEDET) on the 15<sup>th</sup> of October 2013. The project was registered and issued a reference number: 17/2/3N-312 on the 17<sup>th</sup> of October 2013 and the formal environmental authorisation process was thereby initiated. All the findings from the scoping process are included in this Scoping Report which forms part of an application for environmental authorisation for the project.

This Scoping Report is divided into the following parts:

- Part 1: Introduction (including a description of the project).
- Part 2: Nature and extent of the environment affected by activity.
- Part 3: Applicable legislation and guidelines.
- Part 4: Public Participation Process.
- Part 5: Need and desirability for the project.
- Part 6: Description of alternatives.
- Part 7: Identification of anticipated environmental Impacts.
- Part 8: Plan of study for EIA.
- Part 9: Conclusion.

The activities associated with the proposed Ngululu Coal Mine are to be undertaken on Portion 26 of the farm Droogefontein 242 IR. The mineral to be mined is coal and the seam is estimated at approximately 30m below the surface. The coal is suitable for domestic power generation as well as low volatile pseudo anthracite. The product will be for the local market only, with Eskom being one of the consumers.

Mining will be carried out by conventional truck and shovel opencast mining techniques through a modified terrace mining methodology that maximises direct backfilling. The initial cut will be through a box cut designed to expose sufficient reserves for the first year of production and also act as a future access ramp into the mine. The first six months are allocated for site clearance, topsoil and subsoil removal, and storage which leaves the rest of the year for product removal, thus resulting in 600 000 tons of the planned 1 200 000 tons production for the first year. The life of mine equates to approximately 20 years, provided that the rate of 3 000 000 tons per annum Run Of Mine (ROM) is maintained.

The proposed mine infrastructure requirements include access road(s), stockpile areas, loading bays, workshops, an administrative building, a change-house, waste rock dump, pollution control dam, storm water management systems, mobile security offices for access control, a weighbridge, potable water tank, power lines, bulk diesel storage facility, oil storage facilities, explosive storage facilities and stores (for spares and material), and mobile ablution facilities.

## **.Legal requirements and legislative process**

As part of the proposed project, listed activities defined under the National Environmental Management Act, Act 107 of 1998 (NEMA, 1998) and the Environmental Impact Assessment (EIA) regulations there under will take place. Relevant listed activities triggered by the proposed activities are described further in this Scoping Report (refer to Part 1.5).

It is the intention of this Scoping Report to provide the necessary information pertaining to the proposed activities associated with the project, as required in terms of the Environmental Impact Assessment Regulations (EIA Regulations R543: EIA Regulations in terms of Chapter 5 of the NEMA, 1998, dated June 2010) under the NEMA, 1998. This Scoping Report intends to highlight all information relevant to the proposed Ngululu Coal Mine project.

A Scoping Report (submitted on 15 August 2013), the Environmental Management Programme (submitted on 15 January 2014) and an amended Environmental Management Programme (submitted on 10 July 2014), all compiled in terms of the MPRDA, were submitted to the Department of Mineral Resources (DMR). Furthermore, a Water Use License will be applied for, in terms of Section 21 of the National Water Act, 1998 (NWA, 1998) for water use activities associated with the proposed project.

The diagram below provides a proposed visual representation of the Scoping- and EIA approach followed in terms of NEMA, 1998 and the EIA Regulations, dated 2010.



**Schedule**

**Process**

**Steps**

October 2013  
– February  
2014

**Application Phase:**

- EIA Application form
- Background Information

- Submission of Application form and obtaining Project reference number
- I&APs & Stakeholder register / database
- Background Information Document distributed, newspaper advertisement and site notices placed
- Telephonic and electronic notifications
- I&APs and Stakeholder comments recorded

**Current Process**

March 2014 –  
December  
2014

**Scoping Phase:**

- Draft Scoping Report and Plan of Study for EIA
- Submission of Final Scoping Report and Plan of Study for EIA

- Letters to inform I&APs and Stakeholders of the availability of the draft Scoping Report
- Draft Scoping Report for public and Stakeholder comment (available on [www.shangoni.co.za](http://www.shangoni.co.za))
- Consultation with local authorities
- Public meeting(s) / open days
- Incorporation of comments and issues into Scoping Report
- Final Scoping Report submission

October 2014  
– March 2015

**EIA Phase:**

- Specialist Studies
- Impact Assessment and Mitigation measures.
- Draft EIA Report
- Final EIA Report

- Letters to inform I&APs and Stakeholders of the availability of the draft EIA Report
- Draft EIA Report for public and Stakeholder comment (available on [www.shangoni.co.za](http://www.shangoni.co.za))
- Continued consultation with local authorities and communication to I&APs
- Incorporation of comments and issues into EIA Report.
- Final EIA Report submission

March 2015 –  
August 2015

**Final Phase:**

- Authorities decision-making stage

- Notify I&APs and Stakeholders of government authority's decision on the EIA
- Available on [www.shangoni.co.za](http://www.shangoni.co.za)

## Anticipated impacts

For the purpose of the Scoping report it is required by Regulation 28 (g) (of Regulation 543) of the EIA Regulations dated 2010, under the NEMA, 1998 that the major potential impacts, the activities, processes and actions may have on the surrounding environment, are identified.

Regulation 31 (of Regulation 543) of the EIA Regulations, 2010, under the NEMA, 1998, requires that an Environmental Impact Assessment Report (EIR) includes an assessment of the status, extent, duration, probability, reversibility, replaceability of resources and mitigatory potential of the major potential environmental impacts of the proposed project be undertaken.

A baseline identification of the major potential impacts has therefore only been included in this Scoping Report. The prediction of the nature of each impact, the evaluation of each impact by rating its significance and the management and mitigation measures adopted to address each impact, will be assessed during the EIR.

The activities associated with the proposed project are described in full in Part 2 and the anticipated impacts of the proposed project are described in Part 7.

Potential significant impacts that have been identified during the scoping process are:

- Destruction of geology due to extraction of coal.
- Destruction of moist grassland / wetland / pan area due to clearing of the vegetation, change of the soil hydrology and dumping of overburden on moist grasslands.
- Deterioration of the vegetation associated with wetlands and the pan due to sedimentation, compaction and/or increased pollutants in the pan or wetland.
- Destruction of the declining' *Crinum bulbispermum*.
- Restriction of water flow due to physical alteration of the site, causing change in quantity and fluctuation of the watercourses (wetland and pan).
- The aquifer structure will be destroyed wherever the box-cut intersects the aquifer.
- Graves and remaining historic settlements will be impacted by operational activities.
- Excavation of fossils that are/may be present in the grey shale interlayered with the coal seams during construction phase.
- Dust from drilling and blasting, stockpiling, offloading and loading of topsoil, overburden, waste rock and coal.
- Potential generation of acid mine drainage due to carbonaceous material found within the mine area.
- Downstream movement of a pollution plume within the weathered zone aquifer
- Reduced or eliminated production in domestic supply boreholes due to the groundwater drawdown.
- Contamination of the perched aquifer may occur if the return water dam is unlined.



- Strong possibility of ARD development consequent to oxidation and hydration.
- ARD development consequent to oxidation and hydration
- Decant from rehabilitated mine pit

Additional significant impacts will be highlighted during the EIA phase of the project. The extent of the identified potentially significant impacts will be quantified, and will be reported on as part of the EIR.

## **Knowledge gaps**

The following knowledge gaps and uncertainties have been identified during the scoping process and require further investigations that will be carried out comprehensively as part of the EIA process for the proposed project:

- All aspects of the environment will be fully quantified as part of the EIA Phase.
- Specialist Studies to be conducted:
  - Blasting and Vibration Study;
  - Traffic Impact Assessment and
  - Economic Assessment.
- Detailed project information and final pit and infrastructure layouts will be presented as part of the final EIR.





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## DEFINITIONS

### Acid Mine Drainage (AMD)

Refers to the outflow of acidic water from metal mines or coal mines. Acid mine drainage occurs naturally within some environments as part of the rock weathering process but is exacerbated by large-scale earth disturbances characteristic of mining and other large construction activities, usually within rocks containing an abundance of sulfide minerals.

### Coal

A solid, brittle, more or less distinctly stratified combustible carbonaceous rock, formed by partial to complete decomposition of vegetation; varies in colour from dark brown to black; not fusible without decomposition and very insoluble.

### Conveyer

An apparatus for moving material from one point to another in a combustible fashion. This is accomplished with an endless (that is, looped) procession of hooks, buckets, wide rubber belt, etc.

### Draw down

Lowering of water surface level.

### Environment

The surroundings (biophysical, social and economic) within which humans exist and that are made up of

- the land, water and atmosphere of the earth;
- micro-organisms, plant and animal life;
- any part or combination of (i) and (ii) and the interrelationships among and between them; and
- the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and wellbeing.

### Environmental Aspects

Elements of an organization's activities, products or services that can interact with the environment.



## **Environmental Degradation**

Refers to pollution, disturbance, resource depletion, loss of biodiversity, and other kinds of environmental damage; usually refers to damage occurring accidentally or intentionally as a result of human activities.

## **Environmental Impacts**

Any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organization's activities, products or services.

## **Environmental Impact Assessment**

A study of the environmental consequences of a proposed course of action.

## **Environmental Impact Report**

A report assessing the potential significant impacts as identified during the environmental impact assessment.

## **Environmental impact**

An environmental change caused by some human act.

## **Land use**

The various ways in which land may be employed or occupied. Planners compile, classify, study and analyse land use data for many purposes, including the identification of trends, the forecasting of space and infrastructure requirements, the provision of adequate land area for necessary types of land use, and the development or revision of comprehensive plans and land use regulations.

## **Overburden Prevention**

Any activity that reduces or eliminates pollutants prior to recycling, treatment, control or disposal.

## **Pollution**

It is the introduction of contaminants into the natural environment that cause adverse change. Pollution can take the form of chemical substances or energy, such as noise, heat or light.

## **Public Participation Process**

A process of involving the public in order to identify needs, address concerns, in order to contribute to more informed decision making relating to a proposed project, programme or development.



## Registered Interested and Affected Party

In relation to an application, means an interested and affected party whose name is recorded in the register opened for that application.

## Topography

Topography, a term in geography, refers to the "lay of the land" or the physio-geographic characteristics of land in terms of elevation, slope and orientation.

## Vegetation

All of the plants growing in and characterizing a specific area or region; the combination of different plant communities found there.

## Waste

As per the definition of the National Environmental Management Waste Act, Act 59 of 2008 - means any substance, whether or not that substance can be reduced, re-used, recycled and recovered—

- (a) that is surplus, unwanted, rejected, discarded, abandoned or disposed of; 3(b) which the generator has no further use of for the purposes of production; (c) that must be treated or disposed of; or (d) that is identified as a waste by the Minister by notice in the Gazette, and includes waste generated by the mining, medical or other sector, but— (i) a by-product is not considered waste; and 3(ii) any portion of waste, once re-used, recycled and recovered, ceases to be waste.

## Watercourse

- a) A river or spring;
- b) A natural channel in which water flows regularly or intermittently;
- c) A wetland, lake or dam into which, or from which, water flows, and
- d) Any collection of water which the Minister may, by notice in the Gazette, declare to be watercourse, and a reference to a watercourse includes, where relevant, its bed and banks.

## Wetland

It is a land area that is saturated with water, either permanently or seasonally, such that it takes on the characteristics of a distinct ecosystem. Primarily, the factor that distinguishes wetlands from other land forms or water bodies is the characteristic vegetation that is adapted to its unique soil conditions. Wetlands consist primarily of hydric soil, which supports aquatic plants.



## ABBREVIATIONS

BID	Background Information Document
CRR	Comments and Responses Report
MDEDET	Mpumalanga Department of Economic Development, Environment and Tourism
DMR	Department of Mineral Resources
DWA	Department of Water Affairs
EAP	Environmental Assessment Practitioner
ECA	Environmental Conservation Act, 1989
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
EMF	Environmental Management Framework
EMP	Environmental Management Programme
GN	Government Notice
I&AP	Interested and Affected Party
MPRDA	Mineral and Petroleum Resources Development Act, 2002
MRSRD	Mine Residue Stockpiles and Residue Deposits
NEMA	National Environmental Management Act, 1998
NEMAA	National Environmental Management Amendment Act, 2008
NEMWA	National Environmental Management Waste Act, 2008
NEMWAA	National Environmental Management Waste Amendment Act, 2014
NDM	Nkangala District Municipality
NWA	National Water Act, 1998
R	Regulation
SAHRA	South African Heritage Resources Agency
S&EIR	Scoping and Environmental Impact Reporting
VKLM	Victor Khanye Local Municipality
PCD	Pollution Control Dam



# 1. INTRODUCTION

Ngululu Resources (the Applicant) proposes an opencast coal mine with an estimated 20 years LOM on Portion 26 of the farm Droogefontein 242 IR. Ngululu Resources is in the process of applying for a mining right in terms of the Mineral and Petroleum Resources Development Act, 2002 (MPRDA, 2002) (Act 28 of 2002) for Portions 26, 46 and 47 of the farm Droogefontein 242 IR, although at this stage, no mining activities are planned to take place on Portion 46 and Portion 47 of the farm Droogefontein 242 IR. Ngululu Resources does not currently hold the surface rights of the properties on which it proposes to undertake the activities.

Portion 26 contains sensitive landscapes such as wetlands and a pan. Furthermore, heritage resources (in the form of graves and remaining historic settlements) have been identified on-site. The topography of the proposed site is relatively flat. Refer to Part 3 of this Scoping Report for further detail on the extent of the environment affected by the proposed activities.

Ngululu Resources' representative Restigen, appointed Shangoni Management Services as the projects independent Environmental Assessment Practitioner (EAP) so as to assist in undertaking the process as prescribed in the National Environmental Management Act, 1998 (NEMA, 1998) (Act 107 of 1998). An application to undertake a Scoping and Environmental Impact Reporting (S&EIR) process was submitted to the MDEDET. The Department subsequently registered the project and the formal process was thereby initiated. All the findings from the scoping process are included in this Scoping Report, which forms part of an application for environmental authorisation for the proposed Ngululu Coal Mine project on Portion 26 of farm Droogefontein 242 IR. The application is made in terms of the EIA Regulations, dated 2010 under NEMA, 1998.

Waste management activities in general, were previously applied for in terms of Government Notice (GN) 718: "List of waste management activities that have, or are, likely to have a detrimental effect on the environment", dated July 2009, under the National Environmental Management Waste Act (NEMWA), 2008. However, GN718 was repealed in November 2013 and a new list (GN 921) of waste management activities that require authorisation was promulgated in November 2013, which now excludes the storage of general- and hazardous waste as these activities are now included in the Norms and Standards (GN926), that was promulgated (along with GN921) in November 2013.

However, changes in terms of the National Environmental Management Waste Amendment Act (NEMWAA) (Act 26 of 2014) have occurred that may be applicable to Ngululu Resources' activities. The exclusion of Mine Residue Stockpiles and Residue Deposits (MRSRD) has been removed from Section 4 of the NEMWA and the definition of hazardous waste in Schedule 3 now specifically includes MRSRD's. This implies that all functional elements of waste management that are enforced in NEMWA

(management, classification, waste generation, storage, transportation, recovery, recycling, reuse and ultimate disposal) become enforceable on MRSRD's.

Further consultation with the relevant Government Authorities will need to be undertaken with regards to the way forward

## **1.1 Process followed**

### **1.1.1 Objectives of the scoping process and the Scoping Report**

Scoping is the procedure that is undertaken during the initial stages of the Planning Phase of a project, and is used to determine the extent of, and approach to an EIA (i.e. terms of reference). This process is required for the proposed project in terms of the NEMA, 1998 and the EIA Regulations, 2010 there under.

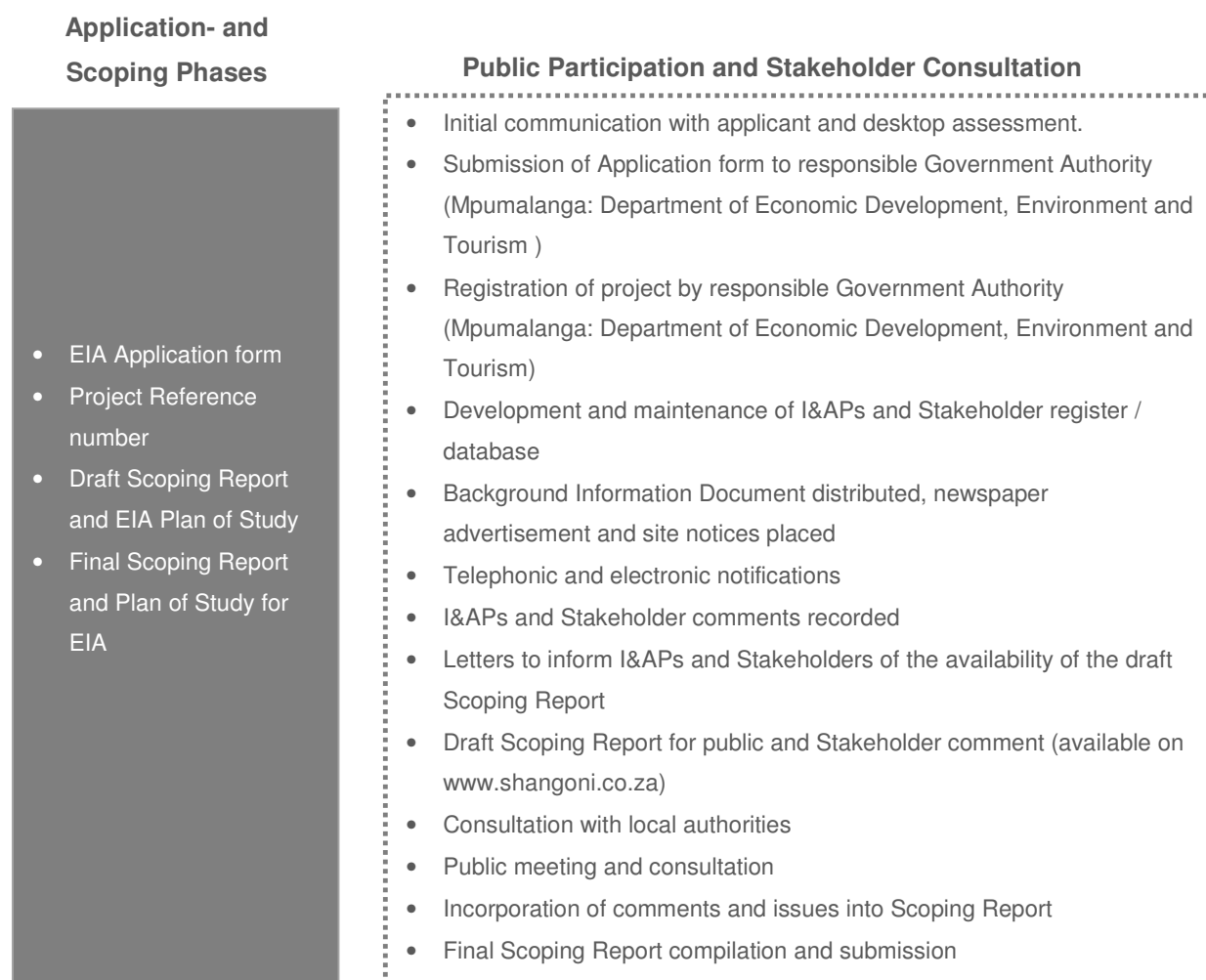
The objectives of the Scoping Process are to:

- Provide an opportunity for the Applicant, relevant Authorities and Interested and Affected Parties (I&APs) to exchange information and express their views and concerns regarding the proposed project before the EIA is undertaken. This is a requirement in terms of Regulation 54 of the EIA Regulations, dated 2010.
- Focus the study on identifying relevant anticipated impacts, issues and concerns, as well as reasonable alternatives (as per Regulation 28 of the EIA Regulations, dated 2010), and knowledge gaps, to ensure that the resulting EIA is useful to the Authorities for decision-making, and addresses the impacts, issues and concerns as identified.
- Facilitate an efficient assessment process that optimises time, resources and costs.



### 1.1.2 Methodology applied to conducting the scoping process

The figure below indicates the methodology that was applied in conducting the scoping process.



**Figure 1: Methodology applied to conducting the scoping process**

### 1.1.3 The Scoping Report in terms of the requirements of NEMA, 1998

Regulation 28(1) of the EIA Regulations, 2010 under the NEMA, 1998, lists aspects that must be included in Scoping Reports. Table 1 below indicates the parts where information has been provided as part of this Scoping Report

**Table 1: The Scoping Report in terms of the EIA Regulations, 2010, under the NEMA, 1998**

Regulation No:	Description	Scoping Report Part
R543 Regulation 28(1)(a)	Details of the Environmental Assessment Practitioner (EAP).	Part 1 & Appendix C
	(i) Details of the EAP who prepared the report.	
	(ii) Details of the expertise of the EAP to carry out scoping procedures.	

Regulation No:	Description	Scoping Report Part
R543 Regulation 28(1)(b)	A description of the proposed activity.	Part 1
R543 Regulation 28(1)(c)	Any feasible and reasonable alternatives that have been identified.	Part 6
R543 Regulation 28(1)(d)	A description of the property on which the activity is to be undertaken and the location of the activity on the property.	Part 1
R543 Regulation 28(1)(e)	A description of the environment that may be affected by the activity and the manner in which the physical, biological, social, economic and cultural aspects of the environment may be affected by the proposed activity.	Part 2
R543 Regulation 28(1)(f)	An indication of all legislation and guidelines that have been considered in the preparation of the scoping report.	Part 3
R543 Regulation 28(1)(g)	A description of environmental issues and potential impacts, including cumulative impacts that have been identified.	Part 7
R543 Regulation 28(1)(h)	Details of the public participation process conducted in terms of Regulation 27(a).	Part 4 & Appendix D
	(i) Steps taken to notify potentially interested and affected parties of the application.	
	(ii) Proof that notice boards, advertisements and notices notifying potentially interested and affected parties of the application have been displayed, placed or given.	
	(iii) A list of all persons or organisations that were identified and registered in terms of Regulation 55 as interested and affected parties in relation to the application.	
R543 Regulation 28(1)(h)	(iv) A summary of the issues raised by interested and affected parties, the date of receipt of, and the response of the EAP to those issues.	Part 4 & Appendix D
R543 Regulation 28(1)(i)	A description of the identified potential alternatives to the proposed activity, including advantages and disadvantages that the proposed activity or alternatives may have on the environment and communities that may be affected by the activity.	Part 6
R543 Regulation 28(1)(j)	A description of the need and desirability of the proposed activity.	Part 5
R543 Regulation 28(1)(k)	Copies of any representations and comments received in connection with the application or the scoping report from interested and affected parties.	Part 4 & Appendix D





Regulation No:	Description	Scoping Report Part
R543 Regulation 28(1)(l)	Copies of any minutes of any meetings held by the EAP with interested and affected parties and other role players that record the views of the participants.	Part 4 & Appendix D6
R543 Regulation 28(1)(m)	Any responses by the EAP to those representations and comments and views.	Part 4 & Appendix D
R543 Regulation 28(1)(n)	A plan of study for Environmental Impact Assessment (EIA), which sets out the proposed approach to the EIA of the application.	Part 8
	(i) A description of tasks that will be undertaken as part of the EIA process including any specialist reports or specialised processes, and the manner in which such tasks will be undertaken.	
	(ii) An indication of the stages at which the competent authority will be consulted.	Part 4 & Part 8
	(iii) A description of the proposed method of assessing the environmental issues and alternatives, including the option of not proceeding with the activity.	Part 7 & Part 8
	(iv) Particulars of the public participation process that will be conducted during the EIA process.	Part 4 & Part 8
R543 Regulation 28(1)(o)	Any specific information required by the competent authority.	N/A
R543 Regulation 28(1)(p)	Any other matters required in terms of Section 24(4) (a) and (b) of the Act.	N/A

\* No specific requests have been received from the competent authorities to date.

The EIA process will be undertaken subsequent to the scoping process and will be conducted in accordance with Regulations 31 of the Environmental Impact Assessment Regulations, 2010 under the NEMA, 1998. The EIA document for the proposed project will include detailed information pertaining to anticipated or potential impacts that may be associated with the proposed project.

#### 1.1.4 Applicable legislation and guidelines

Table 2 below provides an indication of the main legislation, policies and / or guidelines applicable to the proposed Ngululu Coal Mine Project.

**Table 2: Applicable legislation, policies and / or guidelines.**

Title of legislation, policy or guideline	Administering authority	Aim of legislation, policy or guideline
<b>Laws of General Application</b>		



Title of legislation, policy or guideline	Administering authority	Aim of legislation, policy or guideline
The Constitution of the Republic of South Africa, 1996 (Act 108 of 1996)	-	To establish a Constitution with a Bill of Rights for the Republic of South Africa.
Environment Conservation Act, 1989 (Act 73 of 1989 as amended)	Department of Environmental Affairs	To control environmental conservation.
National Environmental Management Act, 1998 (Act 107 of 1998)	Department of Environmental Affairs	To provide for the integrated management of the environment, and to regulate the 'Duty of Care' Principle.
Promotion of Access to Information Act, 2000 (Act 2 of 2000 as amended)	-	To give effect to the constitutional right of access to any information held by the State and any information that is held by another person and that is required for the exercise or protection of any rights.
<b>Air Quality and Noise</b>		
National Environmental Management: Air Quality Act (Act No 39 of 2004)	District Municipality	To reform the law regulating air quality to protect the environment by providing reasonable measures for the prevention of pollution. To provide for national norms and standards regulating air quality monitoring, management and control.
<b>Water Management</b>		
National Water Act (NWA), 1998 (Act No 36 of 1998)	Department of Water Affairs	To provide for fundamental reform of the law relating to water resources
Government Notice (GN) 704, dated 1999 under the NWA, 1998		
<b>Waste Management</b>		
National Environmental Management: Waste Act (Act No 59 of 2008)	Department of Environmental Affairs and the Department of Economic Development, Environment and Tourism	To reform the law regulating waste management in order to protect health and the environment by providing reasonable measures for the prevention of pollution and ecological degradation.
National Environmental Management Waste Amendment Act (NEMWAA(Act 26 of 2014)		
Government Notice (GN) 926, dated November 2013 under the National Environmental Management: Waste Act (Act No 59 of 2008)		National Norms and Standards for the storage of waste.
<b>Biodiversity</b>		
National Environmental Management Biodiversity Act, 2004 (Act No 10 of 2004)	Department of Economic Development, Environment and Tourism	To provide for the management and conservation of South Africa's biodiversity within the framework of the National Environmental Management Act, 1998.



Title of legislation, policy or guideline	Administering authority	Aim of legislation, policy or guideline
Conservation of Agricultural Resources Act, 1983 (Act No 43 of 1983)	Department of Agriculture	To provide for control over the utilisation of the natural agricultural resources of South Africa in order to promote the conservation of the soil, the water sources and the vegetation and the combating of weeds and invader plants.
National Veld and Forest Fire Act, 1998 (Act No 101 of 1998)	Department of Agriculture	To reform the law on veldt and forest fires.
Agricultural Pest Act, 1983 (Act No 36 of 1983 as amended) – GN R276 of 5 March 2004	Department of Agriculture	To regulate plants, plant products and other regulated articles when imported into South Africa.
<b>Soil and Land Management</b>		
National Environmental Management Act, 1998 (Act 107 of 1998). National Environmental Management Amendment Act, 2008 (Act 62 of 2008).	Department of Economic Development, Environment and Tourism	To provide for the integrated management of the environment and to regulate the 'Duty of Care' Principle.
Environment Conservation Act, 1989 (Act 73 of 1989 as amended)	Department of Economic Development, Environment and Tourism	To control environmental conservation.
<b>Heritage and Archaeological Resources</b>		
National Heritage Resources Act No 25 of 1999 (Act No 25 of 1999 as amended)	South African Heritage Resources Agency	To introduce an integrated and interactive system for the management of the national heritage resources; to promote good government at all levels, and empower civil society to nurture and conserve their heritage resources so that they may be bequeathed to future generations
<b>Protected Areas</b>		
National Environmental Management: Protected Areas Act, 2003 (Act No 57 of 2003 as amended)	Department of Economic Development, Environment Affairs and Tourism	To provide for the protection and conservation of ecologically viable areas representative of South Africa's biological diversity and its natural landscapes.
<b>Planning of New Activities</b>		
National Environmental Management Act, 1998 (Act 107 of 1998)	Department of Economic Development, Environment and Tourism	To provide for the integrated management of the environment and to regulate the 'Duty of Care' Principle.



Title of legislation, policy or guideline	Administering authority	Aim of legislation, policy or guideline
EIA Regulations R 543, R 544, R 545 and R 546, dated June 2010) under the NEMA, 1998	Department of Economic Development, Environment Affairs and Tourism	To regulate and control the authorisation of certain listed activities.
<b>Mining</b>		
Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002)	Department of Mineral Resources	To make provision for equitable access to and sustainable development of the nation's mineral and petroleum resources.
Mineral and Petroleum Resources Development Regulations GN R 527, dated 2004		



## 2. DESCRIPTION OF THE PROJECT

### 2.1 Details of the project applicant

Name of Applicant	Ngululu Resources (Pty) Ltd
Postal Address	PO Box 67347 Highveld x11 0169
Telephone No.	+27 (012) 663 2257
Fax No.	+27 (0)12 663 1018
Farm name and portion on which the proposed activities will take place	Portion 26 of the farm Droogfontein 242 IR
Title Deed Number and 21 Digit Code	113368/2003 T0IR00000000024200026
Co-ordinates of operation	S 26.22605 and E 28.55864

### 2.2 Appointed Environmental Assessment Practitioner

Name of firm	Shangoni Management Services (Pty) Ltd	
Postal address	PO Box 74726 Lynnwood Ridge 0040	
Telephone No.	+27 (0)12 807 7036	
Fax	+27 (0)12 807 1014	
E-mail	<a href="mailto:mpho@shangoni.co.za">mpho@shangoni.co.za</a> / <a href="mailto:wilda@shangoni.co.za">wilda@shangoni.co.za</a>	
Team of Environmental Assessment Practitioners on project		
Name	Qualifications & experience to conduct the EIA	Responsibility
Brian Hayes	Registered professional engineer (Chemical) with a master degree in Environmental Engineering	Quality Assurance
Mpho Masango	NDip: Environmental Sciences programme	EAP



Wilda Meyer	BSc (Hons) Geography and Environmental Management	EAP
Minnette Le Roux	Founding member of the EAPSA and Certified Natural Scientist with a master degree in Environmental Management.	Technical Reviewer

\* Detailed cv's of project team are attached (Appendix C).

## 2.3 Proposed activity

The proposed activities applied for as part of this Scoping Report (in support of an Environmental Authorisation) are associated with opencast coal mining and related activities.

An EIA application form in terms of NEMA, 1998 and the EIA regulations, dated 2010, was submitted to the Mpumalanga Department of Economic Development, Environment and Tourism on the 15<sup>th</sup> of October 2013. The project was registered and a letter of acknowledgement (see Appendix B1) was received with a reference number 17/2/3N-312 on the 17<sup>th</sup> of October 2013. The following listed activities in terms of the NEMA, 1998 (that are being applied for) will be undertaken on Portion 26 of farm Droogefontein 242 IR.

**Table 3: Listed activities in terms of GN. No R 544, 545 and 546, dated 2010 under NEMA, 1998.**

Number and date of the relevant notice	Activity No	Description
GN. No. R 544 Listing Notice 1 18 June 2010	9	<p><u>Listed Activity:</u>  <i>The construction of facilities or infrastructure exceeding 1000 metres in length for the bulk transportation of water, sewage or storm water -</i>  <i>(i) with an internal diameter of 0,36 metres or more; or</i>  <i>(ii) with a peak throughput of 120 litres per second or more, excluding where:</i>  <i>a. such facilities or infrastructure are for bulk transportation of water, sewage or storm water or storm water drainage inside a road reserve;</i>  <i>or</i>  <i>b. where such construction will occur within urban areas but further than 32 metres from a watercourse, measured from the edge of the watercourse.</i></p> <p><u>Project Description:</u>            Construction of return water pipelines delivering return water from the affected areas to the return water dam (pollution control dam) with a potential combined throughput of more than 120ℓ per second.</p>



Number and date of the relevant notice	Activity No	Description
GN. No. R 544 Listing Notice 1 18 June 2010	11	<p><u>Listed Activity:</u> The construction of: (i) canals; (ii) channels; (iii) bridges; (iv) dams; (v) weirs; (vi) bulk storm water outlet structures; (vii) marinas; (viii) jetties exceeding 50 square metres in size; (ix) slipways exceeding 50 square metres in size; (x) buildings exceeding 50 square metres in size; or (xi) infrastructure or structures covering 50 square metres or more</p> <p>where such construction occurs within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line.</p> <p><u>Project Description:</u> Construction of infrastructure, such as the return water dam (pollution control dam), storm water management measures and access roads to the open pit, as well as opencast mining activities within 32 metres of a watercourse (Wetland areas and a pan).</p>
GN. No. R 544 Listing Notice 1 18 June 2010	12	<p><u>Listed Activity:</u> The construction of facilities or infrastructure for the off-stream storage of water, including dams and reservoirs, with a combined capacity of 50000 cubic metres or more, unless such storage falls within the ambit of activity 19 of Notice 545 of 2010;</p> <p><u>Project Description:</u> After further assessment during the Scoping Phase, it became evident that this activity will no longer be relevant to this project.</p>
GN. No. R 544 Listing Notice 1 18 June 2010	13	<p><u>Listed Activity:</u> The construction of facilities or infrastructure for the storage, or for the storage and handling, of a dangerous good, where such storage occurs in containers with a combined capacity of 80 but not exceeding 500 cubic metres;</p> <p><u>Project Description:</u> Construction of facilities for the storage of hazardous substances (e.g. diesel, explosives and oil) with a capacity above 80 but less than 500 cubic metres</p>



Number and date of the relevant notice	Activity No	Description
GN. No. R 544 Listing Notice 1 18 June 2010	22	<p><u>Listed Activity:</u> The construction of a road, outside urban areas, (i) with a reserve wider than 13,5 meters or, (ii) where no reserve exists where the road is wider than 8 metres, or (iii) for which an environmental authorisation was obtained for the route determination in terms of activity 5 in Government Notice 387 of 2006 or activity 18 in Notice 545 of 2010.</p> <p><u>Project Description:</u> Ngululu Resources proposes to construct access roads and internal haul roads for the proposed project</p>
GN. No. R 545 Listing Notice 2 18 June 2010	5	<p><u>Listed Activity:</u> The construction of facilities or infrastructure for any process or activity which requires a permit or license in terms of national or provincial legislation governing the generation or release of emissions, pollution or effluent and which is not identified in Notice No. 544 of 2010 or included in the list of waste management activities published in terms of section 19 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) in which case that Act will apply.</p> <p><u>Project Description:</u> A Water Use License will be applied for water uses associated with the proposed Ngululu Coal Mine.</p>
GN. No. R 545 Listing Notice 2 18 June 2010	15	<p><u>Listed Activity:</u> Physical alteration of undeveloped, vacant or derelict land for residential, retail, commercial, recreational, industrial or institutional use where the total area to be transformed is 20 hectares or more; except where such physical alteration takes place for: (i) linear development activities; or (ii) agriculture or afforestation where activity 16 in this schedule will apply.</p> <p><u>Project Description:</u> The proposed disturbance of more than 20 hectares of land for the establishment of a coal mine and associated infrastructure.</p>





Number and date of the relevant notice	Activity No	Description
GN. No. R 546 Listing Notice 3 18 June 2010	14	<p><u>Listed Activity:</u>  <i>The clearance of an area of 5 hectares or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation, except where such removal of vegetation is required for:</i>  <i>(1) purposes of agriculture or afforestation inside areas identified in spatial instruments adopted by the competent authority for agriculture or afforestation purposes;</i>  <i>(2) the undertaking of a process or activity included in the list of waste management activities published in terms of section 19 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) in which case the activity is regarded to be excluded from this list;</i>  <i>(3) the undertaking of a linear activity falling below the thresholds in Notice 544 of 2010.</i></p> <p><i>a (i) All areas outside urban areas</i></p> <p><u>Project Description:</u>  The clearance of vegetation for the establishment of a proposed opencast coal mine and associated infrastructure.</p> <p>Note from the Vegetation Assessment conducted for the proposed project: <i>The site is largely transformed by agricultural activities. The natural vegetation is limited to the wetland areas, transformed grassland and cultivated areas, secondary areas and seepage areas, and moist grasslands (vegetation associated with watercourses). Also, a protected plant species, the 'Declining' Crinum bulbispermum was observed in a large population occurring within the wetland, which adds to the sensitivity of the area.</i></p>

## 2.4 Proposed locality

The site for the proposed Ngululu Resources opencast coal mine is located on Portion 26, of the farm Droogfontein 242 IR, approximately 15km from Delmas, Mpumalanga Province. The proposed site is situated within the VKLM's' jurisdiction. This local municipality forms part of the NDM located within the Mpumalanga Province. The site locality map and regional locality map are given below as Figure 2 and Figure 3 and are also attached as Appendix A2 and Appendix A3.



**Table 4: Administrative and water management boundaries**

Province	Mpumalanga
District Municipality	Nkangala District Municipality
Local Municipality	Victor Kanye Local Municipality
Ward	Ward 6
Department of Mineral Resources (DMR) Local Office	Mpumalanga
Department of Water Affairs (DWA) Local Office	Gauteng
Department of Economic Development, Environment and Tourism Local Office	Mpumalanga
Catchment Zone	C21E quaternary catchment
Water Management Area (if applicable)	Upper Vaal WMA

## 2.5 Use of immediately adjacent land

Portion 26 of the farm Droogefontein 242 IR is bordered by a commercial chicken farm to the north-west. The proposed site is surrounded by areas lands dominated by agriculture, specifically maize cultivation.

The dirt roads forming the western and southern boundary of Portion 26 of the farm Droogefontein 242 IR have recently been upgraded and soil berms and culverts were constructed, likely to aid drainage of the roads due to the wetland conditions.

The surface owners of the farm portions immediately adjacent to the proposed Ngululu Coal Mine site are listed in Table 5 below. Refer also to Part 4 for more detail regarding the Public Participation Process.

**Table 5: Surface rights holders of properties adjacent to the proposed site/farm**

Farm Name	Owner
Portions 31 and 39 of the farm Droogefontein 242IR	African Exploration (Mining Rights)
Portion 31 and 39 of Farm Droogefontein 242 IR	Namutoni Boerdery (Pty) Ltd _Mr. Tinus van Dyk (Surface rights)
Portion 29 of the farm Droogefontein 242IR	Rep n Roer Pty Ltd (Daniel C.H van Wyk)
Portion 53 of the farm Droogefontein 242 IR	Vibrant Veterans
RE of mineral area 1 on the RE of portion 52, RE of portion 4, RE of portion 18, portions 5, 8, 9,11, 12, 13, 14, 15, 16, 17, 19, 20, 22, 23, 24, 25 and 30 of the farm Droogefontein 242IR.	Eloff Mining / Total



## 2.6 Land Tenure

The surface right holders of the farm portions of Droogefontein 242 IR which Ngululu is applying mining rights and environmental authorisation for are Mr Tinus van Dyk (landowner of Portion 26), Mr Elwyn Michael Vereker (landowner of Portion 46) and Mr Ockie Bezuidenhout (landowner of Portion 47). No mining activities are currently being undertaken on the proposed site and there will be no mining activities taking place on Portions 46 and 47 of the farm Droogefontein 242 IR. The site is used for agricultural activities and is characterised by a flat to gentle slope topography. Sensitive landscape identified is a wetland and a pan. Sites of archaeological importance were also identified on-site (refer to Figure 4).



