



AQUILA STEEL (S AFRICA) (PTY) LTD

Section 24 G Technical Report

**Locality: The farm Donkerpoort 448KQ Remaining
Extent and the farm Randstephne 455KQ,
Thabazimbi; Limpopo**

Departmental Ref No: 12/1/9-6/S24G/15-W1

MARCH 2014

SHANGONI
Management Services (Pty) Ltd



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PROJECT DETAILS

Department of Limpopo Economic Development, Environment and Tourism

Reference No.: 12/1/9-6/S24G/15-W1

Project Title: Information in support of an application for rectification of unlawful construction of gravel roads on the farm Donkerpoort 448KQ Remaining Extent and the farm Randstephne 455KQ, Thabazimbi Local Municipality, Waterberg District Municipality, Limpopo

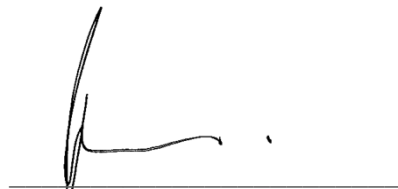
Project Number: AQU-TH-13-09-05

Compiled by: Khosi Mohlahlo

Date: March 2014

Location: The farm Donkerpoort 448KQ remaining Extent and the farm Randstephne 455KQ, Thabazimbi Local Municipality, Waterberg District Municipality, Limpopo

Technical Reviewer: Brian Hayes



RB Hayes (Pr.Eng)



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DEFINITIONS

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 organisation'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 organisation'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.

Pollution Prevention

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



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 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 characterising 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.



ABBREVIATIONS

BID	–	Background Information Document
BAR	–	Basic Assessment Report
CRR	–	Comments Response Report
DWA	–	Department of Water Affairs
EAP	–	Environmental Assessment Practitioner
ECA	–	Environmental Conservation Act of 1989
EIA	–	Environmental Impact Assessment
EIR	–	Environmental Impact Report
EMP	–	Environmental Management Programme
GN	–	Government Notice
I&AP	–	Interested and Affected Party
NEMA	–	National Environmental Management Act, Act 107 of 1998 as amended
R	–	Regulation
S&EIR	–	Scoping and Environmental Impact Reporting
S24G	–	Section 24 G
TLM		Thabazimbi Local Municipality
WDM		Waterberg District Municipality
LEDET		Limpopo Department of Economic Development, Environmental Affairs and Tourism



EXECUTIVE SUMMARY

The Applicant

Aquila Steel (S Africa) (Pty) Limited ("Aquila") holds the prospecting rights to the Meletse iron ore deposit located near the town of Thabazimbi in the Limpopo Province of South Africa. Aquila obtained separate prospecting rights for the properties Randstephne 455KQ on 18 July 2007 (as part of what is known as the Klipgat Prospecting Right) and Donkerpoort 448KQ remaining extent on 22 October 2008 (known as the Donkerpoort Prospecting Right) in Limpopo South Africa. The surface rights of the farm Donkerpoort 448KQ remaining Extent and the farm Randstephne 455KQ belong to Aquila Steel Thabazimbi (S Africa) Pty Ltd. Since commencing in late 2007, Aquila's prospecting has led to the discovery of the Meletse Iron Ore Deposit ("Meletse Deposit") on the Donkerpoort and Klipgat Prospecting rights.

Background description

The purpose of this document is to supply the Limpopo Department of Economic Development, Environmental Affairs and Tourism (LEDET) with the requested information pertaining to the National Environmental Management Act No. 107 of 1998 (NEMA) Section 24G application (project reference: [12/1/9-6/S24G/15-W1](#)). This section 24g application is for rectification of unlawful development or continuation of a listed activity in terms of section 24g of the National Environmental Management Act (Act 107 of 1998) in respect of the construction of gravel roads towards the Meletse beacon located at the top of the mountain known as Meletse located on the farms Donkerpoort 448KQ remaining Extent and the farm of Randstephne 455KQ within Thabazimbi local municipal area of the Waterberg District.

Location

The unlawful activities are situated on the farms Donkerpoort 448KQ remaining Extent and Randstephne 455KQ (hereinafter referred to as the "contravened site"), located some 30km east of the town of Thabazimbi. The contravened site falls within the magisterial area of the Thabazimbi Local Municipality (TLM), a part of the Waterberg District Municipality (WDM), Limpopo Province; and approximately 10km south of the Marakele National Park.

Activity description

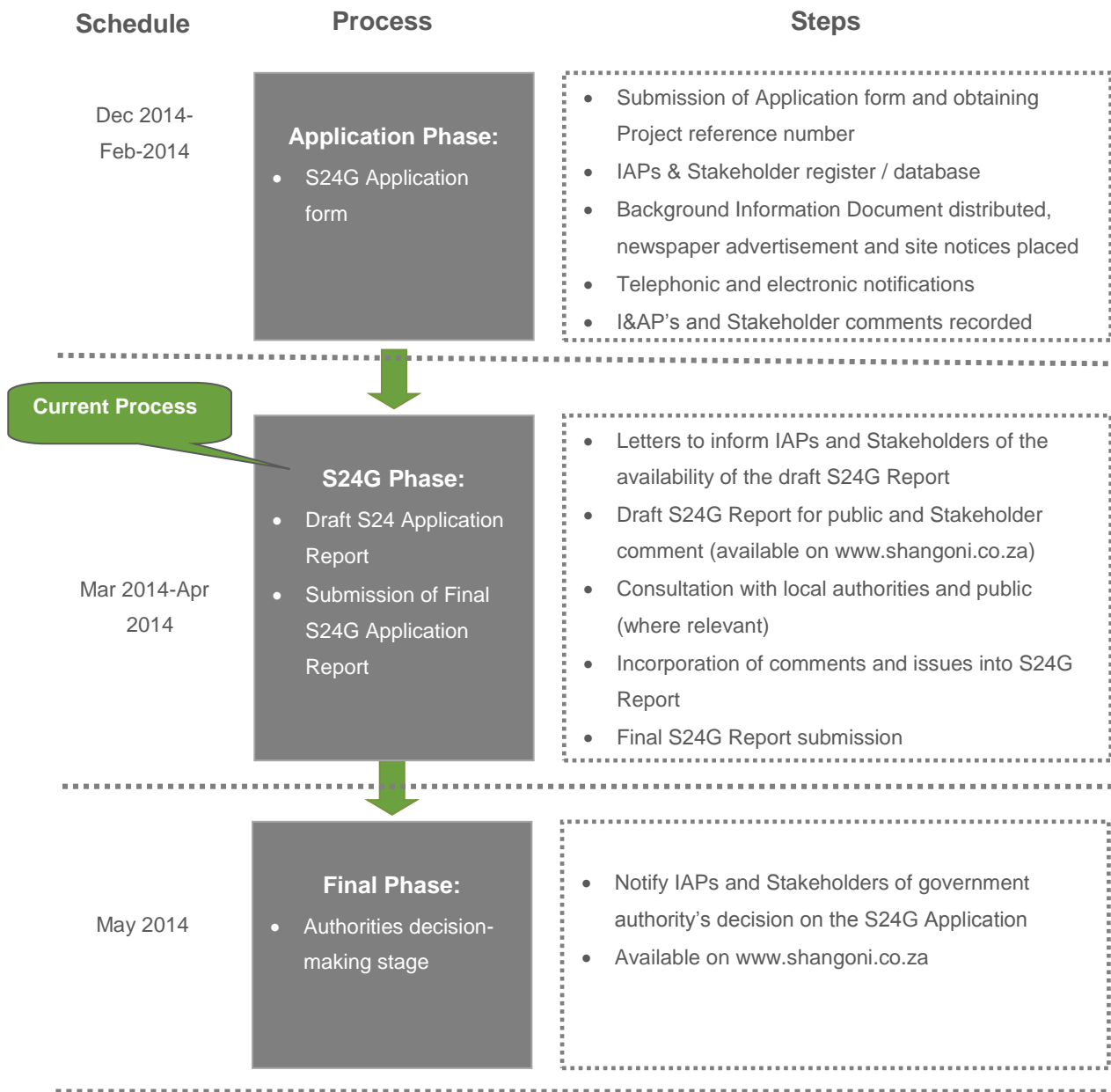
Aquila's prospecting activities have led to the discovery of the Meletse Iron Ore Deposit on the farm Donkerpoort 448KQ remaining Extent and the farm Randstephne 455KQ with a current measured, indicated and inferred resource of 80.8Mt at 61.1%Fe. This high grade iron ore deposit is very low in contaminants and outcrops at surface. From September 2007 to June 2011, Aquila Steel constructed gravel roads on the farm Donkerpoort 448KQ remaining Extent and the farm Randstephne 455KQ. The roads were required for access to prospecting activities that were conducted by the exploration team and for use as access in the event of fires on the mountain, which then acted as fire breaks.



The EIA regulations have identified activities that may result in substantial impacts to the environment. The regulations require that an environmental impact assessment process be undertaken for these activities and the results of this process be submitted to the relevant authority for consideration. Commencement of any of the listed activities prior to obtaining authorisation from the relevant authority is prohibited by these regulations and constitutes an offence. Aquila was not aware that they should have complied with other environmental legislative requirements as an authorisation from the Department of Mineral Resources had already been obtained. Due to this oversight, Aquila commenced with the construction of the gravel roads without acquiring environmental authorisation.

Legal requirements and legislative process

The diagram below provides a visual representation of the approach followed.



Identified impacts and way forward

The activities associated with the project are described in full in Part 2 and the anticipated and / or actual impacts of the project are described in Part 4.

In this report, only the impacts related to the activities applied for in this application will be dealt with.

These impacts are summarised as follow:

- Disturbance of fauna and flora species;
- Disturbance of Sensitive landscapes;
- Visual impacts of gravel roads;
- Soils erosion;
- Siltation of watercourses;
- Hydrocarbon spillages;
- Dust generation;
- Emissions from contractor's vehicles and machinery;
- Noise generation and;
- Establishment of invader plants.



1. INTRODUCTION

This document forms part of an application for rectification (Section 24G) for the unlawful construction of gravel roads on the farm Donkerpoort 448KQ remaining Extent and the farm Randstephne 455KQ, Limpopo. The application process is undertaken on behalf of the applicant, Aquila Steel (S Africa) (Pty) Ltd. Shangoni was appointed, as independent environmental practitioner, to prepare this Section 24G Application and facilitate the application process.

This report is divided into the following parts:

- Part 1: Introduction
- Part 2: Nature and extent of the activity
- Part 3: Nature and extent of the environment affected by activity
- Part 4: Environmental framework
- Part 5: Applicable legislation and guidelines.
- Part 6: Public Participation Process.
- Part 7: Conclusion

1.1 Details of the project applicant

Applicant	Aquila Steel (S Africa) (Proprietary) Limited
Postal Address	PostNet Suite 317 Private Bag X 75 Bryanston 2021
Responsible Person	Mr. Michael Halliday
Telephone Number	011 463 1340
Facsimile Number	011 514 0441
Cell Phone Number	27 82 655 3401
E-Mail Address	MHalliday@aquilaresources.com.au
Company Registration No.	2005/021254/07

1.2 Appointed Environmental Assessment Practitioner

Name of firm	Shangoni Management Services
Postal address	PO Box 74726 Lynnwood Ridge 0040



Telephone No.	27 (0)12 807 7036	
Fax	27 (0)12 807 1014	
E-mail	khosi@shangoni.co.za	
Team of Environmental Assessment Practitioners on project		
Name	Qualifications	Responsibility
Khosi Mohlahlo	BSc Hons Environmental Management	Report compilation
Leeanne Fellows	B-Tech Nature Conservation	Project manager
Jan Nel	MSc Environmental Management	Technical reviewer
Brian Hayes	B Eng (Chemical), MSc Environmental Engineering,	Quality reviewer

* Detailed CV's for the project team are attached (Appendix A).

Project Team Profiles

Brian Hayes – Quality Reviewer

Brian is a registered professional engineer (Chemical) with a master degree in Environmental Engineering from the University of Nottingham. Brian has 20 years' experience in environmental management and environmental engineering.

Jan Nel – Technical Reviewer

Jan has been actively involved or the past 16 years in environmental management within the mining industry, providing assistance with EMP Compliance, Environmental Impact Assessments (EIA). Financial Provision Calculations, Closure Plans, Rehabilitation Plans, Environmental Management Programme Reports (EMP) and EMP Performance Assessments. He is further experienced in environmental management through third party certification audits as well as Environmental Management System (EMS) implementation and has in excess of 8000 audit hours to date. Jan is also the vice chairman of TC 207 in South Africa.

Lee-Anne Fellows – Project manager

Lee-Anne has a B-tech degree in Nature Conservation at the Tshwane University of Technology and holds a National Diploma in Nature Conservation. She gained valuable experience in the conservation and the environmental field through her employment at Gauteng's Department of Agriculture, Conservation and Environment. Her areas of expertise include flora monitoring, bio-diversity and conservation plans, Environmental Impact Assessments (EIA), identification of alien invasive species and eradication programmes. Leeanne has 7 years' experience at Shangoni Management Services as project lead to EIA's and EMP.



Khosi Mohlahlo - Environmental Practitioner

Khosi obtained her B.Sc. Hons in Environmental Management from UNISA in 2013. She is currently involved in EIA and EMP development for new mining and prospecting rights, as well as supporting EMP performance assessments.

1.3 Unlawful activity and motivation

Gravel roads were constructed on the farm Donkerpoort 448KQ remaining extent and the farm Randstephne 455KQ from September 2007 to June 2011. The gravel roads were required for access to exploration activities which were conducted by Aquila's Thabazimbi prospecting team as part of the Meletse Iron Ore Project and for use as access to the mountain during fires and acting as a fire break. The gravel roads were constructed as per the requirements in the Mine Health and Safety Act 29 of 1996, on a 1:8 slope with the uphill turns on a 1:9 slope in order to ensure safe handling of equipment on the roads. Prior to establishment of the gravel road, a 4.85 km old farm road existed on the farm Donkerpoort. Aquila upgraded this road by constructing proper drainage channels and safety barriers.

The gravel roads were constructed without obtaining the necessary environmental authorisation in terms of Section 24(2), 24(5), 24D and 44 of the National Environmental Management Act, 1998, (Act No. 107 of 1998). Aquila was not aware that they should have complied with other environmental legislative requirements as the applicant had already obtained authorisation from the Department of Mineral Resources. Aquila further obtained authorisation from the landowner at the time to construct the gravel road. Subsequently, Aquila purchased the property. In addition, a rehabilitation fund had been secured with the Department of Mineral Resources to rehabilitate the gravel roads.

A 24G application was made and submitted to the Department once it was raised with Aquila that environmental authorisation should have been obtained prior to commencement. Aquila will and have used some of the gravel roads as a way to access the mountain and the Meletse deposit and to maintain the boundary fences.

The site locality map is given below as Figure 1 and is attached in Appendix B1 while Figure 2 illustrates the gravel on the contravened site.



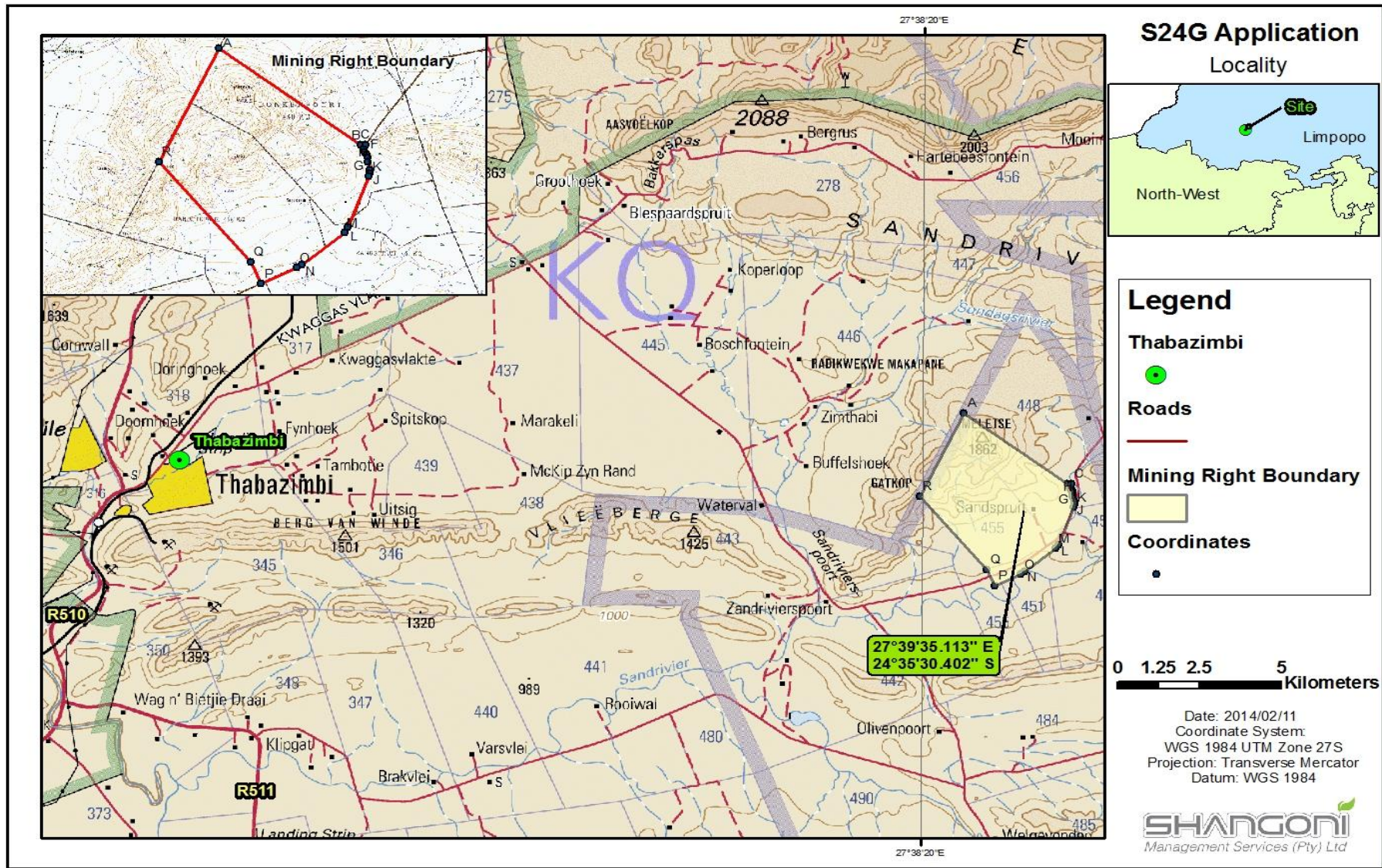


Figure 1: Map illustrating the locality of the contravened site.

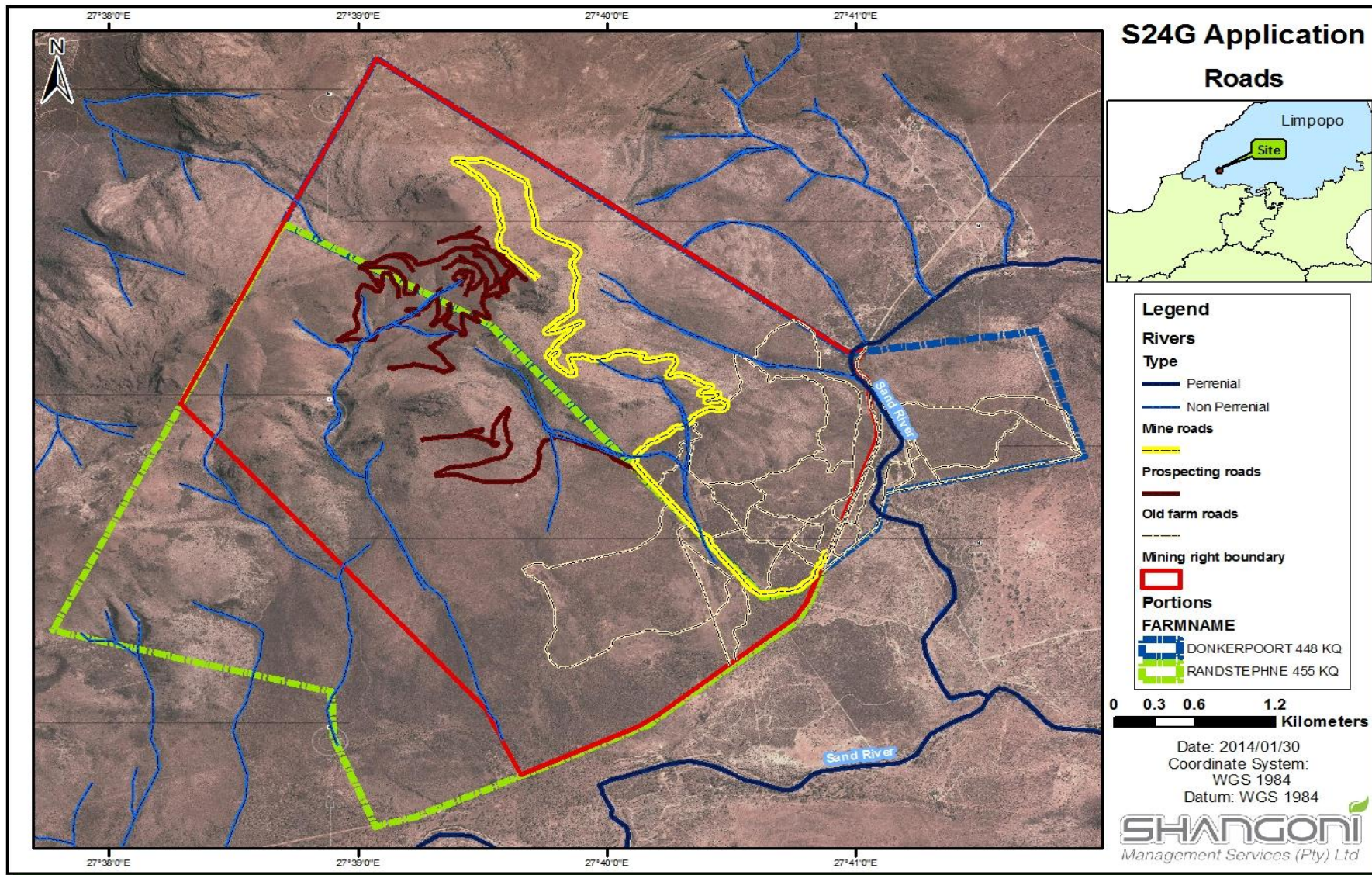


Figure 2: Map illustrating the gravel roads on the contravened site .

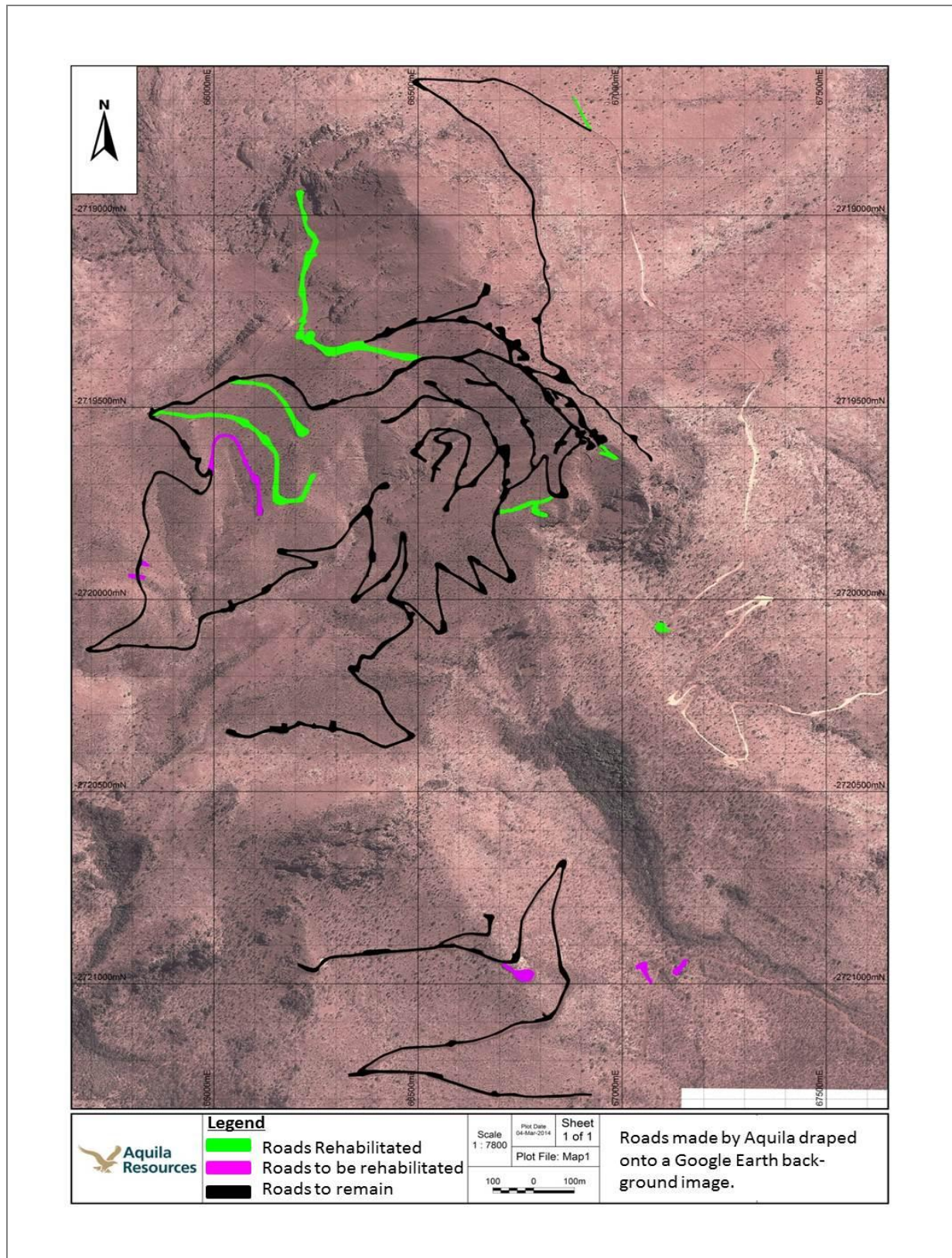


Figure 3: Map of roads that Aquila rehabilitated, plans to rehabilitate, and plans to utilise for the Mining activities



In accordance with Section 24(G) read together with sections 24(F) and 12(3) of the National Environmental Management Amendment Act, 2008 (Act No. 62 of 1998) the applicant is required to carry out a rectification process for unlawfully commencing with the activities listed in Table 1 below.

Table 1: Unlawful activities undertaken

Number and date of the relevant notice	Activity as per Regulation	Description of activity undertaken
R. 544, 18 June 2010	22	<p><u>Project description:</u> The construction of new access and haul roads where no reserve exists and the road is wider than 8 meters.</p> <p><u>Listed Activity:</u> The construction of a road, outside urban areas, with a reserve wider than 13,5 meters or, where no reserve exists where the road is wider than 8 meters,</p>
R. 544, 18 June 2010	47	<p><u>Project description:</u> The widening and lengthening of existing roads where no reserve exists and is wider than 8 meters.</p> <p><u>Listed Activity:</u> The widening of a road by more than 6 meters, or the lengthening of a road by more than 1 kilometre – with a reserve wider than 13,5 meters or, where no reserve exists where the road is wider than 8 meters,</p>
R.546, 18 June 2010	4	<p><u>Project description:</u> The construction of access and haul roads where no reserve exists and the road is wider than 8 meters.</p> <p><u>Listed Activity:</u> The construction of a road wider than 4 metres with a reserve less than 13,5 metres. (gg) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve;</p>



1.3.1 Site locality

The unlawful construction of gravel road took part towards the Meletse beacon at the top of the Meletse Mountain on the farms Donkerpoort 448KQ remaining extent and Randstephne 455KQ located within the Thabazimbi local municipal area of Waterberg district, in the Limpopo province. Refer to Table 2 below for the property sizes and title deeds. Table 3 below gives information on water management boundaries while Table 4 gives a list of towns closest to the contravened site.

Table 2: Landholdings upon which the project will be implemented.

FARM NO.	EXTENT	TITLE DEED
The Farm Donkerpoort No. 448 KQ remaining extent	837.6995ha	T28163/1986
The Farm Randstephne No. 455 KQ	1301.3585ha	T14383/2011
TOTAL	2139.058ha	

Table 3: Administrative and water management boundaries

Province	Limpopo
District Municipality	Waterberg District Municipality
Local Municipality	Thabazimbi Local Municipality
Department of Mineral Resources (DMR) Local Office	Limpopo Region
Department of Water Affairs (DWA) Local Office	Limpopo Region
Department of Economic Development, Environmental Affairs and Tourism	Limpopo Region
Catchment Zone	Limpopo River Catchment area
Water Management Area	A24H quaternary catchment area.