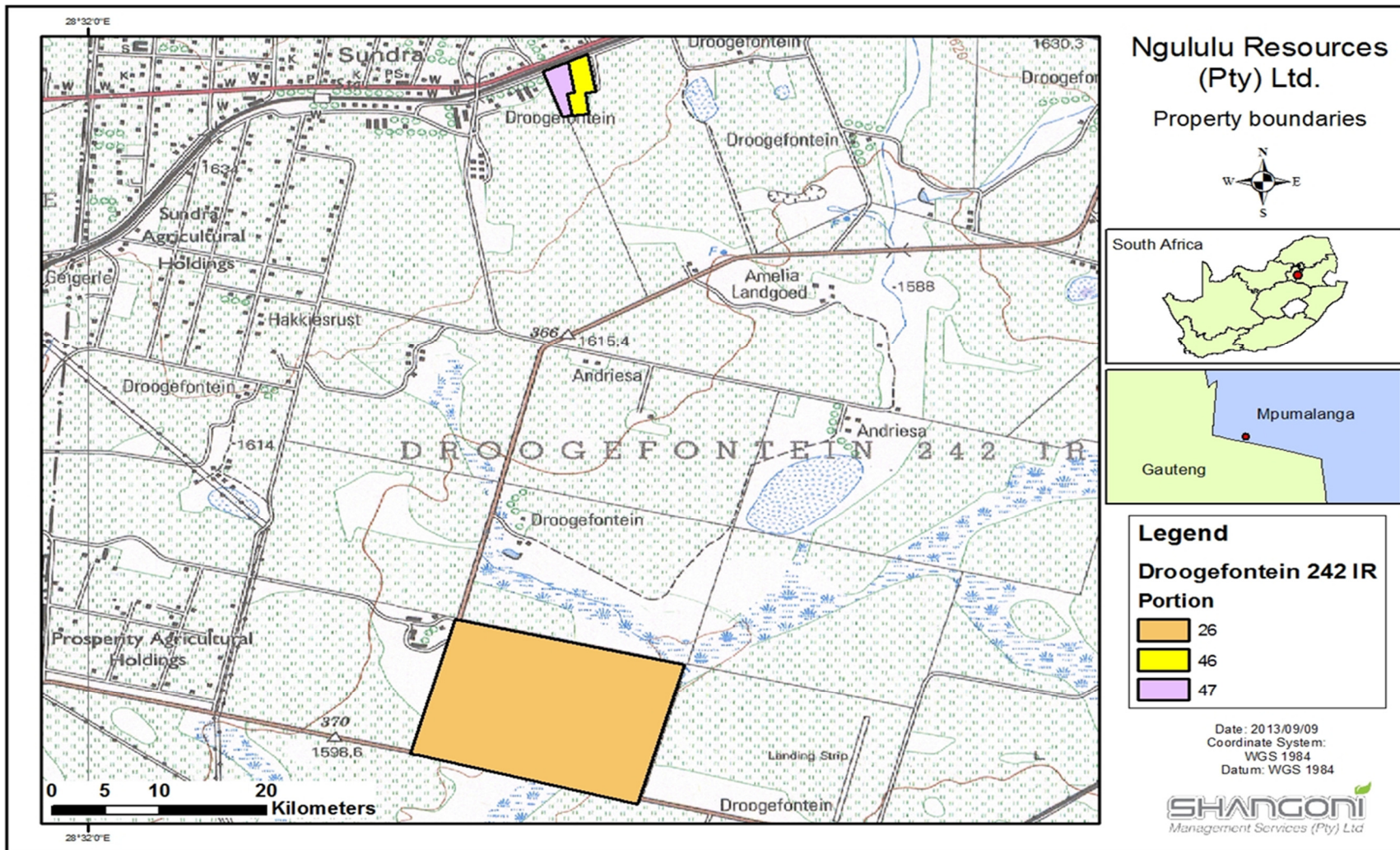


Figure 2: Locality map

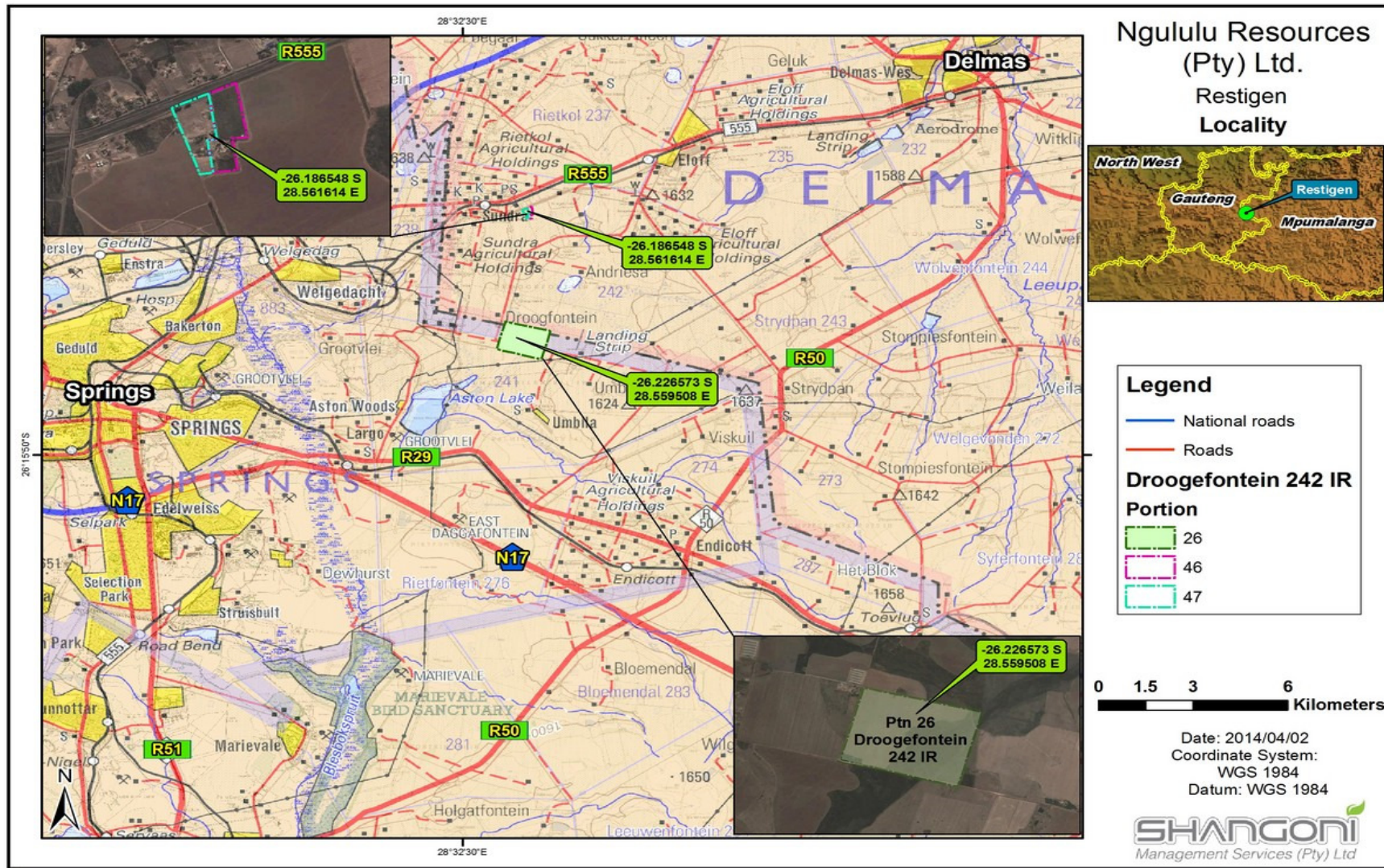


Figure 3 : Regional locality map

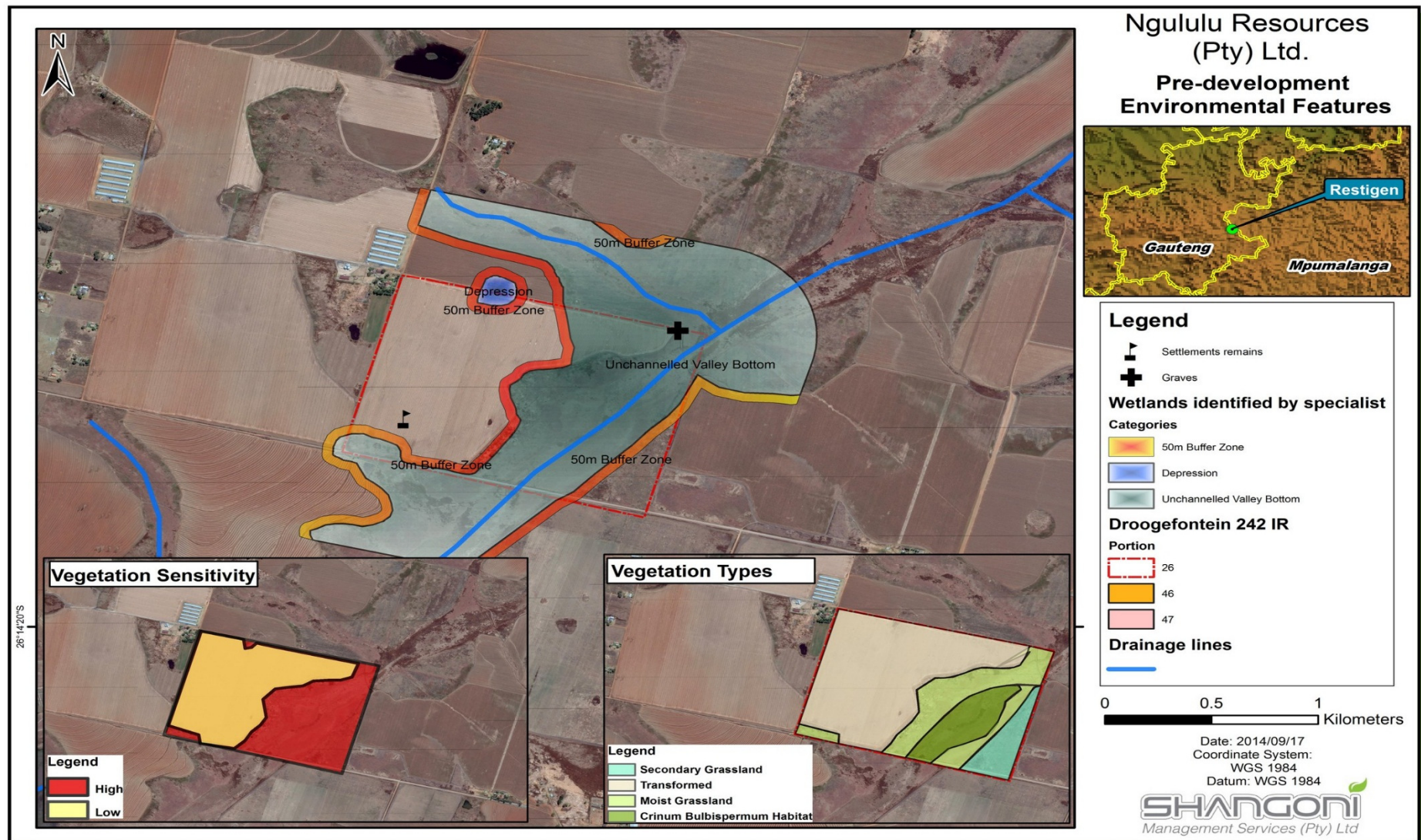


Figure 4: Map showing existing environmental features of Portion 26

## 2.7 Mine layout and Mining method

The mineral to be mined is coal and its depth is said to be approximately 30m below the surface. The coal is suitable for domestic power generation as well as low volatile pseudo anthracite. The product will be for the local market only, with Eskom being one of the consumers. The first six months are allocated for site clearance and topsoil and subsoil removal and storage which leaves the rest of the year for product removal thus only resulting in 600 000tons of the planned 1 200 000tons production for the year. The life of mine equates to approximately 20 years provided the rate of 3 000 000 tpa ROM is maintained as the life of mine is dependent on the production rate that can be applied.

The mine will be an open cast mine and will be carried out by conventional truck and shovel opencast mining techniques through a modified terrace mining methodology that maximises direct backfilling. The initial cut will be through a box cut designed to expose sufficient reserves for the first year of production and also act as a future access ramp into the mine

The first three months will be dedicated to stripping and storing of topsoil and the establishment of storm water diversion channels to protect topsoil from erosion. Subsoil will be drilled and blast and stored for later use during rehabilitation and storm water diversion channels will be constructed to protect subsoil from erosion. The open pit cuts through the wetland and a section of the pan (refer to Figure 5 below and Appendix A5). Faces will be opened up in one area through overburden stripping and the exposed coal seams will be mined and transported to the plant by a fleet of trucks. Once the coal seams have been removed, the mined out areas will be backfilled through direct backfilling methods. The final void will be backfilled with overburden from the initial boxcut.

The proposed mine infrastructure requirements include access road(s), stockpile areas, loading bays, workshops, an administrative building, a change-house, waste rock dump, pollution control dam, storm water management systems, mobile security offices for access control, a weighbridge, potable water tank, power lines, bulk diesel storage facility, oil storage facilities, explosives storage facilities and stores (for spares and material), and mobile ablution facilities.

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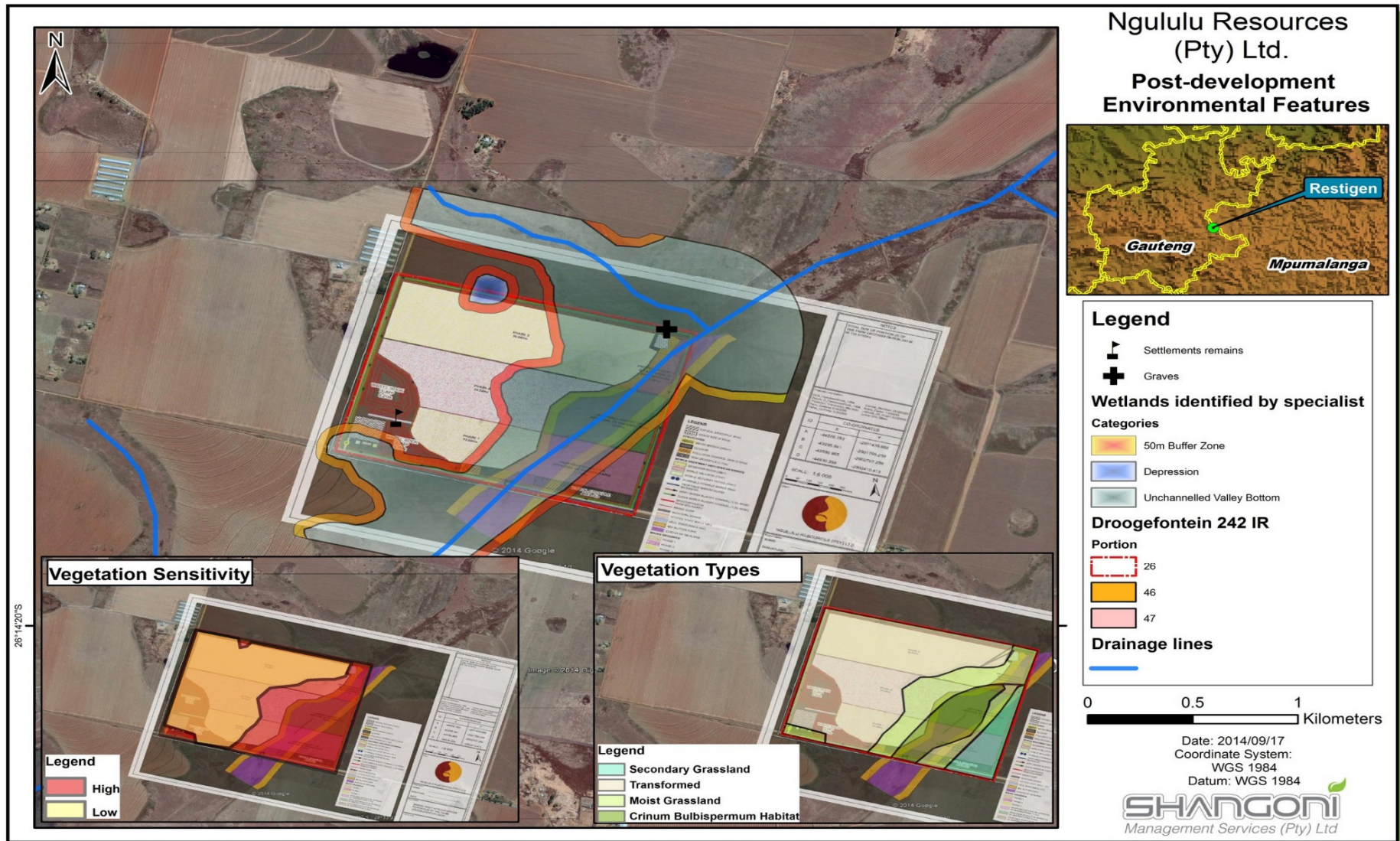


Figure 5: Overlay of proposed mine layout plan on existing environmental features on site.



## **3 NATURE AND EXTENT OF THE ENVIRONMENT AFFECTED BY ACTIVITY**

### **3.1 Geology**

#### **3.1.1 Regional geology**

According to the Mining Works Programme all of the known coal deposits in South Africa are hosted in sedimentary rocks of the Karoo Basin, a large retro-foreland basin which developed on the Kaapvaal Craton and filled between the Late Carboniferous and Middle Jurassic periods. The Karoo Supergroup is lithostratigraphically subdivided into the Dwyka, Ecca and Beaufort groups, succeeded by the Molteno, Elliot and Clarens Formations and the Drakensburg Formation (S.A.C.S., 1980). The coals range in age from Early Permian (Ecca Group) through to Late Triassic (Molteno Formation) and are predominantly bituminous to anthracite in rank, which is a classification in terms of metamorphism under the influence of temperature and pressure.

The deepest part of the basin with the thickest development of the Vryheid Formation was located in the north-eastern part of the preserved basin. The generalised vertical profile of the Vryheid Formation shows that the succession of five coarsening-upward sequences. In a complete succession each of the five coarsening-upward sequences starts with fine grained marine facies, which grade upwards into coarser delta front and delta plain-fluvial facies. Several coal seams occur in the Vryheid Formation and these are associated predominantly with the coarser-grained fluvial facies at the top of each sequence). These coal seams can be traced laterally across the entire area of occurrence of the Vryheid Formation and as such are correlatable marker horizons.

Figure 6 below illustrates the general underlying geology and locations of Portion 26, 46 and 47 of Droogfontein 242 IR.

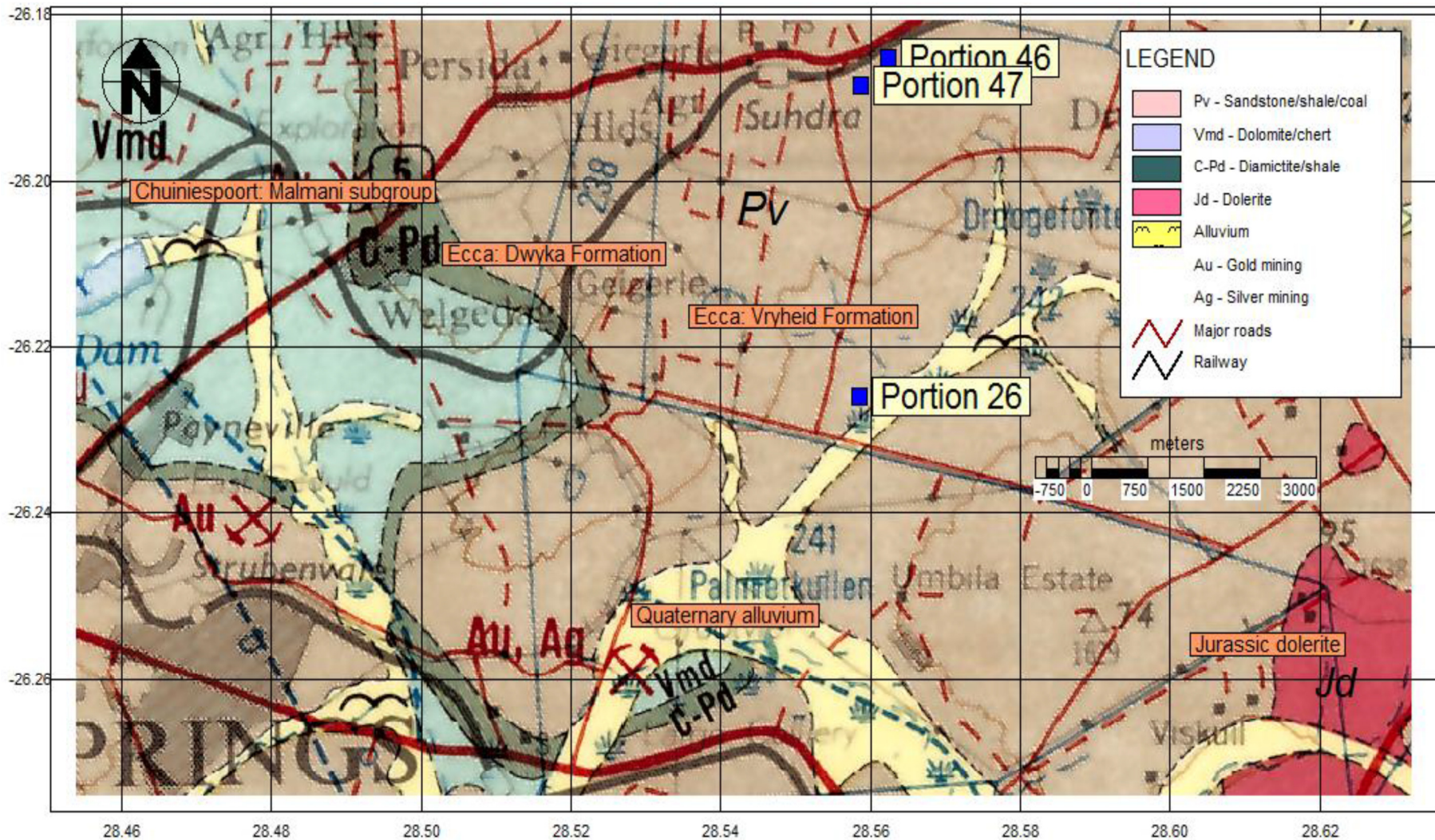


Figure 6: East Rand Geological Map 2628 at a scale of 1:250 000 showing the general underlying geology and locations of Droogfontein portions 26, 46 and 47 (Shangoni AQUIScience (Pty) Ltd, 2013)

### 3.1.2 Site Specific Geology

Information included in this section of this Scoping Report has been sourced from the report titled: “Mining Works Programme” (Refer to Appendix F1).

The farm is underlain by rocks of the Karoo Supergroup and more specifically the lower parts of the Eccca group belonging to the Madzaringwe Formation. The rocks underlying the farms will be characterized by sandstone, shale and coal and various intrusions of Dolerite dykes and sills. The area predominantly lies on a rift related subsistence basin associated with Mafic and Ultra Mafic volcanic rock, Transvaal Supergroup, Karoo Dolerite and Felsic rock. The area also has the Caronite rocks on the non-rift basin Forland basin and this forms part of the Malmani Supergroup of the Chuniespoort group.

The area applied for is underlain by sedimentary and volcanic units of the Karoo Supergroup and surficial sediments. Within the area applied for the boundary fault to the southern basin trends east west through the centre for the area applied for. The southern downthrown block is underlain by from North West to South West Lebombo lava, Clarens sandstone, Irrigasie mudstone, siltstone, shale, sandstone and conglomerate, and lastly Eccca shales, mudstones, carbonaceous sediments including coal measures and subordinate sandstone.

The entire area is covered with variable thicknesses of reddish to khaki sandy soil and outcrop of Karoo strata is very rare. The mineralisation of interest occurs within the lower most Karoo formation, where the coal seams occur within a coal zone consisting of carbonaceous shale and coal bands with minor silt, sand and mud intercalations. Refer to Figure 7 below for a geological map.

### 3.1.3 Presence of dykes and sills

The site is underlain by rocks of the Madzaringwe Formation, Eccca Group and Karoo Supergroup. The rocks are primarily classified as sandstone, shale and coal with Dolerite dykes and sills present. The bedrock is covered predominantly with a variable thickness, reddish sandy soil. ((Nurizon Consulting (Pty) Ltd, 2013



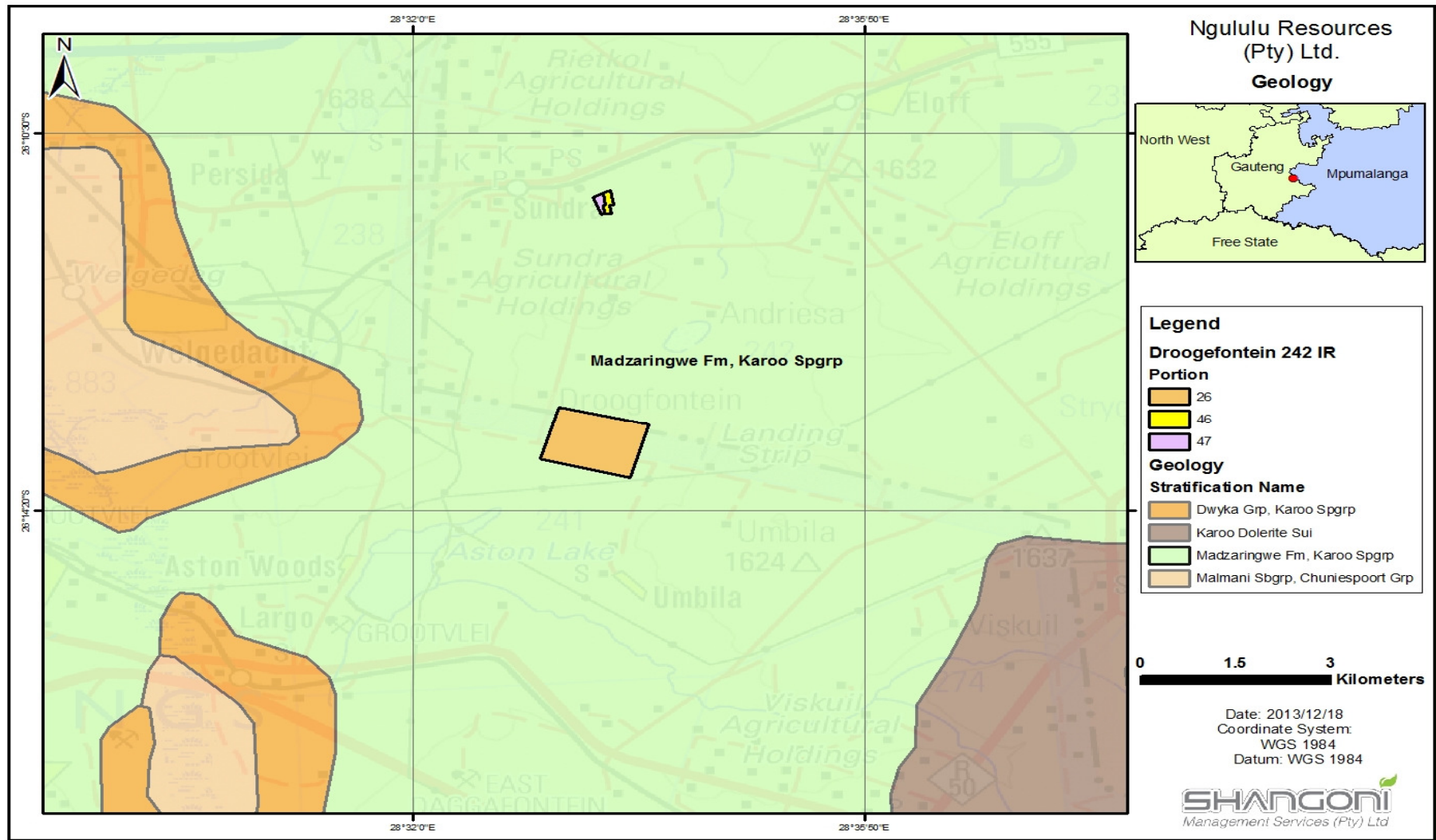


Figure 7: Site Geology Map

## 3.2 Climate

### 3.2.1 Temperature

The climate of the Delmas area is typified by warm, moist to wet summers and cool to cold, dry winters (Kotze, 1985). The extreme high temperature for the area is 38°C and the extreme low temperature is 7.0°C. The majority of the rainfall is received during the period November through to March. Both temperatures and rainfall are favourable for rain-fed arable cultivation of grain crops. The main long-term climate indicators are indicated in Table 6 below. (Zoneland Solutions, 2013)

**Table 6: Average Climate data**

Month	Average Rainfall (mm)	Evaporation (mm/day)	Average Min Temp (°C)	Average Max. Temp (°C)	Average frost dates
Jan	135.1	6.5	12.9	23.6	Start date: 16/06
Feb	107.5	6.0	12.8	23.3	End date: 29/07
Mar	94.0	5.5	11.9	22.6	Days with frost: 4
April	47.7	4.9	9.6	21.4	
May	20.2	4.8	6.1	19.1	
Jun	8.6	4.6	3.1	16.9	
Jul	12.89	4.9 2	2.9	17.2	Heat units (hrs.> 10°C)
Aug	11.9	6.0	4.8	19.6	Summer
Sept	34.5	7.0	7.7	22.0	(Oct to Mar): 1 694
Oct	81.5	6.5	9.9	22.9	
Nov	129.1	6.7	11.4	23.1	Winter
Dec	139.1	7.0	12.5	23.8	(Apr – Sept): 725
Year	821.9 (Tot)	5.78 (Ave.)	15.1°C (Ave)		

### 3.2.2 Precipitation and Evaporation

According to the report titled: “*Environmental Management Programme Report*”, dated June 2014, precipitation in the area is highly seasonal with a mean annual rainfall of 732.7 mm according to the rainfall data from the Department of Water Affairs (DWA) hydrological datasets collected at station B2E001 (1967-2014). Most of the rainfall occurs during the summer months with the majority of rain events between October and April. The region receives the highest rainfall in January and the lowest in July. Evaporation is measured at station B2E001 for an S class pan located approximately 40 km from Portion 26 of the farm Droogfontein. Table 7 below lists the rainfall and evaporation recordings.

**Table 7: Average annual precipitation and evaporation**

Month	Precipitation (mm)	Evaporation (mm) (S-Pan)
January	143.5	167.9
February	84.1	144.2
March	94.5	134.7



Month	Precipitation (mm)	Evaporation (mm) (S-Pan)
April	43.7	103.7
May	15.1	83.6
June	7.2	65.1
July	2.6	73.2
August	7.7	103.0
September	23.0	141.2
October	78.1	165.6
November	118.0	163.9
December	123.6	176.2
Annual	732.7	1523.2

### 3.3 Topography

According to the report titled: “*Environmental Management Programme Report*”, dated June 2014, the site is located in the Upper Vaal Drainage Region and C21E quaternary catchment. General drainage from the site flows in the south-eastern direction. The proposed site is characterised by flat and gently sloping topography from west to east and current activities consists of arable crop production due to the presence of high potential soil. The region is characterised by summer rainfall and dry winters. A wetland area is situated in the south-eastern side of portion 26 associated with the *Dwars-in-die-Wegvlei* spruit flowing towards Aston Lake from where the overflow joins the *Blesbok* spruit ultimately flowing to the Vaal River. Figure 8 below illustrates the topography and drainage of portion 26

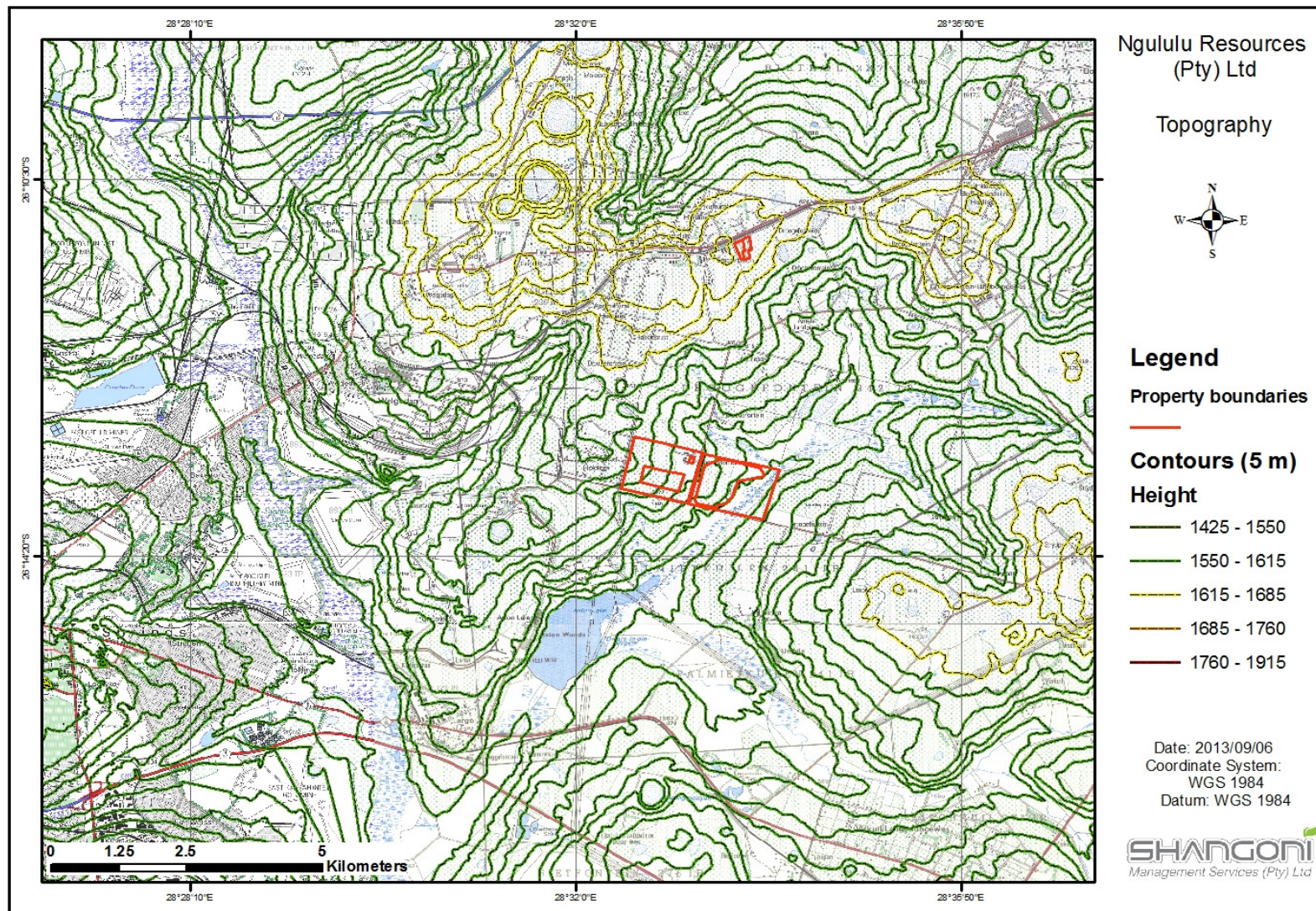


Figure 8: A map showing the topography for the area associated with the proposed Ngululu Coal Mine.

### 3.4 Soils

Information included in this section of this Scoping Report has been sourced from a report titled: “*EIA Agricultural Impact Assessment, dated October 2013, compiled by Zone land Solutions*”. Impact assessment of this environmental component will be conducted in the EIA Phase.

According to the report, the soil in Mpumalanga is of the Ecca Group, a stratum of the Karoo Supergroup. The status of the phosphorus, a major macronutrient essential for plant growth, is good. The phosphorus content of the uncultivated wetland area is lower than that of the cultivated soil because no fertiliser is added to the uncultivated wetland area. More acidic soil is often found in areas of high rainfall. The pH of the arable soil is 4.9 to 5.2. This pH is suitable for the cultivation of maize, for which the soil is currently utilized. The soil pH is very important in arable farming because plant nutrition, and therefore yield, is influenced by soil pH. The texture properties are described as sandy soil. Sandy soil is easily cultivated using normal agricultural equipment. The wetland soil is clay. Figure 9 below shows the soil properties of the proposed site.





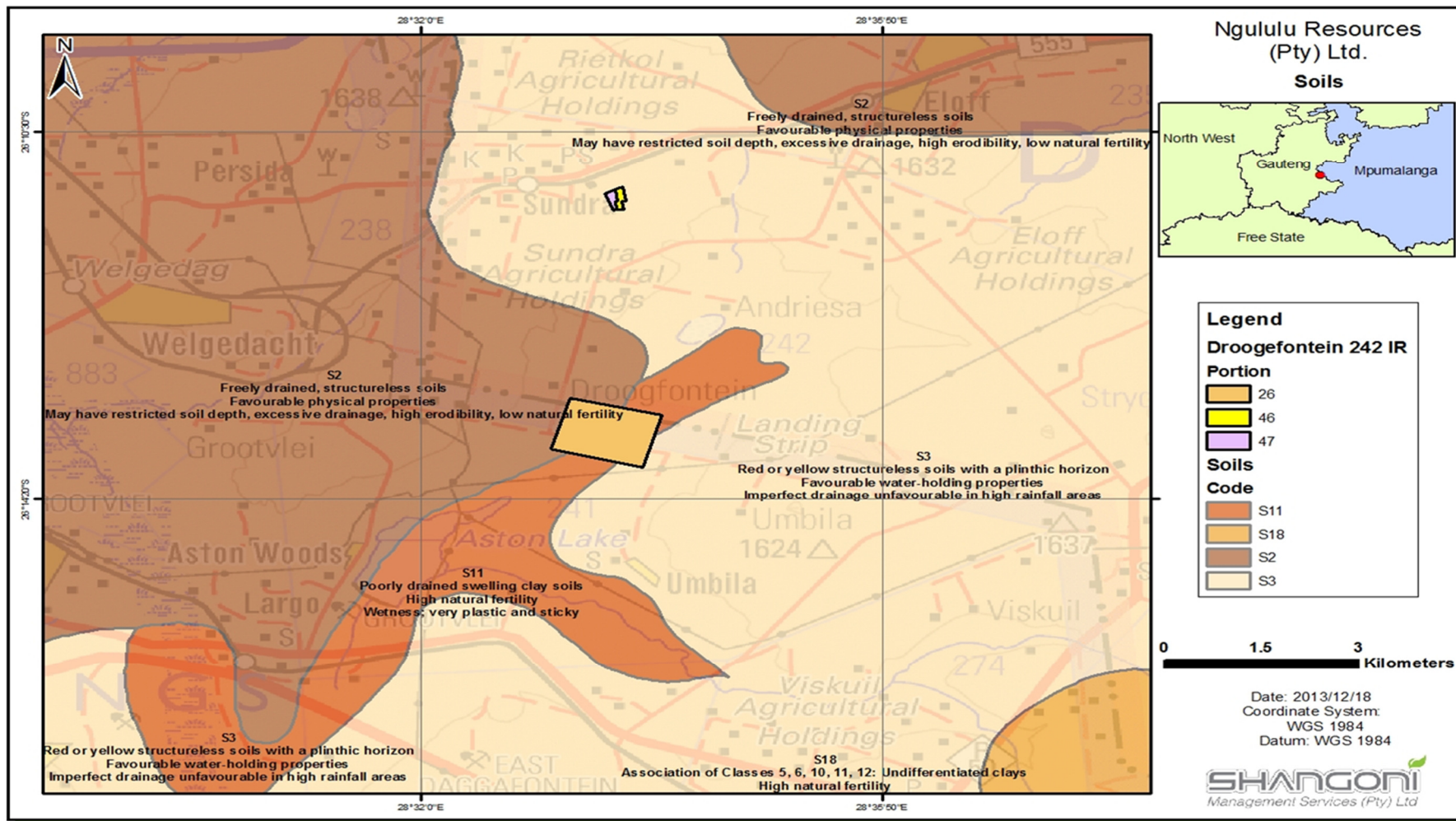


Figure 9: Soil properties of the proposed site

## 3.5 Land use and land capability

Information included in this section of this Scoping Report has been sourced from a report titled: “*Vegetation Assessment: Proposed Coal Mine on the Farm Droogfontein 242 IR Portions 26, 46 and 47, Delmas, Mpumalanga*”, dated October 2013, compiled by Dimela Eco Consulting. Impact assessment of this environmental component will be included in the EIA phase.

### 3.5.1 Current land use

As per the above-mentioned report, most of Portion 26 of the farm Droogfontein 242 IR and its surrounds are used for maize cultivation. The area not currently ploughed comprises of wetland areas that show signs of grazing. Historic aerial imagery indicates that parts of the larger wetland area was also ploughed in the past – probably during dry years when the area was not too saturated to plough. A small cemetery is situated in the northern eastern corner of the site. The dirt roads forming the western and southern boundary of Portion 26 of the farm Droogfontein 242 IR were recently upgraded and soil berms and culverts constructed, likely to aid drainage of the roads due to the wetland conditions.

### 3.5.2 Evidence of misuse

Historical aerial imagery indicates that parts of the larger wetland area were ploughed in the past. The area not currently ploughed on Portion 26 of the farm Droogfontein 242 IR comprises of wetland areas that show signs of grazing.

## 3.6 Vegetation

Information included in this section of this scoping report has been sourced from a report titled: “*Vegetation Assessment: Proposed Coal Mine on the Farm Droogfontein 242 IR Portions 26, 46 and 47, Delmas, Mpumalanga*”, dated October 2013, compiled by Dimela Eco Consulting. Impact assessment on this environmental component will be included in the EIA phase.

### 3.6.1 Vegetation type(s)

Three identified vegetation types, all converging in the area assessed, are Soweto Highveld Grassland, Eastern Highveld and Andesite Bushveld. The two Grassland types are nationally classified as Endangered due to cultivation, mining and urbanisation within the grassland. The extent of vegetation on the proposed site is geographically represented in Figure 10 below.

The study found that the vegetation sensitivities on site comprised the vegetation associated with wetland conditions as well as the adjacent portion of secondary grassland with seepages on portion 26. No primary Soweto Highveld or Eastern Highveld grassland was observed. A protected plant species, the ‘Declining’ *Crinum bulbispermum* was observed in a large population occurring within the wetland, which adds to the sensitivity of this portion of the site assessed.



Due to the site being largely transformed by agricultural activities, the natural vegetation is limited to the perceived wetland areas on Portion 26 of the farm Droogfontein 242 IR. The vegetation on-site can be grouped as follows:

1. Transformed grassland and cultivated areas;
2. Secondary grassland with seepage areas; and
3. Moist grasslands / vegetation associated with watercourses.

### **3.6.1.1 Transformed grassland and cultivated areas**

The transformed land is characterised by vegetation that no longer comprises of the natural species diversity and includes the cultivated lands, the small holdings as well as the grazed grassland on

Although the grazed areas were burnt or grazed short, grasses such as *Eragrostis curvula* (Weeping Love Grass) and *Cynodon dactylon* (Couch Grass) were recognised but that the species diversity is assumed to be low. No natural vegetation remains and no plants of conservation concern occur within transformed land.

### **3.6.1.2 Secondary grassland with seepage areas**

Portion 26 of the farm Droogfontein 242 IR includes a portion of secondary grassland. Secondary grasslands develop where the original, primary (undisturbed) grassland vegetation was removed (e.g. by cultivation). After such disturbances cease, pioneer grassland species colonise the disturbed areas leading to a secondary grassland state as opposed to the primary (climax) state prior to any disturbances. In the absence of any further disturbances, continuous succession should theoretically lead to the development of the original climax (or primary) state of the grassland. However, primary grasslands are species rich ecosystems, which once disturbed, are difficult, if not impossible to restore. Although grasslands can be re-created to comprise a number of grass species, the diversity of forbs and geophytes are not easy to attain.

From historic aerial images it is evident that the south-western corner of Portion 26 of the farm Droogfontein 242 IR was ploughed at some stage. At the time of the survey, the secondary grassland was grazed and partially burnt. Although the grass species was not recognisable, it was thought that as a minimum the following grass species would be present: *Themeda triandra* (Red Grass), *Aristida congestus* (Three-awn), *Setaria spachelata* and *Eragrostis curvula* (Weeping Love Grass). The grass *Cynodon dactylon* (Couch Grass) was positively identified as well as *Imperata cylindrica* (Cotton Wool Grass). Cotton Wool Grass favours moist soils and can be indicative of wetland conditions. Within the secondary grassland, the patchy occurrence of this grass coincided with seepage areas possibly linked to the wetland area directly west thereof (Limosella, 2013).

The herbaceous layer included *Hermannia depressa* (Rooi-opslag) which in large numbers could be



indicative of overgrazing and trampling (Van Wyk & Malan, 1997). Other species were *Helichrysum nudifolium*, *Berkheya setifera*, *Jamesbrittenia aurantiaca* (Cape Saffron) and *Bulbine narcissifolia*. Although secondary grassland is not expected to host large species diversity, the species diversity was low. However, it is possible that some species were still dormant at the time of the field survey and therefore this should be seen as the minimum and not exact species diversity.

### 3.6.1.3 Moist grasslands / vegetation associated with watercourses

As per the NWA, 1998 a wetland means land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil. Vegetation indicative of wetland conditions was also observed on Portion 26. A large wetland area stretched from the mid southern boundary of Portion 26 of the farm Droogfontein 242 IR to the north-eastern corner and beyond. This vegetation was burnt at the time of the field survey. The grass layer was not recognisable but the following species were thought to occur: *Sporobolus species*, *Eragrostis plana* (Tough Love Grass), *Aristida aequiglumis*, *Andropogon appendiculatus*, *Paspalum dilatatum* and *Setaria species*. In addition, sedges such as *Typha capensis* and *Schoenoplectus species* also likely occur. However, the fire stimulated a number of herbaceous species to flower. The species observed include *Falkia oblonga*, *Hermannia erodioides*, *Hypoxis filiformis* and *Arctotis arctotoides*.

Although not yet in flower, a population of the bulb *Crinum bulbispermum* (River Lily) was found within the wetland area. This species is a protected plant species as its medicinal use is leading to a decline in numbers nationally. Although the species diversity is likely not high, the vegetation remains functional to prevent soil erosion, regulate water flow and to provide habitat to numerous fauna and flora species. A smaller portion of moist grassland was found on the south-western corner of the site. While *Crinum bulbispermum* was not observed here, the bulbs might still have been dormant. Some dumping and excavation (likely from the recent road works) as well as alien invasive plant species were observed at the edge of the moist grassland, while the small wetland area on the northern boundary was encroached by the maize cultivation.

### 3.6.2 Endangered or rare plant species

Plants of conservation concern are those plants that are important for South Africa's conservation decision making processes and include all plants that are Threatened, Extinct in the wild, Data deficient, Near-threatened, Critically rare, Rare and Declining. These plants are also referred to as Red Listed plants. Of these, suitable habitat for 2 species was present on the studied site, of which one, *Crinum bulbispermum* was confirmed to occur. This species is classified as "declining". If the decline continues, these plants will become threatened.

The other species that could potentially occur is *Kniphofia typhoides*. This species is classified as near threatened and are thus on the verge of becoming extinct. During the vegetation assessment, this

species was observed in historically ploughed and areas disturbed before. The clayey nature of soil within parts of the wetland could be suitable habitat for this species. At the time of the vegetation assessment, the vegetation was burnt and therefore the likelihood of the plant occurring cannot be ruled out.

### **3.6.3 Alien invasive plant species**

The wetland area on Portion 26 of the farm Droogefontein 242 IR contains annual and biannual invasive species such as *Verbena Brasiliensis* and *Crisium vulgare* (Scotch Thistle) as well as large specimens of *Eucalyptus cf camaldulensis* (Red River Gum).



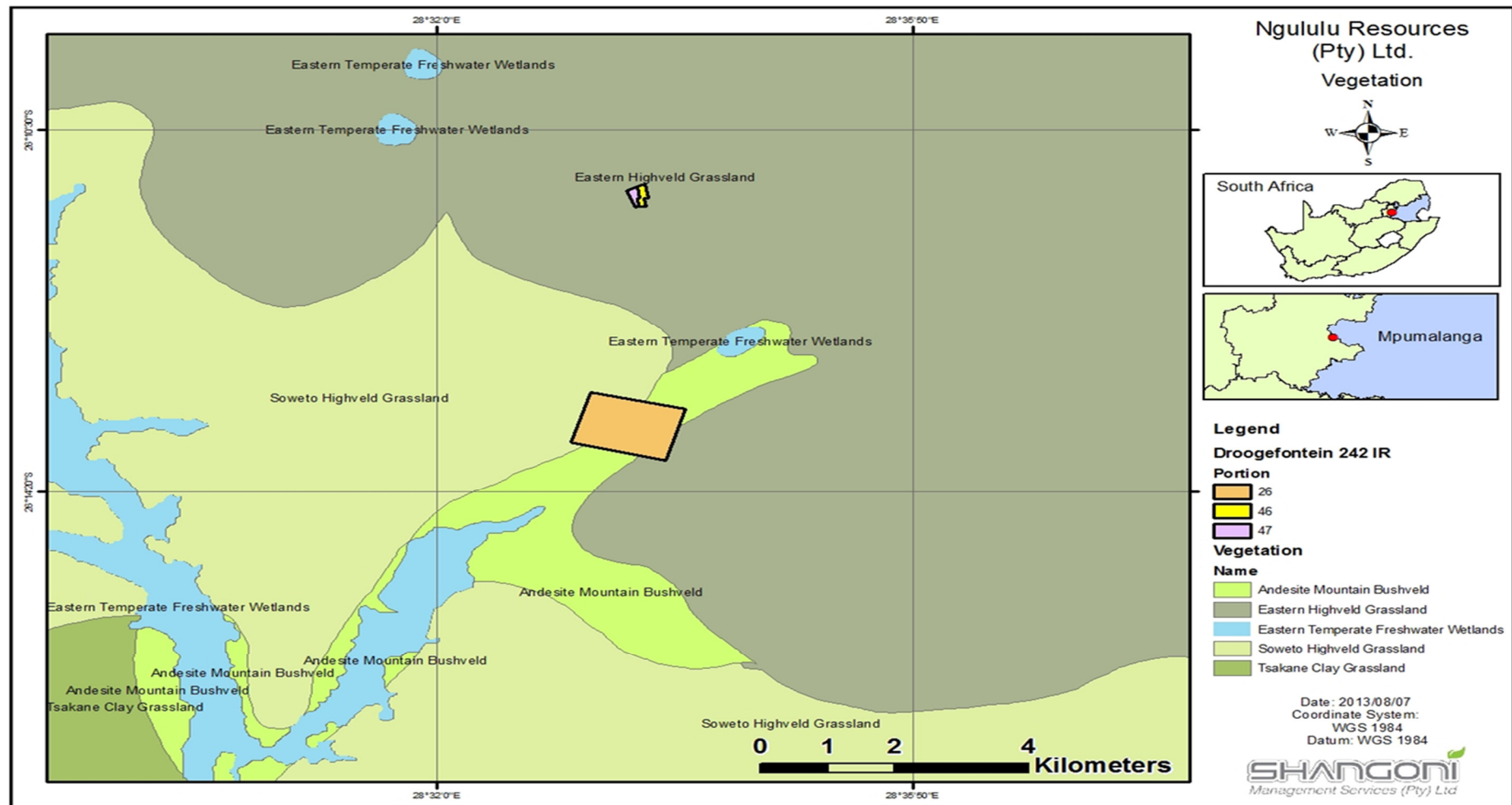


Figure 10: Extent of vegetation on the proposed site

## 3.7 Animal life

Information included in this section of this Scoping Report was sourced from a report titled: *faunal assessment report*, dated November 2013, compiled by Classical Environmental Management Services. A detailed Impact assessment on this environmental component will be included in the EIA phase.

### 3.7.1 Site Specific Commonly occurring species

#### 3.7.1.1 Mammals

Mammal species were identified by visual sightings as well as by means of spoor, droppings and roosting sights and available habitat. Mammals were identified using Field Guide to Mammals of Southern Africa (Stuart and Stuart; 2001) and The Mammals of the Southern African Sub region (Skinners and Chimimba; 2005).

The identification of possible mammal species present on the site relied upon assessment of the vegetation on site and supplemented by spoors or droppings. During the site assessment, signs of mammal presence were seen and included burrows, droppings and spoor.

Portion 26 is capable of supporting opportunistic mammal species particularly small mammals (hares, mongoose, jackals, small buck) and rodents (mice and rats etc.) which will forage in the areas assessed and the surrounds. The transformed nature of the site is only suitable for opportunistic species due to the uniform habitat structure, limited diversity and constant anthropologic disturbance in the form of agriculture and housing.

A significant proportion of Portion 26 of the farm Droogefontein 242 IR is comprised of wetlands and moist grassland areas which offer the most suitable habitat for natural mammal assemblages in terms of providing foraging habitat and shelter. Although previously disturbed, the wetlands and associated grasslands are considered a migratory corridor for small and large mammal species. No mammal species of conservation concern are considered to be present within the study area or surrounds.

The rough haired golden mole (*Chrysofalax villosus*) which is considered critically endangered has been recorded within the vicinity of the study area but is unlikely to occur within the area as it prefers using dry ground on the edges of marshes or vleis which is undisturbed. The study area, although likely to have been comprised of such areas has been altered and the effects of ploughing the wetland areas has rendered not suitable habitat for this species.

#### 3.7.1.2 Avifauna

Data regarding the distribution of bird species was obtained for the quarter degree grid using the information available from the South African Bird Atlas Project and the Mpumalanga Parks and Tourism



Authority and isolated to species of conservation concern. Species of conservation concern were described using the Eskom Red Data Book of Birds of Southern Africa, Lesotho and Swaziland (Barnes, 2000). The avifauna assessment concentrated on identifying the possible occurrence of red data listed birds. Birds were identified using *Sasol Birds of Southern Africa* (Sinclair, I., Hockey, P. & Tarboton, W.; 2002).

The presence of bird species on and around the site relied upon a vegetation assessment, direct sightings, bird calls and the presence of nests. During the site survey, relatively few avifaunal species that are common and widespread were identified visually and there was a distinct lack of roosting sites. The assessment therefore relied heavily upon previous data available and the vegetation and geological features present on site. A list of bird species which may be present within the study area was obtained from the South African Bird Atlas Project, Quarter Degree Grid 2628BA. Due to the high levels of human disturbances within the grassland and wetland areas, the site offers limited suitable habitat for any large terrestrial birds such as the secretary bird or large / small raptor species. Continuing pressure on wetlands and surrounding moist grassland habitat are largely responsible for the decline of the avifaunal species. Wetland areas are important as foraging and migratory corridors for avifauna species and as such these areas should be maintained. By nature, birds are mobile fauna assemblages that are able to adapt and relocate rapidly. They are able to change their location rapidly and considering the transformed nature of the farm portions it is unlikely for the proposed mining development to have a significant negative impact on avifauna species of conservation concern.

### 3.7.1.3 Amphibians

Comprehensive amphibian surveys can only be undertaken by nocturnal surveys throughout the duration of the wet season. This was beyond the current scope of the assessment and the area was surveyed diurnally for possible habitat for amphibian species. Based on available habitat observed during the field survey, amphibians were identified through a literature review, by use of the Frog Atlas (developed by the Animal Demography Unit, Cape Town University) and the field guide *Frogs and Frogging in Southern Africa* (Carruthers, 2001). Reptiles were identified through a literature review and using *The Field Guide to Snakes and Other Reptiles of Southern Africa* (Branch, 1998) based on the habitat observed during the field survey.

Table 8 below lists species that are likely to be present within the area (Quarter Degree 2628BA) and have been confirmed by the Mpumalanga Parks and Tourism Authority and the Frog Atlas. Extensive habitat transformation and high levels of human activities within a study area often results in low amphibian diversity as they are very sensitive to environmental stressors.

On Portion 26 of the farm Droogfontein 242 IR, a large wetland area and associated moist grassland and seeps are present. However, this wetland area and associated grasslands have undergone previous disturbance in the form of ploughing and have therefore been transformed and possibly, in drier seasons, utilised for agriculture. Portion 26 has been significantly altered by agricultural practices



in close proximity to the wetland areas and as such the anthropological impacts in the area are high. No species were confirmed during the survey period and it is not expected for the amphibian diversity to be significantly high. It is expected for the more common species to occur within the study area although in small populations. It is likely that mining practices will impact on the remaining amphibian populations.

**Table 8: Amphibian species likely to occur within the quarter degree grid 2628BA**

Scientific Name	Common Name	Conservation Status
<i>Bufo gutturalis</i>	African common toad	Least Concern
<i>Bufo rangeri</i>	Rangers toad	Least Concern
<i>Cacosternum boettgeri</i>	Boettger's dainty frog	Least Concern
<i>Phrynobatrachus natalensis</i>	Natal dwarf puddle frog	Least Concern
<i>Afrana fuscigula</i>	Cape river frog	Least Concern
<i>Afrana angolensis</i>	Angola river frog	Least Concern
<i>Tomopterna cryptotis</i>	Common sand frog	Least Concern
<i>Xenopus laevis</i>	African clawed frog	Least Concern
<i>Kassina senegalensis</i>	Senegal running frog	Least Concern
<i>Schismaderma carens</i>	African red toad	Least Concern
<i>Tomopterna natalensis</i>	Natal sand frog	Least Concern

#### 3.7.1.4 Reptiles

South Africa has a high diversity of reptile species, with more endemic reptile species than mammal species. Reptiles are generally shy and extremely sensitive to habitat destruction and transformation (Branch, 1998). As such a comprehensive species list specific to the study area could not be determined. Reptiles are extremely secretive and difficult to observe during field surveys and therefore the identification of reptile species relied upon an assessment of the vegetation and surrounding areas to the site.

Considering the use of the portions as residential small holdings and agricultural areas, the resultant habitat destruction has caused the alteration of reptile assemblages occurring on and around the site. In addition, the lack of trees, stumps and rocky outcrops (for shelter/habitat) and termite/ant mounts (for foraging and roosting) within the study area further contributes to the lack of reptile assemblages.

The site had also recently been burnt. Frequent burning of a site will impact the reptile species by reducing refuge areas and increasing predation as well as likely killing any species that cannot out run the flames. It is not expected for arboreal reptiles to be present within the study areas although ground dwelling reptiles such as snakes may occur within the study area in small numbers.

The striped harlequin snake (*Homoroselaps dorsalis*) is classified as rare and of conservation concern but requires old termite mounds or scattered loose rocks according to its habitat requirements. As such, no suitable habitat exists for this species and it is not expected to occur within the study area. None of the reptile species likely to occur within the study area are considered to be of conservation concern.

## 3.8 Surface water

Information included in this section of this scoping report was sourced from the Environmental Management Programme Report, dated July 2014. A detailed impact assessment of this environmental component will be included in the EIA phase.

### 3.8.1 Catchment areas

Portions 26 of the farm Droogefontein 242 IRs situated in the C21E quaternary catchment of the Upper Vaal Water Management Area and the South-eastern Highveld groundwater region. The proposed open-cast coal mine is planned on Portion 26 of the farm Droogefontein in the Delmas district of Mpumalanga (central coordinates S26.22605 and E28.55864). The major surface water drainage system in the C21E catchment is the Blesbokspruit that flows in a southern direction and is situated approximately 7 km southwest of the mining operations (Refer to Figure 11 below for a Quaternary catchment map).

A natural drainage line and intermittent stream and seasonal wetland, namely '*Dwars-in-die-Wegvlei*', is located on the eastern perimeter of Portion 26. This intermittent and seasonal stream drains towards the Aston Lake to the southwest, which in turn feeds the Blesbokspruit.

No envisaged mining activities are planned for Portions 46 and 47 of the farm Droogefontein 242 IR. Relevant information pertaining to water management for the C21E quaternary is shown in Table 9 below.

**Table 9: Quaternary catchment information (GRDM)**

Attribute	C21E
Area	628.2 km <sup>2</sup>
Mean annual rainfall	691 mm/a
Mean annual runoff	35 mm/a
Baseflow	6 mm/a
Population (Thaba Chweu, 2001)	133 707 Count
Mean annual evaporation (C2E007)	1400 - 1700 mm/a
Total groundwater use	0.22 Mm <sup>3</sup> /a
Present Eco Status Category	D Category
Recharge	~35 mm/a
	~5%
Exploitation potential	10 Mm <sup>3</sup> /a
Vegetation type	Moist Cool Highveld Grassland
Ecoregion	Highveld
Land use	Farming
Groundwater General Authorisation	75 m <sup>3</sup> /ha/a



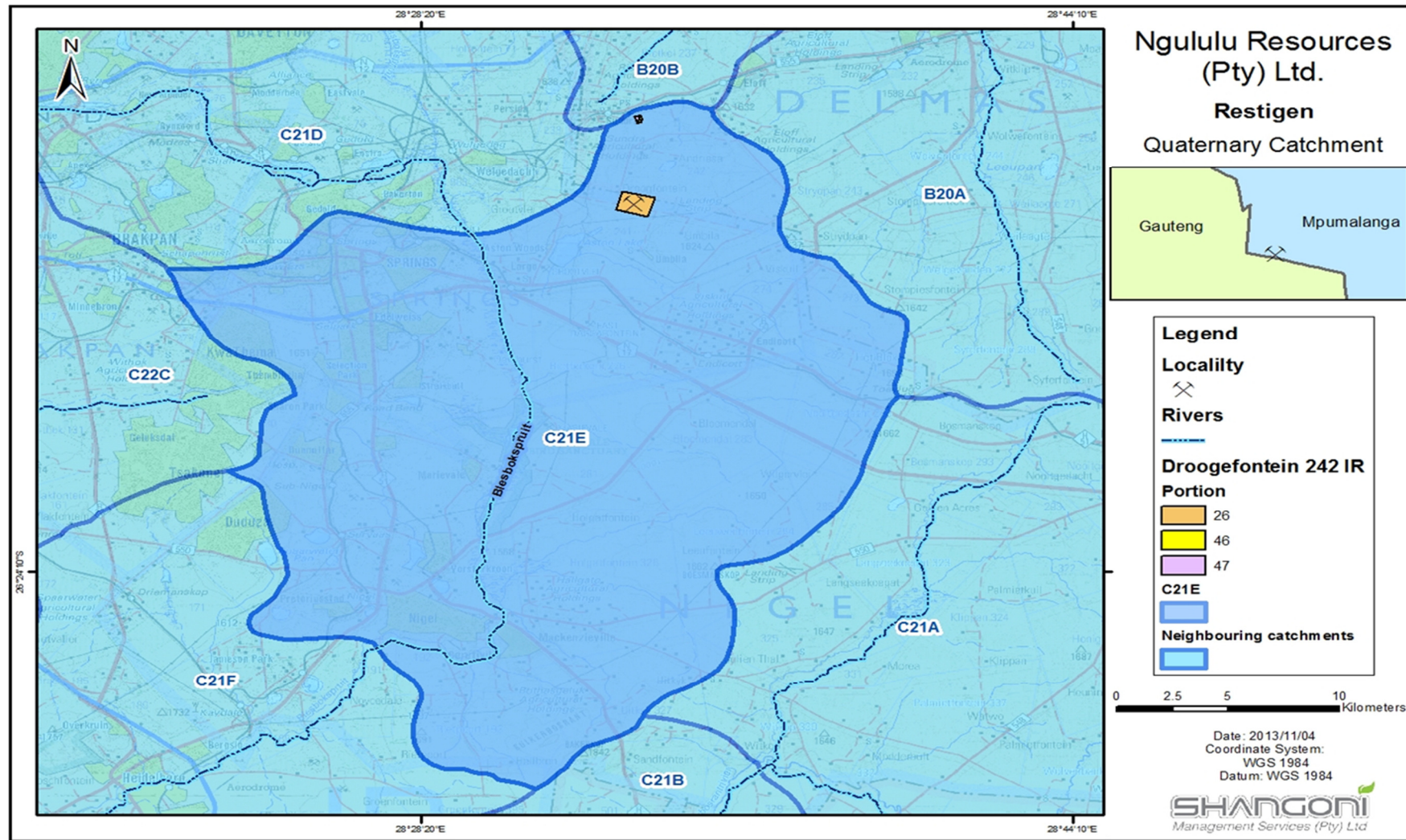


Figure 11: Quaternary catchment map in vicinity of Portion 26 of the farm Droogfontein 242 IR.

### 3.8.2 Mean annual runoff (MAR)

The Mean Annual Runoff (MAR) for the catchment area was calculated as 35mm per annum.

### 3.8.3 Surface water quantity and use

The main water uses in the vicinity of the mine are domestic and agricultural, while the nearby “*Dwars-in-die-Wegvlei*” is a sensitive water course and classified as a Type C wetland.

## 3.9 Groundwater

Information included in this section of this scoping report has been sourced from the report titled: “*Geohydrological investigation on the farm Droogfontein portions 26, 46 and 47*”, dated November 2013, compiled by Shangoni AQUIScience. The impact assessment of this environmental component will be included in the EIR.

### 3.9.1 Aquifer classification

The aquifer classification system used to classify South African aquifers is the National Aquifer Classification System developed by Parsons (1995). The South African Aquifer System Management Classification is presented by five major classes:

- Sole Source Aquifer System
- Major Aquifer System
- Minor Aquifer System
- Non-Aquifer System
- Special Aquifer System

Based on the underlying hydrogeology of the project area, and the corresponding aquifer test results and analyses, the aquifers have been classified according to Parsons and system as follows:

- Shallow Aquifer – Non-aquifer
- Fractured Karoo Aquifer - Minor Aquifer
- Dwyka Tillite Aquifer - Non Aquifer
- Basement Karst Aquifer - Major Aquifer

Due to the depth of the final open pit, only the shallow and fractured Karoo aquifer has been evaluated.

### 3.9.2 Aquifer types, thickness and yields

An aquifer is comprised of a geological formation, or group of geological formations, or part of a formation that contains sufficient saturated permeable material to store and transmit water and to yield economical quantities of water to boreholes or springs. It is the storage medium from which groundwater is abstracted. *It should be managed properly and at all times be protected from over-exploitation and*



*contamination*. The thickness and extent of an aquifer is influenced by fracture extent, orientation, aperture, as well as the thickness of the geological layers.

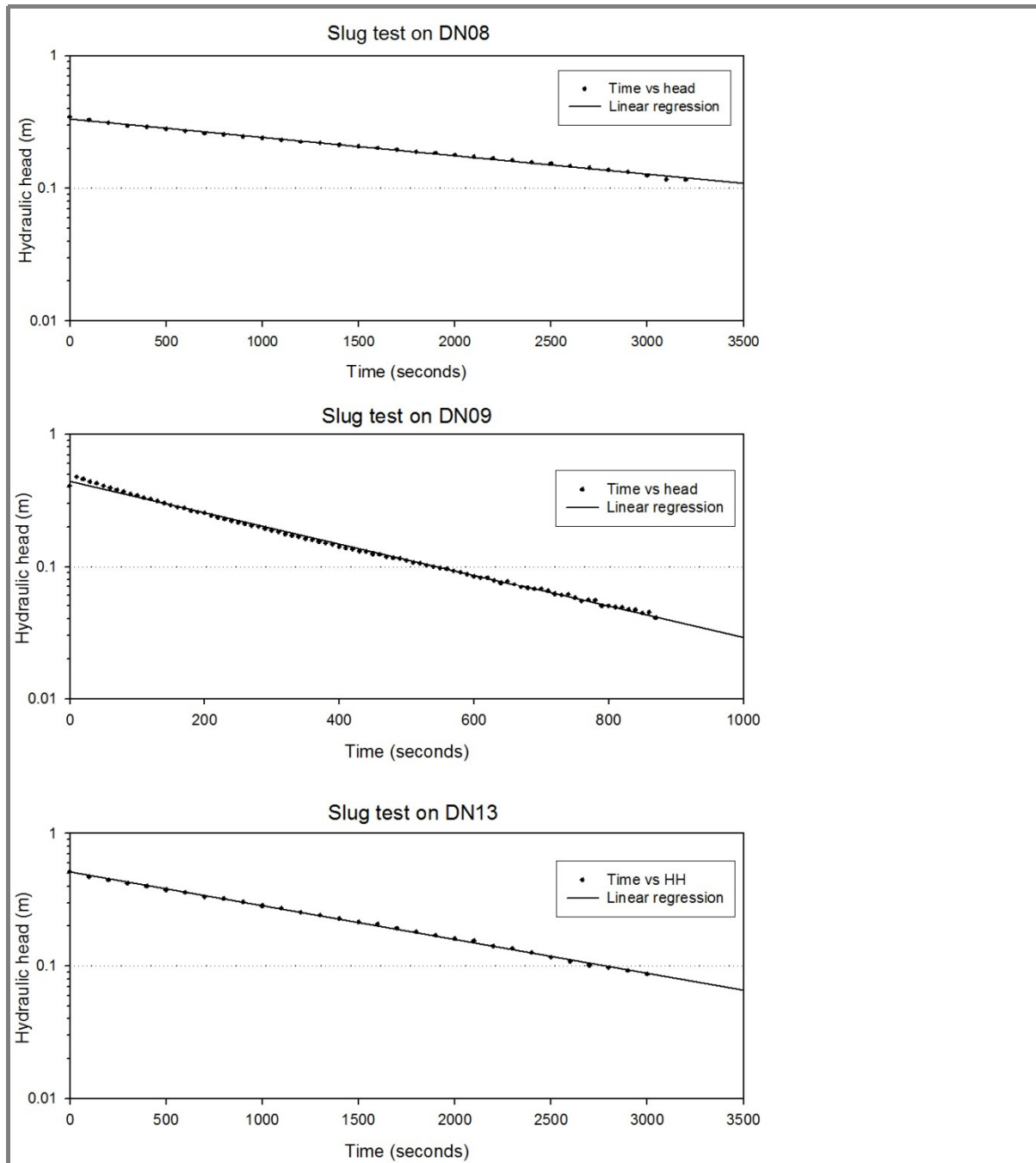
From studying the borehole logs of the exploration boreholes and aquifer tests, three aquifers can be distinguished within the study area:

- i) Perched unconfined/semi-confined aquifer
- ii) Weathered and fractured semi-confined sandstone aquifer
- iii) Dolomitic confined aquifer

### **3.9.3 Shallow unconfined/perched aquifer**

A shallow unconfined aquifer occurs within the soil horizon above the weathered bedrock zone. This unconfined or semi-confined aquifer is formed as a result of vertical seepage of water through the soil profile where it reaches the relatively impermeable clayey layer occurring at approximately 5 mbgl. The water will then seep horizontally in a down gradient direction on this contact zone. This layer is sometimes referred to as a perched aquifer. Usually this layer is poorly developed and is generally not considered as an aquifer given its inability to sustain reasonable or useful quantities of groundwater.

Slug tests were performed on three of the exploration boreholes to determine the aquifer parameters of this upper aquifer zone. With the slug test the hydraulic conductivity and transmissivity of this zone was determined from the rate of recovery of the water level in the boreholes after a 'slug' of water was displaced in the boreholes. Figure 12 illustrates the hydraulic data of the tests captured vs. time. The slug test data was interpreted using the Bouwer and Rice method (Bouwer and Rice, 1976) and the software package Flow Characteristic Method (FC\_Excel) developed by the Institute of Groundwater Studies for the determination of aquifer parameters and sustainable yields in fractured rock environments.



**Figure 12: Time series graphs for hydraulic head recovery following slug tests on exploration boreholes**

This shallow unconfined system has very low hydraulic conductivities and transmissivities and will therefore yield very little groundwater and can as a result not be regarded as an aquifer or be exploited as such. Table 10 illustrates the hydraulic conductivities and transmissivities calculated for this zone. The transmissivities were calculated using the Cooper and Jacob method using an aquifer thickness of 5 m. Average values for hydraulic conductivity and transmissivity were calculated to be 0.023 m/d and 0.115 m<sup>2</sup>/d with probable groundwater yields of <0.05 l/s.

**Table 10: Hydraulic parameters for the shallow unconfined zone**

Borehole ID	Hydraulic conductivity (m/d)	Transmissivity (m <sup>2</sup> /d)	Probable yield (l/s)
DN08	0.009	0.045	<0.05
DN09	0.05	0.25	<0.05
DN13	0.01	0.05	<0.05
Average	0.023	0.115	<0.05

### 3.9.4 Fractured semi-confined Karoo aquifer

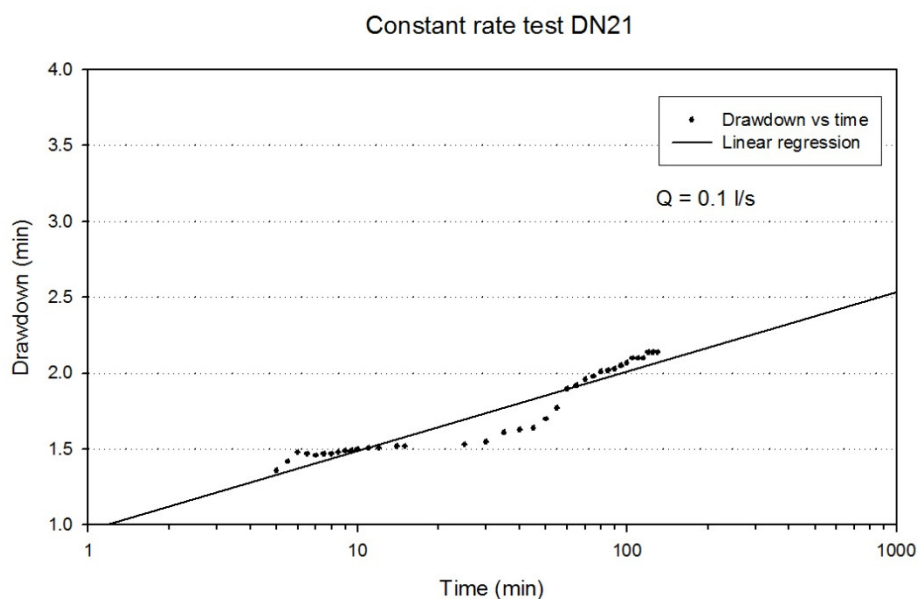
The second aquifer system is an intergranular and fractured, semi-confined Karoo type aquifer of Ecca (shale/sandstone/tillite) origins occurring between 10 and 15mbgl and with a thickness of approximately 80-100m. Groundwater is confined to joints and fractures and flow in the matrix rock and usually has very low hydraulic conductivity and low yields. However, high yields do occasionally occur especially where dolerite intrusions (of Karoo age) have resulted in significant fracturing of the host rock. Of all un-weathered sediments in the fractured aquifer, the coal seam often has the highest hydraulic conductivity.

The Ecca overlies the Dwyka tillite which may form a separate aquifer but because of its negligible aquifer forming properties it is generally discussed as one with the Ecca aquifer. The aquifer permeability of the Dwyka tillite is estimated to be between 0.0002 and 0.0148m/d (Hodgson and Krantz, 1998). The thickness of this aquifer varies from 0.5 to 30m thick averaging at 8m.

A constant rate pumping test was performed on the farm borehole DN21 (Figure 13) which intersects the Karoo Ecca and possibly the Dwyka aquifer. The transmissivity of the borehole was calculated using the Cooper and Jacob method (Cooper and Jacob, 1946) and the software package FC\_Excel. The borehole was pumped at a low rate of 0.1 l/s for 130 min with maximum drawdown of 2.14m achieved.

The aquifer can be regarded as heterogeneous having a good fracture network formed in the consolidated and mostly impervious matrix as a result of tectonic and depositional stresses. Movement of groundwater is mostly restricted to fracture and aperture flow although the sandstone/shale matrix may also contribute to the aquifer albeit very little. The transmissivity for the Karoo fractured aquifer is relatively low with a value of 3.9 m<sup>2</sup>/d and a yield of approximately 0.5 – 1.0 l/s. The hydraulic conductivity (K) of the borehole was calculated using the transmissivity calculated and using an aquifer thickness (b) of 80m by substituting the equation for calculating transmissivity, i.e.  $T = Kb$  to read  $K = T/b$  (refer to equations 2 & 3).





**Figure 13: Drawdown data vs. time for the constant rate pumping test for DN21**

The fractured rock aquifer is considered to be a more reliable source of groundwater compared to the weathered zone aquifer. The yield from this borehole/aquifer would be sufficient to supply drinking, sanitation and irrigation (small scale) water for a household but would not be sufficient to be exploited for mining related process water. The hydraulic parameters and proposed yield is summarised in Table 11 below.

**Table 11: Hydraulic parameters for DN21 and the weathered and fractured Karoo aquifer**

Borehole ID	Hydraulic conductivity (m/d)	Transmissivity (m <sup>2</sup> /d)	Yield (l/s)
DN21	0.049	3.9	0.5 – 1.0

### 3.9.5 Dolomitic confined aquifer

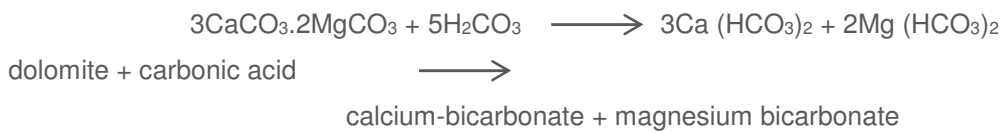
Although no dolomite was intersected during the exploration phase, dolomite is expected to be present at approximately 80 – 100 mbgl. This assumption is made based upon the fact that boreholes drilled in similar and nearby environments did intersect dolomite at approximately 80 – 100 mbgl.

The aquifer is comprised of dolomite which forms part of the basement rocks of the Transvaal Supergroup and the Chuniespoort Group (Malmani subgroup) of rocks which is located directly below the Dwyka Group tillites. The Dwyka tillite forms a hydraulic barrier between the overlying mining activities and the basement aquifer, due to its low hydraulic conductivity. The continuity of the dolomite aquifer is interrupted by vertical to sub-vertical geological structures such as dykes which create low permeability to impermeable compartmental barriers.

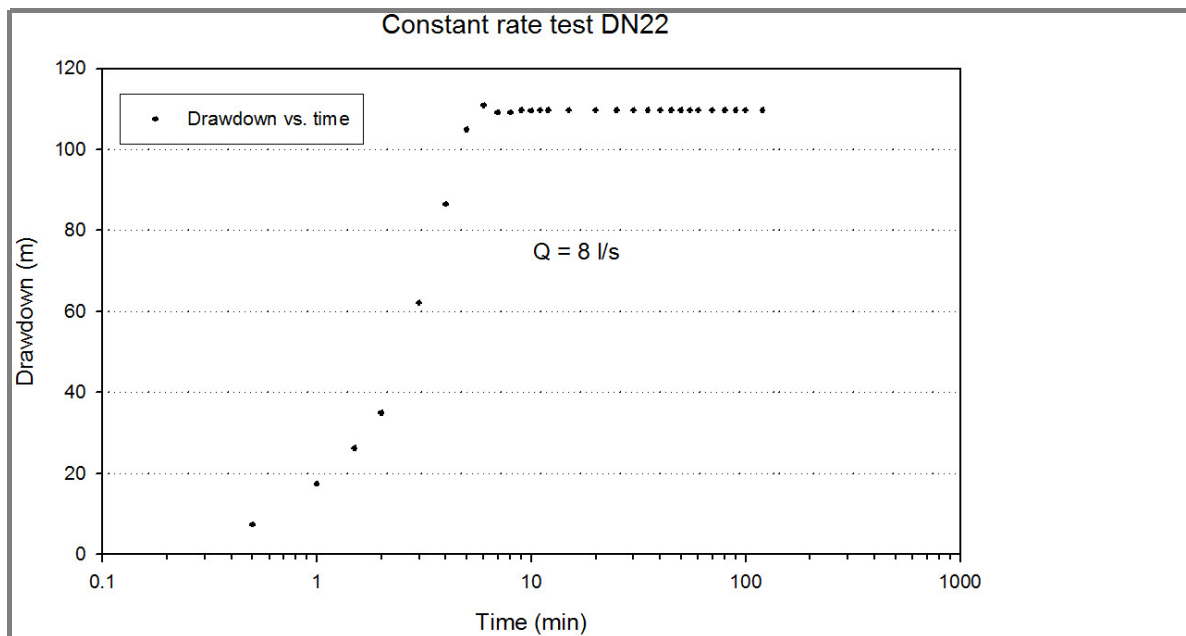
The dolomites of the Chuniespoort Group represent the most important aquifers in South Africa. This is generally due to the exceptionally high storage capacity (storativity) and often high permeable

characteristics of weathered dolomite. Dolomitic groundwater storage mostly occurs in dolomitic compartments and fractures derived from dolomitic dissolution/chemical weathering, which in extreme cases, result in the development of open cavities and caves (karstification). The continuity of the dolomite sequence is often interrupted by geological structures in the form of vertical and sub-vertical intrusive dykes resulting in significant fracturing of non-karstified dolomite. Boreholes intersecting these compartments (or fractures) often yield significant quantities of groundwater.