Table 4: Direction & distance to the nearest town(s)

Direction	Distance from site	Closest town
±27	South west	Thabazimbi
±76	North east	Modimolle
±70	North east	Bela-Bela

1.3.2 Land tenure and use of immediately adjacent land

Immediate adjacent land is utilised for agricultural activities. Agricultural activities in the area can be divided into three broad categories, namely irrigation farming, dry land crop production and cattle and game farming. Crops produced in the area include wheat, soya, maize, cotton, sunflower, sorghum, red pepper and a variety of fruit and vegetables. Livestock include cattle, goats, pigs and game.

The surface owners of the farm portions immediately adjacent to the contravened site are listed in Table 5 below and the neighbouring farms are illustrated in Figure 4. Refer also to Part 6 for more detail regarding the Public Participation Process.



Table 5: Surface rights holders of properties adjacent to the contravened site

Portion	Farm name	Owner
5	Rookpoort 450	MJ Raath
4	Buffelshoek 446	E.B Nieuwoudt
16	Buffelshoek 446	E.B Nieuwoudt
17	Buffelshoek 446	E.B Nieuwoudt
18	Buffelshoek 446	E.B Nieuwoudt
19	Buffelshoek 446	E.B Nieuwoudt
21	Buffelshoek 446	E.B Nieuwoudt
22	Buffelshoek 446	E.B Nieuwoudt
23	Buffelshoek 446	E.B Nieuwoudt
28	Buffelshoek 446	E.B Nieuwoudt
0	Rebelsig	E B Shelf Inv No 166 Pty Ltd
5	Zandriverspoort 442	Chris van Rooyen
6	Zandriverspoort 442	Dr A Martin
6	Rookpoort 450	MJ Raath
10	Donkerpoort 448	Jan Coetzer
3	Buffelshoek 446	Alwyn Hefer Trust
15	Buffelshoek 446	Calshelf Inv 173 Pty Ltd
2	Buffelshoek 446	E.B Nieuwoudt
20	Buffelshoek 446	Calshelf Inv 173 Pty Ltd
0	Donkerpoort 448	Aquila Steel
2	Meletse 697	Louis van der Walt
11	Meletse 697	Louis van der Walt
1	Meletse 699	Jonker Family Trust
3	Donkerpoort 448	Dr Andre van Coller
	Buffelskloof 452	Staat verdrag
10	Waterval 443	Mr Piet Venter



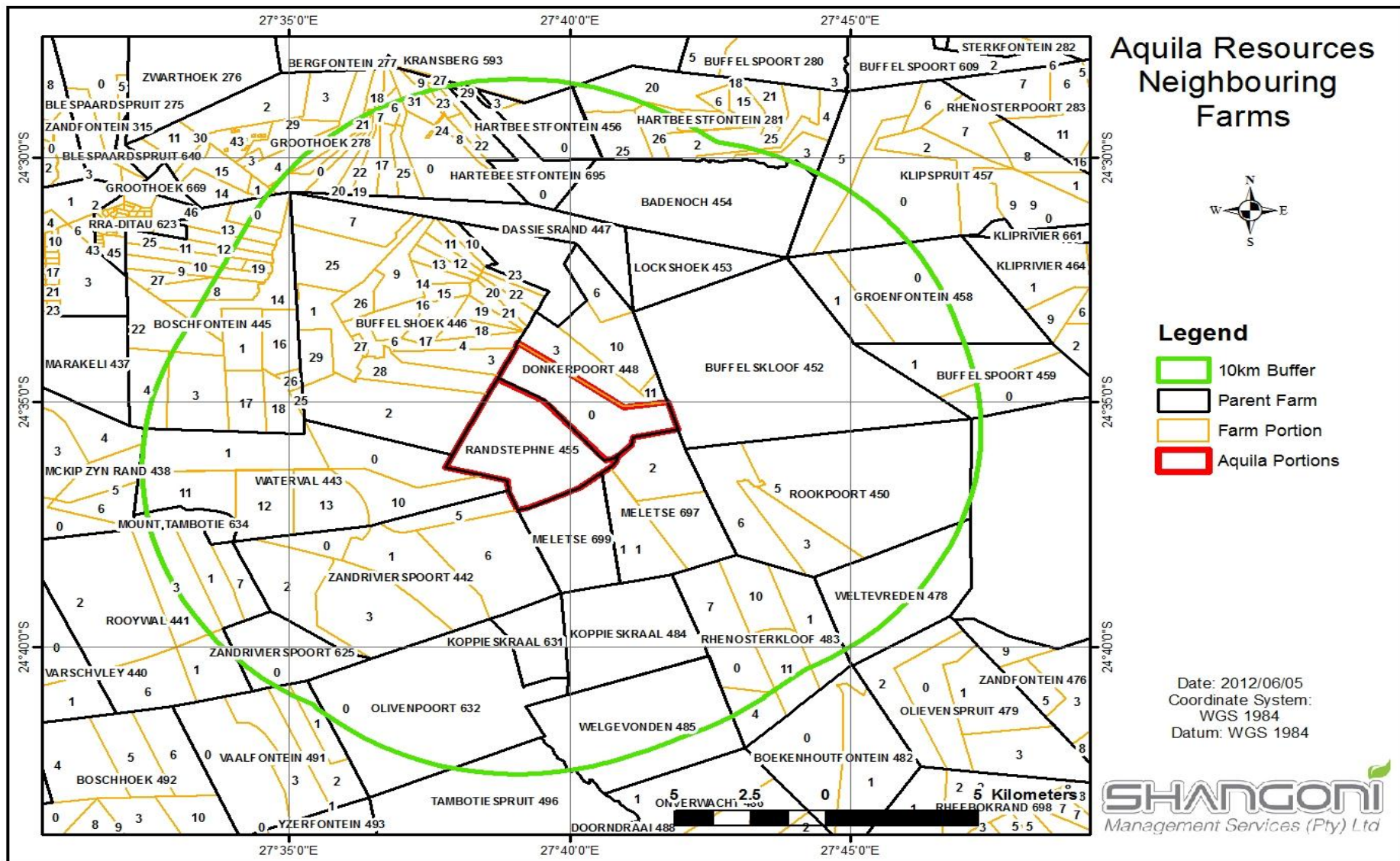


Figure 4: Map indicating the farm portions directly adjacent to the contravened site

2. NATURE AND EXTENT OF THE ACTIVITY

2.1 Process description

Gravel roads were constructed on the farm Donkerpoort 448KQ remaining extent and the farm Randstephne 455KQ from September 2007 to June 2011. These roads are utilised mostly for access to prospecting activities conducted by Aquila's prospecting team. Refer to Photo 1 and 2 for aerial photographs illustrating the gravel roads on the contravened site.



Photo 1: Aerial photograph illustrating the gravel roads on the contravened site





Photo 2: Aerial photograph illustrating the gravel roads on the contravened site

2.2 Water use activities

Some of the gravel roads cross various natural drainage lines within the valley. This activity is listed under Section 21 (c) impeding or diverting the flow of water in a watercourse and (i) altering the bed, banks, course or characteristics of a watercourse in terms of the National Water Act (Act No 36 of 1998) and requires a water use license, which Aquila is not in possession of.

During the construction of the gravel roads, Aquila also embarked on pumping of water from the borehole for utilisation by the drill rigs and for dust suppression. This activity is listed under section 21a in terms of the National Water Act (Act No 36 of 1998). According to the GN 399 General Authorisations, dated March 2004, in terms of Section 39 of the NWA, 1998 (Act 36 of 1998), a person who takes more than 50 m³ from surface water or 10 m³ of groundwater on any given day, requires to register the water use. The quantity of water abstracted from the boreholes is more than 10 m³ per day, and therefore registration of this water use activity was required.

According to Table 1.2 of GN 399 General Authorisations, dated March 2004, 75m³ of water per hectare per year may be taken from quaternary catchment A24H. Aquila utilised ± 12 m³ of water per year from the boreholes. Portion 0 of the farm Donkerpoort 448KQ Remaining Extent is 837 hectares. Aquila may therefore abstract 62,775m³ of water per year from the boreholes. A license was therefore not required.



2.3 Hazardous chemical substances

During the gravel roads construction phase, a temporary hazardous chemical storage facility as well as a bulk diesel storage tank was established on site. These facilities were situated within the boundaries of the farm Donkerpoort 448KQ remaining extent. The hazardous chemical storage facilities were not fenced off, but access to the farm was controlled. The temporary hazardous chemical storage facility and the bulk diesel storage tank were removed from site when construction of roads and prospecting activities ceased. There are currently no hazardous chemical storage facilities on the contravened site.

2.4 Service delivery

2.4.1 Electricity

Electricity was sourced from the existing Eskom 22kV network.

2.4.2 Surface water management

2.4.2.1 Potable Water

During the gravel roads construction phase, 5L bottles of water were bought on a daily basis for consumption by the construction crew.

Domestic potable water was obtained from a borehole located on site. The borehole is located at the foot of the mountain. Water was pumped from the borehole for utilisation by the drill rigs. The system utilised for drilling activities was designed for 2 x RC rig and 1 x diamond rig. The diamond rig used approximately 1000ℓ per hour. One RC rig used approximately 1000ℓ per day.

2.4.2.2 Domestic wastewater

Two chemical toilets were available on site. The toilets were supplied and serviced by Coastal Hire. The contents thereof were disposed of at local municipal sewage site.

2.4.2.3 Stormwater management

There are no stormwater management structures at the contravened site.

2.4.3 Waste management

General waste (non-hazardous waste) generated during the construction of the gravel roads was collected at a central area and disposed of at the Thabazimbi municipal waste site. Aquila had permission for this disposal.



Biodegradable waste generated during construction activities was buried on the farm Donkerpoort 448KQ remaining Extent. This refers to waste generated by 4 workers that resided on the farm and 2 domestic workers.



3. NATURE AND EXTENT OF THE ENVIRONMENT AFFECTED BY ACTIVITY

3.1 Geology

The following section was compiled using a document titled: “Resource Estimation Update of the Meletse Iron Ore Deposit – December 2012” which is available from the applicant (Aquila Steel) upon request.

3.1.1 Site specific description

The farm Donkerpoort 448KQ remaining Extent and Randstephne 455KQ fall in the Transvaal sub basin of the Limpopo Province. Structural deformation on the Thabazimbi area has caused the Chuniespoort Group sediments to dip south at 50° to 60° and thrust repeat the BIF sequences.

According to a study “Resource Estimation Update of the Meletse Iron Ore Deposit – December 2012” conducted by Aquila on the farm Donkerpoort 448KQ remaining extent and the farm Randstephne 455KQ, banded iron ore formations (BIF’s) are developed in the Transvaal Supergroup within the Transvaal sub-basin of the Limpopo Province. The iron ore deposits occur within the Penge Formation of the Chuniespoort Group. Generally the iron content of the BIF’s varies between 25% and 35% Fe and it is only where significant enrichment has taken place (upgrading the iron content to >60% FE) that the iron formation constitutes ore. The mechanism of the enrichment process is still not fully resolved. Supergene enrichment through replacement by iron minerals is a major factor, but the controls on that enrichment can be viable. Hydrothermal fluid flow, structural channelling / plumbing and paleo-weathering, leading to supergene upgrading at unconformities, play important roles in the enrichment process.

The Meletse Deposit is mainly underlain by clastic sedimentary rocks of the Waterberg Group, granite of the Bushveld Complex, BIF of the Penge Formation and dolomite of the Malmani Subgroup (Figure 5). In the south-western portion of the mapped area, the BIF of the Penge Formation is underlain by dolomite of the Malmani Subgroup, whilst to the north-east the BIF rests non-conformably on the granite of the Bushveld Complex and un-conformably on the sandstone of the Waterberg Group. Being a stratabound deposit, it is important to define the hanging- and footwall rocks associated with the deposit.



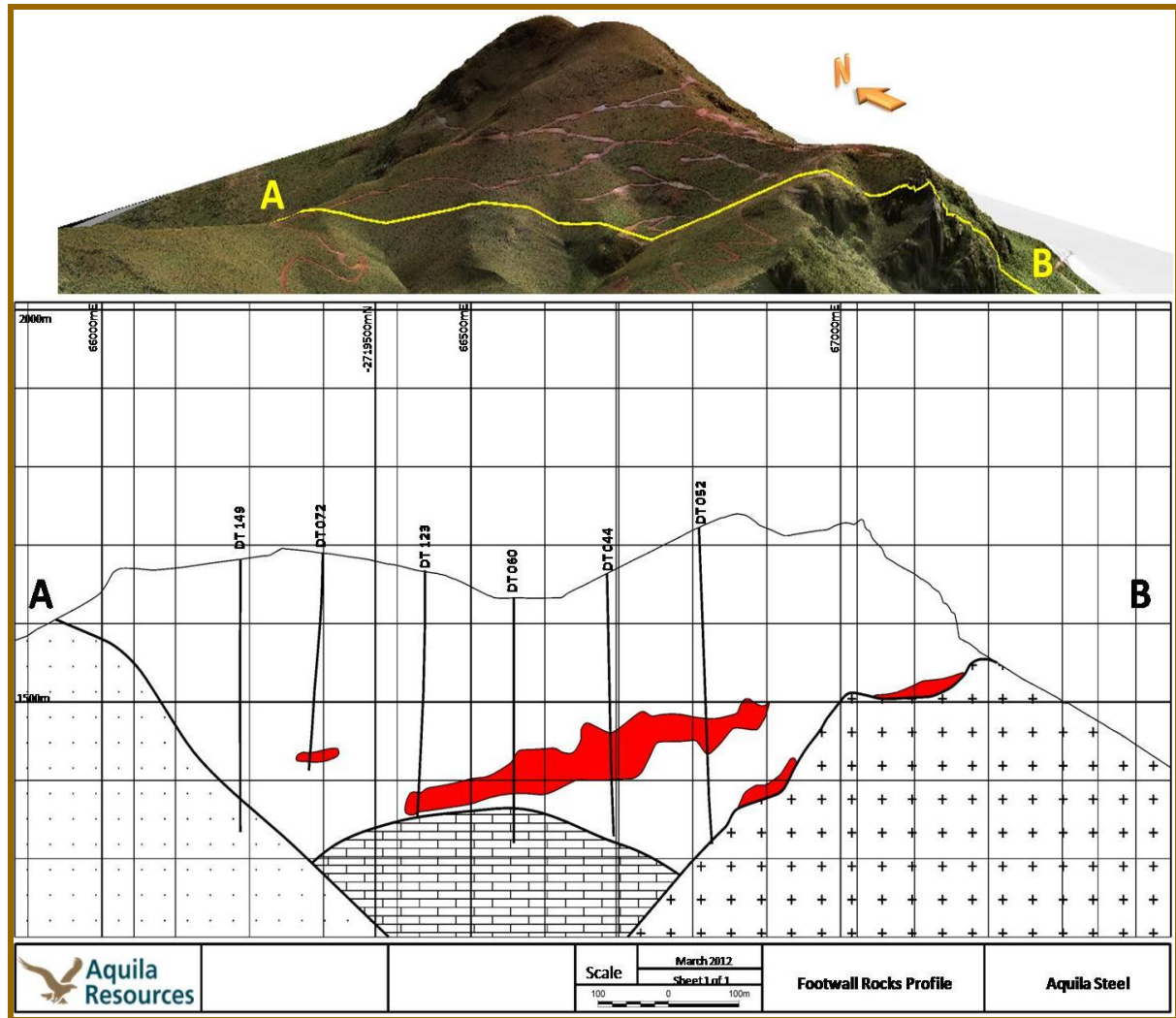


Figure 5: Profile indicating the spatial relationship of the footwall rocks

Lithostratigraphic data gathered from mapping and borehole logs of the sediments of the Chunniespoort Group were used to reconstruct a stratigraphical profile of the upper Malmani Subgroup and basal Penge Formation (Figure 6). Chert poor dolomites of the Frisco Formation are overlain by a transitional zone (locally referred to as the mixed zone). This zone comprises of an alteration of shale and chert macrobands and has an average thickness of 15-20 m. Nodular pyrite is present in the carbonaceous rich shale macrobands while contorted microbands of ankerite are developed in the chert macrobands.



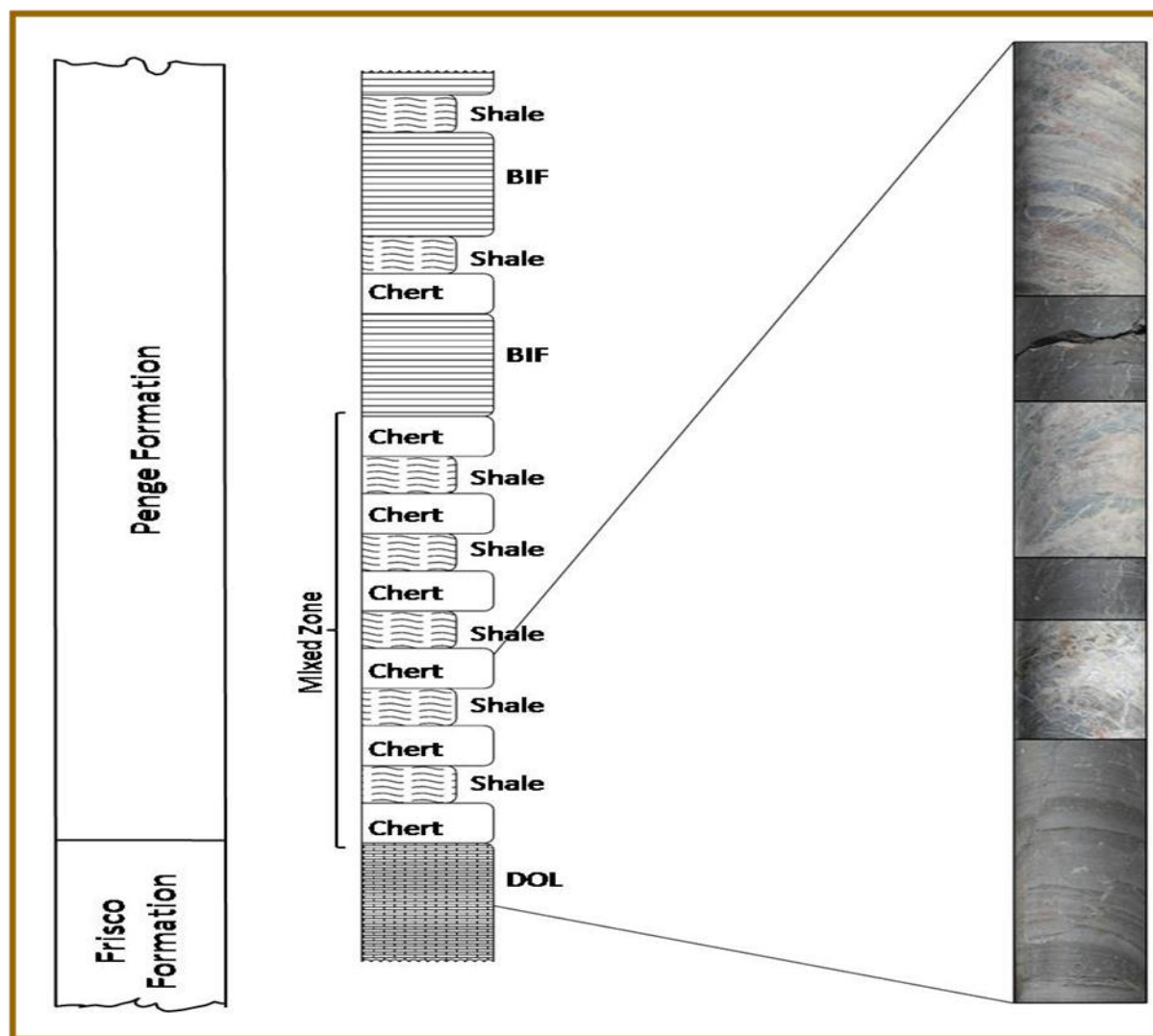


Figure 6: Lithostratigraphical profile of the mixed zone

Brecciation and metamorphism deformed the rocks of the mixed zone in close contact with the intrusive granite of the Bushveld Complex. Rock samples of the contact zone were analysed by MINTEK and they concluded that the samples represent a fine grained hornfels with quartz, chlorite, mica and pyrite. The rock samples can be described as a dark hornfels which lacks definite sedimentary structures. These fine-grained rocks are composed of a mosaic of equidimensional grains without preferred orientation and typically formed by contact metamorphism (MINTEK, May 2010).

The mixed zone is conformably overlain by metamorphosed iron oxide facies BIF. The basal BIF can be defined as a fericite composed of macrocycles. In their complete form the macrocycles are composed of stilpnomelane lutite overlain by siderite microbanded chert, magnetite – siderite, and hematite-magnetite banded micritic iron formation. Well defined alteration of micro- and mesobands of iron oxides and chert is visible in outcrops and core. The iron oxides have a dark appearance while the chert is light grey in colour. The bedding character of the chert mesobands does vary from even,

wavy to podded forms. The high grade iron ore lodes are developed in the basal iron oxide facies BIF protolith and underlain by BIF and or granite in the proximity of the outcrops and by the mixed zone in the dip extent of the deposit.

Boreholes drilled on the SW dip extent of the sequence penetrated a magnetite bearing BIF. Mesoscopically the BIF is grey to light grey in colour and fine grained with dark iron oxide bands alternating with grey laminae composed of chert and iron silicates. The contacts between the laminae are often sharp but mostly poorly defined. The magnetite bearing BIF can be defined as a fericrite. The macrocycles composed of stilpnomelane lutite overlain by microbanded chert, iron oxide – iron silicates micritic iron formation are not as well defined as in the iron oxide facies BIF. The mineralogy also differs and this can be a result of a facies change and/or the submergence of the carbonate shelf.

3.1.1.1 Structural setting

Field observations and drill hole results (undertaken and analysed between 2008 and 2013 by the Aquila Steel Exploration team) revealed a hydrothermal – supergene origin for the formation of the high grade Meletse deposit. The Meletse Deposit is spatially associated with thrust faults that offset and duplicate the stratigraphy. These faults and associated splays provided critical pathways during their extensional episodes allowing movement of basinal brines and /or deeply circulating meteoric water into the BIF and the transformation of BIF to high-grade hematite ore.

Most high – grade iron deposits in Hamersley province is associated with normal faults that usually caused down-throw of the mineralized zones and burial by younger sediments. This was particular favorable to the preservation of ore deposits. Compressional structures such as thrusts as indentified at Meletse were far less favorable for the preservation of ore deposits, due to the uplift caused and subsequent erosion of the ore bodies. This might be one of the main reasons why there is such a major size difference between the Hamersley metalliferous deposits and deposits in the Thabazimbi iron ore province.

It is evident that the geometry and geological setting of the Meletse deposit is complex. Defining the structural controls in context with simplified deformation periods enabled the Aquila Steel exploration team to do a lateral and down dip interpretation of the geometry and extent of the iron ore lodes. The proposed structural model defined as different episodes is discussed. Refer to Figure 6 for a regional map identifying the project area structurally evaluated.



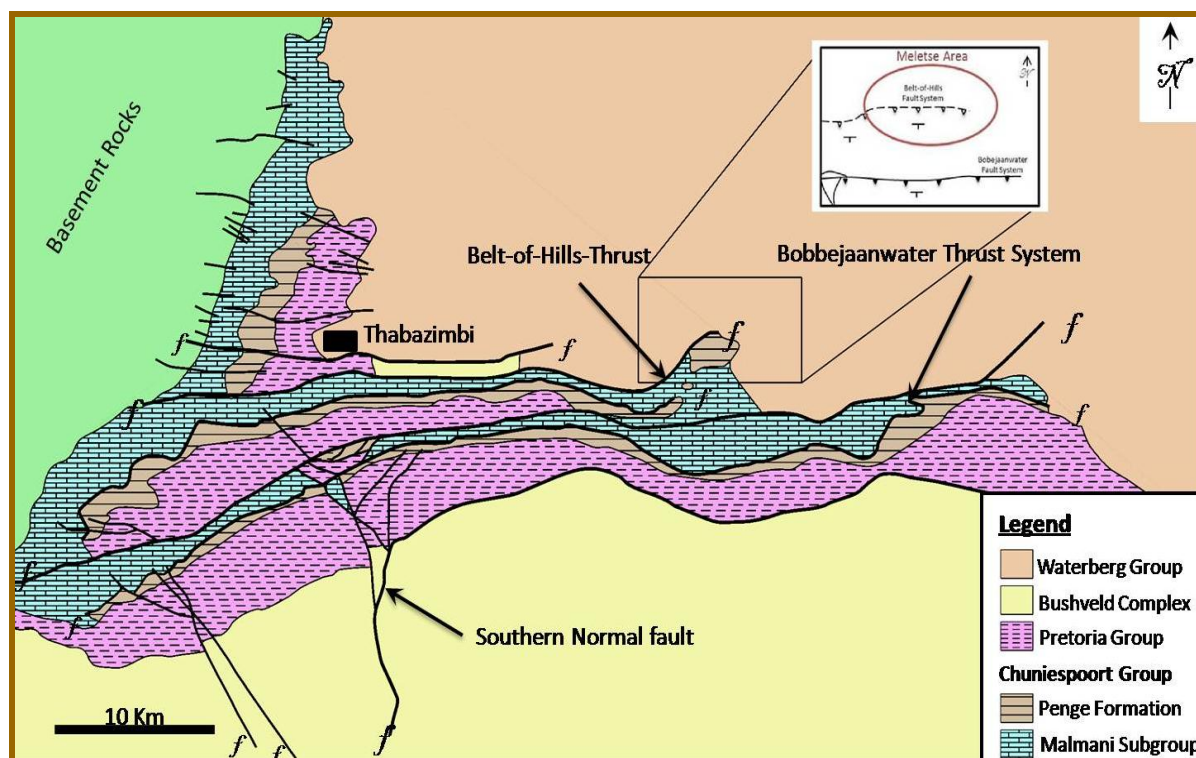


Figure 7: Regional map identifying the project area structurally evaluated

According to McCourt (1994) the craton scale Thabazimbi-Murchison Lineament developed during the 3100 Ma accretion event and continued its influence throughout Waterberg times and had a major influence on the development and setting of the Meletse Deposit. The structural deformation that influenced the Meletse Range started with the two major fault systems namely the Bobbejaanwater and the Belt-of-Hills fault systems that duplicated and in some instances triplicated the rocks of the Transvaal Supergroup and the Bushveld complex. This period of deformation is defined as the end of the first episode.

Sediments of the Waterberg Group were deposited post the first episode and pre the second episode of deformation. The second period can be defined as the episode when the Gatkop over-thrust thrust the chemical sediments of the Chuniespoort group over the clastic sediments of the Waterberg group. This changed the southerly dip orientation of the rocks to SSE.

The third episode is identified as the north directed stress field gave rise to the formation of several synthetic thrusts all slaying of the Gatkop thrust plane, which served as a floor thrust, creating the Meletse Thrust and the Northern Thrust. The Meletse thrust was intersected in two diamond boreholes (DT033 & DT075). Folding was initiated during the compressional phase, followed by a period of relaxation leading to extensional structures.

Rotation of the regional stress field marks the beginning of the fourth episode. On a local scale the rotated stress field gave rise to the developing of open folding with NW – SE trending axes. Smaller

synthetic thrust faults all verging to the north-east developed and changed the orientation of the BIF block, hosting the Meletse iron ore body. These thrust faults probably resulted in the staggered appearance of the Meletse Iron Ore Body.

The accumulated effect of the different deformation events are reflected in the present outcrop patterns of ore lodes as determined by the current topography of the area. A structural analysis of the present BIF orientation was evaluated “Resource Estimation Update of the Meletse Iron Ore Deposit – December 2012” Indications are that the total sample of poles to bedding planes lies in a girdle field with a centre of gravity (C) at 152°/12° and a significant concentration of poles, also lying in a girdle field, representing bedding planes dipping at 50° to 60° in a SSW through a southerly to a SSE and a less prominent concentration dipping at approximately 60° in a NNE direction.