The chemical weathering of dolomitic rock is generally associated with weakly acidic rainwater which results from carbon dioxide diffusion forming carbonic acid. The carbonic acid dissolves the dolomite as it percolates through planes of weakness such as faults, fractures and joints associated with deformation. The dolomite dissolves according to the following chemical reaction:



The borehole is approximately 150 m deep believed to have intersected dolomite. The pump test data and can be viewed in Figure 14. A high transmissivity value of 372 m<sup>2</sup>/d was calculated from the drawdown data which is typical for dolomitic aquifers. Yields will typically in range between 10 – 20 l/s.



**Figure 14: Drawdown data vs. time for the constant rate pumping test for DN22**



### 3.9.6 Summary of aquifers present

Three (3) aquifers are present in vicinity of the study area composed of with differing lithologies and therefore differing in aquifer properties and hydraulic parameters. The types and characteristics are summarised in Table 12.

**Table 12: Aquifer types present at Droogfontein**

Aquifer	Type	Geology	K (m/d)	T (m <sup>2</sup> /d)	S*	Yield (l/s)
Shallow perched	Unconfined (primary)	Quaternary Soil/clay	0.023	0.115	-	~0.05
Weathered/fractured	Semi-confined	Karoo sandstone (Ecca)	0.049	3.9	0.0005	0.5 – 1.0
Karstic/fractured	Confined	Malmani dolomite	0.1-10	372	0.01	~10 l/s

\* Storativity cannot be accurately determined from a single borehole without making use of observation boreholes. The values given are based on typically encountered for the specific formations.

### 3.9.7 Boreholes and springs

#### 3.9.7.1 Portion 26

A detailed hydrocensus was conducted in 2km radius on and around Portion 26 to obtain a representative population of the boreholes and springs on the properties of adjacent land owners. A total of 38 boreholes were surveyed in a 2 km radius around portion 26 where the open pit coal mine is proposed. The results from the hydrocensus are summarised in Table 13 and a map showing their positions relative to the mining infrastructure in Figure 15 below. The hydrocensus and water user survey revealed that groundwater abstracted from these boreholes is mainly used for domestic supply, livestock watering and watering of gardens at farmsteads. *The landowners included in the Portion 26 hydrocensus rely solely on the groundwater for their water supply since municipal water is not available.* The Karoo aquifers present poor aquifers and typically yield less than 2 l/s. However, deeper boreholes >150 m may intersect the dolomitic aquifer which could yield in excess of 5 l/s.

Water levels could not be obtained from seven (7) boreholes as a result of no access to water levels while 19 of the surveyed boreholes were either pumping or recovering from pumping during the hydrocensus. Static unaffected water levels ranged between 3.55 mbgl and 18.54 mbgl.

Static water level elevations, excluding pumping or recovering boreholes and water levels obtained from the dolomitic aquifer, were plotted against surface elevation/topography. This was done to assess whether a Bayesian correlation exists between the water level and surface topography. A relatively good Bayesian correlation of 83% exists between the surface topography and groundwater level elevation. An assumption that groundwater flow paths will mimic surface topography can therefore be inferred.



**Table 13: Portion 26 hydrocensus results**

Borehole ID	Coordinates	Property	Owner	Collar WL (m)	pH	EC (mS/m)	Application	Aquifer	Equipped	Approx yield (l/s)
DN08	S26.23204 E28.55963	Droogefontein 242 Ir/26	SM Boerdery Thinus van Dyk	3.5	8.47	27.6	Exploration	Karoo	No	0.1-0.5
DN09	S26.23282 E28.56392			5.4	7.89	22.2			No	0.1-0.5
DN13	S26.22874 E28.56518			4.88	8.08	44.7			No	0.1-0.5
DN20	S26.21735 E28.55457	Droogefontein 242 Ir/39		NAWL	7.45	51.4	Livestock watering, domestic*	Malmani dolomite	Yes	10
DN21	S26.22248 E28.55331	Droogefontein 242 Ir/31		12.78	7.25	40.2	Irrigation (small scale)	Karoo	Yes	0.1-0.5
DN22	S26.21609 E28.54211	Droogefontein 242 Ir/33		NAWL	7.91	52.3	Livestock watering, domestic*	Malmani dolomite	Yes	5
DN23	S26.20759 E28.54143			10.18	7.4	21.1	Irrigation (small scale), domestic*	Karoo	Yes	0.1-0.5
DN24	S26.21214 E28.54075			20.54	7.5	47.9	Domestic*		Yes	0.1-0.5
DN25	S26.21516 E28.55783	Droogefontein 242 Ir/21		Dan Retief. Schoemans Boerdery	5.79	7.92	33.7	Domestic*	Yes	0.1-0.5
DN26	S26.23536 E28.57491	Droogefontein 242 Ir/25	SM Boerdery Thinus van Dyk	8.28	6.82	28.1	Domestic*, irrigation (small scale)	Yes	0.1-0.5	



Borehole ID	Coordinates	Property	Owner	Collar WL (m)	pH	EC (mS/m)	Application	Aquifer	Equipped	Approx yield (l/s)
DN27	S26.25051 E28.56248	Palmietkuilen 241	Dan Retief. Schoemans Boerdery	12.07			None		No	0.5
DN28	S26.25150 E28.56246			11.94	6.52	19.5	None		No	0.1-0.5
DN29	S26.24358 E28.57785			8.55	6.81	36.3	Domestic*, irrigation (small scale)		Yes	0.1-0.5
DN43	S26.20796 E28.57349	Droogfontein ptn 25	Steven Victor	31.0	7.42	35.9	Domestic*, livestock	Karoo	Yes	~1.0
DN44	S26.20845 E28.57610			NAWL	None	Karoo	No	-		
DN45	S26.20414 E28.56024	Droogfontein ptn 20	JC Du Plessis	25.55	7.05	36.4	Domestic*, irrigation (small scale)	Karoo	Yes	~1.0
DN46	S26.22152 E28.54140	Plot 40 Prosperity	Jan Hattingh	±100	7.7	55.2	Domestic*, irrigation (small scale)	Dolomite/karst	Yes	>5
DN47	S26.22303 E28.53882	Plot 51 Prosperity	Rudi Kocks	34.5	7.28	25.0	Domestic*, irrigation, livestock	Karoo	Yes	~1.0
DN48	S26.22267 E28.53817	Plot 35 Prosperity	Annemarie Bendelberg	34.33	7.01	98.2	Domestic*, irrigation (small scale)	Karoo	Yes	~1.0
DN49	S26.22091 E28.53925	Plot 40 Prosperity	Jan Hattingh	16.55	6.08	34.0	None	Unknown	No	-



Borehole ID	Coordinates	Property	Owner	Collar WL (m)	pH	EC (mS/m)	Application	Aquifer	Equipped	Approx yield (l/s)
DN50	S26.22416 E28.54096	Plot 54 Prosperity	Rodney Craukamp	33.78	7.13	41.4	Domestic*, irrigation	Karoo	Yes	~1.5
DN51	S26.22518 E28.54018	Plot 54;56 Prosperity	FJ Prinsloo	17.32	7.12	37.6	Domestic*, irrigation (small scale)	Karoo	Yes	~1.0
DN53	S26.22529 E28.53105	Plot 12 Prosperity	Neurita Gort	16.6	7.23	49.9	None	Unknown	No	-
DN54	S26.22592 E28.53719	Plot 42 Prosperity	Paul Marnevic	20.40	6.88	36.5	None	Unknown	No	-
DN55	S26.22539 E28.53676			29.03	7.49	31.5	Domestic*	Karoo	Yes	Unknown
DN56	S26.22535 E28.53732			10.2	6.9	51.8	Domestic*	Karoo	Yes	Unknown
DN57	S26.22548 E28.53729			100.52	7.5	51.8	Domestic*	Karoo/Dolomite	No	Unknown
DN58	S26.22188 E28.53834	Plot 33 Prosperity	Nico Venter	-	7.9	78.3	Domestic*	Karoo/Dolomite	Yes	Unknown
DN59	S26.21802 E28.53913	Plot 27 Prosperity	Roy Atkins	32.05	7.72	57.3	Domestic*, irrigation (small scale)	Karoo	Yes	~1.0
DN60	S26.21832 E28.53650	Plot 11 Prosperity	Sindiso Giqwa	NAWL	7.60	163.6	Domestic*, livestock	Unknown	Yes	Unknown
DN61	S26.22128 E28.53552	Plot 17 Prosperity	Jaco Labuschagne	49.69	7.65	49.5	Domestic*, livestock	Karoo	Yes	~1.0
DN62	S26.22013 E28.53472			22.33	7.71	34.6	None	Karoo	No	Unknown



Borehole ID	Coordinates	Property	Owner	Collar WL (m)	pH	EC (mS/m)	Application	Aquifer	Equipped	Approx yield (l/s)
DN63	S26.22000 E28.53653	Plot 30 Prosperity	Hennie Nagel	56.95	7.28	72.2	Domestic*, irrigation, livestock	Karoo	Yes	~1.0
DN64	S26.22515 E28.53294	Plot 25 Prosperity	Hannes Nagel	18.54	7.88	37.7	Domestic*, irrigation, livestock	Karoo	Yes	~4.0
DN65	S26.22427 E28.53266			19.77	7.88	26.1	Domestic*, irrigation, livestock	Karoo	Yes	~3.0
DN66	S26.22544 E28.53456	Plot 41 Prosperity	Dewald Geldenhuys	48.24	7.97	24.6	Domestic*, irrigation, livestock	Karoo	Yes	~3.0
DN67	S26.22285 E28.53264	Plot 20 Prosperity	Wollie Wolmarans	25.58	6.7	34.6	Domestic*, irrigation, livestock	Karoo	Yes	~1.5
DN68	S26.22116 E28.53293			16.38	-	21.0	Domestic*	Karoo	Yes	~1.0
DN69	S26.21906 E28.53153	Plot 5 Prosperity	Gert Greyvenstein	NAWL	7.39	49.8	Domestic*, livestock	Karoo	Yes	~1.0
DN70	S26.21933 E28.53155			66.35	-	70.2	Domestic*, livestock	Karoo	Yes	~1.0
DN71	S26.21761 E28.53399	Prosperity	Naas Swanepoel	11.60	7.3	40.2	Domestic*	Karoo	Yes	~1.0
DN72	S26.22615 E28.53908	Plot 58 Prosperity	Hannes Van der Westhuizen	28.0	7.38	40.5	Domestic*, irrigation	Karoo	Yes	~1.5

\*Pumping at time of water level measurement



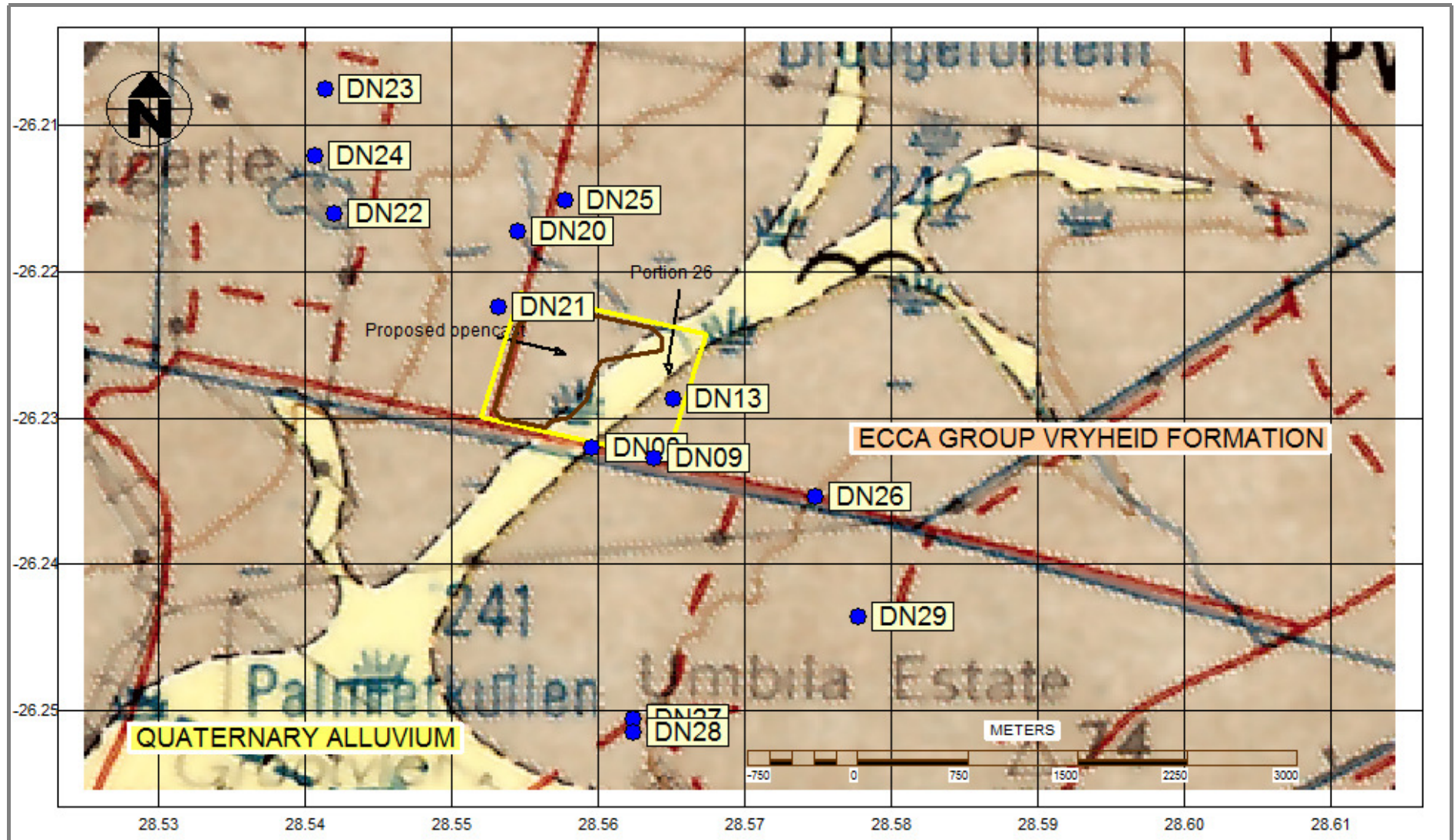


Figure 15: Droogfontein Portion 26 hydrocensus map.



### 3.9.8 Groundwater recharge

Groundwater recharge for the area was reported using:

- i. The Chloride Mass Balance (CMB) method (Bean, 2003)
- ii. Recharge estimation in the GRDM database.

The first approach adopted is the CMB approach. This method is based on the principle that chloride behaves as a conservative tracer and is neither absorbed nor lost as it flows from precipitation to groundwater. Thus the method assumes that chloride in recharge water percolating vertically through the unsaturated zone and into the aquifer is derived entirely from precipitation (i.e. no chloride is derived from the soil or unweathered zone) and the chloride concentration of groundwater is controlled by evapotranspiration processes. Thus the proportion of rainfall that occurs as recharge can be quantified as the ratio between the two concentrations. Using the simplified CMB method equation 4 applies (Bean, 2003):

$$R\% = C_{IP} / C_{IGW} \times 100$$

Eq. 1

Where R = recharge and  $C_{IP}$  and  $C_{IGW}$  represent the Cl-concentration (in mg/l) of precipitation and water percolating through the soil zone (water table), respectively.

The following assumptions are necessary for successful application of the CMB:

- There is no source of chloride in the soil moisture or groundwater other than that from precipitation, i.e. Cl levels suspected to be caused from surface seepage should not be used.
- Chloride is a conservative ion, i.e. it does not readily take part in biological processes nor does it precipitate.
- Steady-state conditions are maintained with respect to long-term precipitation and chloride concentrations.
- A piston flow regime, which is defined as downward vertical diffuse flow of soil moisture, is assumed.

### 3.9.9 Groundwater qualities

Groundwater samples were collected from the hydrocensus boreholes. The samples were submitted to Yanka Laboratories situated in Witbank. Yanka takes part in the SABS inorganic inter-laboratory testing scheme (z-score = 0.73), including in the National Laboratory Association Water Microbiology Proficiency Test Scheme. The laboratory is in the process of achieving SANAS accreditation (ISO/IEC 17025:2005). Water quality was interpreted based on the domestic colour coded classification system (refer to Table 14; WRC, 1998), including the South African Nation Standard for drinking water (SANS 241: 2011; refer to Table 15).



**Table 14: Colour coded classification system (WRC, 1998)**

Classification	Risk
Class 0	<u>Ideal</u> drinking water suitable for lifetime use
Class 01	<u>Good</u> drinking water suitable for lifetime use
Class 02	<u>Marginal</u> drinking water which may be used without health effects by the majority of individuals in all age groups but may cause some effects in sensitive individuals.
Class 03	<u>Poor</u> drinking water which poses a risk of chronic health effects, especially in babies, children and the elderly.
Class 04	<u>Unacceptable</u> water quality posing severe acute health effects even with short term use.

**Table 15: Relevant physical aesthetic, operational and chemical parameters**

### 3.9.9.1 Portion 26 Groundwater Qualities

The hydrochemical data for Portion 26 hydrocensus boreholes are shown in Table 16. The results indicate that most parameters recorded well within the SANS: 241 guidelines and can be classified as *Ideal (class 0)* with neutral, non-saline and soft to very hard water. However, groundwater sampled from DN08, DN09, DN13 and D22 recorded high to very high levels of inorganic N – DN08, DN09 and DN13 as  $\text{NH}_4$  and DN22 as  $\text{NO}_3$ , consequently exceeding the SANS: 241 guidelines. DN23 recorded a Fe concentration of 2.42 mg/l exceeding SANS 241 guidelines with a classification of *Marginal (class 02)*. In terms of domestic classification, DN08 can be classified as *Marginal (class 02)*, DN09 as *Poor (class 03)*, DN13 as *Good (class 01)* and DN22 as *Marginal (class 02)*.

The chemistry analyses supplied in Table 16 should serve as baseline water quality throughout the life of the proposed mining operations.

Stiff diagrams displayed in Figure 16 and the Expanded Durov diagram in Figure 17 display mostly  $\text{Ca-HCO}_3^-$  water types while the boreholes DN08, DN09 and DN13 display  $\text{Na-HCO}_3^-(\text{Cl})$  water types. The Expanded Durov diagram indicate mostly unpolluted fresh and recently recharged water plotting in fields 1 and 2 of the Durov; only DN08 plotted in Field 3 indicating possible Na-Cl enrichment. The Durov diagram also indicates that boreholes DN09 and DN13 are grouped separately from the remaining boreholes in Field 2 which may also indicate a level of Na-Cl enrichment. The above-mentioned boreholes with  $\text{Na-HCO}_3^-(\text{Cl})$  facies) are all exploration boreholes located in a maize field and the enrichment may be due irrigation activities and evapo-transpiration processes

Parameter	Risk	Unit	Standard limits <sup>a</sup>
Physical and aesthetic determinands			
Electrical conductivity	Aesthetic	mS/m	≤170
Total dissolved solids	Aesthetic	mg/l	≤1200
Turbidity <sup>b</sup>	Operational	NTU	≤1
	Aesthetic	NTU	≤5
pH <sup>c</sup>	Operational	pH units	≥5 to ≤9.7
Chemical determinands – macro			
Nitrate as N <sup>d</sup>	Acute health	mg/l	≤11
Sulphate as SO <sub>4</sub> <sup>-2</sup>	Acute health	mg/l	≤500
	Aesthetic	mg/l	≤250
Fluoride as F	Chronic health	mg/l	≤1.5
Ammonia as N	Aesthetic	mg/l	≤1.5
Chloride as Cl <sup>-</sup>	Aesthetic	mg/l	≤300
Sodium as Na	Aesthetic	mg/l	≤200
Zinc as Zn	Aesthetic	mg/l	≤5
Chemical determinands – micro			
Antimony as Sb	Chronic health	mg/l	≤0.020
Arsenic as	Chronic health	mg/l	≤0.010
Cadmium as Cd	Chronic health	mg/l	≤0.003
Total chromium as Cr	Chronic health	mg/l	≤0.050
Copper as Cu	Chronic health	mg/l	≤2.0
Iron as Fe	Chronic health	mg/l	≤2.0
	Aesthetic	mg/l	≤0.30
Lead as Pb	Chronic health	mg/l	≤0.010
Manganese as Mn	Chronic health	mg/l	≤0.50
	Aesthetic	mg/l	≤0.10
Mercury as Hg	Chronic health	mg/l	≤0.006
Nickel as Ni	Chronic health	mg/l	≤0.07
Selenium as Se	Chronic health	mg/l	≤0.010
Uranium as U	Chronic health	mg/l	≤0.015
Vanadium as V	Chronic health	mg/l	≤0.2
Aluminium as Al	Operational	mg/l	≤0.3



**Table 16: Hydrochemical results for the Droogefontein 242 IR, Portion 26 hydrocensus boreholes**

SAMPLE ID	DN08	DN09	DN13	DN20	DN21	DN22	DN23	DN24	DN25	DN26	DN28	DN29
Parameter												
pH	8.47	7.89	8.08	7.45	7.25	7.91	7.40	7.50	7.92	6.82	6.52	6.81
EC (mS/m)	27.6	22.2	44.7	51.4	40.2	52.3	21.1	47.9	33.7	28.1	19.5	36.3
TDS (mg/l)	145	148	216	260	203	288	106	252	170	146	96.8	184
Ca (mg/l)	8.57	11.4	14.8	52.1	38.1	52.0	19.7	48.7	34.2	26.1	19.7	30.8
Mg (mg/l)	4.08	5.09	14.9	22.6	13.2	19.4	6.59	15.0	13.0	10.4	4.42	12.7
Na (mg/l)	27.7	17.1	39.9	17.0	20.4	18.8	7.92	28.3	11.8	11.5	8.81	14.7
K (mg/l)	11.2	3.78	7.43	4.73	4.06	4.61	2.74	5.64	2.91	8.14	3.04	10.5
Cl (mg/l)	35.2	20.5	46.1	23.2	19.3	21.8	11.5	16.0	9.40	7.53	4.96	20.4
SO <sub>4</sub> (mg/l)	0.10	6.10	12.9	9.17	8.09	25.2	11.4	7.57	2.25	3.97	2.95	11.7
Talk (mg/l)	85.4	64.6	129	216	154	158	71.8	216	140	129	87.0	123
Hardness (mg CaCO <sub>3</sub> /l)	38.2	49.4	98.3	223	149	210	76.3	183	139	108	67.4	129
NO <sub>3</sub> (mg N/l)	0.010	7.16	0.010	0.010	1.51	11.4	0.010	0.010	2.72	0.080	0.010	2.06
Total ammonia (mg/ NI)	5.00	10.1	1.64	0.18	0.09	0.38	0.39	0.13	0.03	0.07	0.29	0.14
PO <sub>4</sub> (mg P/l)	<0.01	0.090	0.010	0.020	0.030	<0.01	0.050	<0.01	<0.01	0.030	0.010	<0.01
F (mg/l)	0.38	0.14	0.31	0.43	0.21	0.09	0.16	0.39	0.10	0.17	0.16	0.18
Si (mg/l)	0.700	2.37	1.82	12.7	26.3	20.6	6.96	14.2	20.9	27.1	15.6	26.3
Al (mg/l)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sb (mg/l)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01



SAMPLE ID	DN08	DN09	DN13	DN20	DN21	DN22	DN23	DN24	DN25	DN26	DN28	DN29
As (mg/l)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Ba (mg/l)	<0.01	0.05	0.05	0.24	0.15	0.16	0.13	0.15	0.06	0.48	0.33	0.39
B (mg/l)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cd (mg/l)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cr (mg/l)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cr <sup>6+</sup> (mg/l)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Co (mg/l)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cu (mg/l)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Fe (mg/l)	<0.01	<0.01	0.070	0.180	<0.01	<0.01	2.42	0.230	<0.01	<0.01	<0.01	<0.01
Pb (mg/l)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Mn (mg/l)	<0.01	<0.01	<0.01	0.180	<0.01	<0.01	0.260	0.040	<0.01	<0.01	0.090	<0.01
Hg (mg/l)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Mo (mg/l)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Ni (mg/l)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Se (mg/l)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
U (mg/l)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
V (mg/l)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Zn (mg/l)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
COD (mg/l)	39.2	33.6	66.3	9.40	6.60	13.8	21.9	10.2	19.3	10.4	22.2	5.90
SAR	1.94	1.05	1.74	0.49	0.72	0.56	0.39	0.91	0.43	0.48	0.47	0.56
DWA classification	Class 02	Class 03	Class 01	Class 0	Class 0	Class 02	Class 02	Class 0	Class 0	Class 0	Class 0	Class 0
Worst parameter	Ammonia	Ammonia	Ammonia	-	-	NO3	Fe	-	-	-	-	-

Values denoted in red font exceeds SANS 241: 2011 drinking water quality guidelines



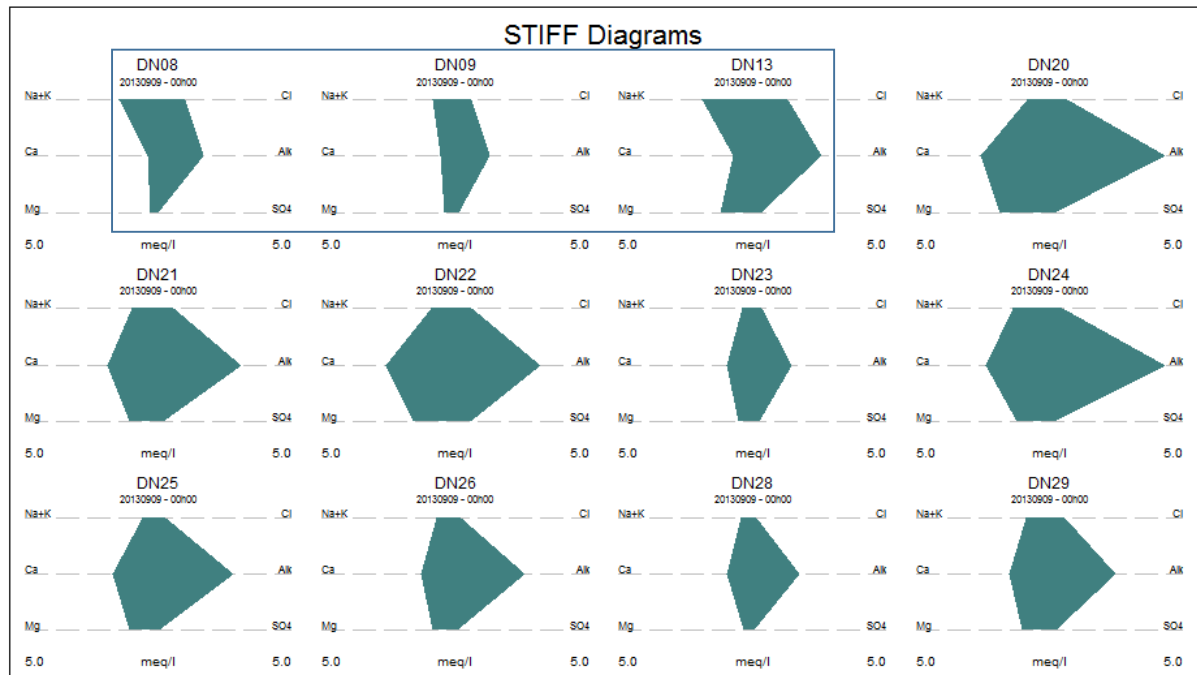


Figure 16: Stiff diagrams displaying major cation and anion distributions in meq/l for portion 26 hydrocensus boreholes

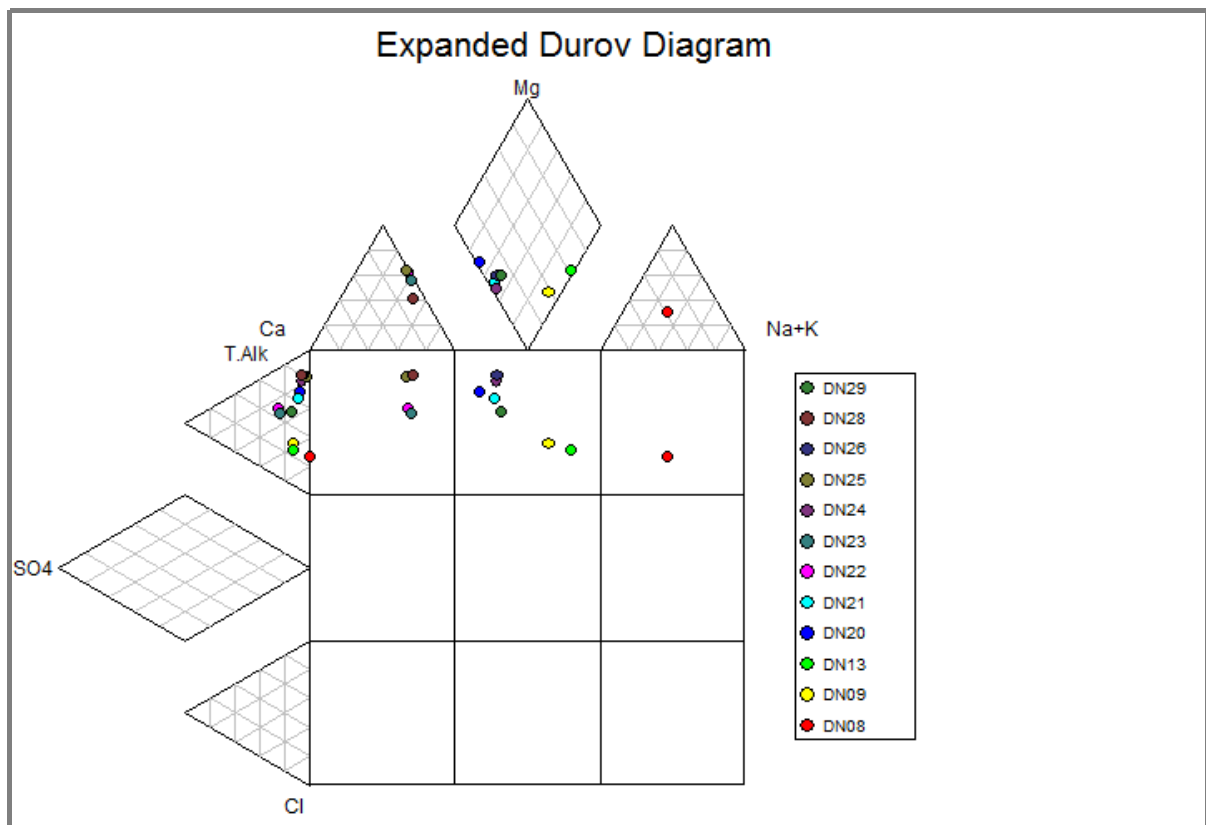


Figure 17: Expanded Durov diagram displaying ratios of major cations and anions in meq/l for Portion 26 hydrocensus boreholes



### 3.9.10 Groundwater use

The main groundwater uses in the vicinity of the proposed mine are domestic and agricultural. The total groundwater usage for the catchment is relatively low which is estimated at approximately 0.3 Mm<sup>3</sup>/a of which livestock watering and irrigation are the largest users.

## 3.10 Sensitive landscapes

### 3.10.1 Wetlands and Pan

Information included in this section of this scoping report was sourced from the report titled: “*wetland and riparian functional assessment*”, conducted by Limosella Consulting. Impact assessment of this environmental component will be included in the EIA Phase.

Two (2) wetland areas were identified; an Unchannelled Valley Bottom Wetland with extensive associated Hillslope seepage wetlands and a Pan, both located on Portion 26 of the farm Droogefontein 242 IR.

The Unchannelled Valley Bottom Wetland with seepage elements on Portion 26 of the farm Droogefontein 242 IR flows from north east to south west and ultimately flows into the Ashton Dam which is located south west of the study site. The Depression Wetland is located close to the Unchannelled Valley Bottom Wetland and is likely hydrologically connected. During the time of the study the vegetation was burnt, accurate functionality assessments could therefore not be conducted. The soil of the area was also disturbed by ploughing. Estimates of the Present Ecological State and Ecological Integrity and Sensitivity for preliminary wetlands is presented in Table 17 below:

**Table 17: Ecological state, ecological integrity and sensitivity for preliminary wetlands**

Wetland Unit	Estimated PES Score	Description	EIS Score
Unchannelled Valley Bottom	C	Moderately modified. A moderate change in ecosystem processes and loss of natural habitats has taken place but the natural habitat remains predominantly intact.	1.2 (Moderate)
Pan	C	Moderately modified. A moderate change in ecosystem processes and loss of natural habitats has taken place but the natural habitat remains predominantly intact.	0.7 (low /Marginal)

Although the secondary grassland found on Portion 26 of the farm Droogefontein 242 IR is expected to have a moderate to low species diversity, seepage areas are embedded in the secondary grassland.

Seepage areas indicate wetland conditions and are therefore protected by national legislation. In addition, the vegetation also plays a role as catchment to the larger wetland area and is important to maintain ecological corridors for the movement and survival of species within a landscape fragmented by agriculture. The secondary grasslands also fall within the recommended 200m protective buffer of the *Crinum bulbispermum* population.

All watercourses are protected environments in South Africa (National Water Act) and subsequently the plant species within and around watercourses that contribute to the health and functioning of the watercourses (Limosella Consulting, 2013). This vegetation should also be protected and rehabilitated where needed. Furthermore, the moist grassland provides habitat to the Declining *Crinum bulbispermum* and is potential habitat to the Near Threatened *Kniphofia typhoides*.

### 3.11 Sites of archaeological and cultural interest

Information included in this section of this scoping report has been extracted from the report titled: “*Heritage Impact Assessment*”, conducted by Pelsler Archaeological Consulting. A detailed impact assessment will be included in the EIA phase.

According to the assessment, there is an informal graveyards containing at least 80 graves as well as settlements remains on Portion 26 of the farm Droogefontein 242 IR.

#### 3.11.1 Graveyards

The proposed site contains informal graveyard containing at least 80 graves, although there might be more located here. Many of the graves have formal headstones with legible inscriptions, while some are only marked with single stones at the head; some are only identified through the depressions left by the burial pit, while others are demarcated by soil heaps, bricks and cement dressings. A number of families are represented by the graves (those who could be identified from inscriptions). These include Gamede, Ndungwane, Molife, Radebe, Majola and Mvathulane. The oldest date of death seen is 1963, with the most recent being 1988. A large number of the graves seem to have been those of young children or infants. The graves are more than likely those of farm workers who used to work and live on this and other farms in the area. (See Figure 18 below)





Figure 18: Graveyards on portion 26 (APelser Archaeological consulting, 2013)

### 3.11.2 Settlement Remains

The site contains the remains of a mud-brick and plastered dwelling, as well as the foundations of other structures and ash and refuse dumps. It is possibly the remnants of a farmworker “settlement” on Droogenfontein, and might be related to the graveyard found at Site 1. It should be noted that there is always a possibility that the burials of still-born or small infants could be located inside or close to the dwellings, and this aspect should be taken into consideration during any development actions. (See figure 19 below)



**Figure 19: Mud-brick dwelling remains (APelser Archaeological consulting, 2013)**

## **3.12 Air Quality**

Information included in this section of this Scoping Report has been sourced from the report titled: “*Basic Atmospheric Impact Report*”, date January 2014, compiled by Shangoni Management Services. A detailed impact assessment of this environmental component will be included in the EIA phase.

### **3.12.1 Emission Sources**

South Africa is situated in the subtropical high pressure belt and is influenced by several high pressure cells, in addition to circulation systems in adjacent tropical and temperate latitudes. The mean upper air circulation over South Africa is anticyclonic throughout the year due to the dominance of the following three high pressure cells: South Atlantic High Pressure, South Indian High Pressure off the east coast, and the Continental High Pressure over the interior. The seasonal variation of the position and intensity of these high pressure cells determine the extent to which circumpolar westerlies impact the atmosphere over a region.

In winter, the high pressure belt strengthens and moves northward and the upper level circumpolar westerlies are able to impact significantly on the region. During summer months, the belt weakens and shifts southwards, reducing the influence of the circumpolar westerlies.

Anticyclones are characterised by convergence in the upper levels of the troposphere, strong subsidence throughout the troposphere, and divergence in the near surface wind field. Such airflow results in subsidence inversions, fair atmospheric conditions and little to no rainfall.



In contrast circumpolar westerlies are associated with convergence in the near surface wind field and divergence in the upper levels of the troposphere. These westerlies produce continual uplift, cloud and the potential for precipitation. The convective activity associated with westerly and easterly wave disturbances, such as strong winds and upward vertical air motion, disrupt the persistence of inversions and therefore facilitate the dispersion and dilution of accumulated atmospheric pollution.

Nkangala District Municipality forms part of the Highveld Priority Area. Industries such as Eskom, Columbus, Highveld Steel, Samancor, Rand Carbide, Vanchem, and Sasol are the major source of emissions in Nkangala. Mining and quarries are an air quality issue in all municipalities, particularly as the result of opencast coal mining, with dust fallouts experienced. The district municipality raised mining as a high priority, with varying degrees of emphasis by the local municipalities (DEA, April 2011).

As site specific meteorological data was not available, suitable surface meteorological data from the South African Weather Service, for a period of three years, was used (2010-2012). No ambient air quality was available for inclusion at the time of compilation of this document.

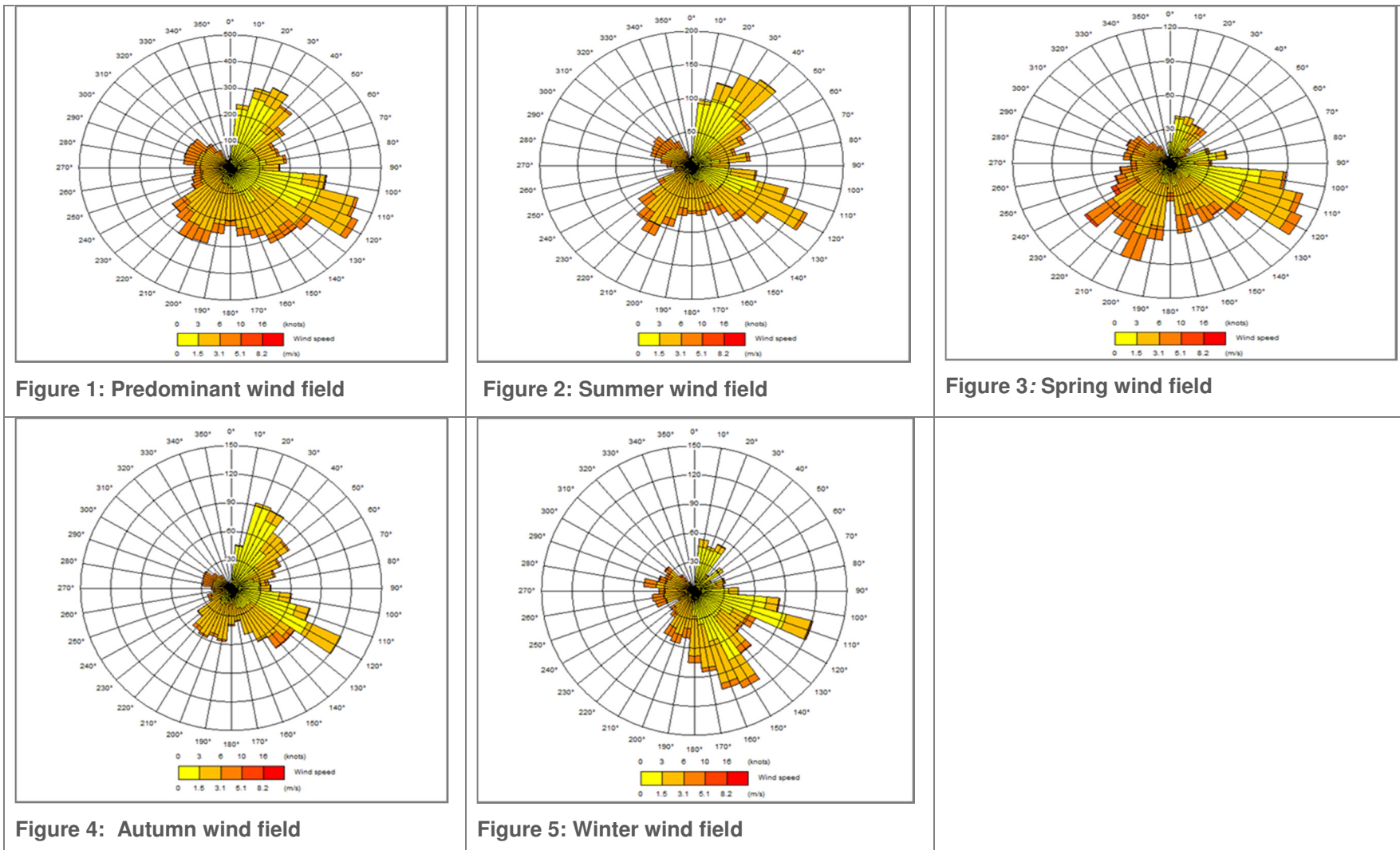
Wind speed, wind direction, ambient air temperature and precipitation data was acquired from the Springs weather station (0476762A3) and cloud cover data from the Oliver Tambo weather station (Johannesburg Int Wo - 0476399 0) (2010-2012), located approximately 13km and 33km from the proposed site, respectively, in a westerly direction.

### **3.12.2 Wind Field**

The predominant wind field for the period 2010 – 2012 is in east south easterly direction with calm to moderate wind speeds of 0-3.1 m/s. (Refer to Table 18, Figure 1 - 5) or seasonal wind fields.



**Table 18: Wind field**



## 2.13 Noise

Information included in this section of this Scoping Report has been sourced from the report titled: “*Baseline Environmental Noise Survey*”, dated October 2013, conducted by Varicon CC. A detailed impact assessment will be included in the EIA phase.

As part of the above-mentioned survey, the sound levels were evaluated against the standards as specified in the SABS Code of Practice 0103 of 2008 (the measurement and rating of environmental noise with respect to land use, health, annoyance and to speech communication) with reference to Code SABS 0328 of 2003 (Environmental Noise Impact Assessments).

For the purpose of this survey and according to SABS 0103 of 2008, it is probable that the noise will be annoying, or otherwise intrusive to the community, or to a group of people, if the rating level of the ambient noise under investigation exceeds the typical rating levels for the ambient noise as given in Table 19 below. Applicable values in the tabulation are highlighted.

**Table 19: Typical rating levels for ambient noise in districts**

Type of district	Equivalent Continuous Rating Level (LReq.T) for Ambient Noise					
	Outdoors			Indoors, with open windows		
	Day-night	Day-time	Night-time	Day-night	Day-time	Night-time
(a) Rural Districts	45	45	35	35	35	25
(b) Suburban with little road traffic	50	50	40	40	40	30
(c) Urban Districts	55	55	45	45	45	35
(d) <i>Urban districts with some workshops, business premises and with main roads.</i>	60	60	50	50	50	40
e) Central Business Districts	65	65	55	55	55	45
(f) Industrial Districts	70	70	60	60	60	50

Stationery noise levels were measured at pre-selected positions around the proposed mining areas. Two sets of measurements were taken during the daytime in the month of October 2013. The measurement positions were selected around the proposed mining areas and at specific locations around the farmlands. Currently the noise levels around the proposed mining site are mainly generated by chicken farming activities and small scale farming activities (Portion 26). The noise levels all were measured within the recommended levels that could cause disturbance to any community that could be affected. The results of the environmental noise surveys are listed below in Table 20. The test results



are compared to the typical rating levels (Category B for Portion 26) (assumed to be best fit) as provided in Table 19 shown above. All noise levels measured were below the prescribed requirements

**Table 20: Noise levels at various sampling locations around the proposed mining site (Portions 26).**

Measuring Positions	Ambient Noise (dB(A))					Remarks
	Day Time Levels					
	Average Results (dBA)		Typical Rating (SABS 0103) (Category B)	Excess $\Delta L_{Req,T}$ (dBA)		
	October 2013	October 2013		October 2013	October 2013	
<u>Position 1:</u> On the North-Western corner of the farmland, close to the Chicken farm structures.	41,1	38,6	50,00	-8.9	-11.4	<u>Day Time:</u> - No mining activities. Mainly background noise from birds, background noises and some dirt road traffic.
<u>Position 2:</u> On the North-Eastern corner of the farmland, next to the graveyard, approximately 1000 m from the farmhouse.	35,7	29,8	50,00	-14.3	-20.2	<u>Day Time:</u> - No mining activities. Mainly background noise from birds, background noises and some dirt road traffic.
<u>Position 3:</u> On the South-Eastern corner of the farmland, next to a main dirt road, approximately 1000 m from farmhouses.	31.8	29,7	50,00	-18.2	-20.3	<u>Day Time:</u> - No mining activities. Mainly background noise from birds, background noises and some dirt road traffic.
<u>Position 4:</u> On the South-Western corner of the farmland, next to a main dirt road, approximately 1000 from farmhouses.	31.4	30.4	50,00	-18.6	-19.6	<u>Day Time:</u> - No mining activities. Mainly background noise from birds, background noises and some dirt road traffic.



### 3.14 Visual aspects

Information included in this section of this scoping report has been sourced from a report titled: “*Visual Impact Assessment*”, dated October 2013, compiled by Zoneland Solutions. Impact assessment on this environmental component will be included in the EIA phase.

As part of the study four dominant *view corridors* were identified in the region, namely the:

- Northern access road, which is the main movement route to the project site from the N12 via the R555.
- Western access road, which is a secondary access route via the R29.
- Eastern access road, which is also a secondary access route via the R42 .

The nearest settlements to the project site are the rural residential settlements of Prosperity, Sundra, Sundale, and Eloff. In terms of the Nkangala District IDP, the N12 freeway has been classified as a development corridor as it links the Nkangala District with the industrial core of Ekurhuleni. The N17 to the south of the project site has an important distribution function in the region. However, both of these roads, together with the R555, R29 and R42 are located in the background of the project site and are therefore not regarded as dominant view corridors of relevance to the proposed activity.

As illustrated by the DEM below (Figure 20), the project site is located at a mean elevation of approximately 1590m above sea level. The DEM shows that there is little prominent topographical manifestation in close proximity to the project site, from which the proposed activity is particularly visually exposed. On a local scale, as a result of the undulating nature of the area, a local ridgeline is formed in the centre of the site.





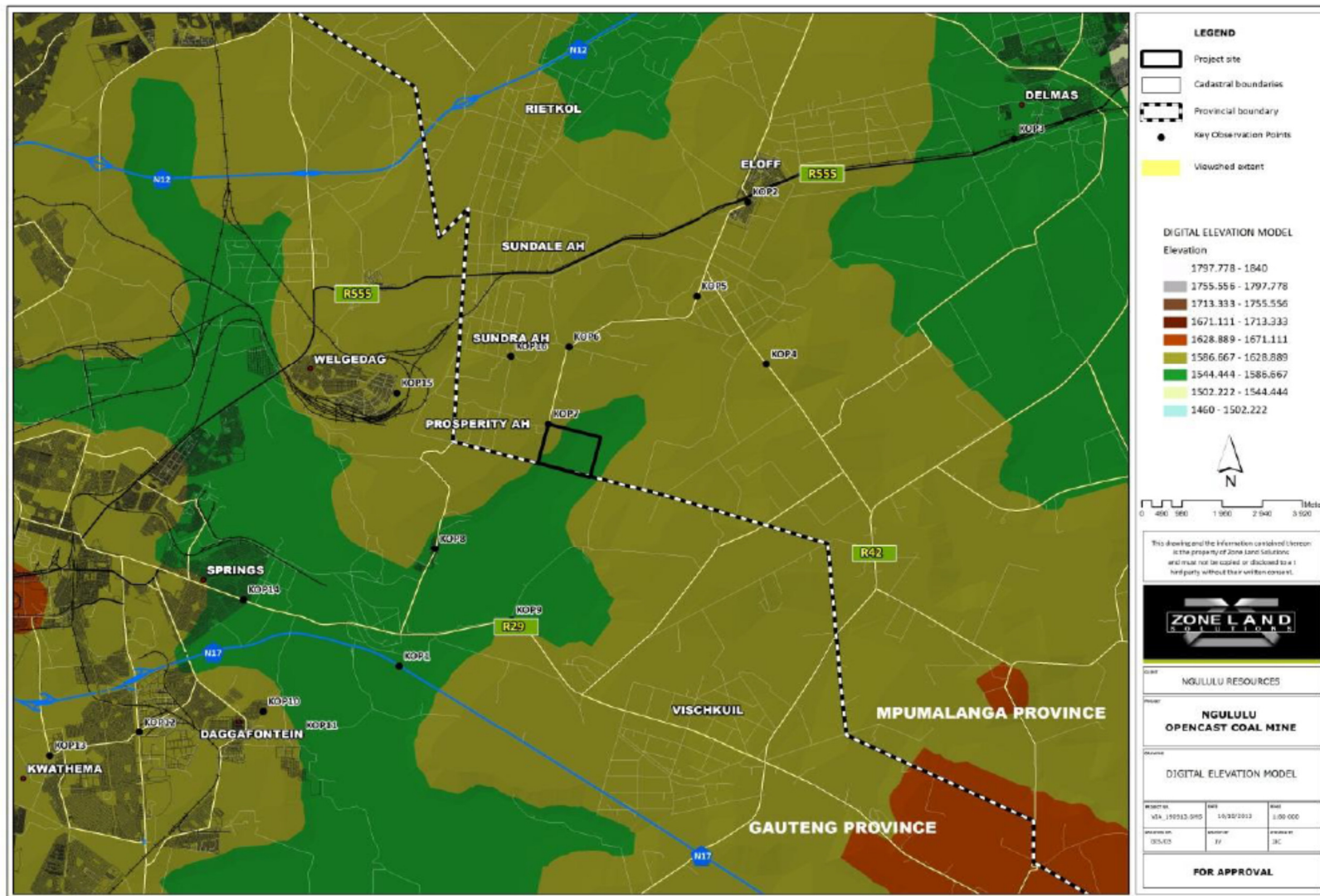


Figure 20: Digital elevation model illustrating major ridgelines and dominant view corridors in the sub-region

### 3.15 Regional Socio-economic aspects

The following section is sourced from the following:

- 2011/16 Victor Khanye Local Municipality Final IDP Document, Final 2014/15 review
- 2012/2013 Integrated Development Plan Final Nkangala District Municipality

#### 3.15.1 Demography

VKLM falls within the NDM which is in Mpumalanga. Mpumalanga is the second smallest province in the country (after Gauteng) but has the fourth-largest economy in South Africa. The capital is Mbombela (formerly Nelspruit). The province is bordered by Mozambique and Swaziland in the east and Gauteng in the west. Its landscape is characterised by high plateau grasslands in the west and the low-lying area known as the Lowveld in the east.

Nkangala District Municipality is made up of the following local municipalities: Delmas (Victor Khanye), Dr J.S. Moroka, Emalaheni, Emakhazeni, Steve Tshwete, and Thembisile. It is also responsible for the Mdala District Management Area. Nkangala is at the economic hub of Mpumalanga and is rich in minerals and natural resources.

The VKLM is situated on the western Highveld of Mpumalanga Province, covering a geographic area of approximately 1,567 square kilometres. The prominent towns and settlements in the Municipality include Abor, Argent, Delmas, and Brakfontein. The municipality is strategically located close to the metropolitan areas of Tshwane and Ekurhuleni to the west. The headquarters of the municipality are in Delmas (a French word meaning small farm).

VKLM is currently characterised by an increase in mining and related activities in the Leandra area. In addition to mining (concentrating on coal and silica), other important sectors in this area are agriculture (a major provider of food and an energy source, i.e. maize); finance and manufacturing (capitalising on the area's proximity to Gauteng).

Delmas has good infrastructure. Natural resources make a significant and direct contribution to the Nkangala District economy, which is "resource based" (i.e. coal, water, land capacity, geographical features, climate, and conservation areas, and ecosystems, natural features).

##### 3.15.1.1 Population distribution and trend

According to census 2011, the population of VKLM has grown significantly since 2001 increasing from 56,335 to 75,452, which represent a growth of 33, 9%. The highest population density occurs in the core urban area of Delmas and Botleng, with the rural wards recording the lowest. VKLM has the third largest population growth in Mpumalanga province, which is an indicative of the migration of labour attracted to the area as a result of the potential for economic growth and resultant job opportunity.

### 3.15.1.2 Age, gender and households

The highest percentage of the population, approximately 67%, is in the economically active age group of 15-64 year old category, the majority of which are under the age of 35 years of age. The trend demonstrates that labour migration may be the contributing factor to the increase resulting from the economic growth potential of the area. The census results also reflected a shift in the ratio of males to females with the current balance now marginally in favour of males, representing 51% of the total. A point of interest is that 30,2% of households are headed by females. The youth between the age groups of 15 to 35 make up approximately 38% of the total population. Table 21 below shows distribution by gender.

**Table 21: Population by gender**

Age	1996			2001			2011		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
0-14	7 821	8 013	15 834	9 008	8 984	17 992	10 754	10 531	21 285
15-64	16 894	16 954	33 848	17 745	18 234	35 980	26 516	24 089	50 605
65+	1 017	1 184	2 201	985	1 378	2 363	1 547	2 016	3 563
Total	25 733	26 151	51 884	27 738	28 597	56 335	38 816	36 636	75 452

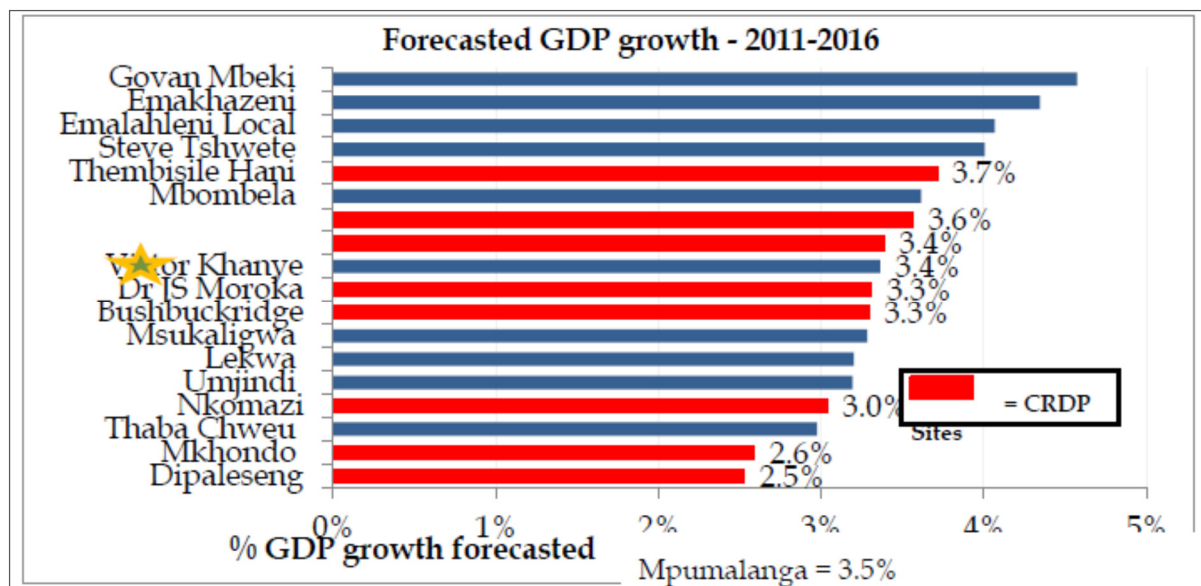
The municipality has recorded a significant growth in the number of households units from 13,409 in 2001 to 20,548 in 2011, representing an increase of 53%, as a result of the population's exponential growth. However, the VKLM comprises only 5,8% of the total households in the NDM.

The population of VKML is 75 452, number of households is 20 548 and the average household size is 3.7. The average household size has decreased from 4.2 persons to 3.7 as per Census 2011 statistics. This phenomenon could be as a result of several factors including incorrect baseline data or that younger people have set up their own homes or the average family size per household is actually decreasing.

### 3.15.2 Major economic activities

The VKLM Gross Domestic Product (GDP) is forecast to grow by 3.4% per annum over up to and including 2016, although this is lower than the District and Province projections. The forecast is very optimistic if we consider that the historic growth rate in the period 1996-2011 remained relatively low at 2.0% per annum. The forecasted GDP growth for 2011 - 2016 is shown on figure 21.





**Figure 21: Forecasted GDP growth for 2011 – 2016**

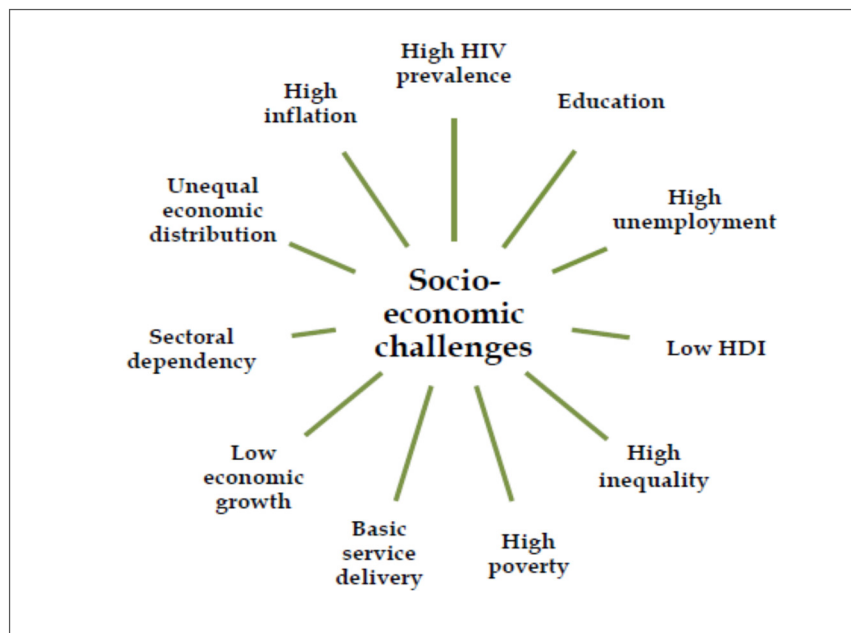
Agriculture, transport, community services, finance and mining will be the main contributors to the VKLM economic growth in the period up to 2016. The municipality is a major maize producing area. Annual maize production is calculated at between 230 000 and 250 000 metric tons. Mining activities are concentrated on coal and silica. About 3 million metric tons of coal and 2 million metric tons of silica are mined annually in the municipal area.

With respect to Gross Value Added (GVA) - a measure in economic terms of the value of goods and services produced in an area, industry or sector of an economy - the VKLM's contribution to the Mpumalanga province is reflected at 2,0% in 2011 at an estimated value of 3,4 billion. The projection going forward is a GVA index of 1,7% reflecting a reduction in the value of economic growth which is contrary to the GDP index projections.

With respect to the GVA contribution to the overall Nkangala District's economic basket the municipalities input of 4,5% is relatively small compared to Emalahleni and Steve Tshwete, which contribute a collective 83,9% on a 54:46 ratio basis. The major economic "bread basket" for the municipality with regards to value added goods are Mining and associated Transport, and Manufacturing playing a significant role.

The regeneration of power stations, as well as the new Kusile power station in the Victor Khanye area, could serve as a catalyst to increased demand for coal reserves in the Nkangala area. The industrial potential of Delmas (agro-processing) should also be promoted to capitalise on its strategic location in relation to the major transport network.

In summary, the economic challenges facing the VKLM are similar in most respects to that facing the Mpumalanga Province as depicted in figure 22. Attracting the correct balance of investment is needed to grow the local economy and address the majority of the ills currently faced in the municipality.



**Figure 22: Socio-economic challenges in Mpumalanga province**

### 3.15.3 Unemployment and employment

The latest statistics reflect that the employment level in the VKLM is currently at 28,9%. based on the 2011 definition of Economically Active Population (EAP) of 30,415 the unemployment rate is reflected at 28,2%, this represents an overall gain in employment compared to 2001. This figure is high when we consider the economic activity in the area, but obviously impacted by the migration influx of job seekers. Leading industries in employment comprise of Trade (18,7%), Agriculture (18,2%) and Community Services contributing (14,3%). However, the former two sectors are experiencing a decline in employment in the last few years whilst Community Services has increased and Mining as an employer has grown and now contributes 12,7%.

In the VKLM, 21 843 (28,9%) people are employed, 8 573 (11,4%) unemployed, 2 477 (3,3 %) discouraged work seekers, 19 365 (25,7 %) not economically active. The unemployment rate with respect to the Youth is 35.8%, which is below the Mpumalanga provincial rate. The employment situation is expected to improve over the medium term with additional jobs expected in the mining sector. Four mines that are set to become operational in the years 2012-15 are Shanduka Coal, Umthombo Resources, Universal Coal and Bramfontein. These developments may however also draw new job-seekers into the VKLM from surrounding areas, which may lessen its positive impact on the prospects of local employment.

### 3.15.4 Community, social and personal services

#### 3.15.4.1 Schools and education

The VKLM has an inherited problem namely that the low income levels per household in the community correlate to the low education levels in the area. Statistics show that 25% of the population above 15 years of age has had no schooling or did not complete primary school. Of this number 5,528 are basically illiterate and therefore future meaningful employment prospects are virtually impossible. A further 41% of the population did not complete the schooling curriculum and therefore did not reach the level of matric.

**Table 22: Educational Levels**

Highest level of education obtained in VKLM	
No schooling	5 528
Less than grade 7	6 164
Grade 7	2 234
Less than grade 12	16 610
Matric/grade 12	12 719
Matric plus	3 348
Total	46 603

On the positive side the pass rate reported in 2012 shows that 76.7% of matriculates wrote the year-end exam, which reflects an upward trend and attributed to VKLM being ranked in 5th place in the province. However this improved pass rate was not reflected in the university admission rate with only 26,2% of scholars seeking to further their education status. When these statistics are compared with the unemployment statistics the assumption can be made that a high percentage of job seekers do not have the minimum education entry level. Unfortunately these job seekers will be restricted to unskilled manual work where the main employer in this sector of employment, namely Agriculture, is receding as a leading employer. This poses a huge problem within the communities as the dependency syndrome increases and criminal activities increase.

#### 3.15.4.2 Basic Services

##### 3.15.4.2.1 Water and sanitation

Approximately 10 000 households out of 13 409 households at VKLM have access to potable water on their stands, excluding rural areas. The municipal council provides for at least 80% of the households in rural areas with borehole water. The water backlog affects the sanitation directly as most houses without potable water are still using the bucket system, pit latrines or septic tanks. At least 4356 of the 13 409 households in VKLM have a sanitation backlog. Water supply in Victor Khanye, Botleng, Delpark and other Extensions are supplied with water by means of boreholes. With the new development in Botleng Extension 5, Victor Khanye Extension 17 and other residential developments and the expansion of McCain Foods, the demand for water exceeds the supply. The demand for water will be 18MI per day and the boreholes are delivering currently only 16MI per day. Rand Water supplied to

Eloff is used to augment the water supply to Victor Khanye, which affect certain areas e.g. Eloff Agricultural Holdings negatively. Higher positioned areas experience water shortages when the level in the reservoirs reaches certain low levels e.g. Botleng Extension 4, Leeupoort Agricultural Holdings, Eloff Agricultural Holdings, Delmas West and Delmas Extension.

The old asbestos water pipes cause high frequency of pipe breakages, which contributes negatively to the water shortage and water quality. The rural communities around Victor Khanye receive their water supply from boreholes. However the communities are scattered all over the Municipal area e.g. Hawerklip situated approximately 21km South East from Delmas and Groenfontein situated 34km North East from Delmas. These communities receive water by means of a water tanker. The majority of the communities live on privately owned lands and the relevant owner would be relevant to provide services to people not working on the farm. Some of these rural boreholes are biologically contaminated, not maintained or functional.

#### 3.15.4.2.2 Access to electricity

Approximately 65% of the households in the VKLM area use electricity for lighting. The remaining 35% includes residents of the rural areas and informal settlements or farm dwellers. The electricity network within VKLM is ageing and has become inefficient. The main electricity substation is under severe pressure and needs to be upgraded since the electricity demand is increasing due to the following: Newly proposed industrial developments e.g. Sephaku Cement Factory, Shopping Mall Botleng Ext.3 Industrial expansions e.g. McCain Foods. New residential development e.g. Botleng Ext. 5, Delmas Ext.17 and West ridge Estates. The infrastructure within the area supplied by Eskom (Eloff, Sundra, Botleng and Extension 3) needs to be upgraded to ensure that communities receive uninterrupted services



## 4. PUBLIC PARTICIPATION PROCESS

### 4.1 Objectives of the Public Participation Process (PPP)

Section 24 of the Constitution of the Republic of South Africa of 1996 guarantees everyone the right to an environment that is not harmful to their health and well-being and to have the environment protected for the benefit of present and future generations. In order to give effect to this right, the National Environmental Management Amendment Act (NEMA), 2008 came into effect.

In terms of Section 24 (4) of the NEMA, 2008, procedures for the investigation, assessment and communication of the potential consequences or impacts of activities on the environment must, *inter alia*, ensure, with respect to every application:

- Coordination and cooperation between organs of state in the consideration of assessments where an activity falls under the jurisdiction of more than one organ of state.
- That the findings and recommendations flowing from an investigation, the general objective of integrated management laid down in NEMA, 2008 and the principles of environmental management set out in Section 2 of NEMA, 2008 are taken into account in any decision made by the organ state in relation to any proposed policy, programme, process, plan or projects, consequences or impacts.
- Public information and participation procedures which provide all integrated and affected parties, including all organs of state in all spheres of government that may have jurisdiction over any aspect of the activity, with a reasonable opportunity to participate in those information and participation procedures.

One of the general objectives of integrated environmental management laid down in Section 23(2) (d) of NEMA, 2008 is to: “ensure adequate and appropriate opportunity for public participation in decisions that may affect the environment.”

The National Environmental Management Principles as stipulated in NEMA, 2008 say;

- “Environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably.
- The participation of all interested and affected parties in environmental governance must be promoted, and all people must have an opportunity to develop the understanding, skills and capacity necessary to achieve equitable and effective participation, and participation by vulnerable and disadvantage persons must be ensured”.





## 4.2 Legislation and guidelines followed for the PPP

The public participation process for this project was conducted by Shangoni Management Services in terms of:

- The procedures and provisions in terms of the NEMA (as amended), 2008;
- Chapter 6 of the EIA Regulations of 2010;
- GN 807; Public Participation Guideline in the Environmental Impact Assessment Process, dated October 2012; and
- Other relevant legislation such as the Promotion of Access to Information Act (PAIA), 2000.

Refer to Appendix D1 for an extract regarding the required public participation process to be followed, taken from the relevant legislation and guidelines

## 4.3 Public Participation Process followed

### 4.3.1 Identification and notification of landowners and organs of state

Table 23 below lists the landowners and adjacent landowners identified and notified (by means of e-mail, telephone, fax and/or post) of the proposed project. The identified and notified landowners and organs of state were added to the Interested and Affected Parties (I&APs) register. Copies of the notifications to all I&APs have been included in Appendix D4, see Figure 23 for proof of postage of registration letters.

**Table 23: List of landowners and adjacent landowners identified and notified**

Farm Name	Owner's Details
Portion 26, 31 and 39 of Farm Droogefontein 242 IR	Mr Tinus van Dyk Namutoni Boerdery (Edm) Bebert
Portion 46 of farm Droogefontein 242 IR	Elwyn Michael Vereker
Portion 47 of farm Droogefontein 242 IR	Mr Ockie Bezuidenhout Oku-Kama Trust
Portions 31 and 39 of the farm Droogefontein 242IR	African Exploration
Portion 29 of the farm Droogefontein 242IR	Rep n Roer Pty Ltd (Daniel C.H van Wyk)
Portion 53 of the farm Droogefontein 242 IR	Vibrant Veterans
RE of mineral area 1 on the RE of portion 52, RE of portion 4, RE of portion 18, portions 5, 8, 9, 11, 12, 13, 14, 15, 16, 17, 19, 20, 22, 23, 24, 25 and 30 of the farm Droogefontein 242IR	Eloff Mining / Total



All organs of state that may have jurisdiction in respect of the proposed project is considered to be registered I&APs.

The following organs of state and stakeholders were notified of the proposed project:

- Department of Economic Development, Environmental and tourism (MDEDET)
- Department of Water Affairs (DWA),
- Department of Mineral Resources (DMR),
- Department of Agriculture, Forestry and Fisheries (DAFF),
- Rural Development and Land Reform (Commissioner for Restitution of Land Rights),
- South African Heritage Resources Agency (SAHRA),
- Wildlife and Environment Society of South Africa (WESSA),
- Endangered Wildlife Trust (EWT),
- Delmas Farmers Union,
- Victor Khanye Local Municipality (VKLM),
- Nkangala District Municipality (NDM), and
- Rural Development and Land Reform (Commissioner for Restitution of Land Rights).

Copies of the notifications to the organs of state have been included in Appendix D4.

### **4.3.2 Methods of notification**

#### **4.3.2.1 Advertisement(s)**

The proposed project was advertised in a local newspaper, Streek Nuus on 01 November 2013. The Streek Nuus was found to be the most appropriate newspaper in terms of its accessibility to I&APs. A copy of the advertisement and proof of the placement thereof is attached in Appendix D5. Refer also to Figure 24 below.

#### **4.3.2.2 Placement of site- and public notices**

Notice was also given to I&APs by notice boards. Notice boards were placed at different, noticeable and conspicuous places:

- Filling station,
- Junction overpass,
- Outspan café,
- Police Station, and
- Railway crossing.

A copy of the site notice and photographs of the site notices are attached in Appendix D6. Refer also to table 24 and Figure 25 below.



#### **4.3.2.3 Background Information Document**

The Background Information Document (BID) developed for the proposed project provides background information and is intended to inform I&APs of the proposed project. The BID was included in the initial notification letter of the project, which also included an invitation to a public meeting and a registration form which I&APs, stakeholders and organs of state are encouraged to complete in order to register as an I&AP for the proposed project.

The initial notification letter together with the BID was made available to all landowners, adjacent landowners, stakeholder and organs of state that may have jurisdiction over any aspect of the activity.

Copies of the combined initial notification and BID and proof of distribution thereof have been attached as Appendix D3 and D4.



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

**Full tracking and tracing/Volledige volg en spoor**



Name and address of sender:  
 Naam en adres van afsender: LEE-ANNE FELLOWES  
472 BOTTERKLAPPER STREET, THE WILLOWS  
P.O. Box 74726 LYNWOOD RIDGE 0040

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

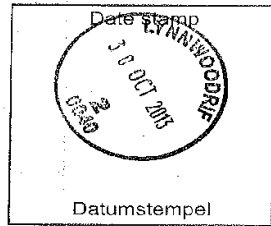
No	Name and address of addressee Naam en adres van geadresseerde	Insured amount Versekerde bedrag	Insurance fee Verskoringsgeld	Postage Posgeld	Service fee Diensgeld	Affix Track and Trace customer copy Plak Volg-en-Spoor-kliëntafskrif	
1	BOET BURGER • JORNN 7 HARTS DRINE 3 PETERSFIELD SPRINGS 1559					REGISTERED LETTER (with a domestic insurance option) RD 630 031 665 ZA A BOOK COPY	
2	JAN STEENBERG P.O. Box 618 SUNDRA 2200					REGISTERED LETTER (with a domestic insurance option) RD 856 132 450 ZA A BOOK COPY	
3	DEBBIE VAN DER HEER P.O. Box 721 SUNDRA 2200					REGISTERED LETTER (with a domestic insurance option) RD 856 132 446 ZA A BOOK COPY	
4	DANIE VAN WIJK P.O. Box 510 SUNDRA 2200					REGISTERED LETTER (with a domestic insurance option) RD 856 132 335 ZA A BOOK COPY	
5	WILHE MARITZ P.O. Box 335 SUNDRA 2200					REGISTERED LETTER (with a domestic insurance option) RD 856 132 344 ZA A BOOK COPY	
6	GIDEON STEENBERG P.O. Box 189 SUNDRA 2200					REGISTERED LETTER (with a domestic insurance option) RD 856 132 358 ZA A BOOK COPY	
7	PIETER SENEKAL P.O. Box 365 SUNDRA 2200					REGISTERED LETTER (with a domestic insurance option) RD 856 132 432 ZA A BOOK COPY	
8	DAAN RETIEF P.O. Box 33 DELMAS 2210					REGISTERED LETTER (with a domestic insurance option) RD 856 132 361 ZA A BOOK COPY	
9	FREDERICK ZEELIE P.O. Box 848 SUNDRA 2200					REGISTERED LETTER (with a domestic insurance option) RD 856 132 429 ZA A BOOK COPY	
10	SAMPIE VENTER P.O. Box 393 SUNDRA 2200					REGISTERED LETTER (with a domestic insurance option) RD 856 132 415 ZA A BOOK COPY	
Number of letters posted Getal briewe gepos		Total Totaal		R	R	R	R

Signature of client  
 Handtekening van kliënt *[Signature]*

Signature of accepting officer  
 Handtekening van aanneembeampte

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 R200,00 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 dokumentere 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**  
 (with an insurance option/met  
**Full tracking and tracing/Volledige**



Name and address of sender:  
 Naam en adres van afsender: **LEE-ANNE**  
**P.O. BOX 74726 LYNWOOD**  
**472 BOTTERICLAPPER STREET**

No	Name and address of addressee Naam en adres van geadresseerde
1	<b>J.S. PRETORIUS</b> <b>P.O. BOX 551 SUNORA 2</b>
2	<b>ROY SHEARER</b> <b>P.O. BOX 107 SUNORA 2</b>
3	<b>MICHAEL VEREKER</b> <b>P.O. BOX 841 SUNORA 2</b>
4	<b>SIZWE MADOENO</b> <b>P.O. BOX 786 141 SANDTON</b>
5	<b>OCKIE BEZUIDENHOUT P.O.</b> <b>8793 CINDA PARK 146</b>
6	
7	
8	
9	
10	

**REGISTERED LETTER**  
**GEREGISTREERDE BRIEF**  
 (with an insurance option/met 'n versekeringsopsie)  
**Full tracking and tracing/Volledige volg en spoor**  
 Address and folio/Geadresseer aan

Post Office

Postage paid R  
 Service fee / Diensgeld R  
 Insurance / Versekering R  
 Total / Totaal R

Insured value of contents  
 Versekerde waarde van inhoud R

Enquiries/Navrae  
 Toll-free number  
 0800 111 502

Affix Track and Trace customer copy  
 Plak Volg-en-Spoor kliëntafskrif

Date Stamp  
 20 OCT 2015

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

Affix Track and Trace customer copy  
 Plak Volg-en-Spoor kliëntafskrif

REGISTERED LETTER (with a domestic insurance option)  
**RD 856 132 389 ZA**  
**A BOOK COPY**

REGISTERED LETTER (with a domestic insurance option)  
**RD 856 132 401 ZA**  
**A BOOK COPY**

REGISTERED LETTER (with a domestic insurance option)  
**RD 856 132 375 ZA**  
**A BOOK COPY**

REGISTERED LETTER (with a domestic insurance option)  
**RD 856 132 392 ZA**  
**A BOOK COPY**

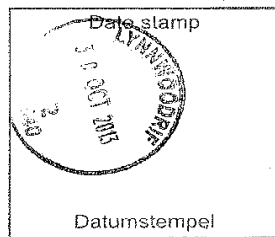
REGISTERED LETTER (with a domestic insurance option)  
**RD 856 132 327 ZA**  
**A BOOK COPY**

Number of letters posted **S** Total Totaal R R R R

Getal briewe gepos

Signature of client *Kelly*  
 Handtekening van kliënt

Signature of accepting officer  
 Handtekening van aanneembeampte



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 R200,00 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 dokumentere bewys betaalbaar nie. Opsionele versekering van tot R2 000,00 is beskikbaar en is slegs op binne-landse geregistreerde briewe van toepassing.

Figure 23: Proof of registered letters

# Cullie olimpiade Gholfers presteer

DRIE van die Gekombineerde Skool Cullinan se Graad 8 en 9 leerders het deelgeneem aan die Distrik Gauteng Noord se Wiskunde Olimpiade en eerste en 'n tweede plek behaal. Toekennings sal laters tydens 'n prysuitdelingsaand te Rayton aan hulle oorhandig word.

In Graad 8 is die eerste plek toegeken aan Brian Scheepers en die tweede plek aan Moagi Boikanyo.

Die Graad 9 leerder wat eerste plek gekry het is Maret Swart.

Baie geluk - die Cullies is trots op hulle!



Die Gekombineerde Skool Cullinan se 'Wiskunde Olimpiade' sterre.



Arno Kruger, Eric Coleman en Louwtjie Hoffman het die Nkangala Gholfspan gehaal. Met hierdie prestasie gaan die spelers binnekort in Secunda, te Graceland aan 'n verdere kompetisie deelneem.



## NOTICE OF APPLICATION FOR A MINING RIGHT, WATER USE LICENSE, AND ENVIRONMENTAL IMPACT ASSESSMENT AUTHORISATION

Notice is hereby given that an application for environmental authorisation in terms of the environmental impact assessment (EIA) Regulations of 2010 (Regulations) in terms of chapter 5 of the National Environmental Management Act no 107 of 1998, as amended (NEMA) has been lodged with the Mpumalanga Department of Economic Development, Environment and Tourism (DEDET), an application for a mining right in terms of section 22 of the Mineral and Petroleum Resources Development Act no 28 of 2002 (MPRDA) has been lodged with the Mpumalanga Department of Mineral Resources (DMR), and an application for an integrated water use license (IWL) in terms of section 21 of the National Water Act no 36 of 1998 (NWA) will be lodged with the Mpumalanga Department of Water Affairs (DWA).