3.1.1.2 Orebody geology

Ore genesis commenced during the early stages of the tectonic events that developed into the Belt of Hills thrust system with subsequent hydrothermal remobilization associated with the Gatkop, Meletse and Donkerpoort thrusts. Indications are that fold hinges, fault splays and the impervious shales of the mixed zone acted as aquitards. The Donkerpoort thrust resulted in the upliftment of a deep seated micro banded magnetite – chert - rich BIF that was transformed at the base of the sequence to a low to medium grade kenomagnetite -martite rich ore. Thus the first, hypogene, stage of ore formation presently identified at Meletse transformed magnetite – chert – rich BIF into a kenomagnetite -martite rich low to medium grade ore. This proto – ore was at a later deep meteoric stage oxidized to a hematite assemblage with the magnetite converted to martite. The inherently lower phosphorous content of the hematite rich high grade ore could be an indication of meteoric descending waters resulting in a supergene alteration of the hematite – martite ores of the Penge Formation.

The Meletse orebody is composed of numerous irregular shaped, hard, lumpy, high-grade hematite rich iron ore lodes outcropping along a lateral extent of 600m as illustrated in Figure 7. Six hematite rich ore lodes defined in alphabetical order from west to east were identified during the detailed mapping exercise. Additional drilling information gathered during this campaign indicates that two of the lodes namely C and D coalesce at close proximity down dip of the outcrop. These lodes were modelled as one lode and reported as lode C/D.

The iron ore lodes are defined as having an average a >50% Fe content. These lodes forms irregular shaped bodies dipping of 40° on average to the SW and flatten to 20° at the dip extent of the lodes. Rafts of sterile protolith BIF and/or iron enriched BIF are developed within the ore envelopes and vary in thickness from one to three metres with a lateral extent of a few metres. The iron ore lodes bifurcate and coalesce in profile and are gently folded along strike. During the deformation episodes, synclinal structures were developed in two directions: NE-SW and SE-NW. Mineralization occurred in the hinges of these synclinal structures causing the ore to locally thicken in the synclinal hinges. The

relaxation episodes of the main compression stress fields resulted in the development of boudin structures.

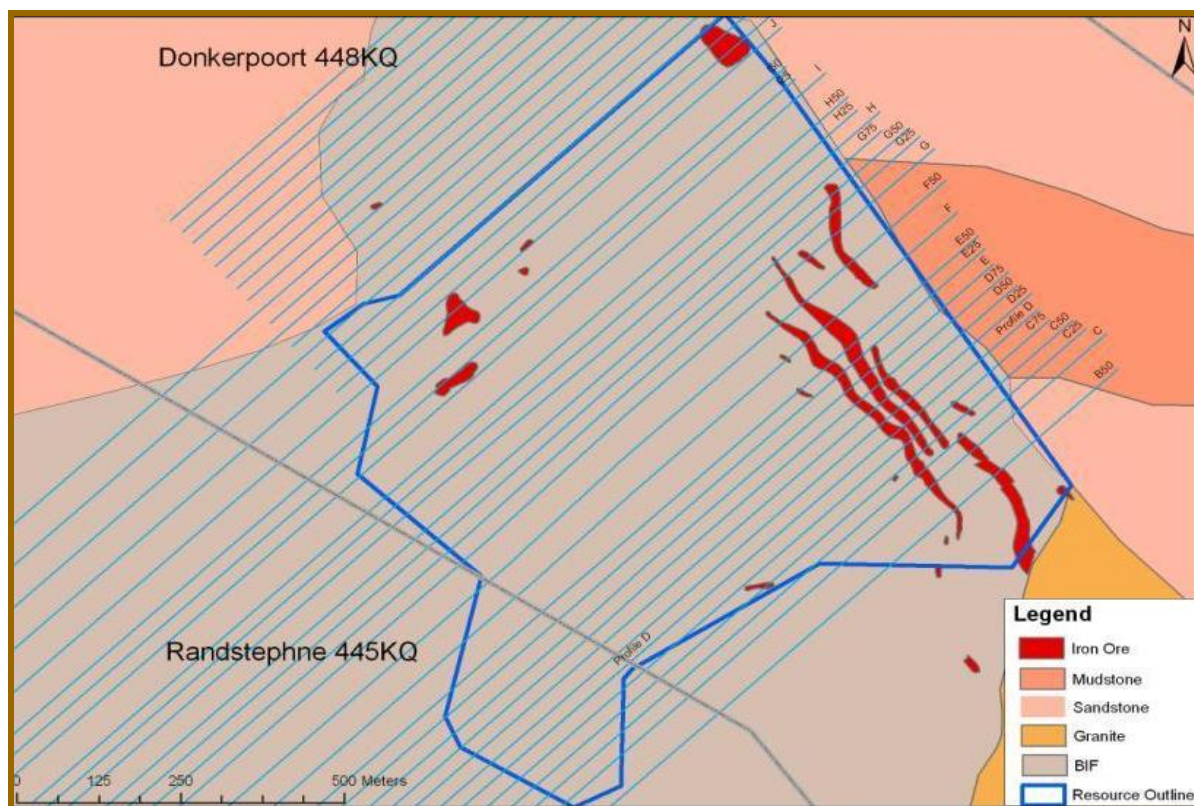


Figure 8: Identified iron ore lodges included in the resource statement as well as profile Lines and the Resource dimensions indicated in blue.

3.2 Climate

This section was compiled using information from the South African Weather Services – Climate Analysis of the proposed Mine at Thabazimbi (www.weathersa.co.za, 2012).

The Thabazimbi area may be described as semi-arid with an approximate Weinert N-value of 5,2 and a Thorn waite Moisture Index very close to -20. Daily temperatures are warm to hot, with a daily maximum average of 27°C to 33°C, but may reach as high as 45°C. The daily minimum average varies between 8°C and 12°C. The average annual rainfall is approximately 645 mm, occurring in the summer as thunderstorms. Rainfall is strongly seasonal, with most rainfall occurring as thunder storms during the summer period of October to April.

3.2.1 Rainfall

The Thabazimbi area has a mean annual precipitation (MAP) of 645 mm, of which 90% falls in the period October to April. The highest rainfall in a single day measures since 1981 was 223.5 mm on



the 15th of February 2010. Table 6 below shows the maximum rainfall per 24 hours recorded for each month in the year 2010. The MAP is reflected in Figure 8 below.

Table 6: Maximum Rainfall in 24 Hour Period in 2010

MONTH	MIN RAINFALL (mm)	MAX RAINFALL (mm)	AVG RAINFALL (mm)
January	2.8	222.5	115.0
February	4.3	223.5	71.2
March	6.3	198.4	71.1
April	0.8	95.5	23.4
May	0.0	31.8	7.8
June	0.0	55.1	12.0
July	0.0	10.2	2.6
August	0.0	7.1	1.2
September	0.0	68.3	12.5
October	0.0	81.3	32.9
November	1.8	129.0	71.0
December	1.0	164.8	87.3
Total	431.8	770.6	541.8



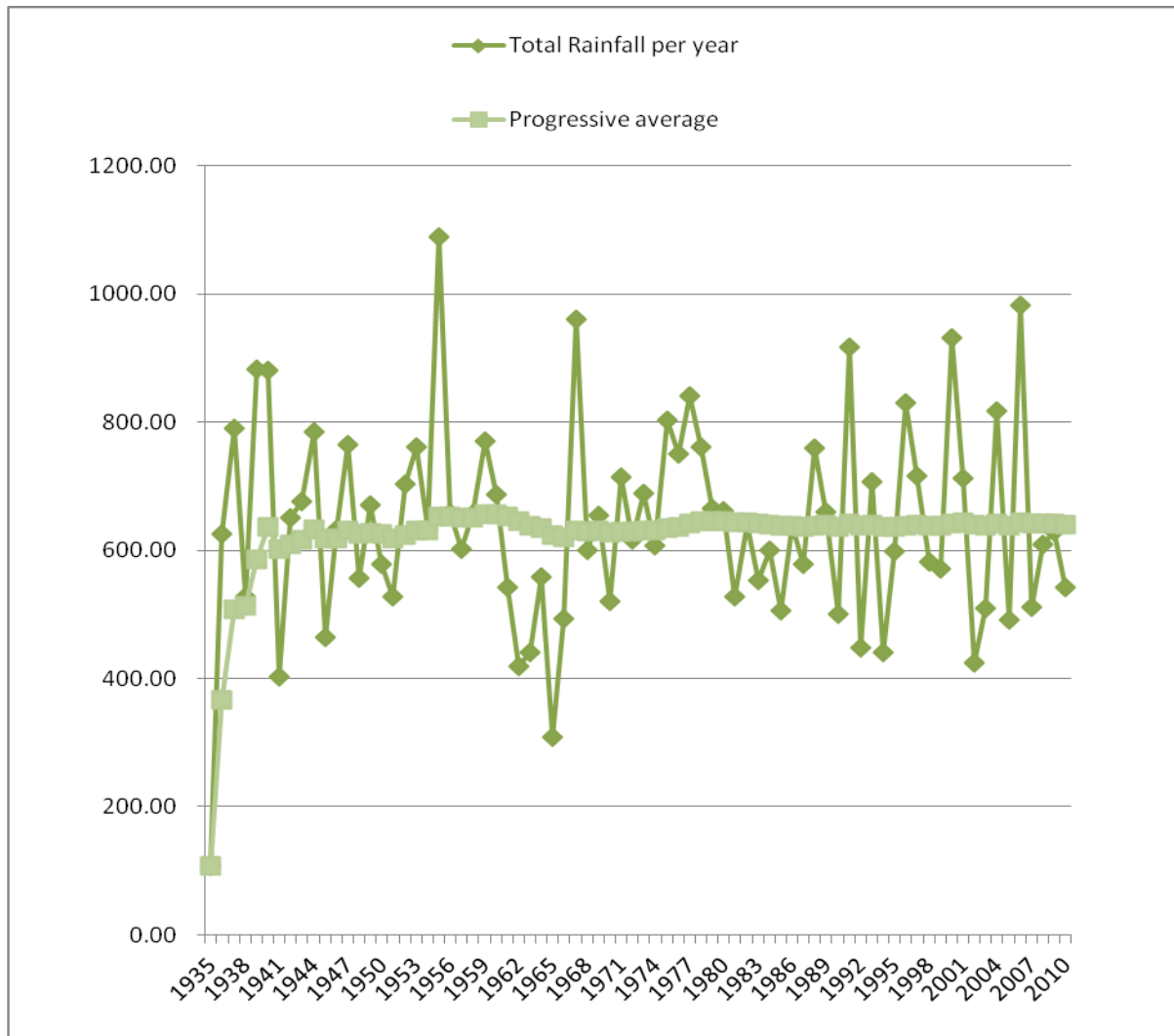


Figure 9: Average Rainfall from 1935 - 2010

3.2.1.1 Maximum rainfall intensities

Thabazimbi normally receives approximately 529mm of rain per year, with most rainfall occurring mainly during mid summer. Thabazimbi receives the lowest rainfall (0mm) in June and the highest (106mm) in January. Refer to Table 7 for rainfall data from 1935 to 2010.



Table 7: Rainfall Data from 1935-2010

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1935							0.00	0.00	0.00	0.00	5.10	102.10	107.20
1936	65.50	169.20	135.90	0.00	68.80	0.00	0.00	0.00	0.00	74.40	111.80	0.00	625.60
1937	245.10	159.80	68.60	29.70	0.00	0.00	0.00	0.00	17.80	72.60	20.60	175.80	790.00
1938	147.10	70.40	22.60	98.60	0.00	6.40	0.00	0.00	0.00	22.60	21.10	138.20	527.00
1939	45.50	269.20	158.00	0.00	44.50	0.00	30.00	4.80	11.70	58.70	185.40	74.20	882.00
1940	123.70	70.90	132.10	38.60	29.00	88.90	0.00	3.60	76.20	32.00	54.40	231.90	881.30
1941	83.10	48.80	14.70	78.50	0.00	0.00	0.00	0.00	9.10	13.00	16.50	139.70	403.40
1942	81.00	108.50	143.30	0.00	8.90	0.00	0.00	10.90	37.80	109.50	52.80	97.80	650.50
1943	102.10	49.00	104.60	140.20	40.10	1.00	3.30	13.20	29.50	125.70	29.50	38.10	676.30
1944	170.20	220.50	58.40	2.30	14.70	55.60	0.00	0.00	4.10	114.80	125.50	18.80	784.90
1945	74.70	78.50	116.80	34.80	3.30	0.00	3.30	0.00	0.00	55.40	63.20	34.80	464.80
1946	287.00	158.80	76.50	19.80	0.00	0.00	0.00	0.00	0.00	13.20	39.10	37.80	632.20
1947	106.20	109.00	159.00	30.20	0.00	0.00	2.30	0.00	6.90	39.90	203.50	108.00	765.00
1948	75.40	37.30	152.10	44.50	15.50	0.00	0.00	0.00	10.20	67.80	151.60	2.50	556.90
1949	179.80	49.50	53.30	13.70	8.40	25.90	1.80	0.00	0.00	30.70	69.60	237.20	669.90
1950	68.10	40.40	53.60	61.00	37.10	0.00	0.00	0.00	4.80	6.10	59.40	247.90	578.40
1951	69.10	82.30	61.70	50.30	37.10	5.10	16.00	16.30	3.30	105.90	24.10	56.40	527.60
1952	120.90	141.70	32.30	29.70	33.50	1.00	0.00	0.00	0.30	23.10	142.20	178.10	702.80
1953	70.60	179.60	153.70	112.00	6.60	0.00	0.00	0.00	0.00	23.60	125.50	89.90	761.50
1954	213.40	82.00	27.90	67.10	4.80	0.00	0.00	0.00	3.00	20.80	96.50	119.40	634.90
1955	165.10	358.10	50.80	27.40	10.20	13.00	0.00	0.00	0.00	47.80	71.60	344.40	1088.40
1956	43.70	189.50	153.40	15.20	38.10	0.00	0.00	0.00	30.50	20.60	71.10	96.00	658.10
1957	88.40	93.00	44.70	32.50	17.50	64.30	63.00	41.90	38.90	48.00	36.60	32.80	601.60
1958	133.60	65.00	33.00	57.20	1.80	0.00	0.00	0.00	30.00	55.10	106.20	175.00	656.90
1959	179.60	123.20	92.50	40.60	25.70	0.00	2.00	8.10	0.00	15.00	117.60	165.90	770.20
1960	35.80	98.30	79.50	74.40	14.00	0.00	1.00	18.00	1.50	37.60	199.10	127.50	686.70

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1961	50.60	79.80	47.50	76.00	32.50	10.50	0.00	0.00	0.00	19.80	124.00	102.00	542.70
1962	86.50	30.50	23.00	77.50	0.00	3.60	0.00	2.50	0.00	21.00	97.50	76.20	418.30
1963	75.50	35.60	0.50	56.40	9.00	51.00	0.00	0.00	0.00	57.50	87.00	67.60	440.10
1964	143.00	39.60	4.00	42.00	0.00	1.00	0.00	0.00	5.60	151.00	68.00	103.60	557.80
1965	60.00	46.60	11.00	64.00	0.00	0.00	0.00	0.00	0.00	0.00	91.00	35.50	308.10
1966	90.50	67.00	9.00	24.00	2.50	32.00	0.00	0.00	63.50	53.50	41.00	111.00	494.00
1967	326.70	198.60	100.50	158.00	16.00	0.00	0.00	16.50	0.00	20.00	89.50	35.30	961.10
1968	147.60	50.50	88.00	78.50	38.00	0.00	0.00	0.00	0.00	9.00	103.00	84.60	599.20
1969	38.00	83.60	138.20	21.60	27.00	0.00	0.00	1.50	1.00	52.60	57.00	233.60	654.10
1970	144.00	36.00	35.60	10.50	11.00	8.00	7.60	0.00	13.50	55.00	89.50	109.00	519.70
1971	202.20	120.20	47.00	38.60	20.00	0.00	0.00	0.00	20.00	46.00	152.20	68.10	714.30
1972	227.00	50.60	143.00	16.00	6.10	0.00	0.00	0.00	4.00	12.50	92.00	66.00	617.20
1973	62.50	166.60	57.40	40.00	0.00	0.00	0.00	0.00	15.00	94.50	83.00	169.00	688.00
1974	98.50	54.50	120.50	32.00	0.00	0.00	0.00	6.50	18.00	20.50	92.00	165.50	608.00
1975	205.00	144.00	30.00	131.50	41.50	5.00	0.00	0.00	0.00	10.00	46.50	189.50	803.00
1976	127.00	122.50	108.50	30.00	32.50	0.00	0.00	0.00	14.50	60.00	107.00	148.50	750.50
1977	192.00	55.00	100.50	79.00	0.00	0.00	0.00	18.50	98.00	48.00	45.50	204.00	840.50
1978	325.00	108.00	98.00	41.00	0.00	0.00	0.00	0.00	20.00	54.00	58.50	57.50	762.00
1979	59.50	95.50	108.00	22.00	40.00	0.00	2.00	23.00	11.00	76.00	174.00	55.00	666.00
1980	151.50	103.50	53.00	23.50	0.00	0.00	0.00	0.00	29.50	30.50	113.50	157.50	662.50
1981	141.00	46.00	85.00	18.00	0.00	9.00	0.00	22.00	16.50	8.00	124.50	58.50	528.50
1982	152.00	54.50	120.50	13.00	0.00	0.00	10.00	0.00	0.00	77.00	53.50	158.90	639.40
1983	65.00	16.00	90.00	44.00	2.00	9.00	0.00	20.00	15.00	27.50	130.00	135.20	553.70
1984	14.50	24.00	126.00	0.00	0.00	41.00	29.00	0.00	5.00	92.00	96.00	172.40	599.90
1985	133.60	63.00	53.00	0.00	2.00	0.00	0.00	10.00	6.00	58.50	26.50	152.60	505.20
1986	68.50	78.50	80.50	56.00	0.00	0.00	0.00	4.00	29.50	88.00	130.00	102.50	637.50
1987	68.50	87.50	104.50	14.00	0.00	0.00	0.00	18.00	8.50	27.00	151.00	98.50	577.50

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1988	103.00	163.50	140.50	54.50	0.00	1.00	0.00	2.00	27.00	92.50	32.00	144.00	760.00
1989	54.50	240.50	43.50	42.50	0.00	7.80	0.00	6.50	0.00	36.20	93.20	134.80	659.50
1990	86.90	111.20	94.00	57.00	31.70	0.00	0.00	0.00	10.30	22.10	18.00	69.20	500.40
1991	268.30	141.30	206.90	0.00	0.00	0.00	0.00	0.00	4.00	34.00	115.00	148.00	917.50
1992	34.50	46.70	82.60	34.60	0.00	0.00	0.00	0.00	0.00	38.00	131.70	80.50	448.60
1993	53.90	143.20	159.70	43.40	0.00	0.00	0.50	0.00	18.00	74.40	76.30	137.70	707.10
1994	115.90	107.50	12.70	3.80	0.00	0.00	0.00	0.00	0.80	50.30	30.10	119.10	440.20
1995	76.80	46.80	110.50	19.10	19.00	0.00	0.00	5.50	1.00	52.00	123.40	144.60	598.70
1996	127.80	324.40	52.50	42.00	7.30	0.00	1.90	0.00	0.40	47.80	77.40	148.70	830.20
1997	261.10	20.60	133.40	11.00	49.30	1.00	1.10	0.30	42.70	22.00	76.60	96.80	715.90
1998	115.10	55.20	17.70	8.50	0.00	0.00	0.00	2.00	2.90	29.70	99.60	251.20	581.90
1999	95.10	18.90	24.70	26.80	71.50	0.50	0.00	0.00	2.70	42.40	24.00	265.30	571.90
2000	308.00	230.80	119.90	27.00	23.00	15.90	1.30	0.00	0.00	74.80	48.30	81.50	930.50
2001	11.10	151.20	49.30	72.30	35.80	2.30	0.00	0.00	19.10	129.30	176.10	66.00	712.50
2002	26.10	0.00	35.60	36.40	0.50	44.30	0.00	2.00	11.00	60.70	0.70	207.80	425.10
2003	111.30	75.10	6.00	0.00	0.00	17.30	0.00	0.00	0.00	42.20	134.30	122.50	508.70
2004	130.20	159.80	203.10	63.90	0.00	0.70	13.70	0.00	0.00	2.10	67.30	176.30	817.10
2005	84.30	18.70	77.00	35.30	0.00	0.00	0.00	0.00	0.00	0.00	156.90	110.50	491.70
2006	256.20	326.80	138.90	0.00	4.00	0.00	0.00	6.90	0.00	76.50	56.70	116.80	982.80
2007	73.90	10.80	0.50	33.80	0.00	19.60	4.30	0.00	52.00	92.50	21.80	203.00	512.20
2008	259.02	37.60	101.40	0.00	14.00	3.00	3.40	0.00	0.00	1.20	122.70	67.30	609.62
2009	169.80	100.40	62.40	0.00	11.70	64.20	0.10	0.60	35.00	87.40	47.60	49.60	628.70
2010	146.10	57.10	106.50	159.70	73.00	0.00	0.00	0.00	0.00				542.40
Month average	125.32	102.64	81.88	41.03	14.41	8.12	2.60	3.75	12.32	48.15	86.15	121.72	648.09

*Source: Department of Water Affairs



3.2.2 Temperature

The Thabazimbi area lies in the summer rainfall region of the Bushveld. The Thabazimbi area is known for its relatively high temperatures, with day temperatures that may rise above 40°C in summer and to a few degrees below zero in winter. The mean maximum summer temperature is approximately 30°C.

In summer, the mean temperature at 14h00 is 30°C, and in winter 21°C. At 08h00, the mean temperature is 23°C in summer and 8°C in winter. The mean monthly maximum and minimum temperatures are shown in the Table 8 below.

Table 8: Mean monthly maximum and minimum temperatures

MONTH	MAX. TEMP. (° C)	MIN. TEMP. (°C)
January	33,4	20,7
February	32,3	21,1
March	31,9	19,0
April	29,3	16,6
May	27,3	12,8
June	25,1	10,1
July	25,1	11,1
August	27,9	14,4
September	29,8	17,6
October	31,9	19,9
November	32,0	20,4
December	31,6	20,7

3.2.3 Evaporation

Refer to Table 9 below for the monthly evaporation measured at station A4E001 for an S class pan located approximately 56 km north-east of the contravened site.

Table 9: Average annual precipitation and evaporation

Date	Evaporation (mm)
January	170.1
February	147.5
March	140.1
April	112.0
May	93.8
June	76.9
July	86.7
August	114.1
September	149.5



Date	Evaporation (mm)
October	180.4
November	169.7
December	170.1
Annual	1630.2

The mean annual evaporation is 1630.2mm with monthly extreme values of 170.1mm (maximum) in December and January and 76.9mm (minimum) in June.

3.2.4 Wind

Figure 10 presents wind roses indicating the mean wind direction. From the wind roses it is evident that the mean wind direction is from North-east to South-east. During the winter months April, May, June and July the wind roses indicate that the wind direction sometimes changes slightly to South-West. The mean monthly wind direction and speed are shown in the Figure below. Statistics based on observations taken between 12/2011 - 6/2013 daily from 7am to 7pm local time. The prevailing wind direction is north-east, at a speed averaging 2.5m/s. Gale force winds occur very rarely.



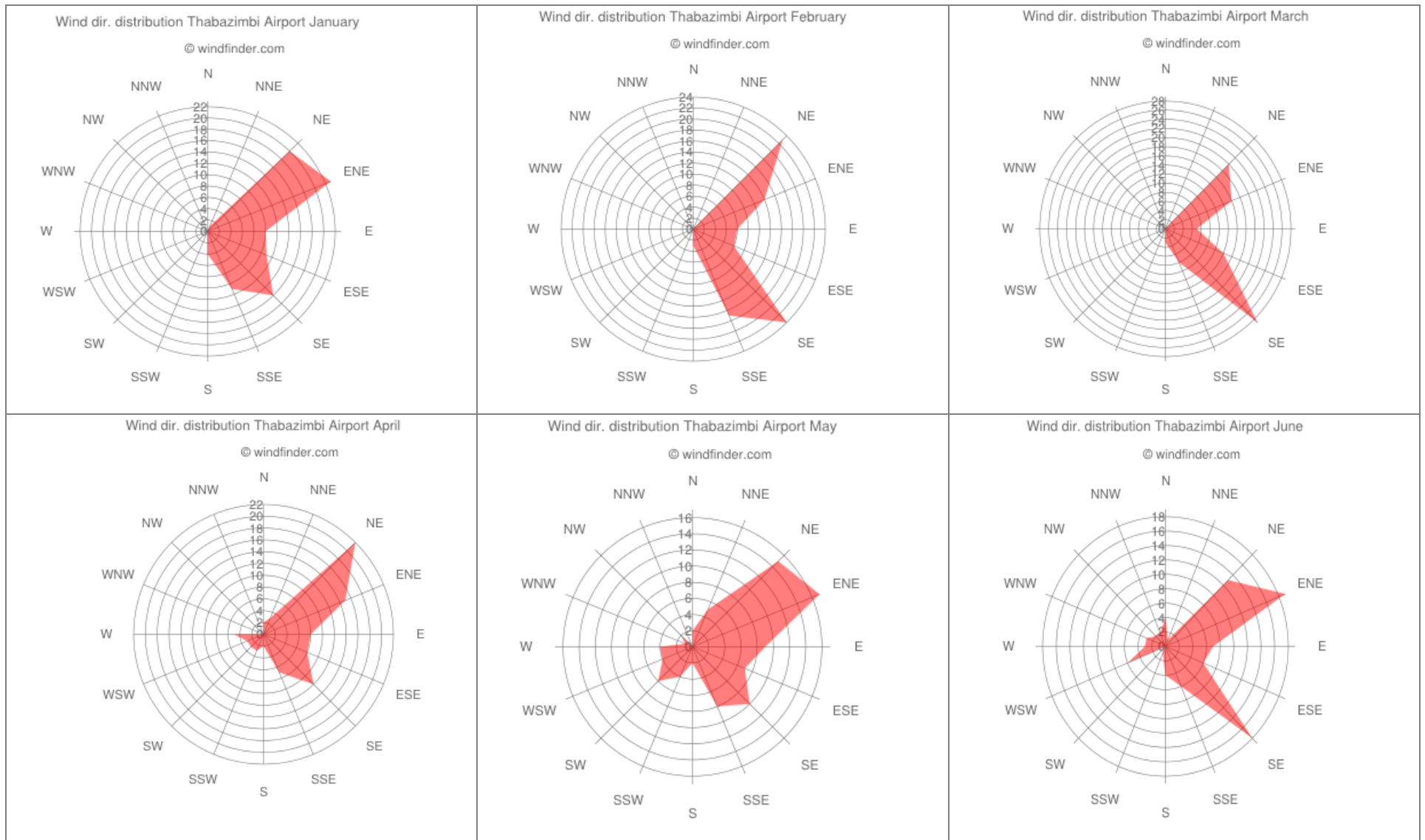




Figure 10: Wind roses indicating the mean wind direction from January to December



3.3 Topography

3.3.1 Regional Description

The topography of the region is characterised by a valley rising from west to east and bound on the northern and southern sides by two prominent mountain ranges. The non-perennial Crocodile River crosses a flood plain that forms the western part of the valley. To the south of Thabazimbi, on the underlying Bush Veldt Layered complex, the topography is flat to slightly undulating. The surface undulates between 850 and 950 mamsl.