Applicant: Ngululu Resources Pty Ltd  
 Project Name: Ngululu Resources proposes to mine coal on portions 26, 46 and 47 of the farm Droogfontein 242 IR.  
 Project Location: Portions 26, 46 and 47 of the farm Droogfontein 242 IR.  
 Mining right ref no: MP/2005/11/21/0070849

Environmental impact assessment ref: 17/02/N-312  
 Project Description: Ngululu Resources proposes an open-pit coal mine with an estimated life of mine of 20 years, planned on portions 26, 46 and 47 of the farm Droogfontein 242 IR. Portion 26 will be established through an open-pit to gain access to the seams. Topsoil, where available, shall be stripped and stored separately. Subsoil will be drilled and stored for later use during rehabilitation and stormwater diversion channels will be constructed. It is envisaged that all waste rock and overburden shall be used to backfill the open-pit. Due to the small size of portion 26 Ngululu Resources have decided not to establish a beneficiation plant but to consult with the surrounding mines in the area to wash and screen the coal. There will be no permanent general and hazardous waste disposal facilities. There is an existing access road to the proposed site. Internal roads will likely be constructed between the open pit and support services. According to the mining work programme (MWP), a pollution control dam is required. It is currently anticipated that this dam will be required for the collection of runoff water from affected areas. Potable water may be transported to the site from outside sources, but could also be obtained from a borehole to be located on site. Potable water tanks will be located on site.

Water activities that will be applied for:	
Section 21 (a)	Taking water from a water resource.
Section 21 (b)	Storage of clean water.
Section 21 (c)	Impeding or diverting the flow of water in a watercourse.
Section 21 (d)	Altering the bed, banks, course or characteristics of a watercourse.
Section 21 (g)	Disposing of waste in a manner which may detrimentally impact on a water resource.
Section 21 (i)	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.

Environmental impact assessment activities applied for:		
Number and date of the relevant notice	Activity No (s) (in terms of the relevant notice)	Listed activity as per the detailed project description
No. R, 544/18 June 2010	9	Construction of pipelines delivering affected water from the affected areas to the pollution control dam.
No. R, 544/18 June 2010	11	Construction of a pollution control dam within 50metres of a watercourse (Wetland).
No. R, 545/18 June 2010	12	Storage of clean water on site for potable use.
No. R, 544/18 June 2010	13	Construction of diesel storage facility with the capacity above 80 but less than 500 cubic metres.
No. R, 544/18 June 2010	22	Construction of haul and internal access roads.
No. R, 545/18 June 2010	5	The mine will require a water use license as the following water use activities will be triggered: Section 21 (a) for the extraction of water from boreholes (groundwater will be abstracted for use on the mine). Section 21 (b) for storage of water on site (Storage of clean water on site). Section 21 (c) impeding or diverting flow of water in a watercourse (impeding or diverting the flow of water in wetland). Section 21 (d) altering the bed, banks, course or characteristics of a watercourse (altering the bed, banks course or characteristics of a wetland). Section 21 (g) disposing of waste in a manner which may detrimentally impact on a water resource (deposition of waste rock on a waste rock dump). Section 21 (i) 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 (seawater of the pit for safe mining).
No. R, 545/18 June 2010	15	Disturbance of more than 20 hectares of land for the establishment of a coal mine and associated infrastructure.
No. R, 545/18 June 2010	14	The clearance of an area of 5 hectares or more for the establishment of a coal mine and associated infrastructure.

Invitation to participate: Should you wish to be included in the register of Interested and Affected Parties or comment on this application, please submit your name, contact information, and interest in this matter in writing to the address below, no later than 30<sup>th</sup> November 2013. You are also invited to our Public Meeting at the Delmas Agri Estate on the 27<sup>th</sup> November 2013 (8:30am to 12:00pm).

Environmental Assessment Practitioner:  
 Shangani Management Services (Pty) Ltd.  
 PO Box 74726, Lynwood Ridge, Pretoria, 0046;  
 Contact Person: Ms Nomsa Molebale  
 Tel: 012 807 7036, Cell: 079 892 4930, Fax: 012 807 1014, Fax to E-mail: 086 639 7996;  
 E-mail: info@shangani.co.za;  
 For online participation go to www.shangani.co.za and click on Public Participation.

## Cullies se Picasso's



Cullinan Gekombineerde Skool se primêre fase leerlinge het gedurende die September vakansie aan 'n skilder kuns eisteddfod deelgeneem. Vnr: Vurmen Stewarts (A), Jane Schroeder (afwesig met 'n A++) en Lee-Alpha Pretorius (A). Alnr: Jolene Janse van Rensburg (A+), Chanté Williams (A), Monique Blignaut (afwesig met 'n A+) en Valencia van Coller (A).

## Sundra koor eindig eerste



Laerskool Sundra se senior koor het tydens die Springs Kunsvedstryd uiters goet gemaak en eerste geëindig. Hul afrigter is juf Dorothy Mfadu.

Figure 24: Copy of advertisement in the *Streek Nuus*

**Table 24: Proof of Site Notices**



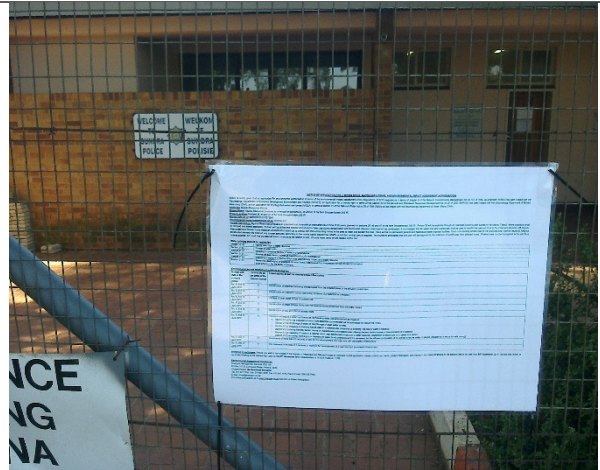
Site notice at filling Station at overpass



Site notice at junction overpass and mini street



Site notice at outspan café



Site notice police station



Site notice at railway crossing



**NOTICE OF APPLICATION FOR A MINING RIGHT, WATER USE LICENSE, AND ENVIRONMENTAL IMPACT ASSESSMENT AUTHORIZATION**

Notice is hereby given that an application for environmental authorisation in terms of the environmental impact assessment (EIA) Regulations of 2010 (regulations in terms of chapter 5 of the National Environmental Management Act no 107 of 1998, as amended (NEMA) has been lodged with the Mpumalanga Department of Economic Development, Environment and Tourism (DEDET), an application for a mining right in terms of the section 22 of the Mineral and Petroleum Resources Development Act no 28 of 2002 (MPRDA) has been lodged with the Mpumalanga Department of Mineral Resources (DMR), and an application for an integrated water use license (IWULA) in terms of section 21 of the National Water Act no 36 of 1998 (NWA) will be lodged with the Mpumalanga Department of Water Affairs (DWA).

**Applicant:** Ngululu Resources Pty Ltd  
**Project Name:** Ngululu Resources proposes to mine coal on portions 26, 46 and 47 of the farm Droogfontein 242 IR.  
**Project Location:** Portions 26, 46 and 47 of the farm Droogfontein 242 IR.  
**Mining right ref no:** MP305/11/G/10076MR  
**Environmental impact assessment ref no:** 17/2/3N-312

**Project Description:** Ngululu Resources proposes an opencast coal mine with an estimated life of mine of 20 years, planned on portions 26, 46 and 47 of the farm Droogfontein 242 IR. Portion 26 will be exploited through an opencast layout to gain access to the seams. Topsoil, where available, shall be stripped and stored separately. Subsoil will be drilled and blasted and stored for later use during rehabilitation and stormwater diversion channels will be constructed. It is envisaged that all waste rock and overburden shall be used to backfill the open pit. Due to the small size of portion 26 Ngululu Resources have decided not to establish a beneficiation plant but to consult with the surrounding mines in the area to wash and screen the coal. There will be no permanent general and hazardous waste disposal facilities. There is an existing access road to the proposed site. Internal roads will likely be constructed between the open pit and support services. According to the mining works programme (MWP), a pollution control dam is required. It is currently anticipated that this dam will be required for the collection of runoff water from affected areas. Potable water may be transported to the site from outside sources, but could also be obtained from a borehole to be located on site. Potable water tanks will be located on the site.

**Water activities that will be applied for:**

Section 21 (a)	Taking water from a water resource.
Section 21 (b)	Storage of clean water.
Section 21 (c)	Impeding or diverting the flow of water in a watercourse.
Section 21 (d)	Altering the bed, banks, course or characteristics of a watercourse.
Section 21 (g)	Disposing of waste in a manner which may detrimentally impact on a water resource.
Section 21 (i)	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.

**Environmental impact assessment activities applied for:**

Number and date of the relevant notice:	Activity No (s) (in terms of the relevant notice)	Listed activity as per the detailed project description
No. R, 544 18 June 2010	9	Construction of pipelines delivering affected water from the affected areas to the pollution control dam.
No. R, 544 18 June 2010	11	Construction of a pollution control dam within 32metres of a watercourse (Wetland).
No. R, 544 18 June 2010	12	Storage of clean water on site for potable use.
No. R, 544 18 June 2010	13	Construction of diesel storage facility with the capacity above 80 but less than 500 cubic metres.
No. R, 544 18 June 2010	22	Construction of haul and internal access roads.
No. R, 545 18 June 2010	5	The mine will require a water use license as the following water use activities will be triggered: <ul style="list-style-type: none"> <li>Section 21 (a) for the extraction of water from boreholes (groundwater will be abstracted for use on the mine).</li> <li>Section 21 (b) for storage of water on site (Storage of clean water on site).</li> <li>Section 21 (c) impeding or diverting flow of water in a watercourse (impeding or diverting the flow of water in wetland)</li> <li>Section 21 (d) altering the bed, banks, course or characteristics of a watercourse (altering the bed, banks course or characteristics of a wetland)</li> <li>Section 21 (g) disposing of waste in a manner which may detrimentally impact on a water resource (disposition of waste rock on a waste rock dump);</li> <li>Section 21 (i) 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 (dewatering of the pit for safe mining).</li> </ul>
No. R, 545 18 June 2010	15	Disturbance of more than 20 hectares of land for the establishment of a coal mine and associated infrastructure.
No. R, 546 18 June 2010	14	The clearance of an area of 5 hectares or more for the establishment of a coal mine and associated infrastructure.

**Invitation to participate:** Should you wish to be included in the register of Interested and Affected Parties or comment on this application, please submit your name, contact information, and interest in the matter in writing to the address below, no later than **30<sup>th</sup> November 2013**. You are also invited to our Public Meeting at the Delmas Agri Lapa on the **27<sup>th</sup> November 2013** (Stakeholders at 15:00 & Public at 17:00).

**Environmental Assessment Practitioner:**  
 Shangoni Management Services (Pty) Ltd;  
 PO Box 74726, Lynnwood Ridge, Pretoria, 0040;  
 Contact Person: **Ms Nomkhosi Mkhahle**;  
 Tel: 012 807 7036, Cell: 079 852 4930, Fax: 012 807 1014, Fax to E-mail: 086 639 7856;  
 E-mail: khosi@shangoni.co.za;  
 For online participation go to [www.shangoni.co.za](http://www.shangoni.co.za) and click on Public Participation.

Figure 25: Copy of notice placed on-site and in public places





### 4.3.3 Registered I&APs

Once all landowners, adjacent landowners, stakeholders and organs of state were notified of the proposed project, an I&APs register (as provided in Appendix D2) was compiled. The I&APs register is provided as Table 25 below. Contact details of the registered I&APs are available on request.

**Table 25: Registered I&APs**

Name	Interest in the matter
Rep n Roer Pty Ltd Daniel C.H van Wyk	Landowner
Michael Vereker	Landowner
Corrie van der Riet	Land owner
Thinus Van Dyk (S.M. van Dyk)	Landowner
Vibrant Veterans Joe Mathebula	Landowner
Renier de vries	Landowner
Ockie Bezuidenhout	Landowner
Eloff Mining / Total	Land owner
Sampie Venter	I&AP
Damian Spargo	I&AP
Debbie Van Den Heever	I&AP
Pieter Senekal	I&AP
Roy Shearer	I&AP
Gideon Steenberg	I&AP
Frederick Zeelie	I&AP
Boet Burger	I&AP
Linda Prior	I&AP
Jan Steenberg	I&AP
Willie Maritz	I&AP
Martin Koekemoer	I&AP
France Gross	I&AP
Lena van der Berg Hendrik van der Berg	I&AP
Daan Retief	I&AP
JJ Pretorius	I&AP
Pierre Pretorius	I&AP
Vibrant Veterans Joe Mathebula (Director)	Landowner
Eloff Mining/Total Gunn Ndebele	Landowner

Thembani Mashiane (owns property in Aston Lake)	I&AP
African Exploration (state owned mine) Sizwe Madondo	Mineral right holders
Ernest Gauta Mafoho	I&AP
Charles Mtsweni (ANCYL)	I&AP
Lukas Sibanyoni (UDEF)	I&AP
Mduduzi Mabena (SANACO)	I&AP
Ronnie Mlambo (Community Development)	I&AP
Mopale Nyakale (SANCO)	I&AP
Smanga Mashiene	I&AP
Paul E. Wipplinger (Total Coal SA (Pty) Ltd)	I&AP
Christo Greeff Jenny Greeff	I&AP
Tanya Greeff	I&AP
Henry Greeff	I&AP
Sophia Zeelie	I&AP
Jacobus van Greuning	I&AP
Dewald Geldenhuys	I&AP
Pieter Prinsloo	I&AP
Carl Nel	I&AP
Deon Coetzee Maria Coetzee	I&AP
Karin & Paolo Peres	I&AP
J.B. Pretorius	I&AP
M. Kruger	I&AP
A Strydom (Daughter of M. Kruger)	I&AP
P. Theunissen	I&AP
O.J. Bezuidenhout	I&AP
Jan Hattingh	I&AP
Maryke Shearer	I&AP
Johan Fourie Valerie Dasilva	I&AP
Wickus du Plessis	I&AP
Riaan Fourie	I&AP
Hennie Nagel Attie Nagel	I&AP
Janus Oosthuizen	I&AP
E. van Schalkwyk	Land owner
Jaco Labuschagne	I&AP
Willem Labuschagne	I&AP
Benjamin van Greuning	I&AP

Falko	I&AP
George van Schalkwyk	I&AP
Andries Grobler	I&AP
Henry Vermeulen William Vermeulen (Pedi Pedi investment)	I&AP
Dewald Swanepoel (Pedi Pedi investment)	I&AP
Lizette Specer	I&AP
J.L. vd Westhuizen	I&AP
J.G. Visser	I&AP
Pietie Nel	I&AP
H. Coetzer	I&AP
Hannes Nagel	I&AP
Louis van greuning (SABACO)	I&AP
Gary Hockaday	I&AP
Tom de Wet	I&AP
T de Wet	I&AP
Yolandi Nel	I&AP
Brent Parret	I&AP
Rosalie Hutchons	I&AP
Casper Joubert	I&AP
WESSA Paul Bartels	Stakeholder
EWT Leigh Combrink	Stakeholder
DMR Mr A Tshivhandekano	Organ of state
SAHRA Phillip Hine	Stakeholder
MDEDET Okwethu-kuhle Fakude	Organ of state
AGRICULTURE Ms. R.L. Bosoga (Lydia) (DAFF Land use and soil management)  Vuyiswa Q  Ms. N.L. Sithole (DARDLA)	Organ of state
DWA – NATIONAL Valarie Du Plessis	Organ of state
DWA - REGIONAL Lillian Siwelane	Organ of state



Delmas Farmers Union Alta Fourie	Stakeholders
Victor Khanye Local Municipality Xolisile Nkosi Mr. Sam Lekhuleni	Stakeholder
Victor Khanye Local Municipality Mr. Jan Steenkamp	Stakeholder
Victor Khanye Local Municipality Diane Bath (Ward Councillor)	Stakeholder
Nkangala District Municipality Mr Mathe Boetie	Stakeholder
Victor Khanye Local Municipality Ward 6 (E.T Shabangu)	Stakeholder
Rural Development and Land Reform (Commissioner for Restitution of Land Rights)	Stakeholder

Refer also to Appendix D2 for a detailed I&APs Register including contact information for all registered organs of state and I&APs.

#### **4.3.4 Public meetings**

Public meetings were held on the 27<sup>th</sup> of November 2014 at 15:00 and 17:00. Notifications were sent of the meetings via the newspaper advertisements, on-site / public notices and telephonically, as well as in the BID, which was distributed via post and / or e-mail. The minutes of the public meetings, a copy of the presentation and the attendance register are attached as Appendix D7.

#### **4.3.5 Meeting with landowner**

A meeting was held between Ngululu Resources and Mr. Johann Minnaar, representative of Mr van Dyk (landowner of Portions 26 and 39 of the farm Droogfontein 242 IR)) on the 20<sup>th</sup> of June 2014. Shangoni attended the meeting as independent EAP to facilitate the meeting. The purpose of the meeting was to consult with the landowner with regards to possible mitigation measures for potential impacts that might occur as a result of the proposed mining operation. Minutes of the meeting and register are attached as Appendix D7.

#### **4.3.6 Access and opportunity to comment on written submissions**

This draft Scoping Report is available to I&APs and other organs of state for review for a period of forty (40) days. Hard copies of the mentioned draft document have been made available at the public viewing station for the I&APs to view, and a copy of the draft document is also submitted to the Mpumalanga Department of Mineral Resources for review.



A register and comment sheet accompanies the hard copies at the public viewing station. An electronic copy of the draft Scoping Report was also posted on the Shangoni Management Services' website ([www.shangoni.co.za](http://www.shangoni.co.za)) for public comment for the same period of forty (40) days.

All the registered I&APs will be notified of the availability of the draft Scoping Report for reviewing purposes. The I&APs are also encouraged to complete the register subsequent to reviewing the draft Scoping Report and / or to submit any formal written comments to Shangoni Management Services (to the contact person below).

Contact person's details: Mpho Masango, Shangoni Management Services, P.O. Box 74726, Lynnwood Ridge, 0040, Cell: 082 529 5188 Tel: 012 807 7036 Fax 012 807 1014, e-mail: [mpho@shangoni.co.za](mailto:mpho@shangoni.co.za).

#### **4.3.7 Consultation with the relevant Authorities**

Shangoni compiled a letter to MDEDET to inform them that the proposed project is currently in the Scoping Phase. In addition to that, an extension for submission of the Scoping Report was requested on the 25<sup>th</sup> of June 2014, and was granted by the relevant authority on the 27<sup>th</sup> of June 2014.

##### **4.3.7.1 Application form in terms of the NEMA, 1998**

The applicable Environmental Authorisation application form under NEMA, 1998 was submitted to MDEDET on the 15<sup>th</sup> of October 2013. A reference number (17/2/3N-312) was issued by MDEDET on the 17<sup>th</sup> of October 2013. The letter of acknowledgement indicating the above mentioned reference number is attached as Appendix B1.

##### **4.3.7.2 Authorities meeting(s)**

An Authorities Meeting with MDEDET will be held within the near future in order to present the proposed project to, and obtain inputs from MDEDET.

#### **4.3.8 Comments and Responses**

All issues, comments and questions received from I&APs up to date have been summarised in Table 26 below. Responses already available as part of the scoping process have been included in this Scoping Report. In all other cases, responses will be provided as part of the final Scoping Report / EIA. Copies of the comments received have also been included in Appendix D8.

**Table 26: Comments and responses (CR)**

I&AP	Date	Method of comment	Issue raised	Response
Johann Minnaar	05 November 2013	Letter	<p><u>Email</u> See attached Letters (Refer to Appendix D6) in reply to your letter to me dated 30 October 2013 on behalf of my client Namutoni Boerdery (Edms) Bpk.</p> <p>Kindly acknowledge receipt thereof.</p> <p><u>Letter</u> Your E mail and your Letter thereto attached dated 30 October 2013 together with the attached Background Information Document (“BID”) refer.</p> <p>I act under instructions and a mandate received from NAMUTONI BOERDERY (EIENDOMS) BEPERK, represented by Mr. Thinus van Dyk, the registered owner of the following properties: Portions 26, 31 and 39 of the Farm Droogenfontein 242 IR (all the above-mentioned properties are hereinafter jointly referred to as “the affected property”).</p> <p>NAMUTONI BOERDERY (EIENDOMS) BEPERK (“hereinafter referred to as “the Owner”) is an affected and interested party in terms of the definition of “affected and interested party” in the Regulations to the Mineral and Petroleum Resources Development</p>	<p><u>Shangoni’s response via e-mail:</u> “We hereby acknowledge receipt of your letter”</p> <p><u>Additional response:</u> Your comments and concerns are acknowledged and form part of this draft Scoping Report that has been submitted to MDEDET.</p> <p>Noted.</p> <p>Noted</p>

			<p>Act, No. 28 of 2002 (“MPRDA”) with regard to the application for a mining right for coal submitted by Ngululu Resources (Proprietary) Limited to the Department of Mineral Resources (“DMR”) under reference No.MP 30/5/1/1/2/10076MR, and which application was accepted by the DMR on 16 July 2013.</p> <p>The Owner is also an affected and interested party in terms of the provisions of NEMA and the National Water Act.</p> <p>I have already requested that the applicant register me as consultant for the owner and that all documentation concerning this application be referred to me.</p> <p>In this regard I attach, for your information and records, a copy of a letter dated 26 August 2013 addressed to Mr. Pierre Briel of Restigen who acted on behalf of the applicant.</p> <p>NGULULU RESOURCES (PROPRIETARY) LIMITED as the applicant in this matter (“Ngululu”) is hereby notified that the Namutoni Boerdery (Edms) Bpk as registered owner of the affected property is not prepared to grant any consent or permission to Ngululu to submit any application in terms of the provisions of the National Water Act, No. 36 of 1998</p>	<p>Noted. Mr. Minnaar has been included in the I&amp;AP database for the proposed project.</p> <p>Please note that this draft Scoping Report relates to the Environmental Authorisation Application process, and not the Water Use Licence Application process.</p> <p>Your comments and concerns are however acknowledged and form part of this draft Scoping Report that has been submitted to MDEDET.</p> <p>Please note that this draft Scoping Report relates to the Environmental Authorisation Application process, and not the Water Use Licence Application process.</p>
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		<p>for water uses as indicated in the BID over the affected property.</p> <p>It should be noted that Ngululu does not hold any rights, including any mining rights, over the affected property and is as such not entitled to bring any applications for water uses over the affected property as envisaged by the National Water Act.</p> <p>The Owner has not executed the prescribed form DW902 as required by the Department of Water Affairs in the instance where an application is made over properties which do not belong to the applicant.</p> <p>No environmental study reports have been presented to the Owner with regard to any water and wetland studies, which reports are a prerequisite in any application for water use licenses.</p> <p>The Owner has also not given any consent to the applicant to bring any applications for listed activities in terms of NEMA, and you are respectfully refer to the relevant provisions of NEMA in this regard.</p> <p>We will request the Mpumalanga Department of Economic Development Environment and Tourism (“DEDET”) to reject the application because of the fact</p>	<p>Your comments and concerns are acknowledged and form part of this draft Scoping Report that has been submitted to MDEDET.</p> <p>At the time the initial notifications for the proposed project were sent out to Interested and Affected Parties (I&amp;APs), no studies have yet been initiated. However, since then, a Hydrological Assessment, a Storm Water Management Plan and a Wetland Assessment has been conducted. The resultant specialist reports are attached hereto in Appendix E.</p> <p>Your comments and concerns are acknowledged and form part of this draft Scoping Report that has been submitted to MDEDET.</p>
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			<p>that the Owner of the affected property has not consented to any application in terms of NEMA.</p> <p>You are requested to provide me with the approval by the DMR of the draft Scoping Report which was submitted by the applicant to the DMR.</p> <p>The Owner and the writer will attend the public participation meeting to be held on 27 November 2013.</p> <p>All the rights of the Owner are hereby duly reserved and the letter is written to you without any prejudice to the Owner's rights.</p>	<p>Please note that this draft Scoping Report relates to the Environmental Authorisation Application process in terms of the National Environmental Management Act (NEMA), 1998 (Act 107 of 1998), and not the mining right application process in terms of the Mineral and Petroleum Resources Development Act (MPRDA), 2002 (Act 28 of 2002).</p>
Bradley Gibbons  (Endangered Wildlife Trust)	05 November 2013	E-mail	<p>Please can you register me as an interested an affected party for the Ngululu Resources application for a mining right.</p> <p>I am now working in Leigh Combrink's place for the Threatened Grassland Species Programme of the Endangered Wildlife Trust</p>	<p><u>Shangoni's response via email</u></p> <p><i>"Thank you for registering as an interested and affected party for the Ngululu Resources project."</i></p> <p>Noted.</p>
Ms Diane Bath		E-mail	<p>Requested registration as an interested and affected party</p>	<p><u>Shangoni's response via email:</u></p> <p><i>"Please find attached a letter of notification and background information document regarding the application for a mining right, water use license and environmental authorisation for Ngululu Resources (Pty) Ltd.</i></p> <p><i>Please contact the undersigned for any comments or enquiries."</i></p>



<p>Oku-Kama Familie Trust  Landowner (p47)</p>	<p>14 November 2013</p>	<p>Registration form</p>	<p>How is my property going to be affected? 1) Value of my land 2) Water quality 3) coal pollution, sickness of animals 4) Noise and squatter camp 5) See annexure v2</p>	<p>It is the purpose of the scoping process, in terms of the NEMA, to identify potential impacts that may occur as a result of the proposed mining activities. Please refer to Part 7.2 of this Scoping Report for a description of the potential impacts that have been identified. Please note that a detailed impact assessment is required as part of the Environmental Impact Assessment (next) phase (which is followed by the Scoping process). A detailed impact assessment table will thus be included in the Environmental Impact Assessment report (EIR), which will also be made available to I&amp;APs for review (once the scoping process has been completed).</p> <p>A number of specialist studies have been conducted for the proposed project and have been attached to this draft Scoping Report. Please refer to the following Appendices:</p> <ul style="list-style-type: none"> <li>• Appendix E7: Hydrological Assessment report,</li> <li>• Appendix E5: Geohydrological Assessment report,</li> <li>• Appendix E3: Noise study report, and</li> <li>• Appendix E4: Fauna Assessment report.</li> </ul>



				<p>The purpose of the scoping process is also to determine knowledge gaps and information requirements for further investigation during the EIA Phase.</p> <p>An Economic Assessment has been identified in this Scoping Report as an additional specialist study that needs to be undertaken.</p> <p>Results of the mentioned assessment will thus be included in the EIR.</p>
Mr Jan Steenkamp	14 November 2013	Telephone	Mr. Steenkamp requested to be registered as an Interested and Affected Party.	<p><u>Shangoni's response via email:</u></p> <p><i>"Please find attached a letter of notification and background information document regarding the application for a mining right, water use license and environmental authorisation for Ngululu Resources (Pty) Ltd.</i></p> <p><i>Please contact the undersigned for any comments or enquiries."</i></p>
Damian Spargo (Total Coal)	20 November 2013	E-mail	<p>1. Issues of concerns include:</p> <ul style="list-style-type: none"> <li>a. Air Quality</li> <li>b. Surface water</li> <li>c. Ground water</li> <li>d. Ecology</li> <li>e. Land Use and Planning</li> <li>f. Waste Management</li> <li>g. Security</li> </ul>	<p><b><u>Initial comments</u></b></p> <p><u>Shangoni's response via E-mail:</u></p> <p><i>"Please take note that we will be conducting a public meeting on the 27<sup>th</sup> of November at 15:00 pm and 17:00 pm at the Agri Delmas Lapa. At the public meeting we will be giving feedback on specialist studies conducted to date. These include: Noise, Fauna and Flora, Wetland delineation,</i></p>



			<p>h. Nuisance</p> <p>2. As indicated in the registration document, Portion 26, over which you wish to apply for a mining right, is contiguous to our prospecting rights, to the northern and eastern side.</p> <p>3. We note that you are investigating an opencast operation. Due to the fact that we are the landowner of the properties detailed in the registration document, we require further consultation in this regard. Further, it will be necessary for you to consult with the following tenants:</p> <p>a. Mr Van Dyk may be contacted via <a href="mailto:smboer@mweb.co.za">smboer@mweb.co.za</a></p> <p>b. Schoeman Boerdery may be contacted via <a href="mailto:Hanneke@witklip.co.za">Hanneke@witklip.co.za</a></p>	<p><i>Geohydrological, Soil Land use and Land capability, Heritage, Visual and Social. The Air quality and Hydrological assessment are underway.”</i></p> <p><u>Additional response:</u></p> <p>The air quality, hydrological assessment, storm water management plans and Palaeontological Assessment have been completed and are attached as Appendix E2, E7, E12 and E13.</p> <p>Noted.</p> <p>Refer to Shangoni’s previous response via e-mail (above) with regards to the Public meeting that was held.</p> <p>Further, Total Coal has been included in the I&amp;AP Database for this proposed project and will receive communication won the project. Mr. van Dyk and Schoeman Boerdery have also been included in the project’s I&amp;AP Database for public participation.</p>
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			<p>4. Please take note that our information shows that your application straddles environmentally sensitive waterways. Please could you provide us with the following:</p> <ul style="list-style-type: none"> <li>a. Evidence of investigation the potential surface and groundwater impact on adjoining properties due to your mining activities;</li> <li>b. Evidence of investigation on the potential dust impacts;</li> <li>c. Demonstrate that adequate environmental (water, dust etc.) monitoring points are in or proposed to be in place to help in determining any possible impacts on nearby properties.</li> </ul>	<p>Please refer to the following Appendices:</p> <ul style="list-style-type: none"> <li>• Appendix E7: Hydrological Assessment Report,</li> <li>• Appendix E13: Storm Water Management Plan,</li> <li>• Appendix E5: Geohydrological Report, and</li> <li>• Appendix E2: Air quality Impact Assessment Report.</li> </ul>
Eloff Mining Company (Pty) Ltd	20 November 2013	Registration form	<p>1. Issues of concern include, but are not limited to:</p> <ul style="list-style-type: none"> <li>a) Air quality</li> <li>b) Surface water</li> <li>c) Ground water</li> <li>d) Ecology</li> <li>e) land use and planning</li> <li>f) Water management</li> <li>g) Security</li> <li>h) Nuisance</li> </ul> <p>2. As indicated above, the portion 26 over which you wish to apply for a mining right is contiguous to our Prospecting Rights, to the Northern and Eastern side.</p>	<p>Please refer to Appendix E which contains the reports for all specialist studies that have been conducted up to present for the proposed project.</p> <p>Noted.</p>



			<p>3. We note that you are investigating an opencast operation. Due to the fact that we are the landowner of the above-mentioned portions, we require further consultation in this regard. Further, it will be necessary for you to consult with the current tenants.</p> <p>a) Mr. van Dyk may be contacted via <a href="mailto:samboer@mweb.co.za">smboer@mweb.co.za</a></p> <p>b) Schoeman Boerdery may be contacted via <a href="mailto:hanneke@witklip.co.za">hanneke@witklip.co.za</a></p> <p>4. Please take note that our information shows that your application straddles environmentally sensitive waterways. Please could you provide us with the following:</p> <p>a) Evidence of the investigation on the potential surface &amp; groundwater impact on adjoining properties due to your mining operations.</p> <p>b) Evidence of investigation on the potential dust impacts; &amp;</p> <p>c) Demonstrate that adequate environmental (water, dust etc.) monitoring points are put in or proposed to be in place to help in determining any possible impacts on nearby properties.</p>	<p>Eloff Mining Company (Pty) Ltd has been included in the I&amp;AP Database for consultation throughout the process.</p> <p>Two Public Meetings were held on 27 November 2014 to which all I&amp;APs were invited.</p> <p>Mr. van Dyk and Schoeman Boerdery have also been included in the project's I&amp;AP Database for public participation.</p> <p>Please refer to the following Appendices:</p> <ul style="list-style-type: none"> <li>• Appendix E7: Hydrological Assessment Report,</li> <li>• Appendix E13: Storm Water Management Plan,</li> <li>• Appendix E5: Geohydrological Report, and</li> <li>• Appendix E2: Air quality Impact Assessment Report.</li> </ul>
Victor Khanye Local Municipality	25 November 2013	Registration form	<p>1) Rezoning application not submitted</p> <p>2) Withdrawal of water will affect municipal water resources</p>	<p><u>Shangoni's response via E-mail:</u></p> <p><i>"A rezoning application has not been submitted yet. It is not part of Shangoni's scope of work". In a public</i></p>



			<p>3) Refer to agricultural for comments</p> <p>4) Refer to dwaf for comments</p>	<p><i>meeting that was held on the 27<sup>th</sup> of November 2013, Mr Pierre Briel who is a representative of Ngululu Resources stated that the rezoning application will only be considered if the mining license is granted successfully. The reason for this is the high cost involved in the application."</i></p> <p><i>Your comment on municipal water is noted.</i></p> <p><u>Additional response:</u></p> <p>Details with regards to water sourcing will be included in the final EIA. Further an Integrated Water Use Licence Application (IWULA) process will be undertaken for the proposed project and the Department of Water Affairs (DWA) will be consulted during the process.</p>
Dremar	26 November 2013	Registration form	Plant hire, industrial cleaning and civil.	The services offered are noted.
Karen Peres (Resident)	27 November 2013	Registration form	Water, roads, bird + animal life?	Please refer to Appendix E which contains the reports for all specialist studies that have been conducted up to present for the proposed project.
Paulo Jose Peres (Resident)	27 November 2013	Registration form	Water, noise, dust etc.	Please refer to Appendix E which contains the reports for all specialist studies that have been conducted up to present for the proposed project.
Karen Janse van Rensburg (Oku-Kama Familie Trust)		E-mail	My FATHER build this plot for the last 20 years this is a PLOT that must stay in the family for years my father has Parkinson decease which give him stimulation we have a spinal defect-spinal bifida brother so that he can use the income to survive during his period. We	<p><u>The Applicant's response sent via e-mail:</u></p> <p><i>"Oku-Kama Family trust</i></p> <p><i>AND</i></p> <p><i>Ockie Bezuidenhout, Karen Janse van Rensburg, Ockert Bezuidenhout, Nadine Bezuidenhout, Alette</i></p>

			<p>build 25 years on this property that took a lot of funds from my parents so that we can have this a haven for them to retire as well.</p> <p>What happen to the underground water that we use on this stage to survive and give plants and garden and animal to survive what will happen will we get municipality water to assist in this matter or what?</p> <p>Who will cost on municipality water us or the mine?</p> <p>We have enquiry at an environmentalist and will get you the report as soon as possible we will get legal advice if necessary on this matter due to the fact that we were not aware of planning from Ngululu Resources Pty Ltd of a mine for the last pass year.Lot of funds went into the project to get the plot as it is known.</p> <p>The health risk is we will not have any water on the plot due to underground water taken away by the mine.</p>	<p><i>Bezuidenhout, Corlet Janse van Rensburg, Jacobus Janse van Rensburg trustees of the Oku-Kama Family Trust</i></p> <p><i>We refer to the above and the communication between your Karen Janse van Rensburg and, Shangoni Management Services and Restigen respectively, and confirm that you indicated that we may address this letter to you directly, and you will distribute this letter to all other trustees of the trust.</i></p> <p><i>We can confirm that our mine planning is to construct an opencast mine on Portion 26. We undertake not to construct an open cast mine on your Portion 47.</i></p> <p><i>We request that you contact our appointed specialists should you have any further queries and we undertake to respond to the requests on an urgent basis.</i></p> <p><i>We thank you for your speedy reply to the background information document and confirm that we will instruct the specialists to register your trust as an interested and affected party.</i></p>
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				<p><i>You have been registered as an Interested and affected as well as Mr Gunn Ndebele as per your request.”</i></p> <p><u>Additional response:</u> Your comments and concerns are acknowledged and form part of this draft Scoping Report that has been submitted to MDEDET.</p> <p>Please refer to Appendix E5 for the report of the Geohydrological Assessment that was conducted. A detailed impact assessment will be included in the EIR (which is the report that follows the Scoping phase (current process).</p>
PE Wiplinger (Total Coal)	28 November 13	Registration form	<p>Research geologist, Total Coal Sa (Pty) Ltd (Neighbour to the north)</p> <p>Please also add, Gunn Ndebele, chief geologist Total Coal SA (Pty) Ltd <a href="mailto:Gunn.Ndebele@total.coal.co.za">Gunn.Ndebele@total.coal.co.za</a></p>	Total Coal has been registered as an I&AP for the proposed project.
Ockert Bezuidenhout  (Oku-kama Familie Trust)	29 November 13	E-mail	<p>Please find our objection against your proposal for mining as stipulated in your proposal</p> <p><u>1. Introduction</u> We are part of the Sundra town community and residents/owners of Portion 47 of the farm Droogfontein 242 IR. This report refers to our</p>	Your comments and concerns are acknowledged and form part of this draft Scoping Report that has been submitted to MDEDET.



			<p>objection in respect of the notice of application for the mining right, water use licence and environmental impact assessment authorisation.</p> <p>The shareholder and public meeting of 27<sup>th</sup> November 2013 refer.</p> <p>A public meeting was held on the said date without Shangoni nor the applicant (Ngululu resources) properly notifying the affected community of Sundra and the surrounding farms. Most of the community members present complained that they were not notified about the meeting and if it was not that some members notifying them they would not participated.</p> <p>Shangoni could not explain why all the affected members were not notified e.g. Prosperity Holdings Farms which is basically next to Portion 26. Therefore the public meeting does not actually constitute a public meeting as only selective members of the community were notified.</p>	<p>The following formed part of the public participation process in notifying I&amp;AP's of the proposed project and the Public Meetings held in November 2013:</p> <ul style="list-style-type: none"> <li>• Advertisements were placed in the local newspaper (Streek Nuus) on 01 November 2013 (refer to Part 4.3.2 of this Scoping Report and Appendix D5 for proof of the placement of the advertisement),</li> <li>• Site Notices were placed (refer to Part 4.3.2 of this Scoping Report and Appendix D6 for photographs and locations), and</li> <li>• Notification letters were sent out to surrounding landowners, organs of state and stakeholders.</li> </ul> <p>The purpose of the Public Participation process is to obtain comments and input from I&amp;AP's with regards to information, concerns, as well as other I&amp;AP's who may have been excluded at the onset of the project. Prosperity Holdings Farms' representatives have been included to the I&amp;AP Database.</p>
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			<p><u>2. Notice of application received for an environmental impact assessment authorisation &lt; Mining right and water use license from Shangoni</u></p> <p>As per document received from Shangoni as per environmental impact assessment notice was provided prior to public meeting, but not discussed at the public meeting (Annexure A)</p> <p><u>3. Research document received</u></p> <p>Research done by Shangoni on behalf of Ngululu Resources Pty Ltd and document tabled at the public meeting (Received on the 27<sup>th</sup> November at the public meeting in Delmas – Annexure B)</p> <p>Purpose of the meeting was clear and the consultant (Shangoni) informed all present. Project description not clear and understandable due to the following facts:</p> <p>The consultant informed members that it is possible that the stockpile could be at another location as well as the washing of coal, but their plan is currently to move coal to another location to be washed. This could</p>	<p>The proposed project as well as the processes with regards to the mining right application, environmental authorisation application as well as the Water Use Licence Application were presented and discussed during the Public Meetings held on 27 November 2013. The document provided as part of the Notification at the on-set of the project was also accompanied by a Background Information Document (BID). Information as contained in the BID was discussed during the Public Meetings.</p> <p>Noted.</p> <p>The Applicant's is currently in the process of sourcing possible beneficiation plants that may be used for the washing of coal.</p> <p>Refer to Appendix E for the specialist studies conducted.</p> <p>It is the purpose of the scoping process, in terms of the NEMA, to identify potential impacts that may occur as a result of the proposed mining activities.</p>
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			<p>also not be confirmed by the applicant as where it will be washed, yet no proper study was done or impact on the environment envisaged.</p> <p>The fact of potable water used or boreholes or other means indicate the applicant is concerned about the effect of using borehole water in this area.</p> <p>On page 4 of the document the infrastructure was not clear as model A and B was presented and the</p>	<p>Please refer to Part 7.2 of this Scoping Report for a description of the potential impacts that have been identified. Please note that a detailed impact assessment is required as part of the Environmental Impact Assessment (next) phase (which is followed by the Scoping process). A detailed impact assessment table will thus be included in the Environmental Impact Assessment report (EIR), which will also be made available to I&amp;AP's for review (once the scoping process has been completed).</p> <p>Sourcing of a water source for the proposed project will be done by the Applicant.</p> <p>Detailed information with regards to the proposed project will be included in the final EIR, which will also be made available to the I&amp;AP's for review. It should be noted that the identification of various</p>
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			<p>consultant indicated that the mine may change models.</p> <p>The survey according to the consultant is only on the portions indicated and not surrounding areas and not the effect of the mine activity on the surrounding ground and farm activities. The study was thus done in isolation and no impact indicated on other areas.</p> <p>The notice of application refer to an estimated life of twenty years at the bottom of page one, but the members present from Ngululu confirm that there was never a feasible study done on the project and they could not indicate what is the life expectancy of the said mine. This indicates that no proper studies were done whether the mine will last one year or fifty years and what areas would be affected on the long term.</p>	<p>alternatives for the project is a requirement for the NEMA EIA process and therefore various site layouts, and other alternatives need to be considered. Refer to Part 6 of this report for the Identified Alternatives, that will be further investigated as part of the EIR.</p> <p>Please refer to Appendix E7 for Hydrology Study report and Appendix E5 for a Geohydrology Study report.</p> <p>Your comments and concerns are acknowledged and form part of this draft Scoping Report that has been submitted to MDEDET.</p>
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			<p>The objective of any survey or investigation from or by Shangoni Management Services is doubtful, bias and most properly incorrect as will later be elaborated on. This is based on the fact that Ngululu is paying Restigen who is contracting Shangoni Management Services to do the survey. The question to be raised is whether Shangoni is really independent to provide a feasible study.</p>	<p>Regulation 17 of the Environmental Impact Assessment Regulations (EIA Regulations) states that an appointed EAP must, at all times, be independent and objective in facilitating/managing an application for an environmental authorisation, even if this results in views and findings that are not favourable to the applicant.</p> <p>Independence is defined in the EIA Regulations as meaning “that the EAP (in this instance, Shangoni)... has no business, financial, personal or other interest in the activity, application or appeal in respect of which that EAP... is appointed in terms of these Regulations other than fair remuneration for work performed in connection with that activity, application or appeal; or that there are no circumstances that may compromise the objectivity of that EAP or person in performing such work.</p> <p>In Shangoni’s initial project proposal for this particular project, it is stated that payment for the work done by Shangoni is not subject to a positive outcome of the application. Thus, Shangoni has no business, financial, personal or other interest in this activity other than the fair remuneration for the work performed in connection with this activity. Shangoni complies with the independence-requirement set out in regulation 17.</p>
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			<p>The public had only three days to submit their comments on the public proposal which is not enough time fairly to comment on the presentation.</p>	<p>The following wording formed part of the letter that was sent out along with the Public Meeting minutes to I&amp;AP's:</p> <p><i>“The Public Meeting(s) that was held on 27 November 2013 at 15:00 and 17:00 at the Delmas Agri Hall, have relevance.</i></p> <p><i>Please find herewith the following:</i></p> <ul style="list-style-type: none"> <li>• <i>A copy of the minutes of the 15:00 and 17:00 Public Meetings;</i></li> <li>• <i>A copy of the presentation given during the above-mentioned meetings; and</i></li> <li>• <i>A copy of the Background Information Document (BID).</i></li> </ul> <p><i>Should you have any queries or concerns, please feel free to contact us.”</i></p> <p>The above letter did not include a date by when I&amp;AP's should submit their comments on the documents sent to them.</p> <p>The Environmental Management Programme (EMP) was only compiled and submitted in 2014, subsequent to the two Public Meetings held on 27 November 2013.</p> <p>Please note that this draft Scoping Report relates to the Environmental Authorisation Application process in terms of the National Environmental</p>
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			<p>Environmental Management Programme is not sufficient in supplying all the factual statistics and relevant impact on the portions as well as the surrounding areas. A proper and more detailed report should be provided at the next public meeting (in advance of the public meeting to be scrutinized by the residents of Sundra). The basis of their survey was not sufficient as some areas were totally left out e.g. Prosperity Holding Farms.</p> <p>2.1. <u>The application form</u>                  Scoping and environmental assessment – registration and response form for interested and affected parties completed by Okukama Trust (Annexure C) Submitted on the 30<sup>th</sup> November 2013 – to <a href="mailto:Khosi@shangoni.co.za">Khosi@shangoni.co.za</a></p> <p>Non-compliance with other council planning policies / government planning guidance according to the members present the applicant has not yet obtained</p>	<p>Management Act (NEMA), 1998 (Act 107 of 1998), and not the mining right application process in terms of the Mineral and Petroleum Resources Development Act (MPRDA), 2002 (Act 28 of 2002), which is considered a separate process.</p> <p><u>As per a response sent to another I&amp;AP on the same matter (via E-mail):</u>  <i>“A rezoning application has not been submitted yet. It is not part of Shangoni’s scope of work”. In a public meeting that was held on the 27<sup>th</sup> of November 2013, Mr Pierre Briel who is a representative of Ngululu Resources stated that the rezoning application will only be considered if the mining license is granted successfully. The reason for this is the high cost involved in the application.”</i></p> <p>Please refer to Appendix E which contains the reports for all specialist studies that have been conducted up to present for the proposed project.</p>
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		<p>zoning from the local authority for the specific portions mentioned.</p> <p>4. <u>Key points for objection</u></p> <p>The consultant could not provide any statistical figures regarding the current and possible pollution effects in any portion or effect of pollution on the surrounding areas.</p> <p>4.1 <u>Water pollution</u></p> <p>One of the largest quality problem associated with coal mining is the acid mine drainage (AMD). The first being that the pyrite in the rock gives rise to water with a low pH and the acid water or rain mobilizes heavy metals from and to the surrounding environment. Treating the water afterwards with calcium to raise the pH makes the water more saline and this is an expensive process which was not discussed or presented at the meeting.</p> <p>The mine activity would result in polluting the ground water of which most of the farm holdings in Sundra and surrounding areas are using for human consumption, domestic use, animal consumption and farm use. Almost all the farms in the immediate surrounding depend on the quality and availability of underground water and if the mine would use underground water as indicated the community and their livestock will be seriously affected.</p>	<p>It is the purpose of the scoping process, in terms of the NEMA, to identify potential impacts that may occur as a result of the proposed mining activities. Please refer to Part 7 of this Scoping Report for a description of the potential impacts that have been identified. Please note that a detailed impact assessment is required as part of the Environmental Impact Assessment (next) phase (which is followed by the Scoping process). A detailed impact assessment table will thus be included in the Environmental Impact Assessment report (EIR), which will also be made available to I&amp;AP's for review (once the scoping process has been completed).</p> <p>Your comments and concerns are acknowledged and form part of this draft Scoping Report that has been submitted to MDEDET.</p> <p>As mentioned during the Public Meetings, Ngululu Resources indicated that they were not involved in</p>
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		<p>The evaporation of polluted water or acid rain has proven the cause of serious sickness in children</p> <p>4.2 <u>Unexpected construction work</u>                  Currently there is clearing of roads in the area of Prosperity near portion 26 which was not cleared for the past 10 years. The question arises as who is cleaning the roads currently?</p> <p>4.3 <u>Impact on agriculture and plants on portion 26/46/47</u>                  According to the consultant portion 26 is vegetation sensitive and has a protected species e.g. Orange river lily (Crinum bulbispermum) present there and the mine activity will definitely affect the future of this plant life as the ground is not easily permeable end result of polluted water to flow into the wet land. No procedures in place of the mine to protect this sensitive area.</p> <p>The agricultural cultivation will be seriously affected as result of the air- and water pollution. The life on earth exist in different ecosystems, whether on micro or macro scale and any activity causing an imbalance in the system will have repercussion on these systems ensuring life in a town like Sundra. This type of mining activity will result that the agriculture activities of over</p>	<p>the upgrading of the roads in the area of Prosperity near Portion 26 of the farm Droogefontein 242 IR.</p> <p>Please refer to Appendix E1 for the report of the Soil and Agricultural Study conducted and Appendix E4 for the Flora Assessment conducted.</p> <p>Please refer to Appendix E1 for the report of the Soil and Agricultural Study conducted and Appendix E4 for the Flora Assessment conducted.</p>
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		<p>100 years in Sundra will die to be a wasteland over the years.</p> <p><u>4.4 Loss of privacy and property value</u>                  The lost of agricultural landscaping surrounding surroundings and ambience</p> <p>Impact on peri- urban environment – character of area by loosing the farming environment to commercial mining</p> <p>The private view of surrounded area for farmers in respect of urban landscape being changed.</p> <p>The loss of investment and value of property due to mining activities.</p> <p>Will the farm owners be remunerated for their lost in value of property due to the mining activities?</p> <p><u>4.5 Noise and smell pollution</u>                  No noise levels were discussed at the public meeting.</p> <p>The consultant could not provide or did not discuss what the impact of the mining would be due to the increase in truck activity and the using of explosives</p>	<p>A Visual Impact Assessment has been conducted (please refer to Appendix E10).</p> <p>The purpose of the scoping process is to determine knowledge gaps and information requirements for further investigation during the EIA Phase.                  An Economic Assessment has been identified in this Scoping Report as an additional specialist study that needs to be undertaken.</p> <p>Results of the mentioned assessment will thus be included in the EIR.</p> <p>A Social Impact Assessment has been conducted (please refer to Appendix E8).</p> <p>A Noise Study has been conducted (please refer to Appendix E3).</p> <p>It is the purpose of the scoping process, in terms of the NEMA, to identify potential impacts that may</p>
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			<p>on the humans and animals in the Sundra area. Definitely the mining activities will have a negative effect on the silent farming surroundings. The noise could be to such extent that all wild life will be chased away.</p> <p>Surely the consultant could provide noise statistics of recent mines operating fully and provide such to the meeting. The statistics should indicate where and when noise levels were measured.</p> <p><u>4.6 Roads and transport</u></p> <p>No indication was given what would the traffic congestion impact be in Sundra. Will the current roads be able to carry the additional loads or should the current road network be uplifted? What could we expect the increase and effect of traffic volume be?</p> <p>No indication was given what would be the routes use to transport coal and what impacts will the noise, dust and crime be on the environment of the community.</p>	<p>occur as a result of the proposed mining activities. Please refer to Part 7 of this Scoping Report for a description of the potential impacts that have been identified. Please note that a detailed impact assessment is required as part of the Environmental Impact Assessment (next) phase (which is followed by the Scoping process). A detailed impact assessment table will thus be included in the Environmental Impact Assessment report (EIR), which will also be made available to I&amp;AP's for review (once the scoping process has been completed).</p> <p>The purpose of the scoping process is to determine knowledge gaps and information requirements for further investigation during the EIA Phase.</p> <p>A Traffic Impact Assessment has been identified in this Scoping Report as an additional specialist study that needs to be undertaken.</p> <p>Results of the mentioned assessment will thus be included in the EIR.</p> <p>The purpose of the scoping process is to determine knowledge gaps and information requirements for further investigation during the EIA Phase.</p>
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		<p><u>4.7 Discharging explosives</u></p> <p>The discharging of explosives in order to loosen the coal will result in damage of surrounding farm households and the CBD of Sundra resulting of house walls cracking and possible collapsing of this walls. This may lead to the lost of human life and families their homes. The consultant could not provide or indicate what the impact will be on the surrounding buildings.</p> <p>This is a peri- urban area life will be disturbed which will include of the wildlife e.g. Birds and even the animals on the farm might die due to the shocks and noise caused by the explosives.</p> <p>The explosive shock will cause that some of the groundwater channels will collapse or dry out and result that the farmers not having bore water for domestic and farm use.</p> <p><u>4.8 Socio-economical factors</u></p> <p>All residents of Sundra according to the Human Rights Act, in particular Protocol 1: Article 1: This states that a person has the right to peaceful enjoyment of all their possessions, which includes the home and other land and Article 8 of the Human Rights Act states that a</p>	<p>A Blasting and Vibration Study has been identified in this Scoping Report as an additional specialist study that needs to be undertaken.</p> <p>Results of the mentioned assessment will thus be included in the EIR.</p> <p>Refer to Appendix E3 for the Noise study report, as well as Appendix E4 for the Fauna Assessment.</p> <p>Your comments and concerns are acknowledged and form part of this draft Scoping Report that has been submitted to MDEDET.</p>
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			<p>person has the substantive right to respect for their private and family life. In the case of <i>Britton vs SOS</i> the courts reappraised the purpose of the law and concluded that the protection of the countryside falls within the interests of Article 8. Private and family life therefore encompasses not only the home but also the surroundings.</p> <p>We as the citizens of sundra has a right to an environment that is not harmful to our health or well being and have the environment protected for the benefit of present and future generations. Citizens to be protected through legislative and other measures to prevent pollution and ecological degradation and use natural resources (Section 24 in the Bill of Rights, The Constitution of the republic of South Africa, 1996).</p> <p>The activities and pollution caused by the mine in this proposal will negatively affect the health and life of the citizens, animal and plants in Sundra. No economical factors or impact on the CBD of Sundra was discussed at the meeting and labour issues could not be answered by Shangoni at the meeting.</p>	<p>Your comments and concerns are acknowledged and form part of this draft Scoping Report that has been submitted to MDEDET.</p> <p>The purpose of the scoping process is to determine knowledge gaps and information requirements for further investigation during the EIA Phase.</p> <p>An Economic Assessment has been identified in this Scoping Report as an additional specialist study that needs to be undertaken.</p> <p>Results of the mentioned assessment will thus be included in the EIR.</p> <p>Your comments and concerns are acknowledged and form part of this draft Scoping Report that has been submitted to MDEDET.</p>
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			<p>The crime in Sundra will definitely increase as we know that mining goes hand in hand with cheap labour (illegal immigrants) and illegal liquor activities. The consultant could not indicate how much of the community will be involved in the mining activity and if the community of Sundra would be used in this project.</p> <p>The question also not answered is what will the community from Sundra benefit from this mining?</p> <p><u>4.9 Ground pollution</u></p> <p>The ground stability and drainage will definitely be affected as such. The consultant also indicated the top and bottom seams had abundance sulphur and possible acid forming. The air pollution will cause acid rain and not increase acid deposit in the ground in the direct surroundings, but also surrounding areas. As most of the land is agricultural the pollution will definitely affect the future of the Sundra community.</p> <p><u>4.10 Air pollution</u></p> <p>Currently the Mpumalanga province has been declared an air polluted area and amongst the worst air quality in the world. The possibility of spontaneous combustion has not been addressed. The community</p>	<p>Socio-economic related impacts will be discussed as part of the detailed impact assessment that form part of the EIR.</p> <p>Refer to Appendix E5 for the Geohydrological Assessment report.</p> <p>Refer to Appendix E2 for the Air Quality Impact Assessment report.</p>
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		<p>still awaits the feedback from the consultants on the air pollution level and the after effects the mine will have on the air pollution.</p> <p>In November 2008 the DEAT declared the Mpumalanga Highveld a “pollution hotspot”. Climate change could also be caused by coal mining and the impact on the agriculture in this area still needs to be explained. If the mining will have a very negative high Key Observation Points surely indicate the high level of air pollution and the effects on the environment of Sundra.</p> <p><u>7. Conclusion</u></p> <p>We formally request that the relevant authorities and consultants do take our objectives into consideration when deciding on the application. We have the responsibility as guardians of the environment to ensure that the environment for our kids and future generations is one to be lived in free of pollution and degeneration.</p> <p>The Okukama trust owners of portion 47 cannot support the mining activity as stipulated in the report as the mining will directly affect our farms and surrounding areas negatively.</p> <p>The reasons were provided above.</p>	<p>Refer to Appendix E2 for the Air Quality Impact Assessment report.</p> <p>Your comments and concerns are acknowledged and form part of this draft Scoping Report that has been submitted to MDEDET.</p> <p>Mining rights have been applied for the mentioned portion and specialist studies covered the mentioned portion, however, note (and as indicated in a response to another I&amp;AP question), that the</p>
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			<p>8. <u>Feedback requested</u></p> <p>We request that you acknowledge the receipt of our objection letter and ask that you notify us of the next public meeting as confirmed at the public meeting on the 27<sup>th</sup> November 2013.</p> <p>We would request that representative members should be present from the local municipality: Dept. of corporate and legal, town planning and housing and relevant government representatives.</p> <p>No proper rehabilitation actions by the mine were mentioned and no time frame or specification indicated. The community are concerned that the areas will not totally restored to its original agricultural landscape.</p> <p>Proper survey information should be provided as tabled at the public meeting and expected impacts discussed.</p>	<p>Applicant indicated that they do not currently plan on mining on Portion 47 of the farm Droogfontein 242 IR.</p> <p>Your comments and concerns are acknowledged and form part of this draft Scoping Report that has been submitted to MDEDET. Construction, operational and rehabilitation-related mitigation measures were, subsequent to the Public Meetings of November 2013 developed as part of the EMP in terms of the MPRDA, 2002. Furthermore, mitigation measures with regards to the proposed project will also be included in the EIR (which will follow the Scoping process).</p>
<p>Rosalie Hutchons (Resident)</p>	<p>30 November 2013</p>	<p>E-mail</p>	<p>Attached is our comment form, stating how we will be affected by the proposed mining activities. We only heard of this on Tuesday evening telling us of the</p>	<p><u>Shangoni's response via E-mail:</u>  <i>"Please note that you have been registered as an interested and affected party."</i></p>



			<p>meeting, but we could not attend, as we were in the Drakensburg Mountains and we only returned home yesterday.</p> <p>We are therefore grieved that there has not been any consultation with us in this regard.</p> <p>Please reply to this email with further communication and acknowledgement of receipt of complaints/comment.</p> <p><u>Registration form:</u></p> <ul style="list-style-type: none"> <li>• Water pollution with our borehole,</li> <li>• Air pollution with all the coal dust,</li> <li>• Earth tremmers with blasting can affect built structures,</li> <li>• Noise pollution,</li> <li>• Worsened roads will affect our daily lives and</li> <li>• Also a decrease in property value.</li> </ul>	<p>Refer to Appendix E for reports on the specialist studies conducted for the proposed project.</p> <p>The purpose of the scoping process is to determine knowledge gaps and information requirements for further investigation during the EIA Phase.</p> <p>An Economic Assessment, Blasting and Vibration Study and a Traffic Impact Assessment have been identified in this Scoping Report as additional specialist studies that need to be undertaken.</p> <p>Results of the mentioned assessments will thus be included in the EIR.</p>
<p>Diane Bath</p> <p>Ward 8 DA Cllr</p>	<p>01 December 13</p> <p>06:31</p>	<p>Email</p>	<p>The road specifically where the mine is expected to mine. Please can I get confirmation who is involved in this, whether it is your client or not?</p>	<p><u>Shangoni's response via E-mail:</u></p> <p><i>"We hereby acknowledge receipt of your email and the contents thereof."</i></p>



			Please it is urgent?	<p><u>Applicant's representative's response via E-mail:</u>  <i>"Our client was not involved in the upgrading of the roads in question. We were under the impression that the municipality was responsible. We would appreciate it if you can find out for us who was involved.</i></p> <p><i>Those roads do not even form part of our EIA application. As already mentioned in the meeting on the 27<sup>th</sup> of November 2013, our client does not plan to undertake any activities without environmental authorisation."</i></p>
Victor Khanye Local Municipality		Fax	<p>List of community organizations:                  Victor Khanye Local Municipality Delmas</p> <ol style="list-style-type: none"> <li>1. Ernest Mafoho: Earthnogenesis- Environmental N.P.o</li> <li>2. Mduduzile Mabena: South African National Apex co-operative</li> <li>3. Lebohang Sibanyoni: (UDEF) Unemployment development Environmental Forum N.P.O</li> <li>4. Ronnie Bafana Mlambo: Delmas Contractors Association (DCA)</li> <li>5. Sibusiso Mthweni: African National Congress Youth League</li> <li>6. Christo Roets: Universal Link Pty Lty</li> <li>7. Ezekiel Sekhukhuni: Chairperson SANCO</li> <li>8. Jacob Mononyane: Secretary Sanco</li> </ol>	<p><u>Shangoni's response via E-mail:</u>  <i>"Please note that you have been registered as interested and affected parties."</i></p>



<p>Annatjie Robertson</p> <p>Journalist (Caxton Local Newspaper)</p>	<p>4 February 2014</p>	<p>E-mail</p>	<p>Springs residents are very concerned about the planned opencast mine in Droogenfontein.</p> <p>Questions were raised as to what the impact will be on the environment i.e. Blesbokspruit, Aston Lake and the surrounding area.</p> <p>Bakerton, Welgedacht and Strubenvale residents are particularly concerned about their houses and the valuation thereof.</p> <p>Will the mine have an impact on their houses when explosives will be used? Will it cause cracked walls and windows? Is this going to influence the value of their houses?</p> <p>The community newspaper I work for informs the public of developments in and around Springs,</p>	<p>Please refer to Sub-section 7.2 for an identified potential impacts on the environment.</p> <p>Also refer to Appendix E for reports on the specialist studies conducted for the proposed project.</p> <p>The purpose of the scoping process is to determine knowledge gaps and information requirements for further investigation during the EIA Phase.</p> <p>An Economic Assessment and Blasting and Vibration Study have been identified in this Scoping Report as additional specialist studies that need to be undertaken.</p> <p>Results of the mentioned assessments will thus be included in the EIR.</p> <p>The Social and Labour Plan for the proposed mine is included in Appendix F.</p>
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			<p>therefore it is of utmost importance that we inform the public on what is going on.</p> <p>What is the planned date for the mine to be operational?</p> <p>What are the plans as far as job opportunities are concerned for local people?</p> <p>Also please let me know what the following stand for:                  I&amp;AP =                  EIA =                  WULA =                  MDEDET =                  EMPR =                  DWA =</p>	<p>I&amp;AP = Interested and Affected Party                  EIA = Environmental Impact Assessment                  WULA = Water Use License Application                  MDEDET = Mpumalanga Department of Economic Development, Environment and Tourism                  EMPR = Environmental Management Programme Report                  DWA = Department of Water Affairs</p>
Michael da Silva	15 July 2014	E-mail	<p>Hi my naam is michael woon in sundra op 'n perseel langs die beplande steenkool myn en will graag weet hoe staan sake gan dit nog gebeur indien soo waneer en soek graag ale inligting inverband met die beplanning soos dit lyk val ons eindom onder die myn aria gan dit dan nou uit gekoop word deur u wergeewer ens ens wag vir u terug laat weet dankie</p>	<p><u>Shangoni's response via email (in Afrikaans):</u>  <i>"Die Omgewings bestuurs program (EMP) onder die Minerale en Petroleum Hulpbronne Ontwikkelings Wet, 2002 is nou ingehandig aan die Departement van Minerale Hulpbronne (DMR) ter ondersteuning van 'n aansoek vir 'n mineraal reg. Die besluit le dus nou by die DMR.</i></p> <p><i>Verder is Ngululu nog in die "Scoping" fase onder die Nasionale Omgewings bestuurs Wet, 1998 rakende 'n aansoek vir omgewings goedkeuring van die Department van Omgewings-sake. Hiervoor</i></p>



				<p><i>moet 'n Scoping Verslag en ook 'n Omgewings Impak Assesserings Verslag nog ingedien word, en goedkeuring moet hiervoor gekry word. Die projek is dus nog in die 'aansoek fase'.</i></p> <p><i>Sou 'n mynreg en omgewings goedkeuring toegestaan word, sal die mynbou en verwante aktiwiteite plaasvind op porsies 26, 46 en 47 van die plaas Droogfontein 242 IR."</i></p> <p>Please note that the Applicant has indicated (refer previous responses) that although a mining right has been applied for Portion 47 and 46 of the farm Droogfontein 242 IR, no mining activities are currently being planned for the mentioned portions.</p>
<p>Thembani Mashiane</p> <p>House owner in Aston Lake</p>	<p>18 July 2014</p>	<p>Telephone</p>	<p>1. She owns a house at Aston Lake and wants Ngululu resources to buy her out</p> <p>2. She mentions another mine close to Blesbokspruit that has received a mining right.</p> <p>3. She mentioned that there are no public meetings indicated on the BID sent to her</p>	<p><u>Telephonic conversation held on 18 July 2014:</u></p> <p>1. It was indicated that Shangoni is only the environmental assessment practitioner and not part of the mine. Shangoni suggested that she puts her concerns down in the form of a formal letter.</p> <p>2. Shangoni indicated to her that Shangoni is not involved with a coal mining project in the mentioned area and explained the location of the proposed Ngululu Resources to her.</p> <p>3. Shangoni indicated to her that all registered I&amp;AP's will be notified in advance should a public</p>



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				meeting be held. The BID sent to Ms Mashiane contained project information with regards to the proposed project.
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#### **4.3.9 Conclusions of the PPP**

In conclusion, the Public Participation process followed was conducted in terms of the requirements as set out in the EIA Regulations, 2010. Opportunity was provided to I&APs to raise comments and concerns with regards to the proposed project, in the form of registration and response forms and two formal Public Meetings. The comments received from I&APs in the form of letters or e-mails have been incorporated into this Scoping Report.





## 5. NEED AND DESIRABILITY FOR THE ACTIVITY

### 5.1 Developer / Applicant

#### 5.1.1 Where is it intended that the product(s) will be sold

The coal will be sold to the local market. Eskom is one of the product consumers,

#### 5.1.2 Expected revenue

Expected revenue per year is as follows:

- Year 1: R 150 000 000.00
- Year 2: R 300 000 000.00
- Year 3: R 300 000 000.00
- Year 4: R 103 480 750.00
- Year 5: R 750 000 000.00
- Year 6: R 750 000 000.00
- Year 7: R 750 000 000.00
- Year 8: R 750 000 000.00
- Year 9: R 750 000 000.00
- Year 10: R 750 000 000.00
- Year 11: R 750 000 000.00
- Year 12: R 750 000 000.00
- Year 13: R 750 000 000.00
- Year 14: R 750 000 000.00
- Year 15: R 750 000 000.00
- Year 16: R 750 000 000.00
- Year 17: R 750 000 000.00
- Year 18: R 375 000 000.00
- Year 19: R 250 000 000.00
- Year 20: R 125 000 000.00

The total revenue as will be generated through the project is R11 353 480 750 as provided by the applicant

### 5.2 Local community

The proposed coal mine will benefit the community through job creation and local economic and social development programme and projects.

According to the report titled: *Social and Labour Plan*, dated April 2013, 258 workers (89% of workforce) will be employed from the local community from the west (Delmas, Botleng, Eloff, Rietkol, and surrounds) and central eastern Gauteng to the east (Daveyton, Springs, Welgedacht, Slovo Park, Bakerton, Gugulethu, Everest, Brakpan, Benoni, Boksburg, Phomolo, Kwa-Thema, White City, Langaville, Tsakane, Duduza, Kempton Park, Thembisa, Alexandra).

Ngululu has budgeted R488 010.00 for SLP projects and R97 602.00 for National Skills Fund. Ngululu Resources will, in association with Victor Khanye Local Municipality and the Department of Transport, assist with the construction/maintenance/upgrade of the internal road network in the local community. Support will be in the form of supply (including delivery) of G6 road base material as well as fill material.

There will also be extramural science, maths and business studies academy project whereby thirty (30) local unemployed youth (young Black women with Grade 12 who performed well in mathematics and natural science) will be trained and supported to establish their own small academy or business that provide extramural or additional mathematics, science, economics, accountancy and business studies classes to learners in the area. The beneficiaries will be persons who recently (within the past 8 years) pass Grade 12 with good average scores in one or more of the subjects of mathematics, science, economics, and accountancy or business studies.

### **5.3 District and provincial benefit**

Benefits up to a district and provincial level will be associated with the Ngululu Coal Mine. According to the report titled: *Social and Labour Plan*, dated April 2013, 19 workers (6% of workforce) will be employed from Gauteng (spread from Johannesburg to Tshwane), 8 workers which is 3% of the workforce will be employed from Mpumalanga (spread from various individual places), 3 workers which is 1% of the workforce will be employed from Eastern Cape (spread from various individual places) and 2 workers which is less than 1% workforce will be employed from the Lesotho.



## 6. IDENTIFIED ALTERNATIVES

The following definition of “alternatives” is given in the EIA Regulations of 18 June 2010: “alternatives”, in relation to the proposed activity, *means different means of meeting the general purpose and requirements of the activity, which may include alternatives to-*

- a) *the property on which or location where it is proposed to undertake the activity;*
- b) *the type of activity to be undertaken;*
- c) *the design or layout of the activity;*
- d) *the technology to be used in the activity;*
- e) *the operational aspects of the activity; and*
- f) *the option of not implementing the activity”.*

As required in term of the requirements of Regulation 28 (j) (of Regulation 543) of the EIA Regulations, 2010, under the NEMA, 1998 the identified potential alternatives as well as the advantages and disadvantages that they may have on the environment and the community that may be affected have been discussed in this part of the Scoping Report. Also included here is the advantage and disadvantage the proposed project may have on the environment and the community that may be affected.

### 6.1 Alternatives considered during Scoping Phase

#### 6.1.1 Alternatives in terms of operational aspects of the activity

##### 6.1.1.1. Process plant options

The following alternatives were identified with regard to the options for the processing plant to be utilised (refer to **Table 27**):

- On site stationary process plant.
- On site mobile processing plant.
- Off-site stationary processing plant (preferred option).

**Table 27: Processing plant options**

Option	Advantage	Disadvantage
<b>Option 1:</b> Construction of an on-site processing plant.	Would make beneficiation of coal for exporting more efficient as less transportation would be required.	High capital expenditure that will not be financially viable for the mine.
		More equipment is required.
		Footprint constraints.
		More environmental impacts on-site.
<b>Option 2:</b>	Less impacts to the environment.	High capital cost.

Option	Advantage	Disadvantage
Use of a mobile on site-processing plant.		
<b>Option 3:</b> The use of an off-site processing plant (preferred option).	Less impacts to the environment on-site.	Coal will need to be transported to a beneficiation plant.
	Cost effective	Additional authorisations would need to be applied for at a later stage.
		Will need to identify suitable off-site treatment plant and get necessary agreements in place (e.g. take-off, treatment etc.)

### 6.2.1.2 Transport options

The following alternatives were identified with regards to the options for the transportation of coal:

- Via haul truck (preferred option).
- Via conveyor.

**Table 28: Transport options**

Option	Advantage	Disadvantage
<b>Option 1:</b> Transportation of ROM coal via conveyor.	Larger quantities of coal can be transported.	More costly.
	Lessens potential negative impacts on roads.	The quantity of coal to be transported is not large enough to substantiate the costs involved.
<b>Option 2:</b> Transportation of ROM coal via road (preferred option).	More financially viable for the initial stages of mining.	Will negatively impact on the roads, and other impacts (e.g. dust and traffic)

### 6.2.2 Alternatives in terms of design and layout of the activity

The following alternatives were identified with regard to the options for the layout and design of the opencast pit (refer to **Table 29**):

- Mine the whole coal reserve.
- Exclusion of the 100m buffer around the wetland area and pan.
- Exclusion of the 50m buffer around the wetland area and pan (preferred option).
- Excluding the pan and the wetland and their respective catchment areas.

**Table 29: Design or layout alternatives**

Option	Advantage	Disadvantage
<b>Option 1:</b> Mine the whole coal reserve area.	All the coal reserve will be mined out, which makes this option the best in terms of mining yield.	All the wetlands within the coal reserve area will be severely impacted or destroyed.
<b>Option 2:</b> Exclusion of the pan and wetland areas with a 100m buffer zone surrounding each pan and wetland.	The pan and a 100m buffer zone surrounding each wetland will be excluded.	The mining activities will still impact severely on the wetlands and pans as the pan and wetland's catchment areas will be affected, with also risk of wetland/pan pollution risks. Portion of coal reserve will not be mined.
<b>Option 3:</b> Exclusion of the pan and wetland areas with a 50m buffer zone surrounding each pan and wetland (preferred option).	The pan and a 50m buffer zone surrounding each wetland will be excluded.	The mining activities will still impact severely on the wetland and pans as the pan and wetland's catchment areas will be affected, with also risk of wetland/pan pollution risks. Portion of coal reserve will not be mined
<b>Option 4:</b> Exclusion of wetland areas, the pan and their respective catchment areas.	The pan, wetland and its associated catchment area will be preserved.	Not financially viable for the mine to exclude such large portions of the coal reserve area.

### 6.2.3 Alternatives in terms of type of activity to be undertaken

The following alternatives were identified with regard to the options for the mining method to be utilised (refer to **Table 30**):

- Opencast mining methods (preferred option).
- Underground mining methods.
- A combination of opencast and underground mining methods.

**Table 30: Alternatives in terms of type of activity to be undertaken**

Option	Advantages	Disadvantages
<b>Option1:</b> Opencast mining methods only (preferred option).	More suitable to access the shallow coal reserves than underground mining methods.	Not suitable for the deeper coal reserves due to costs and environmental impacts.
	Impacts and safety risks, such as surface subsidence, that are	Vegetation cover, soils, wetlands and pan will be impacted upon.



Option	Advantages	Disadvantages
	associated with underground mining methods in shallow coal reserves will not occur.	
<b>Option 2:</b> Underground mining methods only.	More suitable for the deeper coal reserves than opencast mining methods.	There are environmental impacts and safety risks associated with roof collapse, surface subsidence and sinkhole formation when underground mining methods are utilized for the mining of shallow reserves. There is an increased and more significant risk should the shallower coal reserves be mined using underground mining methods.
	Vegetation cover and soils would be preserved in areas where underground mining takes place.	
<b>Option 3:</b> A combination of opencast and underground mining methods.	Opencast mining methods for the shallow coal reserves and underground mining for the deeper coal reserves will prevent unnecessary costs and ensure that environmental impacts are prevented.	Vegetation cover and soils will be impacted upon through the clearing of land for opencast operations.
	Vegetation cover and soils would be preserved in areas where underground mining takes place.	There are environmental impacts and safety risks associated with roof collapse, surface subsidence and sinkhole formation when underground mining methods are utilized if not adequately mitigated or prevented.

#### 6.2.4 Land Use alternatives

The following land use alternatives have been identified and were investigated and are briefly compared in Table 31 below:

- Utilisation of the surface area for the Ngululu Coal Mine.
- Utilise the surface area for grazing of livestock.
- Utilise the surface area for crop production.
- None of the above (No-go option).

**Table 31: Assessment of land use alternatives**

Environmental component	Opencast Mining	Grazing	Crop production	No-go
<b>Geology</b>	Drilling and blasting of the hard overburden to expose the underlying coal seams will permanently destroy or disrupt the geological	No impact.	No impact.	No further impact.



Environmental component	Opencast Mining	Grazing	Crop production	No-go
	sequence of the coal seams to be mined.			
<b>Topography</b>	Topography will be permanently altered by the opencast mine.	No impact.	No impact	No further impact.
<b>Soil</b>	Soil structure and functioning will be permanently altered.	Soils will be eroded.	Soils will be chemically and physically modified.	No further impact.
<b>Land use</b>	Land use will change to mining and related activities.	Land use will stay agriculture.	Land use will stay agriculture.	No further impact.
<b>Land capability</b>	Land capability will be permanently altered.	Land capability may be lowered if overgrazing occurs.	Land capability may be impacted on if poor farming techniques are employed.	No further impact.
<b>Flora</b>	Natural vegetation will be destroyed in the land use area. Of special concern being the pan and wetland area and the sensitive flora species (Declining' <i>Crinum bulbispermum</i> )	Natural vegetation will be impacted on if overgrazing occurs.	Natural vegetation will be destroyed in all crop areas.	No further impact.
<b>Fauna</b>	Fauna will be impacted on as habitats are destroyed.	No impact if overgrazing is prevented.	Fauna will be impacted on as habitats are destroyed.	No further impact.
<b>Surface water</b>	Surface water quantity and quality will be compromised, wetland and pan will be severely impacted.	No impact.	Impact on the wetland area will reduce wetland functionality.	No further impact.
<b>Groundwater</b>	Groundwater quantity and quality will be impacted upon	No impact.	Groundwater may be used for irrigation, thereby impacting on quantity.	No further impact.
<b>Air quality</b>	Dust will be generated.	Dust will be generated if overgrazing occurs.	Dust will be generated after the harvest season.	No further impact.



<b>Environmental component</b>	<b>Opencast Mining</b>	<b>Grazing</b>	<b>Crop production</b>	<b>No-go</b>
<b>Noise</b>	Noise will be increased, associated with activities of mining, and hauling of material	No impact.	No impact.	No further impact.
<b>Visual</b>	The visual environment will be altered by changes in topography.	No impact.	The planting of crops will alter the visual environment, but will not be intrusive.	No impact.
<b>Sensitive landscapes</b>	Sensitive landscapes will be altered.	Sensitive landscapes will be altered or destroyed if overgrazing occurs.	Sensitive landscapes will be altered or destroyed.	No further impact.
<b>Sites of archaeological and cultural interest</b>	There is a risk of impact.	No impact.	No impact.	No further impact.
<b>Socio-economic</b>	Jobs will be created, along with other benefits arising from the Social and Labour Plan.	No impact.	Some jobs may be created.	No further impact.
<b>Interested and affected parties</b>	Surrounding landowners will be further impacted upon as a result of impacts listed above.	No impact.	No impact.	No further impact.
<b>Cumulative impacts</b>	Large mining complexes already exist in the vicinity of the proposed mine. Impacts of mining (as described above) may be slightly increased.	Destruction of the natural environment will be compounded if overgrazing takes place.	Destruction of the natural environment will be compounded if over-fertilisation occurs or poor farming techniques are employed.	No further impact

Major impacts associated with each land use alternative have been summarised for comparative purposes. Each proposed land use alternative may impact on the natural environment at the proposed site.





## 6.2 Consequences of not proceeding with the proposed project (no project alternative)

The 'No Project' alternative has been investigated in terms of the above-mentioned alternatives.

The 'No Project' alternative is not yet considered due to the anticipated benefits of the proposed Ngululu Coal mine. Expected indirect benefits of the proposed project include:

- Potential for the creation of additional jobs.
- Continued upliftment of the surrounding communities.
- Continued supply of coal to the local and national, markets, and therefore contribution to local, provincial and national economy.

The alternatives, including the 'No Project' option will be further assessed as part of the EIA process for the proposed project.



## 7. IDENTIFICATION OF ANTICIPATED ENVIRONMENTAL IMPACTS

This part of the document focuses on the identification of the major potential impacts the activities, processes and actions may have on the surrounding environment. It indicates the major impacts that these activities may have on the environmental components associated with the site, as required in terms of Regulation 28 (g) of R.543 of the EIA Regulations, 2010, under the NEMA, 1998.

### 7.1 Project phases and activities to be undertaken

For the purposes of this impact identification, the project timeframe will be subdivided into the following four phases:

- Construction Phase.
- Operational Phase.
- Decommissioning and Closure Phase.
- Post Closure Phase.

Potential cumulative impacts were also identified, where applicable.

#### 7.1.1 Construction Phase

Activities that will be carried out during the construction phase include the following:

- Drilling of boreholes.
- Creating internal roads.
- Clearing of vegetation.
- Stripping and storing of topsoil.
- Excavation to create an initial box cut.
- Drilling and blasting of subsoil.
- Stripping and storing of subsoil.
- Stockpiling waste rock
- Construction of mine support infrastructure (weighbridge, change house, loading bays, bulk diesel and oil storage facility and stores).
- Erection of administrative buildings and security offices.
- Construction of storm water management systems (Storm water diversion channels)
- Construction of pollution control dam.
- Transportation of topsoil, subsoil and waste rock to designated area..
- Refueling of construction vehicles and machinery
- Construction of power supply facilities

### 7.1.2 Operational Phase

Activities that will be conducted in the operational phase include the following:

- Continues Drilling and blasting of subsoil,
- Continued excavation of the pit,
- Continued stockpiling of waste rock,
- In-pit coal hauling,
- Constructing pipes that takes water from the pit to the pollution control dam,
- Dewatering the pit,
- Temporary coal stockpiling,
- Concurrent backfilling of the pit with waste rock,
- Rehabilitation of the backfilled phase of the pit,
- Continued storage of hazardous and non-hazardous operational waste,
- Transportation of coal to processing plant using existing roads,
- Transportation of topsoil, subsoil and waste rock to stockpiling area,
- Transportation of coal to the local market using the existing access road,
- Use of maintenance facilities,
- Use of administration and security offices,
- Refueling of operational vehicles and machinery,
- Storage and distribution of potable water and
- Use of power supply.