3.3.2 Site specific description

The topography of the contravened area is very rugged. The Meletse deposit is situated in Meletse mountain ridge, which is a northeast-southwest trending extension of the Northern range, to the east of Thabazimbi town. Two mountain ranges, known as the Northern and Southern ranges, strike east-west in the area. A minor range is located between the Northern and Southern ranges and is known as the Middle Range. Refer to **Figure 10** for the topographical map of the contravened site



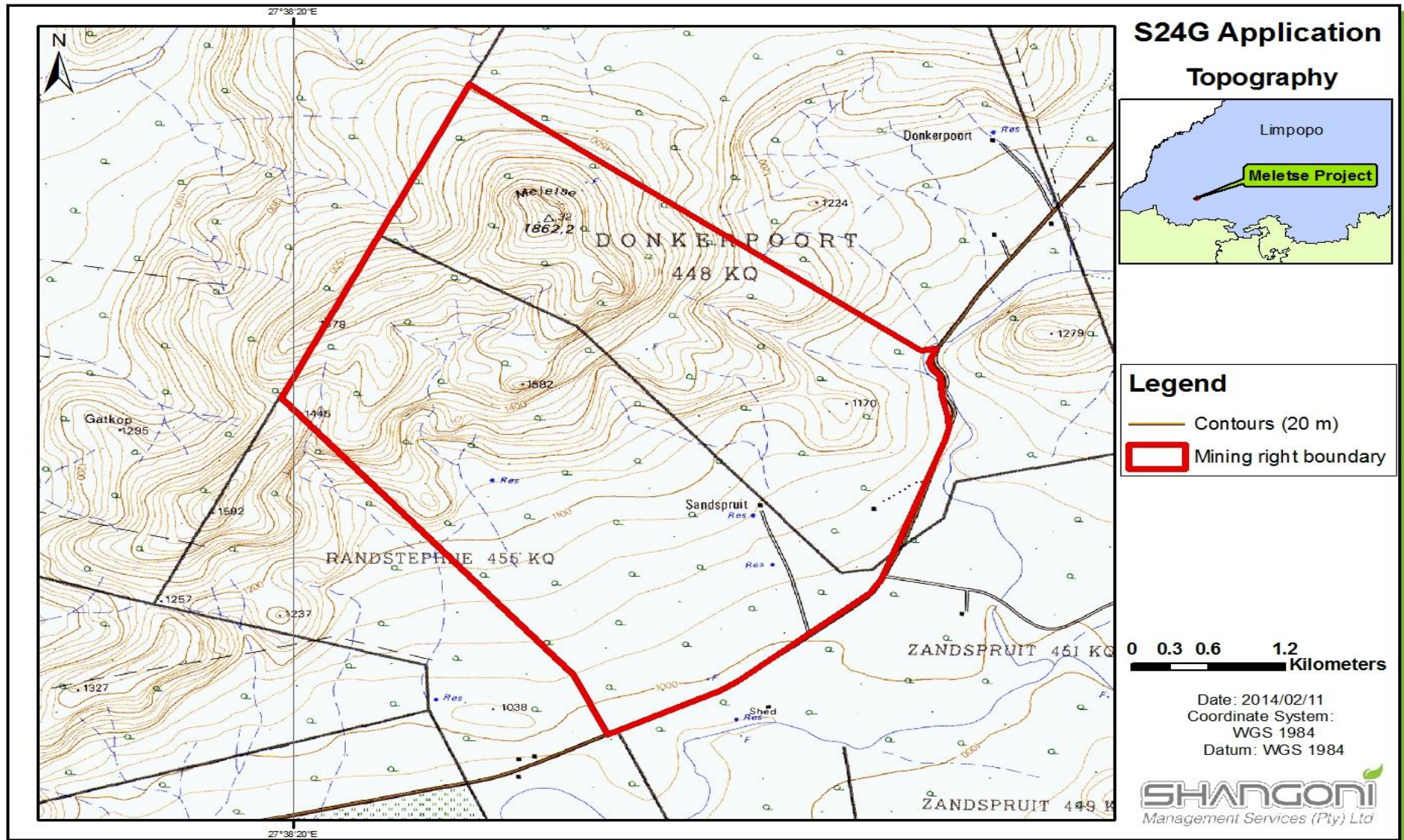


Figure 11: Map illustrating Topography of the contravened site

3.4 Soils

The Memoirs on the Agricultural Natural Resources of South Africa, No.10, were used to determine the different types of soil that exist on the farms Donkerpoort 448KQ remaining extent and the farm Randstephne 455KQ. The contravened site reaches over three land units namely Ae (Red apedal, freely drained soils), Ib (Diverse soils) and Fa (Glenrosa- and/or Mispah soil forms). The dominant land type is the Fa category. The Fa unit is intended to accommodate pedologically young landscapes. The soil forms, which epitomize these processes, are Glenrosa and Mispah. Fa refers to land in which no lime in the soil is encountered. These soils are usually shallow with a low cropping potential but can be used for grazing.

Soil in the north-western parts of the site has loamy sands present and is moderately susceptible to wind erosion. Soil in the north-eastern part of the site predominantly sand and is susceptible to wind erosion. Soil in the southern part of the site is not susceptible to wind erosion. Soils where slopes are steeper are more susceptible to water erosion. The clay content of the soil of this vegetation type (Waterberg Mountain Bushveld, Central Sandy Bushveld and Western Sandy Bushveld) is less than 15% with a swell-shrink potential being low in the southern part of the site.

Soils do not have poor or impeded drainage. Topsoil depth is less than 450mm. The water-holding capacity is low in the northern part of the site and moderate in the southern part of the site. Soils are not saline or sodic. Soils on the southern part of the site have structurally favourable properties for arable farming. Soils do not have beneficial water-retaining layers below the rooting zone.

Organic carbon percentage is moderate and pH is between 5.5 and 6.4. Soils on the southern part of the contravened site are somewhat susceptible to acidification and are eutrophic. Refer to Figure 12 below for a map illustrating soils on the contravened site.



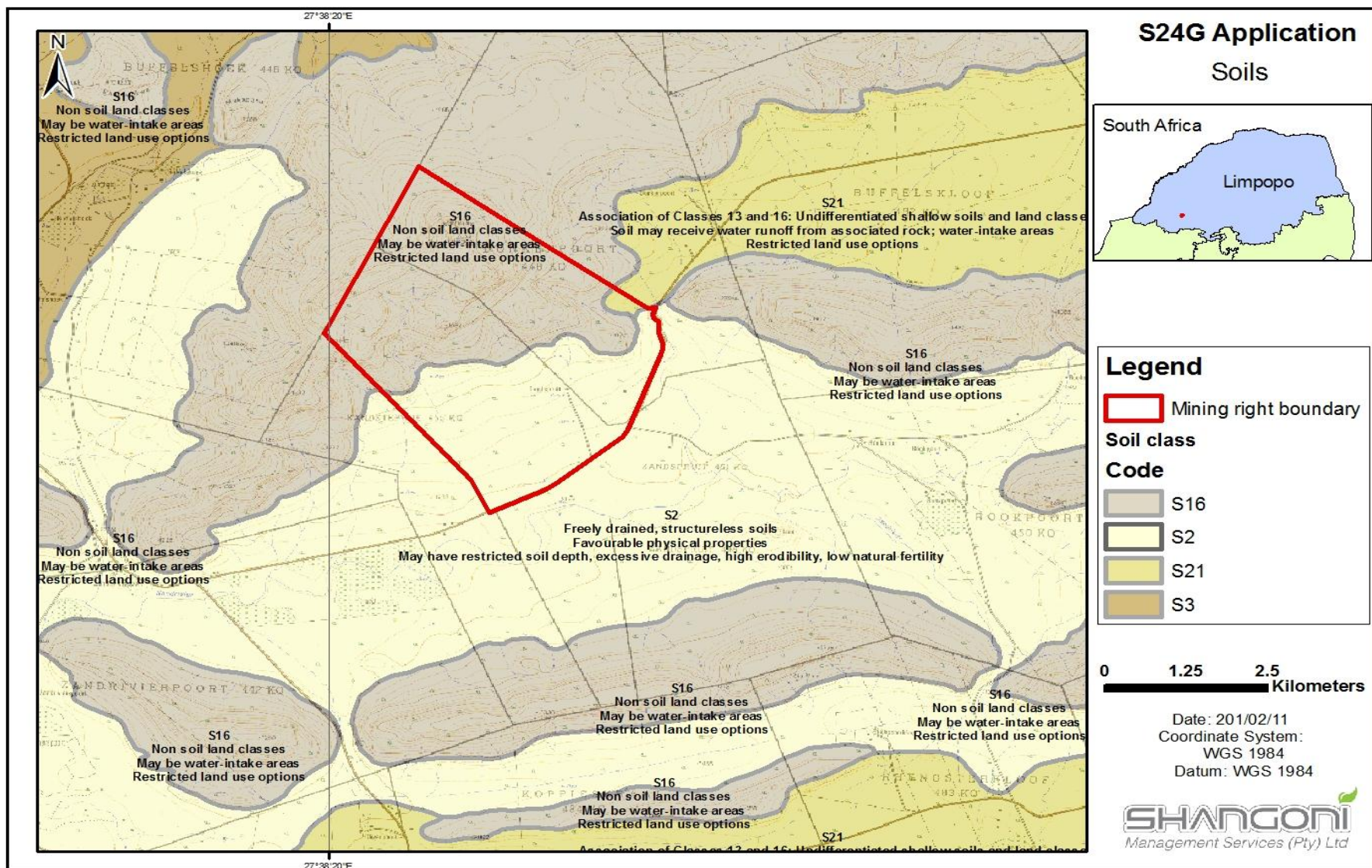


Figure: 12 Map depicting the soil properties of the contravened site

3.5 Land use and land capability

The following information on the land capability was sourced from AGIS. The land capability of the contravened site can be defined as wilderness on the north-western side, and moderate potential arable grazing land towards the south-eastern side. According to AGIS comprehensive atlas, the grazing capacity of the contravened site can be defined as moderate.

3.5.1 Current land use

There are crop fields towards the western side of the Crocodile River and irrigated land some distance to the east of the river. The current land use on the contravened site is a mixture of residential and highly limited eco-tourism. Neighbouring farms are utilised for game farming and breeding.

3.5.2 Evidence of misuse

Within the district area the challenges that are found include degradation of the land caused by overgrazing and deforestation.

3.6 Vegetation

3.6.1 Vegetation type(s)

The farms Donkerpoort 448KQ remaining extent and Randstephne 455KQ corresponds to the Savanna Biome and more particularly to the Central Bushveld Bioregion as defined by Mucina & Rutherford (2006). The site incorporates three ecological types known as the (1) Waterberg Mountain Bushveld, (2) Central Sandy Bushveld and (3) Western Sandy Bushveld (Mucina & Rutherford, 2006). The following information was extracted from a report titled "An ecological evaluation for the Aquila Steel Project, Thabazimbi" conducted by Pachnoda Consulting CC. For comprehensive details on this study refer to Appendix F1.

Waterberg Mountain Bushveld

The vegetation & landscape features of this vegetation type is rugged mountains with vegetation grading from *Faurea saligna* - *Protea caffra* bushveld on higher slopes through broad leaved deciduous bushveld (*Diplorhynchus condylocarpon*) on rocky mid - and foot slopes to *Burkea africana* - *Terminalia sericea* savanna in the lower-lying valleys as well as on deeper sands of the plateaus. The grass layer is moderately developed or well developed.

This vegetation type is predominantly confined to the northern half of the site, and is restricted to the Waterberg Mountains including a number of outlier hills and ridges of the Vlieëpoortberge and Boshofsberge near Thabazimbi. The conservation status of this vegetation type is least threatened, but poorly protected. About 9% is statutorily conserved mainly in the Marakele National Park and



Moepel Nature Reserve. More than 3% is transformed, mainly by cultivation. Erosion is generally very low to low. The clay content of the soil of this vegetation type is less than 15 percent; with a topsoil depth of less than 450 mm. Soils are not suitable for arable agriculture. Soils are mainly suitable for forestry or grazing where climate permits (ENPAT 2001).

Central Sandy Bushveld

This vegetation type is confined to a small area on the eastern extremity of the site. It extends in a broad arc south of the Springbokvlakte from the Pilanesberg region in the west, through Hammanskraal and Groblersdal to GaMasemola in the east. It is located on low undulating areas dominated by tall, deciduous woodland on deep sandy soils (typified by *Terminalia sericea* and *Burkea africana*). On shallow, gravel soils the floristic composition consists of *Combretum apiculatum* while *Acacia*, *Ziziphus* and *Euclea* are prominent on areas consisting of eutrophic soils. The Central Sandy Bushveld is “Vulnerable” with less than 3 % conserved in a number of scattered nature reserves. It is transformed by cultivation and urbanisation.

Western Sandy Bushveld

This vegetation type is dominant on the low-lying areas of the study site, and is typical of the sandy flats and undulating plains west of the Waterberg Mountains and north towards Steenbokpan. The vegetation structure varies from a tall, open canopy to low woodland dominated by broad-leaved and microphyllous species on soils underlain by arenite and sandstone. Noteworthy species include *Acacia erubescens* and *Combretum apiculatum*, with *Terminalia sericea* on areas comprising of deep sandy soils.

The Western Sandy Bushveld is also Least Threatened with about 6 % statutorily conserved in the Marakele National Park (Mucina & Rutherford, 2006). Refer to Figure 13 for a map illustrating the vegetation units associated with the contravened site.



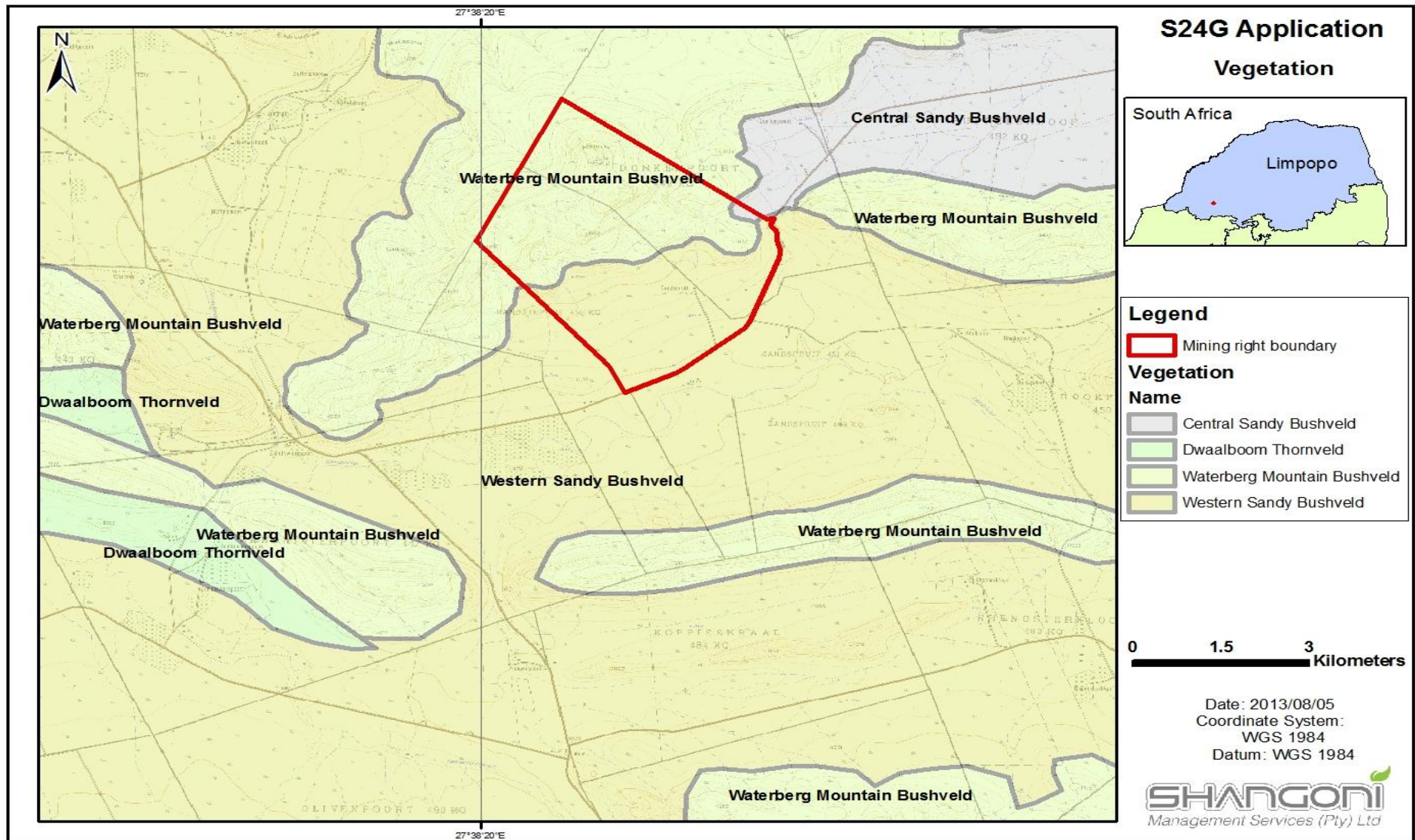


Figure 13: Map illustrating vegetation units at the contravened site

3.6.2 Dominant species

The dominant vegetation composition and structure on the contravened site comprises of five major communities simulated by environmental drivers such as rock cover and soil depth, altitude, slope and prominent geology (Table 10).

Table 10: The surface area (ha) of each defined vegetation unit in relation to the contravened site.

Vegetation Community and sub-communities		Environmental drivers	Area (ha)	%
1	Open <i>Protea caffra</i> – <i>Loudetia flavida</i> savannoid grassland	Mountain plateaus	350.51	16.44%
1a	Open <i>Loudetia flavida</i> – <i>Monocymbium cerasiiforme</i> crest grassland	Upper slopes	66.18	3.10%
1b.	Open <i>Protea caffra</i> – <i>Bewsia biflora</i> savannoid grassland	Upper slopes	284.34	13.33%
2	Open <i>Acacia caffra</i> – <i>Combretum molle</i> – <i>Diheteropogon amplexens</i> woodland	Steep rocky slopes;	737.50	34.59%
3	Dense <i>Combretum apiculatum</i> – <i>Dichrostachys cinerea</i> – <i>Panicum maximum</i> woodland	Gradual slopes and pediments	953.26	44.70%
3a.	Open <i>Dichrostachys cinerea</i> – <i>Nidorella resedifolia</i> shrubland	Sandy soils	181.33	8.50%
3b	<i>Combretum apiculatum</i> – <i>Panicum maximum</i> woodland	Rocky soils	559.28	26.23%
3c	Tall <i>Spirostachys africana</i> – <i>Dicliptera eenii</i> woodland	Drainage lines	87.91	4.12%
3d.	Open <i>Acacia erioloba</i> - <i>Panicum maximum</i> woodland	Deep sandy soils	124.73	5.85%
4.	<i>Mimusops zeyheri</i> – <i>Calodendron capense</i> Afromontane forest	Dolomite hills	36.91	1.73%
5.	<i>Croton gratissimus</i> – <i>Kirkia acuminata</i> woodland on dolomite hills	Dolomite hills	54.20	2.54%
Total			2132.38	100.00%

In general, *Combretum apiculatum*, *Loudetia flavida*, *Panicum maximum*, *Diheteropogon amplexens* and *Acacia caffra* were the dominant taxa observed on the site.

3.6.3 Endangered or rare species

Refer to Table 11 below for Red Data and Orange listed species likely to occur at the contravened site.



Table 11: Red Data and Orange Listed plant species likely to occur on the contravened site based on the occurrence of suitable habitat.

Species	Flowering Season	Habitat	Probability of occurrence	Conservation Status
Red Data Listed (threatened taxa)				
<i>Cyphostemma hardyi</i>	October - December	In shade of trees among boulders and outcrops.	Possible, however not encountered.	Vulnerable
<i>Cheilanthes deltoidea</i> subsp. <i>silicicola</i>		Northern aspects of rock crevices (phonolithic lava of the Waterberg Group). Also on chert outcrops.	Confirmed from the open Loudetia flavida – Monocymbium ceresiiforme crest grassland.	Vulnerable
Orange Listed				
<i>Adromischus umbraticola</i> subsp. <i>ramosus</i>	November-December	Rock crevices.	Confirmed from the Loudetia flavida – Monocymbium ceresiiforme crest grassland.	Taxonomically Uncertain (DDT)
<i>Boophone disticha</i>	October-January	Grassland and bushveld.	A widespread species on rocky substrates.	Declining
<i>Freylinia tropica</i>	July - June	Riverbanks and streams (at 1 800 m).	Absent, not likely to occur.	Rare
<i>Myrothamnus flabellifolius</i>	November - May	On sandstone or granite outcrops with shallow soils.	High, suitable habitat observed from sheetrock (confined to the Acacia caffra – Combretum molle – Diheteropogon amplexens woodland on steep rocky slopes.	Taxonomically Uncertain (DDT)

3.6.3.1 Red Listed Species

The threatened pteridophyte *Cheilanthes deltoidea* subsp. *silicicola* was confirmed from the *Loudetia flavida* – *Monocymbium ceresiiforme* grassland of the mountain summit. This species is restricted to the rock crevices and sheltered soil pockets of the large boulders that are located in open grassland. Given its small size and the habit of shrivelling during dry periods, it is often overlooked. It is currently known from only nine localities with an area of occupancy of 2-5 km². The estimated total population size is between 600 – 800 individuals (Raimondo *et al.*, 2009).

3.6.3.2 Orange Listed Species

Boophone disticha is a “declining” geophyte that was recorded from the grassland and woodland communities. It is declining as a result of its medicinal properties; large quantities are being harvested



and sold nationwide. Although this species is Orange listed, all populations should be managed within the footprint areas through prior marking and identification, and removed if threatened by destruction.

The dwarf succulent *Adromischus umbraticola* subsp. *ramosus* is another species of conservation concern. The taxonomic status of *A. umbraticola* subsp. *ramosus* is currently uncertain since it is easily confused with the similar *A. u.* subsp. *umbraticola*. If further research suggests that it deserves to be treated as a full species, it could justify placement in the “near-threatened” category. It was observed from rock crevices on the *Loudetia flavida* – *Monocymbium ceresiiforme* grassland.

3.6.4 Ecological sensitivity

The contravened site consists of a number of habitat types with high ecological value (refer to Figure 14 below for a map illustrating sensitive areas). The areas of avifaunal importance include the following:

- The Sand River tributary provides ideal habitat for the “near-threatened” Half-collared Kingfisher (*Alcedo semitorquata*) and is a critical important daily flight/dispersal route for water bird taxa. The Sand River tributary forms a vital corridor with other foraging habitat (impoundments) and roosting sites in a region where surface water is naturally scarce.
- The *Loudetia flavida* – *Monocymbium ceresiiforme* crest grassland and *Protea* savanna sustain a relict grassland community with affinities to the Drakensberg Highlands. In addition, the presence of *P. roupelliae* highlights the possibility for the occurrence of an isolated population of Gurney’s Sugarbirds (*Promerops gurneyi*) – a small population exists on the nearby Marakele National Park.
- The *Mimusops zeyheri* – *Calodendron capense* Afromontane forest and tall woodland along the various drainage lines support a bird composition of local interest that is commonly associated with forested habitat types.
- The ridges and vertical cliffs (part of the *Loudetia flavida* – *Monocymbium ceresiiforme* crest grassland) are the ideal nesting platform for Falconiiform taxa and foraging habitat for charismatic birds of prey species (Verreaux’s Eagle *Aquila verreauxii*);
- The large dead trees pertaining to the *Acacia erioloba* – *Panicum maximum* woodland provide roosting and breeding habitat for cavity nesters including the Red-billed Oxpecker (*Buphagus erythrorhynchus*) and the presence of free-roaming game is responsible for the establishment of a local population of “near-threatened” Red-billed Oxpeckers (*Buphagus erythrorhynchus*).



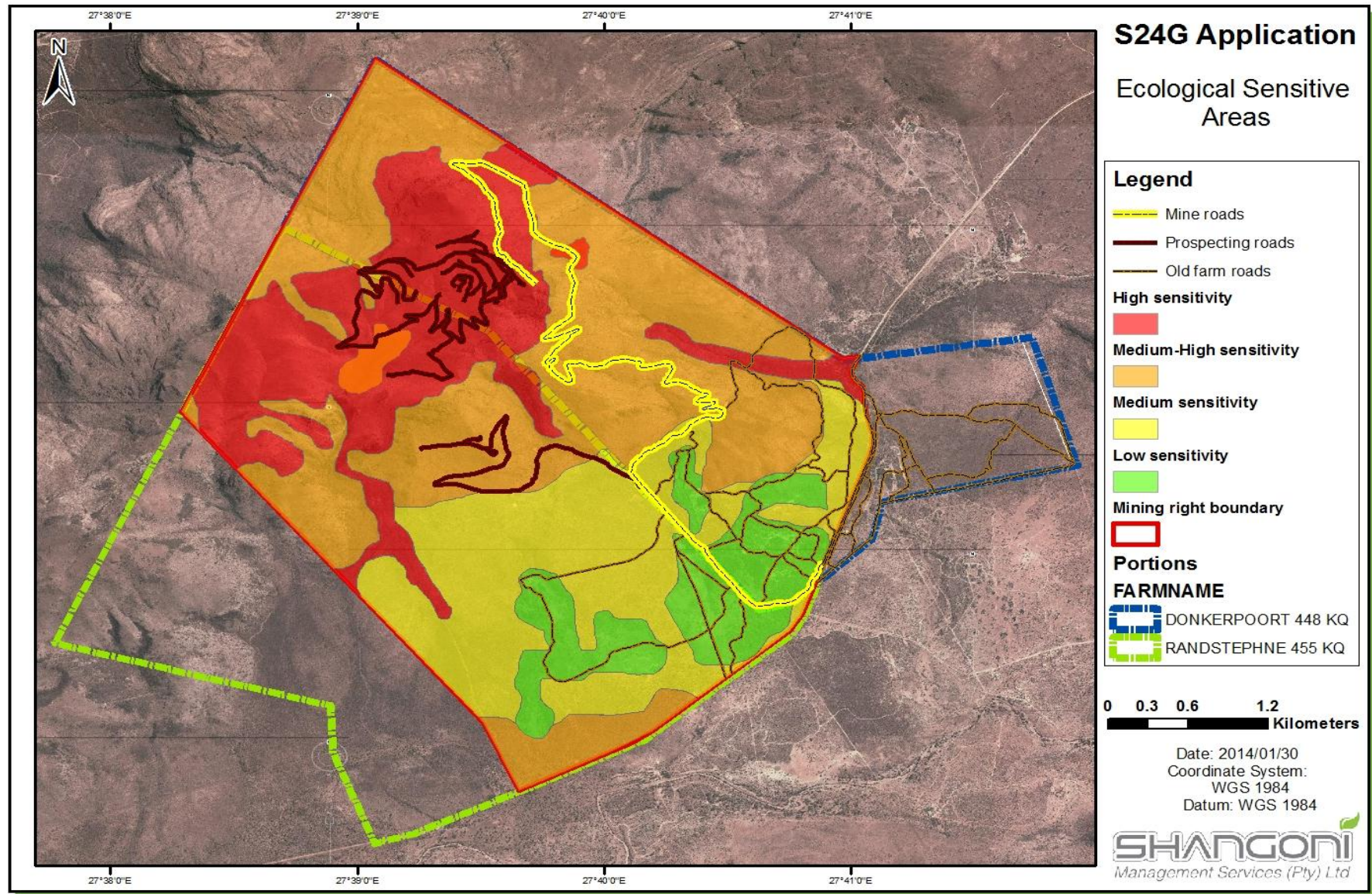


Figure 14: Ecological sensitive areas

3.6.5 Alien invasive species

Invaders and weed species are plants that invade natural or semi-natural habitats; especially areas disturbed by humans, and are commonly known as environmental weeds. Weeds that invade severely disturbed areas are known as ruderal and agrestal weeds. Most of these weeds are annuals colonising waste sites and cultivated fields. These weeds only persist on recently disturbed areas and seldom invade established areas (Henderson, 2001).

Declared weeds and invaders have the tendency to dominate or replace the canopy or herbaceous layer of natural ecosystems, thereby transforming the structure, composition and function of natural ecosystems. Table 12 below provides a list of declared weed and invasive plant species recorded during the vegetation assessment which was conducted on the contravened site..

Table 12: A list of weeds and invader plant species identified on the study site.

Species	Vernacular Name	Type	Control Measure	Category
<i>Achyranthes aspera</i>	Burrweed	Weed	Control	1
<i>Jacaranda mimosifolia</i>	Jacaranda	Invader	Control	3

3.7 Animal life

3.7.1 Commonly occurring species

The following information was extracted from the report titled “Aquila Steel Herpetofauna Survey; compiled by Luke Verburgt, dated July 2012” which is an appendix to the Ecological Evaluation report (Appendix F1). A Herpetofauna survey was conducted by Enviro Insight on the contravened site.

According to the Herpetofauna Survey, the contravened site falls within the extensive Waterberg bushveld region with a unique but widespread geology. The Waterberg mountain range provides habitat for several reptile species found almost exclusively on the mountain e.g. Waterberg crag lizard (*Smaug breyeri*), Waterberg Dwarf Gecko (*Lygodactylus waterbergensis*) and Waterberg quill-snouted snake (*Xenocalamus bicolor australis*) (Branch 1998). However, despite the geographic distribution restriction of these species to the mountain range, they are not listed as species of conservation concern due to the large extent of the Waterberg mountain range (~14500 km²). Furthermore, the herpetofauna of this mountain range enjoy a good degree of protection due to the fairly large portion of this area which is managed as game farms, private reserves, conservancy or national parks.