### 7.1.3 Decommissioning and Closure Phase

Activities that will be included in the decommissioning phase include the following:

- Dewatering the pit.
- Back filling final voids of the pit.
- Demolishing the existing structures (buildings, pipelines, weigh bridges and storage tanks and roads).
- Monitoring the areas already rehabilitated during operational phase.
- Rehabilitating the area by :
  1. Re-vegetating
  2. Levelling the area where there were stockpiling
  3. Controlling invasive plants
  4. Replacement of topsoil (If topsoil was lost due to erosion)

### 7.1.4 Post-Closure Phase

Post-closure activities will not be conducted until the Closure certificate has been obtained from the Department of Mineral Resources. Possible activities that might be conducted during the Post-closure phase include the following:



- Monitoring of surface and groundwater for pollution.
- Monitoring the rehabilitated areas for signs of erosion, poor vegetation growth, fertility etc.
- Monitoring the sustainability of rehabilitation.

## 7.2 Impacts identified

The main potential impacts identified for the Ngululu Coal Mine project are listed below, these impacts will be further investigated during the EIA phase. The EIR will include a full risk assessment of all environmental impacts. The Environmental Impact Assessment Report (EIAR and Environmental Management Programme (EMP) in terms of NEMA, 1998 will set out mitigation measures to be implemented during the Construction, Operational, Decommissioning and Closure and Post-Closure Phases. Refer to Part 8 of this Scoping Report for the Impact Assessment methodology that will be followed as part of the EIA process.

### 7.2.1 Construction Phase

Table 32 below lists the proposed potential impacts during the Construction Phase.

**Table 32: Potential impacts during the construction phase**

Geology
Drilling and blasting enhances porosity and can increase weathering rates.
Destruction of geology due to extraction of coal.
Soil
Disturbance of soil surface due to construction activities (vehicles, de-vegetation, excavation)
Soil erosion due to clearing of surface vegetation thus exposing the soils, which in rainy events would wash away, possibly into the wetland or pan.
Loss of topsoil due construction of boxcut pit.
Soil compaction due to construction activities.
Flora and Fauna
Establishment of alien invasive plants due to eroded soil because seeds from proximate alien invasive trees can spread easily into these eroded soil.
Vehicles driving on the vegetation will impact the surface vegetation especially the moist grassland.
Destruction of moist grassland / wetland / pan area due to clearing of the vegetation, change of the soil hydrology and dumping of overburden on moist grasslands.
Destruction of 'declining' plant species due to drawdown of water tables caused by construction activities.
Deterioration of the vegetation associated with wetlands and the pan due to sedimentation, compaction and/or increased pollutants in the pan or wetland.
Destruction of the declining' <i>Crinum bulbispermum</i>
Clearing of vegetation communities will alter the current dynamics of fauna assemblages and result in a loss of habitat or fragmentation of habitat.
Disruption of natural cycles especially nocturnal animals due to artificial lighting.



High ambient noise levels will be present which will disturb the fauna assemblages and therefore they will no longer utilize the site or the surrounding area.
Personnel who are not fully educated with regards to fauna assemblages may hunt or persecute fauna for recreation or for food purposes.
<b>Surface water</b>
Alteration, diversion or impeding the flow within and around the wetland and pan.
Sedimentation increase as a result of construction activities.
Restriction of water flow due to physical alteration of the site, causing change in quantity and fluctuation of the watercourses (wetland and pan).
Alteration of seepage processes of the wetland and pan thus causing change in quantity and fluctuation of the watercourses..
Alteration of water quality in wetland and pan due to contamination from toxic contaminants and hydrocarbons (fuel).
Site clearing and removal of topsoil, may lead to ponding of surface water in the cleared areas during the wet season.
<b>Groundwater</b>
Potentially increased infiltration to the aquifers due to site clearing and removal of topsoil.
Change in groundwater quality if significant amounts of explosive are spilled or incompletely detonated during blasting activities. – Elevated nitrate levels.
The aquifer structure will be destroyed wherever the box-cut intersects the aquifer.
Development and infiltration of mounding water into the phreatic zone within the stockpiles (especially carbonaceous stockpiles) and waste rock dump deposition.
Oil or fuel spillages from construction machinery may collect in the soils. During rainfall events, hydrocarbon compounds from oils and fuel in the soils may migrate to the subsurface water bodies with water infiltrating through these polluted areas.
<b>Archaeology</b>
Graves and remaining historic settlements will be impacted by operational activities.
<b>Palaeontology</b>
Excavation of fossils that are/may be present in the grey shale interlayered with the coal seams during construction phase.
Sealing in or destruction of fossils by development, vehicle traffic and human disturbance during construction.
Construction activities will impact on the Palaeontological heritage of the Vryheid formation.
<b>Air Quality</b>
Dust from drilling and blasting, stockpiling, offloading and loading of topsoil, overburden, wasterock and coal.
Dust fallout creating nuisance and health impacts)
Dust deposition on vegetation thus damaging or blocking the stomata or resulting in abrasion of leaf surfaces and cuticles.
<b>Noise</b>
Noise impact from construction machinery and vehicles.
Noise impact from drilling and blasting.
<b>Visual</b>
Potential visual impact on the sensitive receptors in the foreground and middle ground.
Potential visual impact on the intrinsic value and sense of place of the region.



Potential visual impact of artificial lighting as a result of the activity.
Potential visual impact of dust.

## 7.2.2 Operational Phase

Table 33 below lists the proposed potential impacts during the Operational Phase.

**Table 33: Potential impacts during Operational Phase**

<b>Geology</b>
Drilling and blasting enhances porosity and can increase weathering rates.
Destruction of geology due to extraction of coal.
<b>Soil</b>
Disturbance of soil surface due to operational activities (vehicles, continued de-vegetation and excavation)
Soil erosion due to clearing of surface vegetation thus exposing the soils, which in rainy events would wash away, possibly into the wetland or pan.
Loss of topsoil due development of the pit.
Soil compaction due to operational activities.
<b>Flora and Fauna</b>
Loss of ecological function due to destruction of vegetation by construction of the open cast pit.
Deterioration of the vegetation associated with wetlands and the pan due to sedimentation, compaction and/or increased pollutants of the pan or wetland.
Destruction of moist grassland / wetland / pan area due to clearing of the vegetation, change of the soil hydrology and dumping of overburden on moist grasslands.
Heavy vehicles driving on the vegetation will impact the surface vegetation especially the moist grassland.
Destruction of the declining' <i>Crinum bulbispermum</i>
Clearing of vegetation Communities will alter the current dynamics of fauna assemblages and result in a loss of habitat or fragmentation of habitat.
Disruption of natural cycles especially nocturnal animals due to artificial lighting.
High ambient noise levels will be present which will disturb the fauna assemblages and therefore they will no longer utilise the site or the surrounding area.
Personnel who are not fully educated with regards to fauna assemblages may hunt or persecute fauna for recreation or for food purposes.
Loss of habitat due to wetlands and moist grassland altered in structure or polluted.
<b>Surface Water</b>
Continued alteration, diversion or impeding the flow within and around the wetland
Sedimentation as a result of operational activities.
Restriction of water flow due to physical destruction thus causing change in quantity and fluctuation of the watercourse (wetland and pan)
Alteration of seepage processes of the wetland and pan thus causing change in quantity and fluctuation.
Contamination due to spillage of coal into the wetland or pan
<b>Groundwater</b>
Potentially increased infiltration to the aquifers due to progressive site clearing and removal of topsoil.



Oil and lubricants used in machinery during operation may accidentally spill and pose a possible threat to groundwater.
Change in groundwater quality from explosives used during blasting activities – Elevated nitrate levels
The aquifer structure will be destroyed wherever the box-cut intersects the aquifer
Development and infiltration of mounding water into the phreatic zone within the stockpiles (especially carbonaceous stockpiles) and waste rock dump deposition
Recharge will be increased along porous groundwater zones due to an increased head of open water collecting in the opencast pit.
Potential generation of acid mine drainage due to carbonaceous material found within the mine area.
Downstream movement of a pollution plume within the weathered zone aquifer
Reduced or eliminated production in domestic supply boreholes due to the groundwater drawdown.
Contamination of the perched aquifer may occur if the return water dam is unlined.
<b>Archaeology</b>
Graves and remaining historic settlements will be impacted by operational activities.
<b>Palaeontology</b>
Excavation of fossils that are/may be present in the grey shale interlayered with the coal seams during operational phase.
Sealing in or destruction of fossils by development, vehicle traffic and human disturbance during operation
Operational activities will impact on the Palaeontological heritage of the Vryheid formation.
<b>Air Quality</b>
Dust from drilling and blasting, stockpiling, offloading and loading of topsoil, overburden, wasterock and coal.
Dust generated causing both nuisance and health risks
Dust deposition on vegetation thus damaging or blocking the stomata or resulting in abrasion of leaf surfaces and cuticles.
<b>Noise</b>
Noise impact from operational machinery and vehicles.
Noise impact from drilling and blasting.
<b>Visual</b>
Potential visual impact on the sensitive receptors in the foreground and middle ground.
Potential visual impact on the intrinsic value and sense of place of the region.
Potential visual impact of artificial lighting as a result of the activity.
Potential visual impact of dust.
<b>Traffic</b>
Increase in volume of traffic due to vehicle movement from and to the site.

### 7.2.3 Decommissioning and Closure Phase

Table 34 below lists the proposed potential impacts during the Decommissioning and Closure Phase.

**Table 34: Potential impacts associated with the Decommissioning and Closure phase**

<b>Flora</b>
Lack of functional vegetation due to lack of adequate rehabilitation.



Lack of functional vegetation due to lack of monitoring
Lack of functional vegetation due to lack of corrective follow-up action
Deterioration of the wetland due to lack of adequate rehabilitation
Surface Water
Continued alteration, diversion or impeding the flow within and around the wetland
Groundwater
Strong possibility of ARD development consequent to oxidation and hydration.
Deterioration of groundwater quality within the back-filled opencast mine workings due to ARD reactions.
Downstream movement of a deeper groundwater pollution plume.
Visual
Potential residual visual impacts left by a scarred landscape, buildings and infrastructure after decommissioning.
Deterioration of wetland due to polluted water reaching the downstream wetlands.

#### 7.2.4 Post-Closure Phase

Table 35 below lists the proposed potential impacts during the Post-closure Phase. Environmental aspects which will not be impacted by post closure phase are not included in the table.

**Table 35: Potential impacts associated with the Post-closure phase**

Groundwater
ARD development consequent to oxidation and hydration
Decant from rehabilitated mine pit

#### 7.2.5 Cumulative Impacts

The following proposed potential cumulative impacts have been identified and will be investigated further during the EIA phase:

**Table 36: Cumulative impacts**

GENERAL DESCRIPTION OF EXISTING CUMULATIVE IMPACTS	CONTRIBUTION OF MINE TO CUMULATIVE IMPACTS
Geology	
The Springs Vischkuil Coalfield, located mostly within the Mpumalanga Highveld region between Delmas and Springs in Gauteng, generally contains seams of coal most of which is of good quality suitable as a feed stock for domestic power generation as well as low volatile pseudo anthracite. As such, coal is extracted from numerous mines located near the Delmas area. Due to the existing surrounding coal mining operations (Exxaro's Leeuwpan Mine and Stuart Colliery, etc.) in	The contribution of the mine to this cumulative impact will increase progressively as mining advances





GENERAL DESCRIPTION OF EXISTING CUMULATIVE IMPACTS	CONTRIBUTION OF MINE TO CUMULATIVE IMPACTS
the surrounding area, the geological strata in the region will be permanently altered.	
Geology and Socio-economic conditions	
<p>The extraction of coal from the Springs Vischkuil Coalfield and close by Witbank Coal Field has occurred over a period spanning more than a century, and modern day opencast mining techniques enable coal extraction to be maximised. This has led to the systematic depletion of the coal reserves in the region, increasing significantly in the last several decades due to improvements in mining technology. Since coal is a fossil fuel it is a non-renewable resource, and as the remaining coal reserves decrease, the value of the coal will increase because of supply and demand principles. This will lead to an increase in income generation and positive contributions to the regional socio-economic conditions during the Operational Phase of the mine, but will ultimately result in the complete exhaustion of the coal reserves, leaving no coal for future generations.</p>	<p>The contribution of the mine to the exhaustion of coal reserves will increase progressively as mining advances</p>
Topography, Land-use and visual aspects	



GENERAL DESCRIPTION OF EXISTING CUMULATIVE IMPACTS	CONTRIBUTION OF MINE TO CUMULATIVE IMPACTS
<p>The mine is located in a region where opencast coal mining is common place. The large number of opencast coal mines in the region, together with the historical nature of the mining in the Witbank region (over 100 years of mining history) will most likely have desensitised local residents and frequent travellers through the area. On the contrary, the visibility of the mining areas from the surrounding areas could be of interest to passers-by, especially since coal mining is an important part of Mpumalanga's history, and visits to coal mines are even cited as being of interest to tourists.</p>	<p>Visual impacts of the opencast mining at the mine would result from the removal of vegetation and the underlying geological layers to expose carbonaceous material and coal, stockpiling of soil and spoils, changes in topography and the general sense of place associated with the pre-mining landscape.</p> <p>In addition, much of the proposed surface infrastructure at mine shall result in topographical elevations within the surface land use area, thereby altering the visual 'sense of place' from that associated with the pre-mining agricultural land use.</p> <p>In situ rehabilitation of mine residue facilities mean that the resultant permanent change in topography will also result in permanent changes to the visual aspects of the study area.</p> <p>Should groundwater management investigations reveal that the use of final voids may be required as part of the long-term water management strategy, the depressions in topography will impact on visual aspects of the study area, depending on the location of the viewpoint.</p>
Topography	
<p>Large sections of the Mpumalanga area affected by shallow undermining, which has had a significant impact on the environment, resulting in sinkhole formation, subsidence and seepage of water from underground workings (ELM IDP, 2009-2010), amongst others.</p>	<p>The mine will contribute to these aspects of visual as the mining advances</p>
Soil, Land capability and socio-economic conditions	



GENERAL DESCRIPTION OF EXISTING CUMULATIVE IMPACTS	CONTRIBUTION OF MINE TO CUMULATIVE IMPACTS
<p>Agriculture is one of the largest economic sectors in Mpumalanga, producing 15% of total output in South Africa (South Africa Yearbook, 2001/02). The numbers of opencast mines in Mpumalanga, particularly large operations, have led to a significant loss of high agricultural potential soils that would otherwise continue to be capable of supporting crop cultivation. Loss of high potential agricultural land due to opencast mining activities in the area will reduce the food production capability of the region.</p>	<p>The contribution of the mine to this cumulative impact will increase progressively as mining advances.</p>
Soil, Land capability, Biodiversity and sensitive landscapes	
<p>Large areas of the surface have been affected by agriculture and opencast mining, which has led to loss of soil structure and function, modification of wetlands in the catchment area and ultimately to loss of biodiversity due to the transformation and fragmentation of natural habitats and ecosystems. In addition, the due to mining and agricultural activities.</p>	<p>The contribution of the mine to this cumulative impact will increase progressively as mining advances.</p>
land use and socio economic conditions	
<p>Mining is an important sector in Mpumalanga providing jobs and contributing to over one fifth of Mpumalanga's Gross Geographic Product (Mpumalanga SoE, 2003).</p>	<p>The temporary change in land use to mining will result in a much higher income per hectare of land over the short-term in comparison with agriculture.</p>
Biodiversity-Alien species	
<p>Invading alien plants are the single biggest threat to plant and animal biodiversity through the effects of predation, alteration of habitat or disruption of ecosystem process and services. Invading alien plants have become established in over 10 million hectares of land in South Africa. If left uncontrolled, the problem will double within 15 years. Invading alien plants waste 7% of our water resources, reduce farming productivity, intensity flooding and fires, cause erosion, degrade river systems, increase rate of siltation of dams and estuaries, reduce water quality and can cause extinction of indigenous plants and animals (Mpumalanga SoE, 2003).</p>	<p>Alien and invasive species tend to establish in disturbed surface areas at the mine, which will be abundant during opencast mining. Unless appropriately managed, it is likely that alien and invasive species will encroach into natural vegetation areas, and especially into areas that are newly disturbed or rehabilitated.</p>
Biodiversity declining species	



GENERAL DESCRIPTION OF EXISTING CUMULATIVE IMPACTS	CONTRIBUTION OF MINE TO CUMULATIVE IMPACTS
<p>Numerous species in Mpumalanga face the risk of extinction due to factors such as habitat loss, environmental degradation and fragmentation of landscapes (Mpumalanga SoE, 2003).</p>	<p>The ‘Declining’ <i>Crinum bulbispermum</i>, and the <i>Kniphofia typhoides</i> classified as a near threatened species, occur within the mine boundary area. The impacts of mining, will severely affect the habitat of these plants, and may lead to the decline and/or loss of these species. Furthermore, the increase in human presence on site will contribute to the migration of animal species but the lack of suitable habitat in the surrounding areas may further contribute to loss of animal life.</p>
<p>Surface water</p>	
<p>The bulk (65%) of water resources available in Mpumalanga comes from surface water resources, water transfers into the province provide 19% of total water availability, groundwater contributes 6% of available water and return flows from mining, industrial, irrigation and urban sectors contribute 10%. Water use in South Africa is dominated by irrigation and Mpumalanga province is no exception with 46% of its water being used for irrigation. The second largest requirement for water is for water transfers to neighbouring catchments and Water Management Areas(WMAs) which accounts for 16% of water use in the province, while water use in the urban sector is slightly less (8%) and requirements for the industrial, forestry and mining sectors each account for 9% of the provinces water use (Mpumalanga SoE, 2003).</p> <p>Water quality indicators have shown a general decrease in water quality over time. Median levels of surface water nutrients have increased and indicate a potential for enrichment. The consequences of these elevated levels are:</p> <ul style="list-style-type: none"> <li>• A greater potential for algal blooms;</li> <li>• An impact on riverine ecosystems; and</li> <li>• Impairment of human health.</li> </ul> <p>High (and increasing) total dissolved solids (TDS) levels in the Olifants Water Management Area (WMA) have the potential for decreasing the aesthetic value of the water. Exceedance of the guideline levels for certain metals and sulphates in the Olifants WMA may be attributed to the numerous industrial and mining</p>	<p>The containment of contaminated water in pollution control facilities at proposed mine will lead to a decrease in the MAR available to the affected catchments. These applies to both the Operational and Post Closure Phases for containment and decant management respectively.</p> <p>If contaminated surface water (including decanting acid mine water) is discharged, or allowed to flow, to the receiving environment, the water quality in the receiving environment would further deteriorate. Downstream users and aquatic habitats would be negatively affected by such discharge, and the wetlands in downstream receiving areas would also be negatively impacted.</p>



GENERAL DESCRIPTION OF EXISTING CUMULATIVE IMPACTS	CONTRIBUTION OF MINE TO CUMULATIVE IMPACTS
activities taking place in that area. At the WMA scale, high exceedances above water quality guideline levels exist for pH levels in the province.	
Groundwater	
<p>Groundwater contributes 6% of available water in Mpumalanga (Mpumalanga SoE, 2003).</p> <p>Groundwater is used for irrigation and domestic consumption in the surrounding agricultural region.</p> <p>Groundwater levels are drawn down at all operational mines in the region, leading to an overall impact on groundwater levels but have also lead to a complicated flow of groundwater between mines.</p>	<p>The extent and quality of pollution plumes emanating from mining areas will affect the overall groundwater quality in the area. This could impact on the water users in the area.</p> <p>Development of draw down cones during the Operational Phase will occur due to the dewatering of mining operations. This will affect the regional groundwater level during the Operational Phase, but once dewatering ceased, groundwater levels are expected to recover.</p>
Air quality	
<p>Air quality is an issue of concern in Mpumalanga, as it is in many other parts of South Africa. A wide variety of air pollution exist in Mpumalanga, ranging from veld fires to industrial processes, agriculture, mining activities, power generation, paper and pulp processing, vehicle use and domestic use of fossil fuels (Mpumalanga Province, 2002).</p>	<p>Dust generated by drilling and blasting activities as well as the transport of coal along gravel roads will cause an increase in the fugitive dust in the area.</p> <p>Emission of carbon dioxide in exhaust fumes and smoke is generally of little consequence in isolation, but contributes to the regional air quality problems in Mpumalanga, and also to the larger, global issue of climate change.</p>
Visual aspects	
<p>The area within which the proposed activity is to be undertaken is relatively rural, with associated gravel roads. Dust is generated from mining operations and transportation</p>	<p>The occurrence of the proposed mining activity and the introduction of heavy hauling trucks will contribute to the cumulative effect of dust in the area.</p>
<p>The area within which the proposed activity is to be undertaken is relatively low lit.</p>	<p>The occurrence of the proposed mining activity will contribute to the cumulative lighting effect of the area.</p>
I&APs	
<p>I&amp;APs are generally affected indirectly by direct impacts of mining and related activities on environmental aspects. The location of I&amp;APs in relation to the mining and related activities strongly influences the severity of the impacts.</p>	<p>Impacts on air quality, noise, vibrations, surface water, groundwater and visual impacts will cumulatively impact on I&amp;APs.</p>
Socio-economic	



GENERAL DESCRIPTION OF EXISTING CUMULATIVE IMPACTS	CONTRIBUTION OF MINE TO CUMULATIVE IMPACTS
Mine closure will raise unemployment levels in the region, and would increase significantly as more mines close down.	<p>All positive impacts of the mine on the socio-economy that will have taken place during the Operational Phase will wane during the Decommissioning Phase until they cease, mainly due to the reduction or cessation of jobs and the cessation of demand for goods and services.</p> <p>Rehabilitation of the surface to support 90% of the pre-mining land capability means that future land use of the site will be sustainable over the long-term. Use of the land for agricultural purposes such as crop cultivation or grazing will enable the contribution of future land users to the local and regional socio-economy through food production and agricultural job creation.</p>

### 7.3 Conclusion on impacts identified

In general the expected environmental impacts from the construction, operation, decommissioning and closure and post-closure phase of the proposed Ngululu Coal Mine and associated infrastructure indicates that some of the proposed activities could have a number of irreversible effects on the receiving environment.

However, a detailed environmental risk (impact) assessment for the proposed project will be conducted during the EIA phase with the specialist study's findings and further investigation.

Information obtained during the mentioned phase will be included in the EIR. Refer to Part 8 of this Scoping Report for further information.

### 7.4 Processes to be undertaken to ensure that impacts are mitigated

Mitigation measures need to be identified to ensure that impacts from the proposed activity are reduced as far as possible. The following mitigation measures objectives will be kept in mind while mitigation measures are identified:

- To find more environmentally sound ways of undertaking specific activities;
- To enhance any environmental and social benefits of a proposed activity;
- To avoid, minimise or remedy negative environmental impacts; and
- To ensure that any residual negative environmental impacts are environmentally acceptable.

Identifying appropriate mitigation measures will be conducted in a hierarchal manner:

1. Preventative measures will be identified to avoid, where possible, negative impacts that may arise as a result of the proposed activity;
2. Measures will be identified to minimise and/or reduce the negative impacts to “as low as practicable” levels; and
3. Measures will be identified to compensate or remedy residual negative impacts that are unavoidable and cannot be minimised or reduced any further (Department of Environmental Affairs, 2006).

Proposed mitigation measures will be communicated to the applicant for review as part of draft Environmental Management Plan (EMP). The applicant will comment on the feasibility and practicality of implementing the mitigation measures. The mitigation measures may be adjusted based on the applicant's comments.



## 8. PLAN OF STUDY FOR EIA

In accordance with of Regulation 28 (of Regulation 543) of the EIA Regulations (2010), under the NEMA, 1998, the knowledge gaps identified and a description of the tasks that will be undertaken as part of the EIA process, including any specialist reports or specialised processes (including the manner in which such tasks will be undertaken), are discussed in this part of the Scoping Report.

### 8.1 Tasks to be undertaken as part of the EIA process

The Environmental Impact Assessment process will be conducted subsequent to the Scoping process and will be undertaken in accordance with the Regulation 31 of the EIA Regulations of 18 June 2010. The Environmental Impact Report (EIR) for the proposed project will include detailed information relating to the potential or anticipated impacts that may arise as a result of the proposed activity.

The EIR and draft EMP in accordance with NEMA (1998) and as per the EIA Regulations R.543 of 18 June 2010, will include, but is not limited, to the following:

- Details of the Environmental Assessment Practitioner (EAP);
- Expertise of the EAP to carry out an EIA;
- A detailed description of the proposed activity;
- A description of the property on which the activity is to be undertaken and the location of the activity on the property;
- A description of the environment that may be affected by the activity and the manner in which the physical, biological, social, economic and cultural aspects of the environment may be affected by the proposed activity;
- Details of the public participation process followed;
- A description of the need and desirability of the proposed activity;
- A description of the identified alternatives to the proposed activity, including advantages and disadvantages that the proposed activity may have on the environment and the community that may be affected by the activity;
- An indication of the methodology used in determining the significance of potential environmental impacts;
- A description and comparative assessment of all alternatives identified during the environmental impact assessment process;
- A summary of the findings and recommendations of any specialist report or report on a specialised process (no specific requests have been received from the competent authorities to date);
- A description of all environmental issues that were identified during the environmental impact assessment process, an assessment of the significance of each issue and an indication of the extent to which the issue could be addressed by the adoption of mitigation measures;



- An assessment of each identified potentially significant impact, including cumulative impacts, the nature of the impact, the extent and duration of the impact, the probability of the impact occurring, the degree to which the impact can be reversed, the degree to which the impact may cause irreplaceable loss of resources, and the degree to which the impact can be mitigated;
- A description of any assumptions, uncertainties and gaps in knowledge;
- A reasoned opinion as to whether the activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation;
- An environmental impact statement;
- A draft environmental management programme containing the aspects contemplated in regulation, including, but not limited to, environmental management objectives and goals, mitigation measures and management of significant impacts, a description of persons responsible for mitigation implementation, description of time periods applicable to mitigation implementation, and monitoring and performance assessment;
- Inclusion of technical and supporting information;
- Copies of any specialist reports and reports on specialised processes complying with regulation;
- Any specific information that may be required by the competent authority; and
- Any other matters required in terms of sections 24(4)(a) and (b) of the Act.

Compilation of the EIR and draft EMP will be conducted according to the EIA Regulations of 18 June 2010 (R.543) as per NEMA, 1998, and will include, but is not limited to, the following:

- The compilation of the EIR as stipulated in Regulation 31 of R.543 (18 June 2010), as per NEMA, 1998;
- The draft EIR and EMP will be submitted to the applicant for input prior to its submission for public and competent authority comment;
- Public Participation will be conducted in accordance with the EIA Regulations of 18 June 2010 (R.543). This will include submission of the draft EIR and EMP to the competent authority and the public in order to obtain their comments for a period of 40 days [R543(56)];
- All comments, objections and/or representations received during the Public Participation Process will be included and addressed in the final EIR and this document will be finalised;
- The final EIR and draft EMP will be submitted to the client to obtain their inputs;
- Registered Interested and Affected Parties will be given an opportunity to comment on the final EIR as stipulated in R543 (56)(6). Their comments will be submitted to the competent authority and the EAP or applicant will be copied;
- The final EIR and draft EMP will be submitted to the competent authority for consideration. The competent authority will have 14 days to acknowledge receipt of the Final EIR. Thereafter, the competent authority has 60 days to consider the report and in writing accept the report, reject the report, or ask for additional information or amendments to the document [R.543(34)(2)].



Once the report has been accepted, the competent authority has 45 days to grant or refuse authorisation [R.543(35)(1)];

- Continued consultation with the relevant authority until issuing of the decision.

## 8.2 Stages at which the competent authority will be consulted

The stages, at which the competent authority will be consulted in the process of compiling the EIR and draft EMP as per the EIA Regulations R.543 (2010), will include amongst other, the following:

- During the Public Participation Process in accordance to EIA Regulations R.543 (2010), the draft EIR will be submitted to the competent authority for a period of 40 days (unless agreed otherwise) to obtain their comments [R543 (56)];
- The final EIR will be submitted to the competent authority. They will have 60 days, after acknowledging receipt of the final EIR, to consider the report and in writing accept the report, reject the report or request additional information or amendments to the document [Regulation 543(34)(2)]; and
- Continued consultation with the competent authority until the decision is issued.

## 8.3 Methodology of assessing the environmental impacts

It is required by Regulation 28 (g) of R.543 of the EIA Regulations, 2010, that major potential impacts on the surrounding environment, as a result of the proposed activity, are identified during the Scoping Phase

Regulation 31 of R.543 of the EIA Regulations (2010), under the NEMA (1998), requires that an EIR includes an assessment of the status, extent, duration, probability, reversibility, replaceability of resources and mitigatory potential of the major potential environmental impacts of the proposed activity.

A baseline identification of the major potential impacts has therefore only been included in this Scoping Report. The prediction of the nature of each impact, the evaluation of each impact by rating its significance and the management and mitigation measures adopted to address each impact, will be assessed during the EIR.

Impact assessments should be conducted based on a methodology that includes the following:

- Clear processes for impact identification, predication and evaluation;
- Specification of the impact identification techniques;
- Criteria to evaluate the significance of impacts;
- Design of mitigation measures to lessen impacts;
- Definition of the different types of impacts (indirect, direct or cumulative); and
- Specification of uncertainties.



In broad terms, the impact assessment for this project will include the following:

- All potential impacts of the proposed activity will be identified and assessed;
- The nature, extent, magnitude and duration of all potentially significant impacts will be predicted;
- A range of mitigation measures that could diminish the impacts will be identified; and
- The significant of residual impacts that remain, after the proposed mitigation measures are implemented, will be evaluated.

The construction, operational and decommissioning phases of the project will be considered whilst identifying impacts. A detailed understanding of the proposed activity will be obtained to ensure that all the potential impacts are identified. The following process will be followed to identify and assess the potential impacts of the proposed activity:

- The current environmental conditions will be determined in detail. This will act as a baseline against which impacts can be identified and measured;
- The changes that will occur in future, should the proposed activity not occur, will be identified;
- A detailed understanding of the activity will be obtained in order to fully understand its consequences; and
- The significant impacts that will occur as a result of the proposed activity will be identified (should the activity be authorised).

After all impacts have been identified, the nature of each impact can be predicted. The impact prediction will take into account physical, biological, socio-economic and cultural information and will then estimate the likely parameters and characteristics of the impacts. The impact prediction will aim to provide a basis from which the significance of each impact can be determined and appropriate mitigation measures can be developed.

The risk assessment methodology is based on defining and understanding the three basic components of the risk, i.e. the source of the risk, the pathway and the target that experiences the risk (receptor). Refer to Figure 26 below for a model representing the above principle (as contained in the DWA's Best Practice Guideline: G4 – *Impact Prediction*).

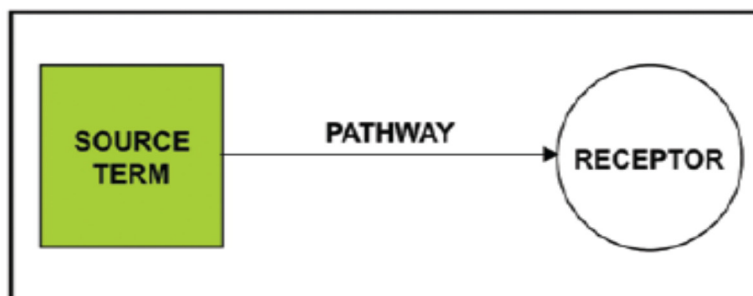


Figure 26: DWA's model for impact prediction (risk assessments)



Tables 37 and 38 below indicate the methodology to be used in order to assess the Probability and Magnitude of the impact, respectively, and Table 39 provides the Risk Matrix that will be used to plot the Probability against the Magnitude in order to determine the Severity of the impact.

**Table 37: Determination of Probability of impact**

Frequency of Aspect / Unwanted Event	Score	Availability of pathway from the source to the receptor	Score	Availability of receptor	Score
Never known to have happened, but may happen	1	A pathway to allow for the impact to occur is never available	1	The receptor is never available	1
Known to happen in industry	2	A pathway to allow for the impact to occur is almost never available	2	The receptor is almost never available	2
< once a year	3	A pathway to allow for the impact to occur is sometimes available	3	The receptor is sometimes available	3
Once per year to up to once per month	4	A pathway to allow for the impact to occur is almost always available	4	The receptor is almost always available	4
Once a month - Continuous	5	A pathway to allow for the impact to occur is always available	5	The receptor is always available	5

**Step 1:** Determine the **PROBABILITY** of the impact by calculating the average between the Frequency of the Aspect, the Availability of a pathway to the receptor and the availability of the receptor.



**Table 38: Determination of Magnitude of impact**

Source								Receptor			
Duration of impact	Score	Extent	Score	Volume / Quantity / Intensity	Score	Toxicity / Destruction Effect	Score	Reversibility	Score	Sensitivity of environmental component	Score
Lasting days to a month	1	Effect limited to the site. (metres);	1	Very small quantities / volumes / intensity (e.g. < 50L or < 1Ha)	1	Non toxic (e.g. water) / Very low potential to create damage or destruction to the environment	1	Bio-physical and/or social functions and/or processes will remain unaltered.	1	Current environmental component(s) are largely disturbed from the natural state. Receptor of low significance / sensitivity	1
Lasting 1 month to 1 year	2	Effect limited to the activity and its immediate surroundings. (tens of metres)	2	Small quantities / volumes / intensity (e.g. 50L to 210L or 1Ha to 5Ha)	2	Slightly toxic / Harmful (e.g. diluted brine) / Low potential to create damage or destruction to the environment	2	Bio-physical and/or social functions and/or processes might be negligibly altered or enhanced / Still reversible	2	Current environmental component(s) are moderately disturbed from the natural state. No environmentally sensitive components.	2
Lasting 1 – 5 years	3	Impacts on extended area beyond site boundary (hundreds of metres)	3	Moderate quantities / volumes / intensity (e.g. > 210 L < 5000L or 5 – 8Ha)	3	Moderately toxic (e.g. slimes) Potential to create damage or destruction to the environment	3	Bio-physical and/or social functions and/or processes might be notably altered or enhanced / Partially reversible	3	Current environmental component(s) are a mix of disturbed and undisturbed areas. Area with some environmental sensitivity (scarce / valuable environment etc.).	3



Source								Receptor			
Duration of impact	Score	Extent	Score	Volume / Quantity / Intensity	Score	Toxicity / Destruction Effect	Score	Reversibility	Score	Sensitivity of environmental component	Score
Lasting 5 years to Life of Organisation	4	Impact on local scale / adjacent sites (km's)	4	Very large quantities / volumes / intensity (e.g. 5000 L – 10 000L or 8Ha– 12Ha)	4	Toxic (e.g. diesel & Sodium Hydroxide)	4	Bio-physical and/or social functions and/or processes might be considerably altered or enhanced / potentially irreversible	4	Current environmental component(s) are in a natural state. Environmentally sensitive environment / receptor (endangered species / habitats etc.).	4
Beyond life of Organization / Permanent impacts	5	Extends widely (nationally or globally)	5	Very large quantities / volumes / intensity (e.g. > 10 000 L or > 12Ha)	5	Highly toxic (e.g. arsenic or TCE)	5	Bio-physical and/or social functions and/or processes might be severely/substantially altered or enhanced / Irreversible	5	Current environmental component(s) are in a pristine natural state. Highly Sensitive area (endangered species, wetlands, protected habitats etc.)	5

*Step 2: Determine the **MAGNITUDE** of the impact by calculating the average of the factors above.*



**Table 39: Determination of Severity of impact**

Environmental Impact Rating / Priority					
	Magnitude				
Probability	1 Minor	2 Low	3 Medium	4 High	5 Major
5 Almost Certain	Low	Medium	High	High	High
4 Likely	Low	Medium	High	High	High
3 Possible	Low	Medium	Medium	High	High
2 Unlikely	Low	Low	Medium	Medium	High
1 Rare	Low	Low	Low	Medium	Medium

Step 3: Determine the SEVERITY of the impact by plotting the averages that were obtained above for Probability and Magnitude in the table below.

## 8.4 Public Participation during the EIA process

The compilation of the EIR and draft EMP as per R.543 will include, but is not limited to, the following public participation:

- The Public Participation Process will be conducted in accordance with the EIA Regulations R.543 (2010). This will include submitting the draft EIR to the competent authority and public for a review period of 40 days [Regulation 543(56)];
- All comments, objections and/or representations received during the Public Participation Process will be included and addressed in the final EIR and this document will be finalised; and
- Registered Interested and Affected Parties (I&APs) will be given an opportunity to comment on the EIR as stipulated in R.543 (56) (6). Their comments will be submitted to the competent authority and the EAP or applicant will be copied.

## 8.5 Alternatives

Alternatives have and will continue to be investigated and the “No-Go Option” will be included in the assessment. The EIA document will further discuss the alternatives identified and investigated for the proposed project as well as the advantages and disadvantages of the identified alternatives.

The alternatives identified were in terms of operational aspect of the activity (process plant option and transport option), design and layout of the activity, types of activity to be undertaken and land use alternatives.

- Land use alternatives looked at opencast mining versus grazing vs crop production versus no-go option.
- Operational aspects of activity looked at process plant option versus transport option



- Types of activity to be taken alternatives looked at opencast mining versus underground versus combined opencast and underground mining.
- Design layout alternatives looked at mining the whole coal reserve area versus exclusion of the pan and wetland with 100m buffer versus exclusion of the pan and wetland with 50m buffer versus excluding the pan and the wetland and their respective catchment areas.

## 8.6 Knowledge gaps and specialist studies

The following specialist studies have been conducted for the proposed Ngululu Resources open cast coal mine:

- Agricultural Impact Assessment (Soil, agriculture and land use)
- Air Quality Impact Assessment
- Faunal Assessment Report
- Vegetation Assessment Report
- Geo-hydrological Investigation
- Heritage Impact Assessment
- Hydrological Assessment
- Noise Survey
- Palaeontological Impact Assessment
- Social Impact Assessment
- Storm water Management Plan
- Visual Impact Assessment
- Wetland and Riparian Functional Assessment

The following knowledge gaps and uncertainties have been identified during the scoping process and require further investigations that will be carried out comprehensively as part of the EIA process for the proposed project:

- All aspects of the environment will be fully quantified as part of the EIA Phase.
- Specialist Studies to be conducted:
  - Blasting and Vibration Study;
  - Traffic Impact Assessment and
  - Economic Assessment.
- Detailed project information and final pit and infrastructure layout will be presented as part of the final EIR.





## 9. CONCLUSION

This scoping process has been carried out in accordance with the NEMA, 1998, and the Regulations there under.

Potential impacts that the proposed Ngululu Coal Mine will have on the environment have been identified. However, the significance of the impacts and mitigation measures to reduce (if not prevent) impacts during the construction, operation, decommissioning and closure as well as the post closure phase will be assessed during the EIA phase and included in the EIR.

I&APs have been identified and will be further notified of the availability of the Scoping Report, in order to review the document.

Based on the above-mentioned information and the identification of the potential environmental impacts as a result of the proposed Ngululu Resources proposed coal mine project, it is concluded that a full Environmental Impact Assessment may commence.