The herpetofauna species observed are all common and typical of the bushveld complex. The three species of conservation concern that can potentially be found on the contravened site have relatively large geographic distributions in relation to the project property. According to the herpetofauna



survey, it is unlikely that Giant bullfrogs (*Pyxicephalus adspersus*) will be found on the contravened site. Consequently, only species protected by NEMBA (2004) due to the risk of exploitation by humans are likely to occur on the property.

3.7.2 Vertebrate

3.7.2.1 Mammals

Refer to Table 13 for Red data species that might occur at the contravened site and to Table 14 for vulnerable bird species found in the area.

Table 13: Red Data Species found in the area

Scientific Name	Common Name	Status
<i>Damaliscus lumatus lunatus</i>	Tsessebe	Endangered
<i>Diceros bicornis minor</i>	Black Rhinoceros	Vulnerable
<i>Hippotragus equines</i>	Roan Antelope	Vulnerable
<i>Hippotragus niger</i>	Sable Antelope	Vulnerable
<i>Acinonyx jubatus</i>	Cheetah	Vulnerable
<i>Crocuta</i>	Spotted Hyena	Near threatened
<i>Hyaena brunnea</i>	Brown hyena	Near threatened
<i>Leptailurus serval</i>	Serval	Near threatened
<i>Lycan pictus</i>	African wild dog	Endangered
<i>Mellivora capensis</i>	Honey badger	Near threatened
<i>Cloeotis percivali</i>	Short-eared trident bat	Critically endangered
<i>Myotis tricolor</i>	Tamminck's hairy bat	Near threatened
<i>Pipistrellus rusticus</i>	Rusty bat	Near threatened
<i>Rhinolophus clivosus</i>	Geoffroy's horseshoe Bat	Near threatened
<i>Rhinolophus darlingi</i>	Darling's horseshoe bat	Near threatened
<i>Rhinolophus hildebrandtii</i>	Hildebrandt's horseshoe bat	Near threatened
<i>Atelerix frontalis</i>	South African Hedge	Near threatened
<i>Dasymys incomius</i>	Water rat	Near threatened
<i>Manis temminckii</i>	Pangolin	Vulnerable

Table 14: Vulnerable bird species in the area

Scientific Name	Common Name	Status
<i>Gorsachius leuconotus</i>	Whitebacked night heron	Vulnerable
<i>Gyps coprothercs</i>	Cape vulture	Vulnerable
<i>Gyps africanus</i>	African whitebacked vulture	Vulnerable
<i>Torgos tracheliotos</i>	Lappetfaced vulture	Vulnerable
<i>Aquila rapax</i>	Tawny eagle	Vulnerable
<i>Polemaetus bellicosus</i>	Martial eagle	Vulnerable
<i>Terathopius ecaudatus</i>	Bateleur	Vulnerable
<i>Falco naumanni</i>	Lesser kestrel	Vulnerable



Scientific Name	Common Name	Status
<i>Podica senegalensis</i>	African finfoot	Vulnerable
<i>Ardeotis kori</i>	Kori bustard	Vulnerable
<i>Pterocles gutturalis</i>	Yellowthroated sandgrouse	Near threatened
<i>Certhilauda chuana</i>	Shortclawed lark	Near threatened
<i>Buphagus erthrorhynchus</i>	Redbilled oxpecker	Near threatened

3.7.2.2 Bats

The following information was extracted from the “Assessment of the bats at Gatkop Cave, and possible mitigation measures” report compiled by Kearney and Ernest, (2012). Refer to Appendix F5 for comprehensive details of this study.

The Gatkop cave is located 24.61799°S, and 27.65235°E on the farm Randstephne 455KQ. The Gatkop cave is 436m north of the Sandspruit River and is situated approximately 4km from the contravened site. The Gatkop cave is at the foot slope of the mountainous area and is not situated at the higher altitudes where prospecting took place. The Gatkop Cave (15-18 December 2011) serves as a habitat for seven species of bats (*C. percivali*, *H.caffer*, *R.blasii*, *R. simulator*, *N. thebaica*, *M. tricolor*, and *M.natalensis*), which were recorded with verifiable voucher specimens and one species that was recorded by echolocation call only (*R. hildebrandtii*). The detectors placed further away from the cave also recorded about five other species that cannot be reliably identified from their call only. These species were unlikely, however, to be roosting in the cave, given their call parameters were not like those of cave roosting species, and that they were not recorded on the detector at the entrance to the cave.

Given the large numbers of female *M.natalensis* relative to the other species, it appeared *M.natalensis* is still using the cave as a maternity roost. Based on the capture of volant sub-adults, post-lactating and lactating females the following species may also have used the cave as a maternity roost: *R. blasii*, *R. simulator*, *N. thebaica*, and *M. tricolor*. However, given the absence of any sub-adult *M.natalensis* in the captures, it was assumed the young of *M. natalensis* were non-volant, and, or still being born. Since only males were caught of *C. Percivali* and *H. caffer*, and no individuals of *R.hildebrandtii* were captured, it is not known if these species also used the cave as a maternity roost. It was not possible to determine if some of the species were using the roost as a day or a night roost (DEWHA 2010), and not all species were recorded directly at the cave entrance. There is also a possibility levels of activity at the roost entrance may have been over-estimated given the observation of bats ‘swarming’ above the flat area just before the decline leading into the cave entrance, after dark around 20h30, once the main emergence appeared to have ended. Furthermore, the Anabat system has an additional constraint that only the call with the loudest intensity is recorded at a point in time, which in the context of a variety of different species occurring together in an area at a similar time, means species with lower intensity calls would be under-sampled in relation to those with louder intensity calls.



Although the capture technique of the bat traps appears not to catch all species with equal probability, i.e. *C. percivali* appears better able to avoid capture than most other species (Seamark, 2005); the numbers of each species captured may give some indication of the relative size of the populations of each species utilizing Gatkop Cave. The species for which the most number of individuals were caught, listed in order from highest to lowest, were: *M.natalensis*, *R.simulator*, *N.thebaica*, *R.blasii*, *H. caffer*, *M. tricolor*, *C.percivali*, and *R.hildebrandtii*. The numbers of individuals of each of the species from the lowest to the highest increased exponentially, with there being 690 times more *M. natalensis* caught than individuals of *H. caffer*, *M. tricolor*, and *R. hildebrandtii*, and 31 times more *M.natalensis* than the second most captured species, *R. simulator*. The activity levels calculated from the passively recorded echolocation calls for the different species may reflect differences in behaviour, i.e. a single individual commuting straight past the detector would record less activity than a single individual foraging within the recording range of the detector. However, comparing the mean of the highest activity recorded over three days at the entrance to the cave for each species, the species listed in order of highest to lowest activity were: *M. natalensis*, *R.simulator*, *R.blasii*, *R.hildebrandtii* and *M. tricolor*. The different levels of activity for each species, from the lowest to the highest activity also increased exponentially, with *M.natalensis* being 114 times more active than *M.tricolor*, and twice as active as *R. simulator*.

Subsequent to the site visit Prof Mac van der Merwe confirmed Gatkop Cave is the same cave he previously reported as Sandspruit Cave No. 1. This means Gatkop Cave has a considerable history of prior evidence regarding bat records at the site, albeit listed under the name Sandspruit Cave No. 1. Interestingly though, in contrast to the eight species we recorded from 15 to 18 December 2011, throughout the work by Prof Mac van der Merwe at Gatkop Cave between 1967 and 1984 during the *M. natalensis* maternity period, i.e. from the end of October to the beginning of March, *M. natalensis* was usually the only bat species recorded at the cave. The exception being during a visit on 17 December 1984 when a small colony of 200-300 juvenile *M.tricolor* was also observed in the cave (van der Merwe, 1987). No *M.tricolor* was observed during a subsequent visit on 26 January 1985 when the cave was still occupied by *M.natalensis* females and juveniles (van der Merwe, 1987).

A maternity roost of some of the bat species we identified at Gatkop Cave had been recorded in 1967 at another cave 9kilometers northwest of Sandspruit Cave No 1. Four small clusters of *R.simulator*, *N.thebaica*, *M. tricolor*, and *C.percivali* with their young were observed at Rookpoort Guano Cave on 10 December 1967 (van der Merwe, 1987). With the exception of *C.percivali*, which was never recorded as Gatkop during the work between 1967 and 1984, the other species had been recorded at Gatkop Cave, but only at times of the year outside the *M.natalensis* maternity period, i.e. In June and August (van der Merwe, 1987). It is interesting that *C.percivali* was not recorded at Gatkop Cave during the period of Prof Mac van der Merwe's work between 1967 and 1984, given the species was identifiable at the nearby Rookpoort Guano Cave. The absence of *C.percivali* from Gatkop Cave during the work of Prof Mac van der Merwe, may have been the result of it being overlooked, since it appears this species can be overlooked during visual inspection and is apparently under-sampled by



many capture techniques (Seamark, 2005). However, if it was absent and the use of Gatkop Cave as a roost for *C.percivali* is relatively recent, it may suggest *C.percivali* is not as faithful to a particular roost, and that over the course of some years they will move between different roosts, or they have been disturbed at Rookpoort Guano Cave and have moved from Rookpoort Guano Cave to Gatkop Cave, or this may represent an expansion of the population into Gatkop Cave.

Work on *M.natalensis* by van der Merwe (1973a, 1978) at Gatkop from November 1967 to March 1968, and October 1974 to February 1975 indicated the females had given birth to their single young from the end of October, with the peak in births occurring from the end of November to the beginning of December, and this species had left the cave by 3 March in 1968. Gatkop Cave is used as a maternity roost for *M. natalensis*, although far fewer non-pregnant females and males have also been observed along with the pregnant / lactating females in this roost. As indicated by banding results this species migrates to and from Gatkop to other caves on the Highveld where it hibernates for the winter (van der Merwe, 1973a, 1975).

There have been several visits to the cave by the Gauteng and Northern Area Bat Interest. During visits on 13 September 2005 and 4 February 2006, the following species were observed: *M.schreibersii*, *C.percivali*, *R.simulator*, *R.blasii* (Dean Peinke, pers. comm.), with *R.simulator* and *R.blasii* being verified by voucher specimens, and during a visit in September 2011, six species were observed: *C.percivali*, *N.thebaica*, *M. tricolor*, *R.blasii*, *R.simulator* and *M.natalensis* (Stan Rodgers, pers. comm.).

According to the IUCN Red List assessment categories of the last regional assessment (Friedmann and Daly, 2004), of the species we recorded one was listed as Data Deficient (*H. caffer*), two were listed as Least Concern (*R.simulator*, *N.thebaica*), two were listed as near threatened (*R.hildebrandti*, *M.natalensis*, *M.tricolor*), and one each were listed as Vulnerable (*R.blasii*) and Critically Endangered (*C.percivali*). Even though *M.natalensis* is not the species with the most threatened conservation status, in the context of the conservation of the bat populations roosting at Gatkop Cave, it is the specialist's opinion that *M.natalensis* is the species most at risk to any potential damage to this roost. Gatkop Cave has been documented as a maternity roost for *M.natalensis* species since 1967, at which time it was noted the roost must have been in use for some time before that given the deposition of guano (van der Merwe, 1973a). It is also one of only two maternity roosts for this species known in the bushveld region and of those was recorded as supporting the larger population. Van der Merwe (1973a) recorded Gatkop Cave (Sandspruit Cave No.1) as having more individuals (estimated 158 900 juvenile *M.natalensis* in 1967 and 110 000 in 1974) than Peppercorn's Cave at Makapans (estimated 49 000 juvenile *M. natalensis* in 1967 and 59 000 in 1974). As evidenced by the results of our site survey, the high level of fidelity shown in the continued use of Gatkop Cave as a maternity roost by *M.natalensis* indicates the preservation and conservation of this cave is significant for the long-term stability / security of the population of this species.



3.7.2.3 Reptiles

Table 15: Reptile species observed during the site survey

Reptile Species	
<i>Atractaspis bibronii</i>	<i>Lygodactylus capensis</i>
<i>Hemidactylus mabouia</i>	<i>Smaug breyeri</i>
<i>Pachydactylus affinis</i>	<i>Platysaurus minor</i>
<i>Trachylepis varia</i>	<i>Afroablepharus walbergii</i>
<i>Acanthocercus atricollis</i>	<i>Trachylepis punctatissima</i>
<i>Gerrhosaurus flavigularis</i>	<i>Agama aculeata distanti</i>
<i>Stigmochelys pardalis</i>	<i>Chamaeleo dilepis</i>
<i>Pelomedusa subrufa</i>	<i>Dendroaspis polylepis</i>
<i>Naja annulifera</i> R) <i>Bitis arietans</i>	<i>Telescopus semiannulatus</i>
<i>Psammophis subtaeniatus</i>	

3.7.3 Endangered species

No herpetofauna species of global conservation concern (IUCN 2012) were observed on the study site. However, three species of local conservation concern may occur here namely the African Rock Python (*Python natalensis*), the Giant Bullfrog (*Pyxicephalus adspersus*) and the African Bullfrog (*Pyxicephalus edulis*). African rock pythons are listed by NEMBA (2004) as protected species and as “vulnerable” by the South African red data book (Branch 1988). Du Preez & Carruthers (2009) list the Giant Bullfrog (*Pyxicephalus adspersus*) as “vulnerable” while NEMBA (2004) lists both the Giant and African Bullfrog species (*Pyxicephalus spp.*) as protected. Therefore, any potential negative impact from the exploration and intended mining operation that is likely to influence either of the above-mentioned species should be mitigated or prevented.

3.8 Surface water

As part of the integrated water management, a Storm Water Management Plan (based on the Best Practice Guidelines G1 (DWAF, 2006)) was developed by Shangoni Management Services for Aquila titled: “*Storm Water Management Plan, Aquila Steel (Pty) Ltd*”, dated January 2014. The mentioned plan describes the water flow over and around the contravened site and proposed mining activities. It also provides strategies for optimising the separation of clean and affected runoff water. Refer to Appendix F6 for a copy of the mentioned Storm Water Management Plan.

3.8.1 Catchment areas

The contravened site is located in the Limpopo River Catchment area, and within the A24H quaternary catchment area (Figure 15). This quaternary catchment area has a surface size of 23,762 km². This area is within the Limpopo/Olifants drainage region. The Sand River, a tributary to the Limpopo River, flows south past the Klipgat tenement. To the west flows the Sondags River through the Sandrivierpoort. The Sandspruit is a tributary to the Sand River and flows through the farm



Donkerpoort. There are also many drainage lines from the mountainous areas towards the Sand River flowing in a southerly direction.

There are no perennial streams in the actual study area, but there are several non-perennial drainage lines feeding into permanent streams in the valley below the mountain. The non-perennial drainage lines, flows only during rain fall events.

Numerous drainage lines occur from the higher peaks in the north-eastern parts of the site and flows down towards the Sand River south of the site.

The drainage area in the vicinity of the site is well vegetated with grass and tree species accompanied by a combination of sandy and rocky areas forming initial hilly and steep topography that gradually flatten towards the south. The sub-catchment drainage density of the area is 1.56 km / m².

3.8.2 Flood peaks

Flood peaks and volumes for recurrence intervals of 1:20, 1:50 and 1:100 years and the regional maximum flood are given in Table 16 below. The results are based on the Rational Method and storm rainfall for the station Kalkheuwel (550612).

The rational method was used to determine flood peaks and volumes for of the sub-catchment. The rational method is based on a simplified representation of the law of conservation of mass. Rainfall intensity is an important input for calculations. It is one of the best-known and the most widely used methods for determining peak flows from small catchments (< 15 km²). The peak flow is obtained from the formula that indicates that $Q = CIA$, where Q is the peak flow, C the runoff coefficient, I the rainfall intensity and A the effective area of the catchment.

Table 16: Flood Peaks and Volumes

POSITION	1:20 YEARS	1:50 YEARS	1:100 YEARS	RMF
Crocodile River	358 m ³ /s	584 m ³ /s	895 m ³ /s	2 790 m ³ /s

3.8.3 Mean annual runoff (MAR)

The natural surface Mean Annual Runoff (MAR) is approximately 646 million m³/annum.

3.8.4 Surface water quantity and use

Surface water in the area is used mainly for agricultural purposes; with little domestic use. No assessment has been done for the contravened site; however as part of the Meletse Iron Ore project, a hydrological assessment is completed.



3.8.5 Water authority

The contravened site falls within the Crocodile (west)/Marico water management area (Crocodile). The North West Department of Water Affairs is the responsible water authority.

3.8.6 Surface water quality

The northern part of the site falls within the River FEPA (Freshwater Ecosystem Protected Area) and associated sub-catchment area. River FEPAs achieve biodiversity targets for river ecosystems and threatened/near threatened fish species, and were identified in rivers that are currently in a good condition (A or B ecological category). Their FEPA status indicates that they should remain in a good condition in order to contribute to national biodiversity goals and support sustainable use of water resources. FEPA status applies to the actual river reach within such a sub-quaternary catchment.

No surface water quality assessment has been conducted for the contravened site; however as part of the Meletse Iron Ore Project, a study has been commissioned for the EIA phase.



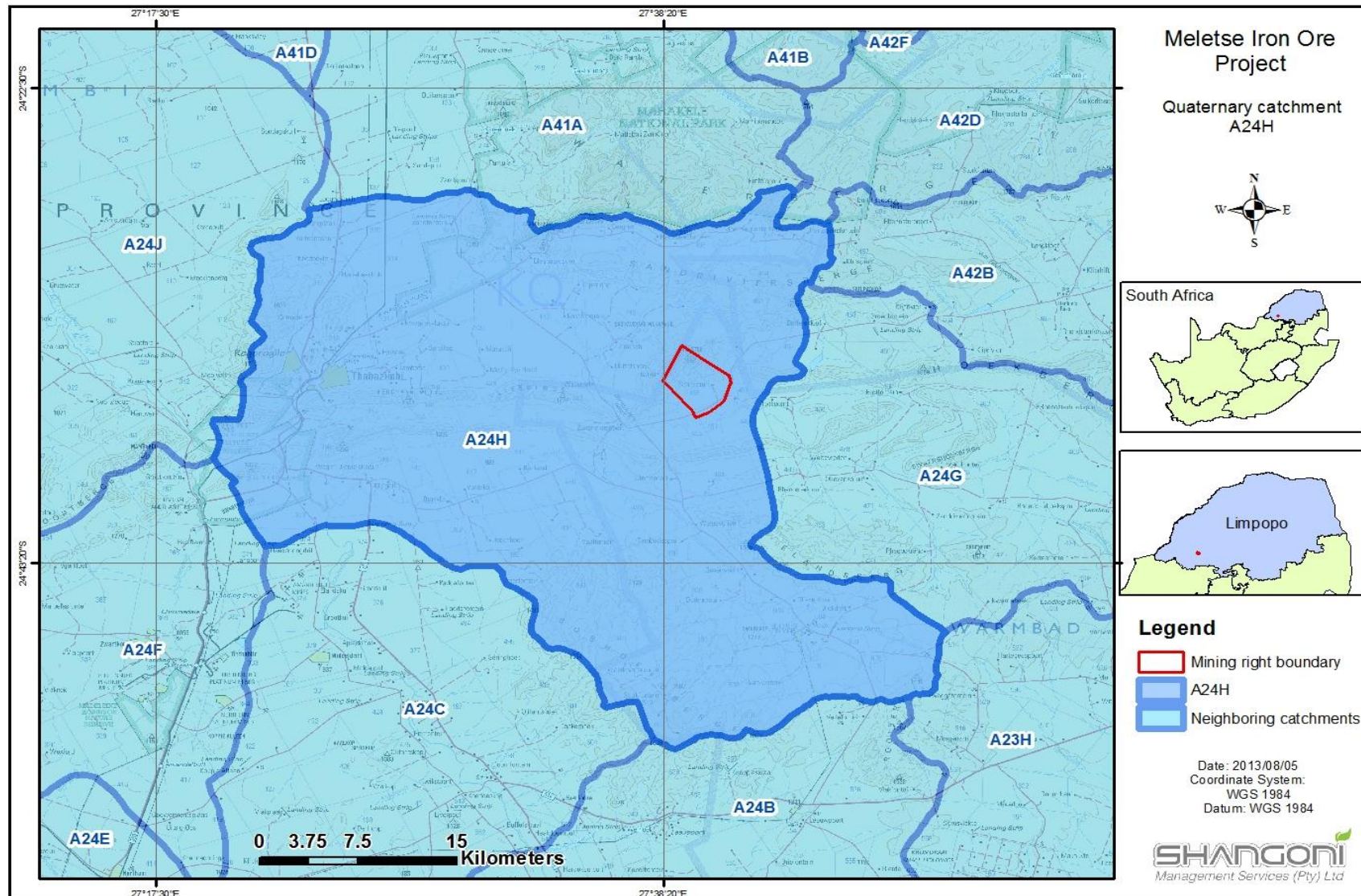


Figure 15: Quaternary catchment

3.9 Groundwater

A report titled 'Aquila Steel Meletse Iron Ore Project: Status and Plan of Study for Geohydrological Investigation as input to the Environmental Impact Assessment dated July 2012 and compiled by Groundwater Complete, discusses the status or progress with the groundwater investigation, and outlines the plan of study for the groundwater specialist investigation as input to the environmental impact assessment and management plan. Refer to Appendix F2 for comprehensive details on this study.

3.9.1 Aquifer type

The following information is extracted from the geohydrological status and plan of study report. Aquifer delineation is conducted to indicate the lateral extent of the aquifer(s) in the area. An aquifer can be delineated in more than one way, such as:

- Using high or low topographical areas over which flow is not possible,
- Mapping structures such as intrusive dykes, progressive sills or displacement faults that act as groundwater flow barriers to form aquifer compartments.

The latter method is probably the most accurate to define the aquifer 'compartment' or boundaries but the required detail of structural geological information is seldom available.

The first method where the topographical high and low areas are taken into account will be used to delineate the Meletse aquifer. The aquifer will start to the north of the mining area on the higher topographical regions and extends to the Sand River in the south where it discharges. The delineated aquifer in the Meletse area is presented in Figure 16 below.

3.9.2 Depth of water tables

According to the geohydrological status and plan of study report, water level information in the Meletse area was scarce at the time of the study. Three water levels were measured during the hydrocensus in October 2011; the one borehole is more than 8km from the site. Five water levels were received from Aquila. The water levels vary between 34 and 194 m. Whether these water levels have been impacted on by factors such as pumping; it is unknown.

3.9.3 Groundwater use

According to the Geohydrological study report, a hydrocensus and groundwater user survey was performed in the Meletse area in October 2011 and 10 borehole localities were recorded. From the survey it followed that the boreholes in the Meletse area are used mainly for domestic and livestock watering purposes. The livestock include wildlife and commercial game. Groundwater is the sole source of water for the surrounding farms.



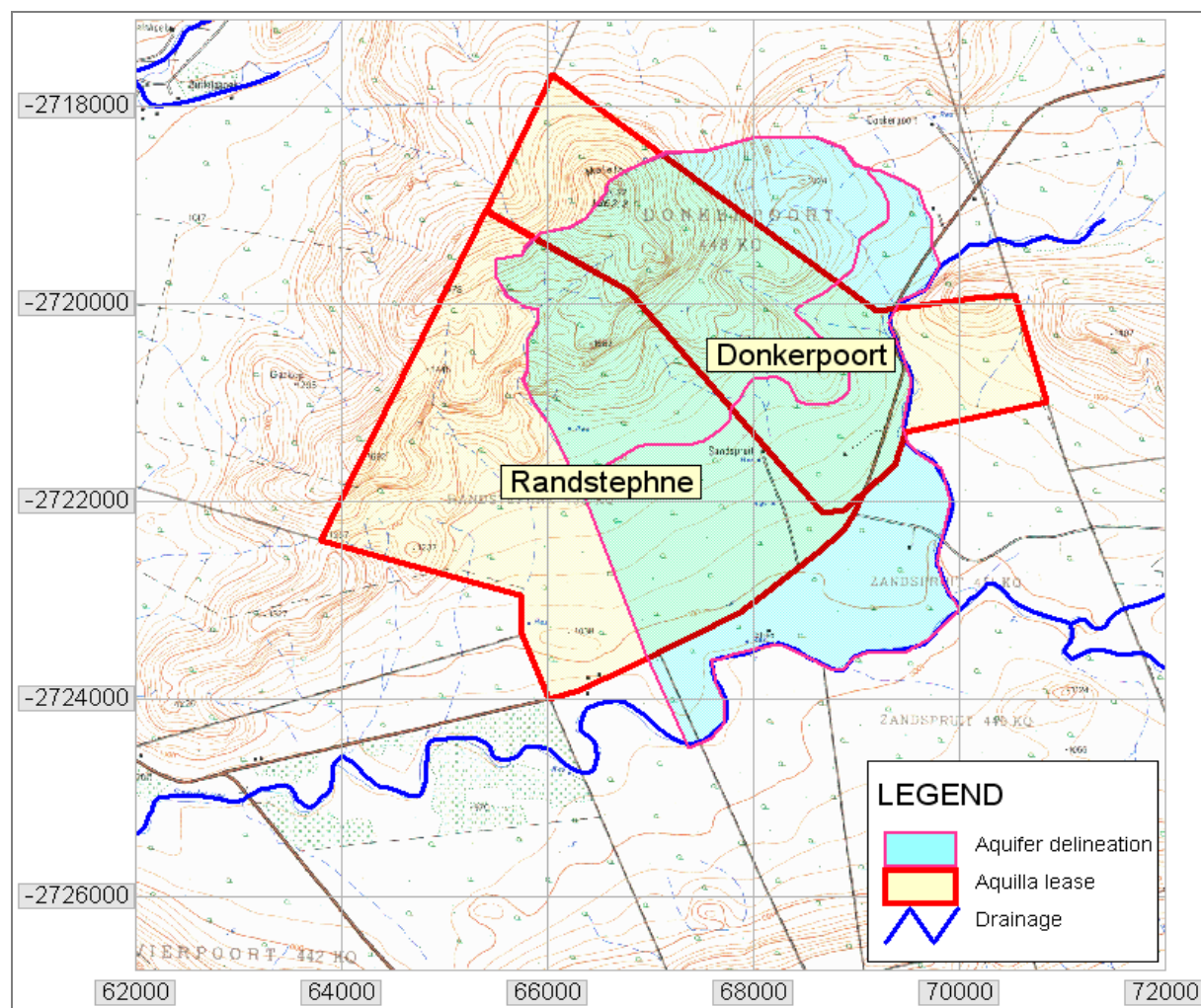


Figure 16: The delineated aquifer in the Meletse area

3.10 Sensitive areas

Sensitive landscapes located on the site include the cave, kloofs, indigenous forest and the grassland (Refer to Figure 17 for a Map illustrating sensitive areas).

Sensitive landscape identified within Randstephne includes the cave [as described in the Paleontological Assessment: Site Visit Report, dated February 2012, compiled by John E. Almond, Natura Viva CC (Appendix F3)] and the indigenous forest [as described in an Ecological Evaluation report for the Aquila Steel project, Thabazimbi Donkerpoort dated January 2012; compiled by Pachnoda Consulting CC (Appendix F1)]. The indigenous forest is situated on the north western side of Donkerpoort and overlaps to the north-eastern border of the farm Randstephne. The indigenous forest is recognised as an area of special concern. The forest does not stretch from the foot slopes of the mountain but starts higher up in the mountain towards the top of the mountain. The cave is situated some four kilometres SSW of the contravened site and over 600m lower in elevation. The cave is known to be used as a roosting site for the Short-eared Trident Bat (*Cloeotis percivali*), which conservation status is listed as Critically Endangered by the Endangered Wildlife Trust. The cave is

also situated at the foot slope of the mountainous area and is not situated at the higher altitudes where the prospecting activities took place. The protection of cave roosting sites is an essential management tool for the survival of this species. It is not known if this species roosts in the specific caves throughout the year.

Donkerpoort also supports a healthy population of *Cheilanthes deltoidea* subsp. *silicicola* with an approximate area of occupancy of 124 ha. This locality represents the second known population of *C. deltoidea* subsp. *silicicola* in the Waterberg region. The bulk of the population corresponds to primary floristic communities at higher elevations and mostly on relatively steep slopes. It is typically associated with grassland communities dominated by an open *Loudetia flavida* - *Monocymbium cerasiiforme* and *Protea caffra* - *Bewsia biflora* alliance. However, it is also confined to woodland dominated by an *Acacia caffra* - *Combretum molle* - *Diheteropogon amplexans* composition, albeit its occurrence is scattered and of low density. Both the *Protea caffra* – *Loudetia flavida* savannoid grassland and the *Acacia caffra* – *Combretum molle* – *Diheteropogon amplexans* woodland represent primary compositions. These communities together with the forest are considered as sensitive.

The site is located outside of the Waterberg biosphere reserve.



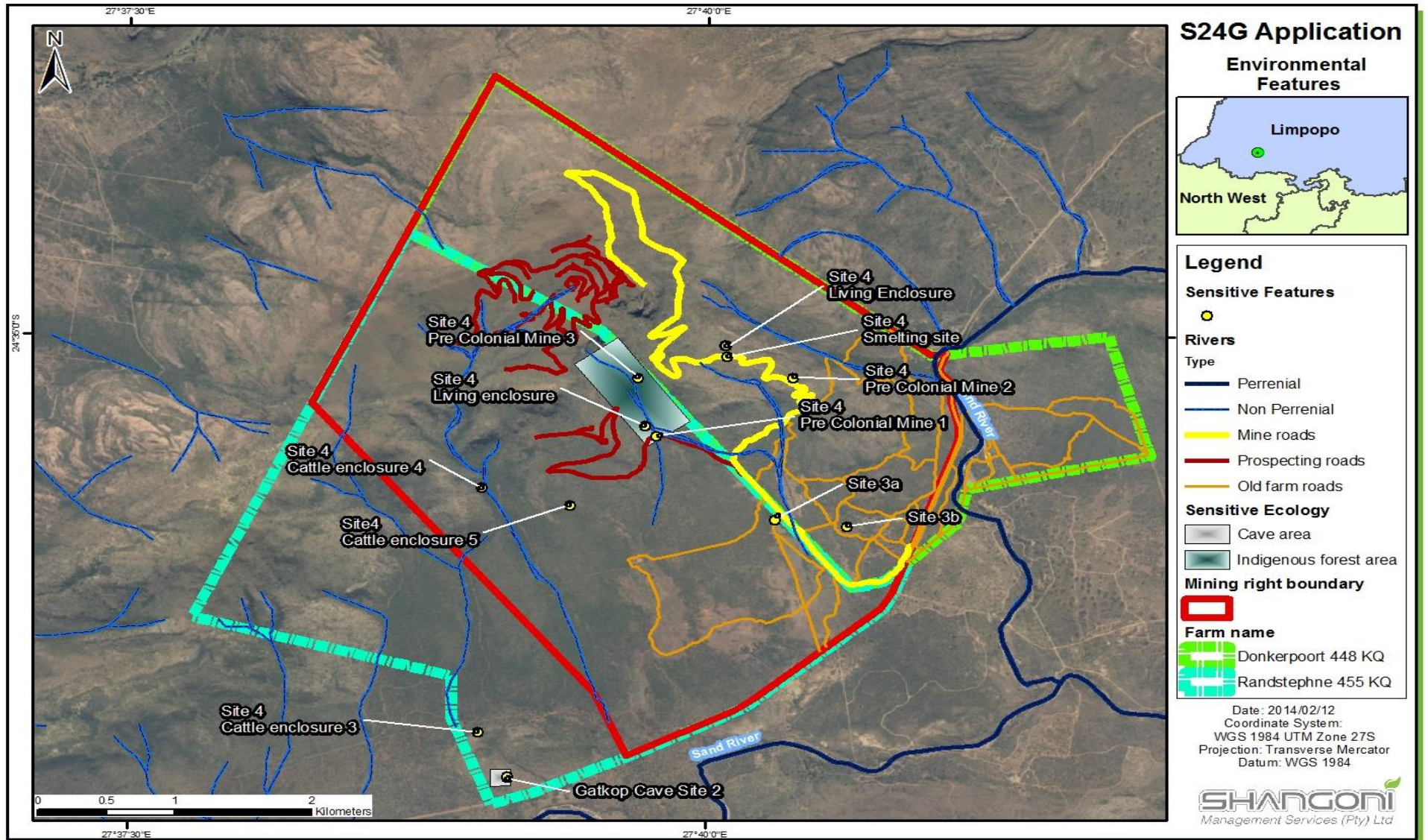


Figure 17: Environmental features

3.11 Sites of archaeological and cultural interest

The following information was extracted from the Cultural Heritage Resources Assay Report for the farms Donkerpoort 448KQ, Randstephne 455KQ and Waterval 443KQ, Thabazimbi, Limpopo Province; dated June 2011; compiled by Sidney Miller of African Heritage Consultants CC. For comprehensive details on the heritage study refer to Appendix F4 and to Figure 18 below for a Google image showing concentrations of heritage resources on the farms that were assessed.

The site is located in the warm Waterberg Bushveld where several different veldt types intersect (See section 2.6.6). From writers such as Moffat and others it is understood that the region was harsh to live in, especially during summers, and under the constant threat of Malaria, and the Tsetse fly. Game abounded here in the past, and the vegetation yielded sufficient sources for gatherers, and then more.

It appears to have been a place that both attracted and repelled the settlement of people through time, but the region had another aspect to consider, namely its minerals. These have been exploited since early times, and throughout time to the present day, where especially iron is one of the most treasured resources.

For the South African Iron Age people that have apparently been active in the region since the eighth century A.D, the iron was used for the manufacturing of implements and weapons that assisted them in farming, hunting, war and as bridal procurement. It also formed part of an intertribal tax system.

Because of the above it is generally known that Stone Age people, as well as Iron Age people utilised the region throughout the centuries before white hunters exterminated the Buffalo that carried the dreaded Tsetse fly. Changes in climate, to a large extent, eliminated the occurrence of malaria.

The Stone age in the region is represented through a sprinkling of stone artefacts throughout the area, and fixed sites such as Mokopaan that represents nearly the full range of the 'Homo specie's' development. In the general Waterberg region, the Stone Age is furthermore represented by a large number of shelters that acted as semi-permanent dwellings for the more recent Stone Age peoples and also retains rock-art that formed part of their religious lives.

Similarly the early black farmers are well represented from 600 A.D. to 1800 A.D. Even that being said, it generally appears that, even during that period; the area has been relatively sparsely populated. One may attribute this to the climate (summer) conditions of the area.

The same was true for the later settlement of European Farmers. In the late nineteenth century the area was used as a winter hunting ground by people of all walks of life, even including Paul Kruger, President of the then Z.A.R. It was only with the advent of the 'discovery' of the massive iron ore body of Thabazimbi in the 1920's that farms were first occupied by white settlers. The large scale iron

ore mining today only commenced in the mid nineteen thirties, with the workforce of one mine manager, Mr Jourdaan and approximately 20 black labourers.

[as described in the Cultural Heritage Resources Assay Report for the farms Donkerpoort 448KQ, Randstephne 455KQ and Waterval 443KQ, Thabazimbi, Limpopo Province; dated June 2011; compiled by Sidney Miller of African Heritage Consultants CC (Appendix F3)].

Features from some of the possible periods mentioned above were located during the assessment, including a site of high religious context for ancestral worshippers from the region.

Site 1:

The grave of one J.H.T.O.Perreira is located on the banks of the Sondagsrivier close to the bridge. On the 1: 50 000 map 2427DA Sandrivierspoort the abbreviation 'R' represents a watering point (possibly an old 'drif' and 'uitspanning') on the 'old road'. The inscriptions on his headstone gives the following information; born in 1881 being a 'Burger' of the Z.A.R., occupation as 'Kruitmaker' and cause of death as 'Vermoor' IN 1901. This is a rather interesting issue from the second South African War, as it is one of the few links to that period of our history here in Thabazimbi. The site should be seen to be of high significance, and treated accordingly.

Site 2:

The second site is a dolomitic cave that is still regularly visited for religious purposes. It is well defined by a sturdy game fence and is under supervision of one Thomas Mothloki. This site must be treated with utmost care from a cultural point of view.

This is a site of considerable cultural, historical and archaeological significance, as recognised in the study of Iron Age archaeology of the Rooiberg region, Limpopo, by Hall (1981). Gatkop Cave probably played a role as a refuge site from Mzilikazi's Ndebele impis during the early nineteenth century Mfecane, and perhaps also later following the arrival of the European trekboers. It is apparent that the archaeological resources within the cave – such as the wooden kraals and abundant pottery recorded by Hall in the large entrance chamber - have since been considerably degraded. Surface scatters of archaeological material are still apparent in front of the mouth of the cave. These include ostrich eggshell beads, abundant shards of Iron Age pottery assignable to the Late Iron Age (Hall's 1981 Rooiberg Unit 3, approximately dated to the Fifteenth Century) as well as Middle Stone Age flakes of ferruginous quartzite (Amanda Esterhuysen, Madelon Tusenius, pers. comm, 2011).

The various types of caves and cave openings found in the Transvaal dolomites are illustrated by Brain (1958) in the specialist study. Gatkop Cave, situated on the gentle lower slopes of the Sandrivier Valley with a short, fairly wide and moderately sloping side entrance, is intermediate between Brain's types D and E.



The regional dip of the Transvaal Supergroup rocks in the study region is towards the south. However, well-exposed medium-bedded Malmani dolomites at the cave entrance show a moderately steep local dip to the northeast. The south-facing entrance is littered with large, angular blocks of dolomite, some of which show well-developed elephant-skin weathering suggesting protracted exposure to the elements. The coarse rubble of fallen blocks with interstitial soil and hillwash continues down into a large main or entrance chamber, descending gently to the NE. The long axis of the chamber probably extends more-or-less NW-SE, parallel to the regional strike of the bedrocks (This orientation is assumed for the purposes of the present description). The main chamber of the cave is still largely open, with only a relatively limited sheet or cone of coarse blocky debris extending into it from the short but fairly wide side entrance. The cave therefore does not appear to have been open to the exterior over a very long time interval in contrast with, for example, the cave systems in the Makapansgat Valley and at Swartkrans. Above a steeply sloping pile of large fallen blocks (collapse breccia) at the NW end of the main chamber there is a higher-lying sub chamber that hosts a sizeable colony of bats and is floored with a soft carpet of bat guano. One or more small, open shafts that might possibly lead to lower-lying chambers are present in the NW part of the main cave.

The Malmani Subgroup host rocks consist of medium to thin-bedded, pale grey to buff dolomites, dipping to the northeast, with numerous bands, lenticles and clots of yellowish to grey secondary chert and occasional thin grey mudrocks. Bedding is generally tabular, but often obscured by high levels of tectonic brecciation related to the major thrust fault zone along which Gatkop Cave developed. Around the cave walls, especially on south-western side, the dolomite bedrock is obscured by a variety of cream to rusty-brown speleothems built of calc tufa or dripstone (sometimes termed travertine). These speleothems include dense arrays of small stalactites on the roof and ridged to rippled flowstones on the walls and floor. Sheets and irregular layers of flowstone locally overlie massive to bedded gravels and reddish finer sediments on the cave floor. These fine ferruginous sediments are sometimes referred to as “cave earth”. They probably consist of a mixture of allochthonous soil or hillwash plus aeolian dust together with autochthonous chert debris and terra rossa (i.e. iron-rich, insoluble residuum from dolomite dissolution). Thinly-laminated flowstone interbedded with reddish gravelly “cave earth” can be seen near the main entrance.

Good, water-worn sections through dolomite breccias are preserved against the south-western face of the main chamber, with recent reddish-brown, fine-grained silty “cave earth” deposits banked up against them. The dolomite clasts are variously sub rounded to angular with a brownish matrix. These well-cemented breccias, either clast- or matrix-supported, clearly belong to an early phase of cave infilling. A meter-thick band of highly ferruginised and / or cave earth - rich breccia occurs within a downward-projecting roof buttress on the north-eastern wall of the main cave. It is unclear whether any extraneous clasts, such as gravels of banded ironstone, are present within this zone. Lenticles of rubbly, vuggy dolomite breccias with pebble- to cobble-sized clasts, some apparently rounded, are exposed in the same area.



The most substantial breccias observed in Gatkop Cave are found on the steep walls of the north-western “upper” or bat-infested subchamber in the NW. The exposures are heavily draped in cobwebs. Some of the breccia bodies are plastered against the well-bedded Malmani dolomite bedrock. Other lenticles or bands of well-cemented breccia appear to be conformable and interbedded with the dolomitic bedrocks, but they probable infill bedding-parallel erosional cavities. The breccia clasts – exclusively composed of dolomite and chert - are poorly size-sorted, chaotically organised and often sub rounded, implying a degree of water transport. These breccia exposures are ancient and water-worn. They are capped and cemented locally by pale, laminated flowstone.

In accordance with the brief for this paleontological site visit to Gatkop Cave, attention focused mainly, but not exclusively, on breccias within the cave infill. Some of these deposits, by analogy with breccias in dolomite caves in the Cradle of Humankind and Makapansgat Valley for example, might be bone-bearing and thus of considerable paleontological interest. Within the fossiliferous breccias the bone clasts may appear variously white, or secondarily reddened by ferric compounds, or even stained black by manganese minerals. The biostratigraphy and taxonomy of the rich Late Pliocene to Pleistocene mammalian faunas, including micromammal and hominin remains that have been recorded from dolomite cave infills in the South African interior have been reviewed by authors such as Brain (1981), Klein (1984), McKee et al. (1995), Maguire (1998), Partridge (2000), Tobias (2000), and Avery (2000). Accessible, well-illustrated accounts of these fossil assemblages are provided by MacRae (1999) as well as Hilton-Barber and Berger (2004). Caves such as Sterkfontein have in addition yielded well-preserved fossil plant remains, including petrified (calcified) woods, pollens and spores (Bamford in Bonner et al. 2007, pp.91-101).

Very useful accounts of the accumulation of fossiliferous cave breccias and cave taphonomy within a southern African context have been provided by Brain (1981), Maguire et al. (1980) and Partridge (2000), among others. These authors emphasise the important role played by carnivores, such as hyenas, leopards and owls, in mammal bone accumulation within caves. Passive introduction of skeletal remains into caves through open shafts acting as fossil traps as well as the redistribution of bones within the cave system by gravity and water flow also played important roles.

It should be noted that not all breccias associated with dolomite caves are fossiliferous. Breccias may owe their origins variously to (1) energetic sedimentary processes in the original depositional basin (e.g. debris flows), (2) episodes of palaeokarst formation during Precambrian times, (3) fracturing of host rocks along major fault planes (as seen, for example, at Gatkop), as well as (4) deposition during the early to late phases of cave formation and subsequent cave infilling (e.g. Roof-fall or collapse breccias, talus and debris cone breccias, or breccias formed by secondary reworking of debris cone material). Fossil-bearing breccias often contain extraneous (i.e. extra-cave) material such as soil, cave earth and gravels in addition to dolomitic and chert debris. In the present case, this extraneous material might include occasional gravel clasts of banded ironstone and reddish, ferruginous soils that typify the area. During the present site visit, attention therefore focused on breccia horizons or lenses



that do not consist exclusively of dolomitic and cherty debris. None of the breccia bodies inspected, including those containing an extraneous component such as reddish-hued cave earth, appear to contain recognisable macrofossil remains, however.

Several dolomitic breccia units of various ages, degrees of cementation and sedimentary facies are exposed within Gatkop Cave. They include examples with a component of extraneous (i.e. extra-cave) material such as ferruginous cave earth, gravel or soil. However, no occurrences of bone-bearing breccia were identified during the site visit. Dolomitic host rocks of the Malmani Subgroup show fine lamination but no well-developed stromatolitic domes or columns. It is concluded that the paleontological sensitivity of the Gatkop Cave site is probably low.

Site 3a:

The third site is the original Randstephne homestead. It contains classical 'South African Edwardian' features in the flanked front veranda where both flanking rooms support Cape Dutch Gables. This building is one of few remaining in the region from this period as few were originally built, and of those most were lost in the processes of 'upgrading and modernisation'. A second phase recording is advised, and a 'preservation' plan must be put in place. This building and farmyard may be developed into site offices and/or accommodation for key personnel on the mine. SAHRA regulations must be adhered to. This building is of high significance and should be treated as such.

Site 3b:

Closely associated with this homestead is the graveyard and former dwellings of the farm labourers that (one must assume), was the workforce of the dwelling on Randstephne. Owing to the physical nature of these dwellings they have long since disappeared, but the graves remain, and are obviously still tended to from time to time by relations. The dwellings will not benefit with any further attention and need not to be protected.

The 13 graves on the other hand are also protected under other laws apart from the National Heritage Act. These may be left in situ, and visiting rights may be negotiated with relations. Alternatively they may be exhumed and reburied in a formal burial site. The second alternative is advised, as the water reservoir and associated mining works close to the cemetery may create tension between the mine and the relatives of the deceased. The graves are of high significance and should be treated as such.

Site 4:

The rest of the sites are all related to the early nineteenth century Iron Age period and has been treated as a collective. These include 'mines' (3), 'smelting sites' (1), 'animal enclosures' (4) and 'living areas' (2). The 'group' is assumed to date from the stressful civil war period known as the Mfecane, or Defecane dating to the period of Mzilikazi, the renegade Zulu General that ruled most of the central and south 'Transvaal' circa 1800 to 1845.



The sites are individually not rare, or of outstanding quality, they are not deemed to be particularly worthy of preservation on their own. But, the information that can be retrieved from these sites as a collective is of special importance, as it has not yet been done so in the past by archaeologists in the region.

It is suggested that a full second phase study is undertaken to record and possibly date the sites through the carbon fourteen dating process. After such recording it will be possible to acquire demolition permits for the individual sites. Although the sites are individually of low significance, the collective is worthy of research. Only if such research is completed may demolition be considered.

Site 5:

The last subjects are the weir and bridge over the Sondagsrivier, possibly dating to circa 1940 and 1960. Owing to 'progress'. South Africa is fast losing these types of structures that had in fact opened the 'frontiers for 'development'. Although the two structures are individually of low significance, the collective is worthy elevating them to medium significance. They have been included in this study for the possible event of the need of a new road to transport the iron ore. The structures are of medium significance.



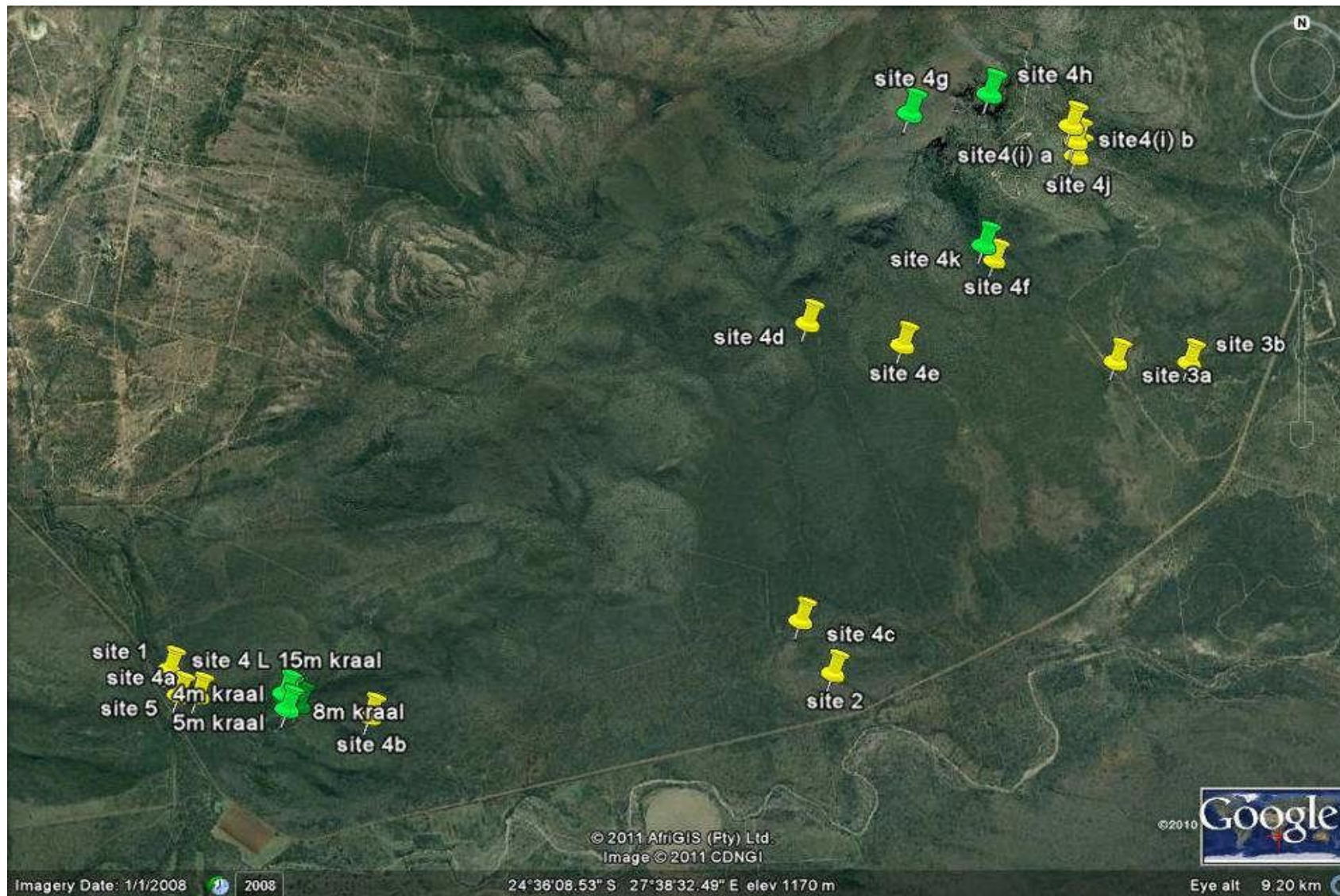


Figure 18: Concentrations of heritage resources on the property as a whole (**Source: Cultural Heritage Resources Assay Report, July 2011)

3.12 Air Quality

The farms Donkerpoort 448KQ remaining extent and Randstephne 455KQ on which the gravel roads were unlawfully constructed falls within the Waterberg district municipality. Waterberg is currently not an air pollution 'hot spot' but has been declared a priority area anticipating the future developments in the area which could result in the area experiencing severe air pollution problems. As a priority area, the area is considered to exceed ambient air quality standards and cause a significant negative impact on air quality and human health. Other operations in the Thabazimbi area that impact on the air quality include Thabazimbi Mine and other industrial activities in or closer to the town of Thabazimbi.

3.12.1 Site specific description

Airshed Planning Professionals (Pty) Ltd was commissioned to measure atmospheric deposition from July 2011 to March 2012 on the Donkerpoort and Klipgat prospecting rights, in Thabazimbi, Limpopo province (Refer to Appendix F7). According to these studies values continue to be well within proposed residential limits. Refer to Table 17 for deposition results.

Table 17: Atmospheric deposition results (mg/m²/day) at Aquila Iron site: June 2011 to July 2012 taken from the atmospheric deposition monitoring report compiled by Airshed Planning Professionals

MAY2011–NOV2011						
LOCATION NUMBER	30MAY-30JUN 2011	30 JUN-1AUG	1AUG-28AUG	28AUG-28SEP	28SEP-31OCT	31OCT-28NOV
1	47	258	284	145	393	212
2	181	269	201	46	overturned	Replaced
3	57	130	179	24	102	78
4	177	76	84	0	150	58
5	291	160	62	48	210	111
6	262	126	139	overturned	211	113
NOV2011–AUG2012						
LOCATION NUMBER	28NOV2011-27JAN2012	27JAN-27FEB2012	27FEB-29MAR2012	29MAR-7MAY2012	7MAY-4JUNE2012	5JULY-2AUG 2012
1	80	127	475	83	160	133
2	Damaged	119	403	25	53	141
3	95	101	Damaged	7	Damaged	25
4	249	Damaged	410	22	39	61
5	81	162	412	55	79	109
6	172	124	401	27	Damaged	101



3.13 Noise

An environmental noise survey was conducted by Varicon from April 2011 to February 2012 around the contravened site as part of the Environmental Impact Assessment (EIA) process to be followed for the Meletse Iron Ore project (Refer to Appendix F8 for comprehensive details on this 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 18 below. Applicable values in the tabulation are highlighted.

Table 18: Typical rating levels for ambient noise in districts

Type of District	Equivalent Continuous Rating Level ($L_{Req,T}$) 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) Urban districts with some workshops, business premises and with main roads.	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
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Stationery noise levels were measured at pre-selected position around the contravened area on the top of the mountain and some measurements were also taken at the bottom of the hill at the main entrance as part of the baseline. The measurement positions were selected around the contravened area and at specific locations down the mountain side. Fortunately all activities on the mountain are remote and secluded from any formal or informal communities. The noise levels all were measured within the recommended levels that could cause disturbance to any community that could be affected. Refer to **Table 19** for noise results in February 2012. According to Varicon's findings the noise levels in Portion 4 is 24.9dBA and Portion 5 is 33.6dBA. These levels are well within the prescribed requirements of rural districts which are 45dBA for daytime and 35dBA for night time. The noise levels of Portion 1, 2 and 3 were slightly above the prescribed requirements, but these should have no influence on any surrounding communities. The sound levels at the farmhouse are perfectly within prescribed requirements and the activities should present no disturbance to the farming communities.

Table 19: Typical rating levels for ambient noise in districts

NOISE LEVELS AT VARIOUS SAMPLING LOCATIONS.				
Measuring Positions	AMBIENT NOISE (dB(A))			Remarks
	Day Time Levels			
	Average Results	Typical Rating (SABS 0103) (Category A)	Excess $\Delta L_{Req,T}$ (dBA)	
<u>Position 1:</u> ± 450m North East of the D043 Drill	51,6	45,00	+6,6	<u>Day Time:</u> - Noise from the drill machine. Machine is secluded from the measuring position.
<u>Position 2:</u> ± 1000m North East of the D043 Drill and North East of the proposed mining site.	61,6	45,00	+16,6	<u>Day Time:</u> - Again the noise from the drill machine. Measuring position on top of the hill direct in line with the noise from the drill machine
<u>Position 3:</u> South East of the mining pit and ±1000m from both the drill machines	62,6	45,00	+17,6	<u>Day Time:</u> - Main noise sources are the two drill machines. Measurement again on the hill top and directly in line with the noise sources. Slight breeze is carrying the noise towards the measuring position.



<u>Position 4:</u> West of the mining area halfway down the mountain. ±2000 m from the drill activities	24,9	45,00	-20,1	<u>Day Time:</u> - General background and bushveld noise. Totally isolated from the noise generated by the drill machines.
<u>Position 5:</u> Main entrance into the mining property at the bottom of the mountain.	33,6	45,00	-11,4	<u>Day Time:</u> - General bushveld noise and some vehicle traffic on the dirt road. No influence from the activities at the mine site on top of the mountain.

3.14 Visual aspects

The following information was extracted from a Visual Impact Assessment study compiled by Zoneland Solutions, dated January 2014, attached hereto in Appendix F9. As part of the study, one dominant *view corridor* was identified in the region, namely the:

- P240, which is the main movement route along the southern boundary of the contravened site.

The nearest settlement to the contravened site is the district town of Thabazimbi, approximately 30km west of the site. The P240 connects with the D928 (approximately 4.5km west of the site) and the D1485 (15km from the site) en route to Thabazimbi. All of these roads have a gravel surface and carries little load. None of these roads were therefore regarded as dominant view corridors.

The contravened site is located between contour levels 1000 and 1582m above sea level. This represents a 582m vertical climb over ±4.3km. The Meletse peak is the highest peak within 10km from the contravened site. The mountain is therefore particularly visually exposed and visible from most observation points in the landscape as all observation points are located at a height below the contravened site.

3.15 Socio-economic aspects

This section was compiled using the following documents:

- Waterberg District Municipality 2011/12 Integrated Development Plan,
- Thabazimbi Local Municipality Integrated Development Plan 2012/13 and
- The Social Baseline Scoping Report; compiled by Ptersa Environmental Management Consultants: San-Marié Aucamp dated November 2011. For comprehensive details on this report refer to Appendix F9.



3.15.1 Limpopo Province

Limpopo's population stands at 5.5 million, the largest proportion of which (27.2%) is resident in the Vhembe district municipality.

Unemployment in the province averages 48% (as against the national average of 26%) and about 65% of the population is classified as living in poverty. Its considerable reserves of agriculture, mineral and tourism resources remain hugely under-exploited.

3.15.2 Waterberg District Municipality

The Waterberg District Municipality has a total population of 596,092 of which the majority of people in villages and townships are still trapped in poverty. The state of local economy is such that 21% of households are rated as low income households as they earn less than R1, 000 per month, with 20% of the potentially economically active population unemployed.

While 86% of South African households have access to a piped water source, 83% do so in WDM while 96% do so in TLM. It is however important to note that on average less households access their water from their own yard in South Africa than in TLM and WDM. Only 40% of the WDM residents have flush toilet sanitation. Statistics South Africa estimates that TLM fares better with 58% having access to flush toilet sanitation.

The water supply situation is that some of the schools particularly those in rural areas have no access to on-site water. The schools are also in need of refurbishment and services such as water and sanitation. There is also a great need for high schools in the rural areas; the majority of education facilities are primary schools

In the case of WDM, the lack of access to electricity is most acute in remote rural areas. In TLM, almost 50% of households rely on gas, paraffin and candles. The majority of households which do not have access to electricity in the municipality are located in the informal settlements and new settlements. Ipeleng is by far the most electrified host community, with over 99% of household having electricity. The remaining settlements have electricity access of between 55 and 65%.

On the health front, 110 villages (representing nearly 65% of the population) are situated outside the clinic catchment areas.

3.15.3 Thabazimbi Local Municipality

The TLM has a total population of 85, 234. Most of the people in the area are between the ages of 30 and 49 years (37.87%) followed by the 5-19 year age group, which represents 22.18% of the population.



Males outnumber females with approximately 58% of the total population being male; this can be ascribed to the number of mine workers employed locally and job seekers who have settled in the area. The mines are the largest employers, followed by agriculture and the service sectors. Approximately 20.6% of potentially economically active people are unemployed.

In national terms it is a mature population with only 34% of the population under the age of 20. This possibly reflects the high degree of labour migrancy as a result of the mines in the region. Population projections from 2001 onward show a steady annual increase of 2.63% per annum to a total of about 85,234 in 2011. The statistics used here are based mainly on the 2011 figures released by Stats SA.

Approximately 9,879 young people within the TLM are currently not attending school. 26.1% of economically active individuals in the TLM have attained a Grade 12 education. Alarmingly, only 8.1% have an education level higher than grade 12. The majority of economically active individuals have an education level that is below Grade 7. Refer to Table 20 below for Thabazimbi Local Municipality Population Statistics.

Table 20: Thabazimbi Municipality Population Statistics (Census 2011)

Population group	Figures
Black African	72 103
Coloured	511
Indian or Asian	341
White	12 274
Total population	85 234

(*Source: Census 2011 Community Profiles Database. Statistics South Africa.)

3.15.3.1 Major economic activities

The surrounding land is mainly focussed on agricultural activities and tourism with game farms. Mining is also a key economic activity in the municipality.

Mining in Thabazimbi Local Municipality

Thabazimbi Local Municipality (TLM) is endowed with a wealth of minerals and metals especially platinum and iron ore. A number of platinum mining operations such as Amandelbult and Union Mine (Anglo Platinum) and Northam Platinum Mine are situated south of Thabazimbi Town in addition; the Thabazimbi Iron Ore Mine is located in the municipality. Other commodities such as andalusite and dolomite are mined from the Rhino Andalusite Mine and PPC's Dwaalboom Cement Operation. There are seven active mines in the TLM area. The mining sector is the primary pillar of the TLM economy and employs 62% of the labour force.

The mining industry has been affected in several ways by the global economic meltdown in the final quarter of 2008. This has led to mine closures and retrenchments across all commodities. Before the global economic crisis, mines were expanding in the municipality and new mining projects were in



early planning phases. The expectations were that more employment opportunities and increased residential and business development would be created in the area. The high prices of bulk commodities such as iron ore were expected to continue in the near future and this would contribute towards development in all economic sectors.

The situation in 2009 and beyond seemed challenging for both platinum producers as well as Thabazimbi Mine as commodity prices went down significantly. Recently some signs of recovery in metal prices have been noticed.

3.15.3.2 Unemployment and employment

According to the Census 2011 statistics, approximately 20.6% of the labour force in the Thabazimbi Municipality is unemployed. Table 21 below presents the economic status of the labour force population of Thabazimbi Municipality.

Table 21: Economic Status of Thabazimbi Labour Force Population (Census 2011)

ECONOMIC STATUS	FIGURES
Employed	52 132
Unemployed	4 306
Not economically active*	22 502
Total Labour Force	78 940

*Note: Not economically active includes students, homemakers, the disabled, those too ill to work and anyone seeking work.

Of the total population of some 85 234 people, about 76.4% are aged between 15 and 65, which can be considered as potentially economically active. Of these, 20.6% are unemployed and 26.9% is the youth unemployment rate.

These figures are not surprising in light of the character of the main industries in the Municipal Area. The fact that the mining and agricultural sectors rely substantially on unskilled labour for hard physical labour is reflected also in the income distribution. More than 10,521 of the employed (51.8%) within the TLM earn below the minimum level of R 1,500 per month. The gender distribution of the income is considerably skewed towards the males, perhaps a reflection of the occupations available at Thabazimbi.

However, these figures cannot be accepted at face value. It is common to understate unemployment as many of those reflected as economically inactive are actually unemployed; also many of those reflected as self-employed (as, for instance, vendors) are actually unable to make a living.



3.15.3.3 Access to basic services

Housing

TLM is dominated by farmland and small settlements. It boasts 3 towns (urban nodes); namely Northam town, Thabazimbi town and Amandelbult town. The towns are the result of the economic development associated with the mining activities taking place in the area.

Almost 26% of dwellings in TLM are informal in nature. The present demand for housing in the Thabazimbi urban node is high, and 30 serviced plots are available in Extension 8. However, owing to the poor economic climate, very few houses are being built there. The demand for houses in the new Regorogile Residential Area is also very high, and sufficient stands are available. Table 22 below indicates the types of accommodation available in the Thabazimbi Urban Node.

Table 22: Housing Available in the Thabazimbi Urban Node

TYPE OF ACCOMMODATION	QUANTITY AVAILABLE
Houses	1 069 (Thabazimbi Town)
Houses	199 (Ipelegeng)
Houses	59 (Town Council)
Houses	102 (Regorogile)
Plot Houses	30

**Source: TLM Intergated development plan*

Water provision

Formal settlements: Thabazimbi / Regorogile are the largest urban node in the area. The quality of housing (structural maintenance, gardening, etc.) in particularly the Kumba Resources Staff Village is visibly better than that available in the adjacent municipal village. Northam Town and Northam Platinum are located in the south of the Municipal Area and Rooiberg and Leeupoort located in the south-west of the area. Amandelbult is located to the south of Thabazimbi Town and between Thabazimbi and Northam. There are no former homeland areas located within the Municipal Area.

Thabazimbi, Regorogile and Northam currently have a quota of 9 mega litres per day from Magalies board. Regorogile and Thabazimbi have additional supply from seven boreholes. The boreholes are located at Group 5, 12 and Kumba Iron Ore Mine. Rooiberg and Leeupoort/Raphuti currently source their water from local boreholes. Schilpadnest water is also supplied from three working boreholes without any chlorination facilities.

Thabazimbi and Regorogile are using water borne sewer system. The existing water treatment plant caters for Thabazimbi town including Regorogile and Ipelegeng. The current capacity of the plant is 28 litres per second but the average daily flow is about 60 litres per second. The current sanitation system in Northam is 60% water borne and 40% septic tank. Leeupoort is septic tank. The Municipality empty the septic tanks for all the residents regularly and discharges the sewerage into the existing oxidation pounds. The outfall sewer has been partially constructed in Northam and the

project is still outstanding. The municipality does not provide bulk water to the mines within its area of jurisdiction

The main sources of potable water are:

- Pienaars River
- Crocodile River
- Vaalkop Dam- Magalies Water Board

Electricity

The municipality has electricity distribution license issued by NERSA in terms of the Electricity Act 41 of 1987. The license covers the following areas for distribution and retail:

- Greater Northam RLC (Portion)
- Thabazimbi TLC (Whole)
- Warmbad- Pienaarsrivier RLC (Portion)
- Rooiberg

Currently the municipality is an Electricity Service Provider in Thabazimbi town, Regorogile extensions 3, 5, 6, 7, 9, Rooiberg and Raphuti. Eskom is for Northam, Regorogile extensions 2, 4, farms and mining areas.



4. ENVIRONMENTAL FRAMEWORK

4.1 Impact assessment methodology

The environmental risk of any aspect is determined by a combination of parameters associated with the impact. Each parameter connects the physical characteristics of an impact to a quantifiable value to rate the environmental risk.

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.

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 19** below for a model representing the above principle (as contained in the DWA's Best Practice Guideline: G4 – *Impact Prediction*).

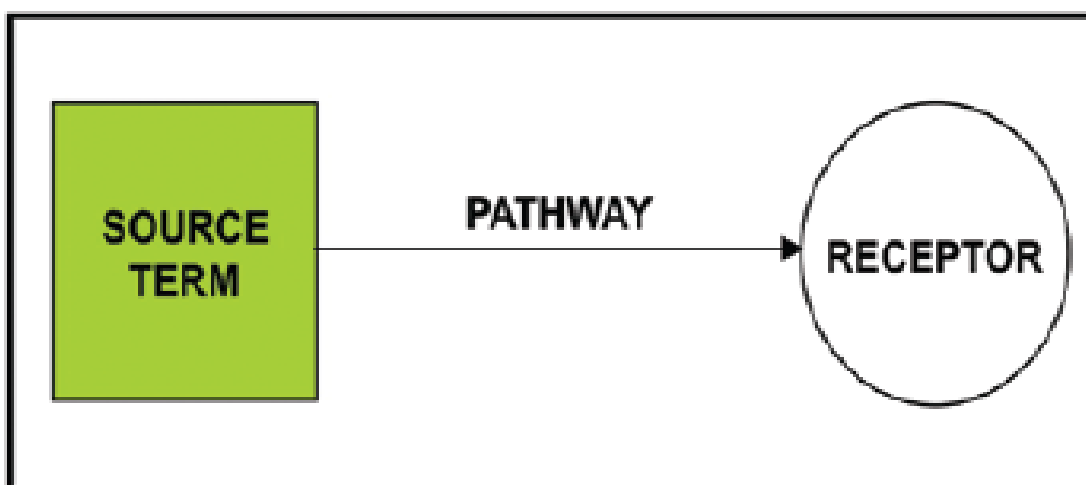


Figure 19: Impact prediction model



PROBABILITY of the impact is determined by calculating the average between the frequency of the aspect and the availability of a pathway to the receptor and the availability of receptor.

Tables 23 and 24 below indicate the methodology to be used in order to assess the Probability and Magnitude of the impact, respectively, and Table 25 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 23: 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 24: 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	3	Moderate quantities / volumes / intensity (e.g.	3	Moderately toxic (e.g. slimes) Potential to create damage or	3	Bio-physical and/or social functions and/or processes might be notably altered or enhanced / Partially	3	Current environmental component(s) are a mix of disturbed	3



SOURCE								RECEPTOR			
Duration of impact	Score	Extent	Score	Volume / Quantity / Intensity	Score	Toxicity / Destruction Effect	Score	Reversibility	Score	Sensitivity of environmental component	Score
		(hundreds of metres)		> 210 L < 5000L or 5 – 8Ha)		destruction to the environment		reversible		and undisturbed areas. Area with some environmental sensitivity (scarce / valuable environment etc.).	
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 Organisation / 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	5



SOURCE								RECEPTOR			
Duration of impact	Score	Extent	Score	Volume / Quantity / Intensity	Score	Toxicity / Destruction Effect	Score	Reversibility	Score	Sensitivity of environmental component	Score
										area (endangered species, wetlands, protected habitats etc.)	

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



Table 25: 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



4.2 Impacts identified

See tables below for a summary of impacts and their associated mitigating actions. The tables also provide an environmental risk assessment of pre- and post- mitigation of identified activities.

4.2.1 Construction Phase

Environmental Component	Environmental aspect	Impact per phase	Risk rating		
			Probability	Magnitude	Severity
<p>The gravel roads were constructed from September 2007 to June 2011. Establishment of the gravel roads included the following activities:</p> <ul style="list-style-type: none"> • Clearance of vegetation • Removal and stockpiling of topsoil. • Removal of additional unsuitable material • Construction of safety berms <p>No mitigation measures are proposed as the construction activities are historical.</p>					
Flora	Removal of vegetation	<p>The contravened site supports one of a few populations of the range-restricted and threatened (“vulnerable”) fern, <i>Cheilanthes deltoidea</i> subsp. <i>silicicola</i>. A vegetation assessment highlighted that a large section of this community has been fragmented by the establishment of a network of gravel roads used during prospecting.</p> <p>The vegetation assessment also identified three protected tree species (<i>Acacia erioloba</i> (Mimosaceae) – Camel Thorn, <i>Combretum imberbe</i> (Combretaceae) – Leadwood, <i>Sclerocarya birrea</i> subsp. <i>caffra</i> (Anacardiaceae) – Marula, occurring widely throughout the contravened site. These trees were removed as part of vegetation clearance, without a permit. A permit is required to remove or disturb a protected plant. It is recommended that protected plants in danger of becoming destroyed during any of the planned activities be removed prior to the</p>	5	5	H



Environmental Component	Environmental aspect	Impact per phase	Risk rating		
			Probability	Magnitude	Severity
		commencement of construction activities and translocated to suitable habitat, or used during the rehabilitation phase.			
Fauna		Road construction resulted in clearance of some vegetation communities has resulted in alteration of the dynamics of fauna assemblage and resulted in a loss of habitat or fragmentation of habitat from similar areas.	5	4	H
Visual/Aesthetic		Clearance of vegetation for establishment of the gravel roads on the Meletse mountain, has created a significant visual scar resulting in a negative visual impact and change to the sense of place of residents in the area.	5	4	H
Soil	Removal of topsoil	Loss of topsoil resource. Soil compaction and topsoil loss leading to reduced fertility.	3	3	M
	Incorrect stockpiling of topsoil	Erosion of stockpiles leading to reduction of fertility of soil .	3	3	M
		Leaching of minerals due to inadequate maintenance of stockpile, resulting in infertile soils .	3	3	M
Surface water	Establishment of gravel roads crossing the drainage lines	Numerous drainage lines occur from the higher peaks in the north-eastern parts of the site and flows down towards the Sand River south of the site The gravel roads crosses the natural drainage lines, causing an impact on surface water quality and surface water flow patterns. A change in surface water flow patterns may impact on catchment yield, affecting the surface water quantity for downstream users. Increase in surface water flow from the road may cause erosion hereby increasing the amount of sediments found in the water impacting on the water quality for nearby users.	3	2	M



Environmental Component	Environmental aspect	Impact per phase	Risk rating		
			Probability	Magnitude	Severity
	Siltation and affected water run-off from construction areas	Loss of ecological function of the watercourse.	3	2	M



4.2.1 Operational phase

Environmental Component	Environmental aspects and Impacts per phase	Risk rating (before mitigation)			Environmental objective	Mitigatory action plan	Timeframe	Responsibility	Risk rating (after mitigation)			Applicable legislation and other documents
		Probability	Magnitude	Severity					Probability	Magnitude	Severity	
OPERATIONAL PHASE												
Activity: Utilisation and maintenance of gravel roads, this includes all transportation activities on the road.												
Geology	Utilisation of gravel roads does not have any impact on the geology of the contravened sites.	N/A				No mitigation measures are proposed.			N/A			
Air quality Groundwater Surface water Soil	<p>Aspect: Hydraulic leakages and emissions resulting from ineffective maintenance of contractor's vehicles driving on gravel roads.</p> <p>Impact: Surface water, groundwater and soil pollution. Groundwater contamination through seepage may occur, however this impact will be insignificant as it is foreseen that the activities (gravel roads) are situated high above the groundwater table.</p> <p>Impact: Localised air quality is likely to be affected as particulate matter is released as a result of the movement of contractor's vehicles during dry and windy conditions.</p>	3	3	M	<p>To limit public exposure to unacceptable health risks.</p> <p>To reduce dust generation</p> <p>To ensure that the applicant remains compliant with air quality legislation.</p>	<ul style="list-style-type: none"> A maintenance system for contractor's vehicles and equipment must be developed and effectively implemented. Service / maintenance data / annual roadworthy inspections of all contractor's vehicles must be reflected. Contractor's vehicles must be visually inspected for black smoke. Contractor's vehicles must be submitted for vehicle emission testing as per GN R 1651. Contractors undertaking transporting on behalf of the applicant shall provide evidence of their vehicle emission levels compliance to the maximum levels set out in GN R1651 or at least proper maintenance on their vehicles. Exhaust systems of all contractors' vehicles must be regularly inspected - no noisy vehicles must be allowed. Should there be an increase in the noise levels of the contractor's vehicle, that vehicle must be scheduled for a maintenance check. Reports as well as monitoring data must be kept and analysed. An increase in vehicle speed results in an increase in particulate emissions generated. Strict speed limits shall be implemented. This includes speed signs on the area as well as the training of drivers. A spill management procedure for the clean-up of leakages and spillages of hydrocarbons must be developed and effectively implemented. Contractor's trucks must be repaired and washed at dedicated areas and the dirty water must not be allowed to discharge into the surrounding natural vegetation. 	Throughout the operational phase.	ECO and Contractor	2	2	L	Section 2 NEMAQA Section 24g NEMA Section 28 NEMA
Soil and land capability	<p>Aspect: Utilisation of the gravel roads by heavy contractor's vehicles</p> <p>Impact: Compaction of soil</p>	5	4	H	To protect soil resources and prevent alteration of the soil composition.	<ul style="list-style-type: none"> There is no immediate mitigation measure proposed although during the Decommissioning and Closure Phase the roads will be rehabilitated where soil will be aerated. 	Throughout the operational phase	ECO	5	4	H	Section 28 NEMA



Environmental Component	Environmental aspects and Impacts per phase	Risk rating (before mitigation)			Environmental objective	Mitigatory action plan	Timeframe	Responsibility	Risk rating (after mitigation)			Applicable legislation and other documents
		Probability	Magnitude	Severity					Probability	Magnitude	Severity	
	<p>Aspect: Increased surface water run-off due to lack of stormwater control structures.</p> <p>Impact: Soil erosion</p>	5	4	H	To protect soil resources and prevent alteration of the soil composition.	<ul style="list-style-type: none"> The condition of all the gravel road areas must be monitored for potential water runoff and erosion, especially during the rainy season. The development of gullies shall be prevented as far as possible. If this cannot be prevented, such gullies shall be controlled. The measures used to control, improve or obliterate gullies depend on the size of the gully, its slope and its drainage area. Runoff shall be reduced by diverting part or all of the runoff to a protected inlet or by holding excess rainfall on the land in the drainage area. If it's not possible to deliver runoff safely into a smooth, well vegetated area or into a protected waterway, the water shall not be channelled into the gully Erosion of gravel roads should be addressed by implementing energy dissipaters to drain surface runoff away from the roads into the adjacent veldt areas. All presently eroded areas within the gravel roads must be rehabilitated to a state comparable to the surrounding area. The Contractor's Programme must include measures for stabilisation of areas that may be prone to erosion. 	Throughout the operational phase. Monitoring as necessary.	ECO	3	3	M	Section 24g NEMA Section 28 NEMA
	<p>Aspect: Establishment of gravel roads.</p> <p>Impact: The land capability where the gravel roads have been established has been permanently altered.</p>	5	4	H	Maximising land capability of disturbed / affected areas.	<ul style="list-style-type: none"> No immediate mitigation measures can be implemented during operational phase due to the nature of the activity. However rehabilitation should be conducted during the decommissioning and post closure phase to return the land's capability back to its pre-disturbed state. 	Throughout the operational phase	ECO	5	4	H	Section 24g NEMA Section 28 NEMA
Landuse	<p>Aspect: Establishment of gravel roads.</p> <p>Impact: The land use where the gravel roads have been established has been altered from game farming to being now used as access roads to the exploration site.</p>	5	5	H	Return area back to the pre-disturbed land use.	<ul style="list-style-type: none"> No immediate mitigation measures can be implemented during operational phase due to the nature of the activity. However rehabilitation should be conducted during the decommissioning and post closure phase to return the land's capability back to its pre-disturbed state. 	Throughout the operational phase	ECO	5	5	H	Section 24g NEMA Section 28 NEMA
Surface water	<p>Aspect: Establishment of gravel roads crossing the drainage lines</p>	5	4	H	To improve the quality and flow of the surface water	<ul style="list-style-type: none"> The applicant must comply with the requirements of GN 704, dated 1999, and must implement the measures as contained in the Storm 	Throughout the operational phase.	ECO	3	3	M	Section 28 NEMA Section 19 NWA



Environmental Component	Environmental aspects and Impacts per phase	Risk rating (before mitigation)			Environmental objective	Mitigatory action plan	Timeframe	Responsibility	Risk rating (after mitigation)			Applicable legislation and other documents
		Probability	Magnitude	Severity					Probability	Magnitude	Severity	
	<p>Impact: Numerous drainage lines occur from the higher peaks in the north-eastern parts of the site and flows down towards the Sand River south of the site. The gravel roads crosses the natural drainage lines, causing an impact on surface water quality and surface water flow patterns.</p>					<p>Water Management Plan.</p> <ul style="list-style-type: none"> As part of the EIA application for the Meletse Iron Ore project, a water use license is required. Section 21(c) impeding of diverting the flow in a watercourse & (i) altering the banks, course or characteristics of a watercourse. These two activities will form part of the water use license application. The gravel roads must be maintained so as to comply with the requirements contained in the National Water Act (NWA) (Act 36 of 1998) and the GN704, dated June 1999. Construct effective silt traps at the outlets of the energy dissipaters to limit siltation of natural drainage lines. The applicant must conduct regular site inspections in order to verify the effectiveness of the water separation system and to identify possible erosion. 						Regulation 7 GN 704 (1999) i.t.o NWA
	<p>Aspect: Inadequate or lack of stormwater control, and linear structures.</p> <p>Impact: The aquatic study conducted in 2011 highlighted a concern about siltation of natural drainage lines caused by elevated surface water run-off from gravel roads due to inadequate or lack of stormwater control, and linear structures.</p>	5	4	H	To minimise sedimentation and improve water surface water quality.		ECO	3	3	M	Section 28 NEMA Section 19 NWA Regulation 7 GN 704 (1999) i.t.o NWA	
Visual/ Aesthetic	<p>Aspect: The existence of gravel roads on the Meletse mountain.</p> <p>Impact: A significant visual impact on surrounding landowners (for an extended distance) as a result of extensive scarring on the mountain. This is particularly important as some of the surrounding landowners use their properties for</p>	5	4	H	To minimise the visual impact the gravel roads have created.	<ul style="list-style-type: none"> No immediate mitigation measures can be implemented during operational phase due to the nature of the activity. However rehabilitation should be conducted during the decommissioning and post closure phase to return the sense of place back to its pre-disturbed state. The applicant should be accessible to the public when concerns, complaints or questions arise. Visual screening berms or other structures or trees (where possible) must be used where possible in areas where there are sensitive receptors. 	Throughout the operational phase	ECO	5	4	H	Guidelines for involving visual and aesthetic specialists in the EIA process

Environmental Component	Environmental aspects and Impacts per phase	Risk rating (before mitigation)			Environmental objective	Mitigatory action plan	Timeframe	Responsibility	Risk rating (after mitigation)			Applicable legislation and other documents
		Probability	Magnitude	Severity					Probability	Magnitude	Severity	
	ecotourism purposes which rely on a sense of a pristine environment in and around the area.											
Air Quality Fauna Flora IAPs	<p>Aspect: Generation of noise and dust and from contractor's vehicles driving at high speed on the gravel roads.</p> <p>Impact: Dust may have physical effects on plants such as blockage and damage to stomata, shading, abrasion of leaf surface or cuticle, and cumulative effects e.g. drought stress on already stressed species.</p>	4	2	M	To ensure that the applicant remains compliant with air quality legislation.	<ul style="list-style-type: none"> Vehicles must travel at low speed on these gravel roads to limit noise and avoid dust creation. Strict speed limits must be implemented. Signage indicating acceptable speed limits must be placed at relevant points along the gravel roads to caution contactors/motorist. Complaints register must be developed and made available for the recording of complaints relating to noise. If complaints of any noise pollution are made, noise levels at the applicable sites shall be measured to assess the intensity of the alleged impact. These noise levels can then be interpreted relative to the baseline information already gathered to indicate whether steps would be necessary. If there are any complaints with regards to dust pollution, dust samples shall be taken to assess the intensity of such an impact on the applicable complainants' land or residences. The surface of the gravel roads will be properly maintained by grading and shaping for cross sectional trimming; Dust fall out monitoring plan must be developed and effectively implemented. A fugitive emission monitoring plan which consists of continuous monitoring of ambient PM10 and PM2.5 and dust fall out monitoring of TSP will be implemented If dust pollution levels exceed the relevant requirements as described under the NEMAQA dust shall be managed by means of a water browser and the implementation of lower speed limits. Trucks transporting light/ wind- dispersible materials shall be covered 	Throughout operational phase. The surface of the gravel roads will be maintained on a continuous basis.	ECO and Contractor	3	1	L	Section 28 NEMA
Sensitive areas	<p>Aspect: Contractor's vehicles driving on non-designated areas</p> <p>Impact: Destruction or damage of sensitive species (such as the <i>Cheilanthes deltoidea</i> subsp. <i>silicicola</i> confirmed from the <i>Loudetia</i></p>	3	3	M	To prevent the destruction or damage of sensitive areas	<ul style="list-style-type: none"> A temporary fence or demarcation must be erected around the sensitive species 	Throughout the operational phase.	ECO	2	2	L	Section 28 NEMA



Environmental Component	Environmental aspects and Impacts per phase	Risk rating (before mitigation)			Environmental objective	Mitigatory action plan	Timeframe	Responsibility	Risk rating (after mitigation)			Applicable legislation and other documents
		Probability	Magnitude	Severity					Probability	Magnitude	Severity	
	<i>flavida – Monocymbium ceresiiforme</i> grassland).											
	<p>Aspect: Contractor's vehicles driving on non-designated areas</p> <p>Impact: Damage to cave site. The site is situated some four kilometres SSW of the main iron ore prospecting area and over 600m lower in elevation. Any unrecorded paleontological heritage resources here are therefore unlikely to be directly or indirectly affected by utilisation of the gravel roads.</p>	2	2	L	To prevent the destruction or damage of sensitive areas	<ul style="list-style-type: none"> A temporary fence or demarcation must be erected around the cave. 	Throughout the operational phase.	ECO	2	1	L	Section 28 NHA Paleontological impact assessment report
	<p>Aspect: Contractor's vehicles driving on non-designated areas.</p> <p>Impact: Potential damage to the heritage structures (this includes the graveyard and the homestead).</p>	3	3	M	To conserve heritage structures	<ul style="list-style-type: none"> The graveyard must be fenced-in, cleaned and well managed Access to graveyard must be provided to descendants and family members to visit their grave sites. A temporary fence or demarcation must be erected around the graveyard. 	Throughout the operational phase.	ECO and Contractor	2	2	L	Section 28 NHA Heritage impact assessment report



Environmental Component	Environmental aspects and Impacts per phase	Risk rating (before mitigation)			Environmental objective	Mitigatory action plan	Timeframe	Responsibility	Risk rating (after mitigation)			Applicable legislation and other documents
		Probability	Magnitude	Severity					Probability	Magnitude	Severity	
Fauna	<p>Aspect: Animal life in the area where gravel roads have been established has been negatively affected by increased activities in the area including habitat destruction and fragmentation</p> <p>Impact: Habitat Loss resulting in disturbance of the fauna environment which has the potential to impact on biodiversity and habitat characteristics. This Includes:</p> <ul style="list-style-type: none"> • Change in plant pollinator composition, • Fragmentation to habitat • Loss of animal corridors. • Loss of habitat, • Disturbance to animal life. 	5	4	H	To conserve animals and prevent disturbance of animal habitats.	<ul style="list-style-type: none"> • Vehicular activities must be restricted to daylight hours to prevent any disturbance to fauna in the area; • Signage should be applied to remind people of the dangers associated with feeding of wild animals. Proper animal-proof dustbins should be used. • Environmental signage is to be displayed on the site including – “no smoking”, “fire hazards”, etc. • Fragments shall be linked by preserving <u>corridors</u> • Cordon off the gravel roads from surrounding natural vegetation prevent any disturbances into the surrounding areas. • Rehabilitation shall be conducted during the decommissioning and post closure phase. Rehabilitation shall be conducted such that it attracts wildlife to areas where rehabilitation is implemented. • Appropriate speed limits must be set. 	Throughout the operational phase.	ECO and Contractor	3	3	M	Section 28 NEMA
Flora	<p>Aspect: Establishment of gravel roads</p> <p>Impact: Invasive plants might be established. This may lead to:</p> <ul style="list-style-type: none"> • Displacement of indigenous vegetation; • Change in plant species composition; • Change in vegetation composition and structure; • Competition for sunlight and ‘living space’ will increase between indigenous and alien 	4	2	M	To control and eradicate all invasive species by means of methods that are appropriate for the species concerned and the environment in which it occurs.	<ul style="list-style-type: none"> • Areas where alien weeds and invasive plants occur must be identified • Alien invasive species that were identified within the contravened area will be removed prior to ripening of seeds. By removing these species, the spread of seeds will be prevented into disturbed soils; which could thus have a positive impact on the surrounding natural vegetation • Alien invasive vegetation shall be removed according to area and not species. • Any action taken to control and eradicate a listed invasive species shall be executed with caution and in a manner that may cause the least possible harm to biodiversity and damage to the environment. • Manual / mechanical removal is preferred to chemical control. • All alien seedlings and saplings will be removed immediately for the duration of the operational phase and after closure. • An alien invasive eradication plan will be compiled and implemented on site. 	Throughout operational phase.	ECO and Contractor	3	1	L	Section 5 & 6 of CARR Regulation 15 of CARR Guidelines for the rehabilitation of mined land



Environmental Component	Environmental aspects and Impacts per phase	Risk rating (before mitigation)			Environmental objective	Mitigatory action plan	Timeframe	Responsibility	Risk rating (after mitigation)			Applicable legislation and other documents
		Probability	Magnitude	Severity					Probability	Magnitude	Severity	
	species; • Competition for water and minerals between alien and indigenous vegetation; • Change in plant-pollinator composition; • Loss of habitat; • Change in flammability of existing vegetation structure – pending the introduction of the alien species; • The spread of alien vegetation in areas previously free from such species causing a change in biodiversity.											

4.2.2 Decommissioning and Closure phase

Environmental Component	Environmental aspect and impact per phase	Risk rating (before mitigation)			Environmental objective	Mitigatory action plan	Timeframe	Responsibility	Risk rating (after mitigation)			Applicable legislation and other documents
		Probability	Magnitude	Severity					Probability	Magnitude	Severity	
DECOMMISSIONING AND CLOSURE PHASE												
Aquila proposes an opencast iron ore mine with an estimated Life of Mine (LoM) of 18 years on the remainder of the farm Donkerpoort 448KQ and the remainder of the farm Randstephne 455KQ. In addition to the opencast mining operation it is proposed that a beneficiation plant also be constructed and operated. Should Aquila be granted a mining right, the gravel roads will be retained for use as access roads to the mining area. The road closure objectives shall form part of the mining right EMP. Should the mining right not be granted, the gravel roads shall be rehabilitated as part of the decommissioning phase and continual maintenance and monitoring of rehabilitated areas shall continue as part of the closure phase.												
Activity²: Continue utilisation of gravel roads.												
Impacts of continual utilisation of gravel roads are similar as for the Operational Phase (Refer to table above (Section 4.2.1)).												
Activity²: Discontinue utilisation of gravel roads shall result in Implementation of rehabilitation activities which include the following: <ul style="list-style-type: none"> • The use of vehicles and machineries for rehabilitation activities • Sloping of the area; • Replacement and levelling of topsoil; • Ripping of gravel roads; 												



Environmental Component	Environmental aspect and impact per phase	Risk rating (before mitigation)			Environmental objective	Mitigatory action plan	Timeframe	Responsibility	Risk rating (after mitigation)			Applicable legislation and other documents
		Probability	Magnitude	Severity					Probability	Magnitude	Severity	
<ul style="list-style-type: none"> Re-vegetation; Monitoring and maintenance of rehabilitated areas. 												
Geology	It is anticipated that rehabilitation activities will not have any impact on the geology.	N/A							N/A			
Topography	<p>Aspect: Incorrect levelling of the gravel roads will result in the topography remaining changed from natural topography</p> <p>Impact: During decommissioning phase the road will no longer be utilised and rehabilitation will commence, where the soils will be ripped and re-vegetated, thus the topography in the area will continue to be impacted on up until the vegetation has established.</p>	3	3	M	To achieve a final functional landscape	<ul style="list-style-type: none"> Rehabilitated areas will be made free draining. Final shaping will be aimed at maximising free-drainage of the topography. Final landscape to be contoured to facilitate free drainage of surface water run-off The final land surface will reflect the pre-disturbed state topography as closely as possible. The soils and land surface will be contoured to facilitate good drainage during the operation as well as on completion. 	Rehabilitation and maintenance of disturbed areas shall be implemented during decommissioning phase. Continual maintenance and quarterly monitoring of rehabilitated areas to ensure that rehabilitation achieved the required criteria (e.g. species diversity and basal cover) shall continue as part of the closure phase.	ECO	2	2	L	Section 24g NEMA Section 28 NEMA
Soil	<p>Aspect: The use of heavy machinery to replace soil as well as vehicles driving on rehabilitated areas.</p> <p>Impact: Soils may be compacted by the use of vehicles and machinery for the rehabilitation of disturbed areas (gravel roads).</p>	3	2	M	To conserve topsoil resources	<p>A detailed plan with regards to rehabilitation of gravel roads shall be developed by a rehabilitation specialist registered at the South African Council for Natural Scientific Professions. The rehabilitation plan shall include the following, including the following:</p> <ul style="list-style-type: none"> Soil sourcing and usage, Vegetation establishment, Most suitable plant and seed mixtures to be utilised Sloping methods End land use requirements. Long-term erosion prevention Confirmatory monitoring Security measures Rehabilitation will be undertaken to the natural angle of repose. <ul style="list-style-type: none"> Compacted soils on the gravel roads will be ripped and seeded (following recommendation made by a rehabilitation specialist) 	Decommissioning phase	ECO	2	1	L	Section 24g NEMA Section 28 NEMA



Environmental Component	Environmental aspect and impact per phase	Risk rating (before mitigation)			Environmental objective	Mitigatory action plan	Timeframe	Responsibility	Risk rating (after mitigation)			Applicable legislation and other documents
		Probability	Magnitude	Severity					Probability	Magnitude	Severity	
					improving the soil structure and functioning. <ul style="list-style-type: none"> • Compaction must be minimised by using the right equipment. Too heavy machinery must not be used to replace the soil. Rather use a dozer than a grader. • Soils should also only be moved when it is dry to minimise soil compaction. • Soil on bare patches shall be loosened by using a tooth implement with re-sowing.. • Ripping must penetrate through soil into the underlying overburden materials in order to ensure free drainage and to ensure root penetration. • Vehicle access onto the rehabilitated area shall be limited in order to avoid compaction. Rehabilitated areas shall be disturbed as little as possible, primarily by rehabilitation and maintenance equipment only. Vehicles speeds should be maintained to reduce the duration of applied pressure. 							
	<p>Aspect: Incorrect replacement and levelling of the topsoil</p> <p>Impact: Inadequate placement of topsoil in slopes or the placement of topsoil creating a catena. Compacted soil may lead to the decrease of water infiltration therefore leading to soil erosion.</p> <p>Disturbance of the natural balance of the soil's physical and chemical characteristics. Soil compaction and topsoil loss leading to reduced fertility.</p>	4	4	H	<ul style="list-style-type: none"> • Vegetation establishment in the form of indigenous flora shall be undertaken in disturbed areas, where soil surface are susceptible to erosion, as soon as is practical. <ul style="list-style-type: none"> ➢ The establishment of vegetation shall consider the regional rainfall and growing season as water availability is a constraint. ➢ In areas prone to wind erosion, open patches shall be covered by vigorously growing vegetation can ensure wind erosion control. • The chemical and physical properties of topsoil to be used for rehabilitation shall not be changed by introducing foreign material, gravel, rock or rubble • Erosion control measures shall be implemented to ensure that the topsoil is not washed away and erosion gullies do not develop. These measures include re-vegetation, prevention of soil compaction. • Samples of stripped soils shall be analysed to determine the nutrient status. Fertilisers and seeding shall be applied if/ as required. • Topsoil to be replaced directly onto rehabilitation areas shall contains viable seed, nutrients and microbes that allow it to re-vegetate more rapidly. 	Rehabilitation and maintenance of disturbed areas shall be implemented during decommissioning phase. Continual maintenance of rehabilitated areas to ensure that rehabilitation achieved the required criteria (e.g. species diversity, erosion and basal cover) shall continue as part of the closure phase	ECO	2	2	L	Section 28 NEMA	
	<p>Aspect: Soils will be exposed from the time that they are placed on rehabilitated areas until such time as vegetation</p>	4	4	H	<ul style="list-style-type: none"> • Where disturbed areas cannot be re-vegetated, appropriate additional measures shall be taken to control erosion. Erosion control measures, such as contours, are required in all areas where slope gradients 		ECO	2	2	L	Section 28 NEMA	



Environmental Component	Environmental aspect and impact per phase	Risk rating (before mitigation)			Environmental objective	Mitigatory action plan	Timeframe	Responsibility	Risk rating (after mitigation)			Applicable legislation and other documents
		Probability	Magnitude	Severity					Probability	Magnitude	Severity	
	<p>has been established.</p> <p>Impact: There will be an increase in soil erosion by water and wind as soils will be exposed</p>					<p>exceed 2% (1:50). Engineered erosion control measures, such as berms and lifts, are required where slope gradients exceed 7% (1:15).</p> <ul style="list-style-type: none"> The extent and rate of soil erosion at rehabilitated areas shall be determined on an annual basis after the rainy season. Any erosion that does occur shall be monitored. The depth of the erosion shall be measured in 5 different areas, a set distance from each other and the average of this depth shall then be calculated. When the average depth exceeds 30cm, rehabilitation of the erosion area shall be done. Any erosion channels shall be backfilled and compacted and the areas restored to a proper condition. Light rill erosion on slopes less than 10% shall be control by placing branches and rock padding across the rills. Ploughing in or pushing in soil material with earth moving equipment to fill small gullies shall take place. During the filling process, the soil worked into the gully shall be compacted. Filled gullies treated in this way shall immediately be reseeded with a close growing crop on the disturbed areas to protect it from further erosion 						
	<p>Aspect: Insufficient quantity of soil available for rehabilitation activities.</p> <p>Impact: Soil in other areas may be impacted if the quantity of soil available is insufficient for rehabilitation activities. In such a case, soil will need to be imported to the contravened area for rehabilitation activities.</p>	3	3	M			ECO	2	2	L	Section 28 NEMA	
Surface water	<p>Aspect: Incorrect levelling of the gravel road area</p> <p>Impact: Incorrect levelling of the gravel road area may temporary result in the blocking of surface water runoff resulting in ponding and reduction of surface water runoff quantity, if not prevented.</p>	4	4	H	Increase surface water quantity and quality.	<ul style="list-style-type: none"> The applicant must comply with the requirements of GN 704, dated 1999, and must implement the measures as contained in the Storm Water Management Plan. 	Monitoring and maintenance of rehabilitated areas shall be implemented during decommissioning phase and shall continue as part of the closure and post closure phase.	ECO	2	2	L	Section 28 NEMA Section 19 NWA Regulation 7 GN 704 (1999) i.t.o NWA.
	<p>Aspect: Soil exposure of ripped up and initial rehabilitated areas</p> <p>Impact: Soil erosion may take place. This could lead to an increase in suspended</p>	5	4	H			ECO	2	2	L		



Environmental Component	Environmental aspect and impact per phase	Risk rating (before mitigation)			Environmental objective	Mitigatory action plan	Timeframe	Responsibility	Risk rating (after mitigation)			Applicable legislation and other documents
		Probability	Magnitude	Severity					Probability	Magnitude	Severity	
	particles in surface water runoff, if not mitigated.											
Groundwater	<p>Aspect: Ineffective maintenance of contractor's vehicles and machinery.</p> <p>Impact: Hydraulic leakages resulting in pollution of groundwater.</p>	2	1	L	To ensure that the ground water quality and quantity of surrounding ground water users is not affected.	<ul style="list-style-type: none"> A maintenance system for contractor's vehicles and equipment must be developed and effectively implemented. A spill management procedure for the clean-up of leakages and spillages of hydrocarbons must be developed and effectively implemented. Contractor's vehicles must be repaired and washed at dedicated areas and the dirty water must not be allowed to discharge into the surrounding natural vegetation. In case that spillages or leakages do occur, the person that first notes the spill shall take steps to prevent the spill from spreading and shall contain the spill to minimise the area affected and prevent contamination of a water source. Spill kits shall be kept in trucks in case minor spillages do occur. 	Decommissioning phase	ECO	1	1	L	Section 28 NEMA Section 19 NWA Regulation 7 GN 704 (1999) i.t.o NWA.
Visual/ Aesthetic	<p>Aspect: The inadequate closure or rehabilitation of the gravel roads.</p> <p>Impact: Permanent visual impact.</p>	3	4	H	To enhance re-vegetation and biodiversity	<ul style="list-style-type: none"> The areas will be planted within indigenous vegetation typical of the area. During rehabilitation, colonisation of the disturbed areas by plants species from the surrounding natural vegetation will be monitored to ensure that vegetation cover is sufficient within one growing season. If not, then the areas will be rehabilitated with a grass seed mix containing species that naturally occur within the area. 	Decommissioning phase	ECO	2	4	M	Section 28 NEMA
	<p>Aspect: The re-establishment of vegetation on the rehabilitated areas.</p> <p>Impact: The removal of gravel roads will reduce the visual impacts created by the gravel roads and allow the sense of place to return to game farming/conservation ecotourism sense. The visual landscape will return to close to its pre-disturbance state.</p>	5	4	H	To enhance re-vegetation and biodiversity	<ul style="list-style-type: none"> Monitoring of the rehabilitation success will take place for at least 5 years and will include corrective follow-up action. Grazing from livestock will be prevented within the first 2 to 3 years after rehabilitation. Access to rehabilitated areas will be prevented until such time that rehabilitation was successful. 	Decommissioning phase	ECO	2	1	L	
Noise	<p>Aspect: Inadequate maintenance of contractor's vehicles and vehicles driving on gravel roads</p>	3	1	L	To ensure that the applicant remains compliant with air quality legislation.	<p>This is a positive impact therefore no mitigation is required, however the following is recommended:</p> <ul style="list-style-type: none"> A Complaints register must still be kept for the recording of complaints relating to noise. 	Decommissioning phase	ECO	2	1	L	Section 28 NEMA



Environmental Component	Environmental aspect and impact per phase	Risk rating (before mitigation)			Environmental objective	Mitigatory action plan	Timeframe	Responsibility	Risk rating (after mitigation)			Applicable legislation and other documents
		Probability	Magnitude	Severity					Probability	Magnitude	Severity	
	Impact: Noise levels are expected to decrease during the decommissioning phase due to decrease in vehicular movement.											
Air quality	Aspect: The ripping of compacted areas during rehabilitation will result in dust generation. Impact: Air pollution	4	4	H	To ensure that the applicant remains compliant with air quality legislation. To reduce dust generation To limit public exposure to unacceptable health risks.	<ul style="list-style-type: none"> In the case of project-related areas, such areas shall be re-vegetated as soon as is practically possible to reduce the amount of open areas exposed to wind erosion. If dust pollution levels exceed the relevant requirements as described under the NEMAQA, dust shall be managed by means of a water bowser and the implementation of lower speed limits. 	Decommissioning phase up until closure.	ECO	2	2	L	Section 28, 32, 33, 63 NEMAQA NFAQM SANS 1929 Declaration of the Highveld Priority area
Fauna	Aspect: Rehabilitation activities may frighten or result in injury of animal life. Impact: Disturbance of animal habitats. However, the resettlement of animal life in the rehabilitated areas is anticipated due to the re-establishment of suitable habitats when rehabilitation is completed.	3	3	M	To conserve animals and prevent disturbance of animal habitats. To maintain the diversity of species.	Rehabilitation shall be conducted such that wildlife is attracted back to areas where rehabilitation is implemented. The following ways can be used: <ul style="list-style-type: none"> Introducing the local animals back into the area. Brush packing provides cover for large animals such as rodents, hares, small carnivores and invertebrates. These animals leave their droppings behind, which contains seeds and aids vegetation as species diversity. Left-overs of their meals also decompose and adds organic material to the topsoil. Some of these animals burrow in the soil, which aerates the soil and helps with the infiltration of rainwater. Indigenous trees will attract seed- and fruit eating birds that leaves their droppings in the area, which contains plant seeds that is viable for re-vegetation. 	Decommissioning phase	ECO	2	2	L	Section 28 of NEMA
Flora	Aspect: Grazing of livestock on rehabilitated areas. Impact: Premature grazing of livestock on rehabilitated areas may affect the re-establishment of vegetation on disturbed areas.	3	4	H	Promote the establishment of self-sustaining plant communities through effective rehabilitation practices.	<ul style="list-style-type: none"> Grazing from livestock will be prevented within the first 2 to 3 years after rehabilitation. Access to rehabilitated areas will be prevented until such time that rehabilitation was successful. Grazing shall be controlled to prevent overgrazing taking place. Game farming shall not be done to the cost of the environment. The two shall be done in accordance. During periods of poor vegetative growth, harvested forage shall be provided for feed in the game farm. 	During re-vegetation	ECO	2	4	M	Section 28 of NEMA



Environmental Component	Environmental aspect and impact per phase	Risk rating (before mitigation)			Environmental objective	Mitigatory action plan	Timeframe	Responsibility	Risk rating (after mitigation)			Applicable legislation and other documents
		Probability	Magnitude	Severity					Probability	Magnitude	Severity	
					<ul style="list-style-type: none"> In areas where overgrazing has taken place or bare patches are located, the regeneration shall be supported by breaking the surface to allow infiltration, germination and establishment of native or introduced pasture plants. To protect these areas from grazing, branches shall be packed over the rehabilitated bare patches to protect new growth. Unseasonal veld fires shall be controlled. 							
	<p>Aspect: Ineffective implementation of rehabilitation activities such as incorrect levelling of the surface of the gravel roads, working inadequate amount or no organic material into soil used for rehabilitation practices</p> <p>Impact: Increased of surface water flow may result in subsequent erosion. This could ultimately limit the settling of vegetation as part of rehabilitation, increase dust generation from the rehabilitated roads and / or increase the runoff of suspended solids into surrounding surface water sources.</p>	3	4	H	<ul style="list-style-type: none"> The disturbed areas will be planted within indigenous vegetation typical of the area. During rehabilitation, colonisation of the disturbed areas by plants species from the surrounding natural vegetation will be monitored to ensure that vegetation cover is sufficient within one growing season. If not, then the areas will be rehabilitated with a grass seed mix containing species that naturally occur within the area. Monitoring of the rehabilitation success a will take place for at least 5 years and include corrective follow-up action. 	Rehabilitation and maintenance of disturbed areas shall be implemented during decommissioning phase. Continual maintenance and monitoring of rehabilitated areas to ensure that rehabilitation achieved the required criteria (e.g. species diversity, erosion and basal cover) shall continue as part of the closure phase	ECO	2	4	M	Section 28 of NEMA	
	<p>Aspect: Inability to re-establish indigenous vegetation.</p> <p>Impact: Permanent loss of indigenous vegetation and low biodiversity</p>	5	5	H	<p>To enhance re-vegetation and biodiversity</p> <p>A detailed plan with regards to rehabilitation of gravel roads shall be developed by a rehabilitation specialist registered at the South African Council for Natural Scientific Professions. The rehabilitation plan shall include the following, including the following:</p> <ul style="list-style-type: none"> Soil sourcing and usage, Vegetation establishment, Most suitable plant and seed mixtures to be utilised Sloping methods End land use requirements. 	Decommissioning phase up until closure.	ECO	5	5	H		



Environmental Component	Environmental aspect and impact per phase	Risk rating (before mitigation)			Environmental objective	Mitigatory action plan	Timeframe	Responsibility	Risk rating (after mitigation)			Applicable legislation and other documents
		Probability	Magnitude	Severity					Probability	Magnitude	Severity	
					<ul style="list-style-type: none"> Long-term erosion prevention Confirmatory monitoring Security measures Rehabilitation will be undertaken to the natural angle of repose. <p>A flora specialists registered with the South African Council for Natural Scientific Professions with the relevant qualification and expertise will be appointed to investigate ways to re-establish indigenous vegetation.</p>							
	<p>Aspect: Unsuccessful re-vegetation.</p> <p>Impact: Possible increase in alien and invasive vegetation. If re-vegetation after closure is unsuccessful or it is not enforced, alien invasive species will increase on the rehabilitated areas after road closure.</p>	3	4	H	To control and eradicate all invasive species by means of methods that are appropriate for the species concerned and the environment in which it occurs	<ul style="list-style-type: none"> Areas where alien weeds and invasive plants occur on rehabilitated areas shall be identified. The size of stands, and plant species to be removed identified shall be calculated. Appropriate resources to remove or control all identified plants in shall be identified in the form of an action plan. Any action taken to control and eradicate a listed invasive species shall be executed with caution and in a manner that may cause the least possible harm to biodiversity and damage to the environment. The methods employed to control and eradicate a listed invasive species shall also be directed at the offspring, propagating material and re-growth of such invasive species in order to prevent such species from producing offspring, forming seed, regenerating or re-establishing itself in any manner. Alien invasive vegetation shall be removed according to area and not species. Any action taken to control and eradicate a listed invasive species shall be executed with caution and in a manner that may cause the least possible harm to biodiversity and damage to the environment. 	Alien invasive plant monitoring shall be implemented during operational phase. This monitoring shall continue as part of decommissioning and closure phase whereby the spread of alien and invasive plant species into the rehabilitated areas are regularly removed and re-infestation monitored for at least five years.	ECO	2	2	L	Section 28 NEMA Regulation 15 CARR Section 5 CARA
	<p>Aspect: Vehicles driving on rehabilitated areas.</p> <p>Impact: Limit vegetation growth in the re-vegetated areas.</p>	3	4	H	To enhance re-vegetation and biodiversity	<ul style="list-style-type: none"> Access to rehabilitated areas will be prevented until such time that rehabilitation was successful. 	Decommissioning phase	ECO	2	4	M	Section 28 NEMA
Sensitive areas	<p>Aspect: Vehicles driving on non-designated areas.</p> <p>Impact: Destruction or</p>	3	3	M	To protect sensitive habitats and species	<ul style="list-style-type: none"> Access to rehabilitated areas will be prevented. A temporary fence or demarcation must be erected around the sensitive species 	During decommissioning phase.	ECO	3	1	L	Section 28 of NEMA

Environmental Component	Environmental aspect and impact per phase	Risk rating (before mitigation)			Environmental objective	Mitigatory action plan	Timeframe	Responsibility	Risk rating (after mitigation)			Applicable legislation and other documents
		Probability	Magnitude	Severity					Probability	Magnitude	Severity	
	damage of sensitive species (such as the <i>Cheilanthes deltoidea</i> subsp. <i>silicicola</i> confirmed from the <i>Loudetia flavida</i> – <i>Monocymbium cerasiiforme</i> grassland) Potential damage to the heritage structures (this includes the graveyard and the homestead), as a result of rehabilitation activities											
	<p>Aspect: Vehicles driving on rehabilitated areas.</p> <p>Impact: Damage to cave site. The site is situated some four kilometres SSW of the main iron ore prospecting area and over 600m lower in elevation. Any unrecorded paleontological heritage resources here are therefore unlikely to be directly or indirectly affected by the rehabilitation of roads.</p>	1	1	L	To conserve heritage structures	<ul style="list-style-type: none"> A temporary fence or demarcation must be erected around the cave to prevent access and damage of the cave. 	During decommissioning phase.	ECO	1	1	L	Section 28 NHA Heritage impact assessment report
	<p>Aspect: Vehicles driving on rehabilitated areas.</p> <p>Impact: Potential damage to the heritage structures (this includes the graveyard and the homestead), as a result of rehabilitation activities</p>	3	3	M	To conserve heritage structures	<ul style="list-style-type: none"> The graveyard must be fenced-in, cleaned and well managed Access to graveyard must be provided to descendants and family members to visit their grave sites. A temporary fence or demarcation must be erected around the graveyard. 	During decommissioning phase.	ECO	2	2	L	Section 28 NHA Heritage impact assessment report
IAPs	<p>Aspect: Rehabilitation activities will result in the restoration of the landscape as closely as possible to the pre-disturbed state.</p>	3	3	M+	Minimise the negative impacts associated during and after closure on the local economy, community	<ul style="list-style-type: none"> Continual monitoring and maintenance of rehabilitated areas. The applicant should be accessible to the public when concerns, complaints or questions arise. 	Rehabilitation and maintenance of disturbed areas shall be implemented during decommissioning phase.	ECO	3	3	M+	Section 28 of NEMA



Environmental Component	Environmental aspect and impact per phase	Risk rating (before mitigation)			Environmental objective	Mitigatory action plan	Timeframe	Responsibility	Risk rating (after mitigation)			Applicable legislation and other documents
		Probability	Magnitude	Severity					Probability	Magnitude	Severity	
	<p>Impact: I&APs will be impacted positively by changes, as the sense of the place will be return as closely as possible to pre-disturbed state. Some impacts previously impacting on I&APs throughout the operational phase will decrease and/or cease completely. This includes impacts on air quality by the generation of dust and noise impacts.</p>				and public sector.							
Land-capability and Landuse	<p>Aspect: Rehabilitation activities</p> <p>Impact: As a result of the rehabilitation activities, the land capability in some surface land use areas will be altered. Land capability will be altered by the placing of soils and establishment of vegetation. Rehabilitation will aim to restore as much of the original land capability as practicable. It is expected however that the land capability of the rehabilitated landscape will be degraded compared to that of the pre-disturbed landscape.</p>	3	3	M	Maximising land capability of disturbed / affected areas through effective rehabilitation and remediation practices. Promote sustainable land use subsequent to rehabilitation.	<ul style="list-style-type: none"> Rehabilitated areas are to be monitored in terms of vegetation establishment and erosion. The post-disturbed land capability will be optimised by maximising the depth of soils stripped. Vegetation establishment is to be augmented where required by re seeding. The impact on land use shall be minimised by maximising the post-disturbed land capability. Eroded areas are to be repaired. 	Decommissioning phase	ECO	2	1	L	Section 24g NEMA Section 28 NEMA



4.2.3 Cumulative Impacts

Cumulative impacts refer to the situation where an activity may in itself not have a significant impact, but may become significant when added to the existing and potential impacts from similar or different activities in the area.

The following potential cumulative impacts have been identified:

Table 26: Cumulative impacts

ASPECT	ASPECT OTHER LAND USES	IMPACT DESCRIPTION
Dust generation from vehicles driving on the gravel roads to the prospecting sites.	Dust generation from agricultural activities and community driving on roads.	Potential impact on air quality. According to atmospheric deposition monitoring conducted as part of prospecting and the EIA phase, deposition values continue to be well within proposed residential limits. There seems to be no significant impact from traffic on the provincial road, which would cause an impact on air quality.
Noise generation from vehicles driving on the gravel roads to the prospecting sites.	Noise generation from agricultural activities and community driving on roads.	Nuisance to the community from noise. However according to the noise survey, the noise shall be contained within the valleys of the mountains and shall have no effect on any surrounding communities.
Invader plants establishing on disturbed areas.	Invader plant already established due to agricultural activities and rural community	Disturbance and destruction of natural vegetation
Natural vegetation was removed prior to construction of the gravel roads.	Removal of natural vegetation for crop production	The construction of gravel roads have resulted in the large-scale loss of primary vegetation units and important faunal habitat types. Consequently, the loss of habitat has lead to the displacement of fauna, the partial loss of certain threatened species and increased fragmentation of key functional habitat types that are already under pressure from developments in other parts of the country (e.g. loss of Highveld grasslands due to mining and cultivation).



ASPECT	ASPECT OTHER LAND USES	IMPACT DESCRIPTION
Siltation of water resources due to run-off from as a result of inadequate or lack of stormwater control, and linear structures.	Siltation of water resources due to crop production	The gravel road system and other related activities may result in an increase in erosion and run-off of water into the non-perennial drainage lines. This may result in an increase in sedimentation in the perennial streams into which they drain (Zandspruit & Sondagsrivier). The increase in sediment could be detrimental to the aquatic ecosystem because the water becomes silted making it difficult for fish and aquatic macro-invertebrates to breathe and feed amongst other ecological processes. The increased sedimentation and thus embeddedness of cobble and gravel substrate will negatively compromise the spawning beds of fish and therefore reduce the breeding success. It will also silt up the nursery areas and lessen the feeding ability of fish fry because of the loss of macro-invertebrate habitat. The riffles and rapids are important for recharging the oxygen content of the water which is critical to the river system as a whole and in particular flow dependent species; this function will be lost or reduced significantly with the increase of sediment loads in a river. There will also be an impact to irrigation operations and could also have varying degrees of impacts on the livestock and other animals drinking this water.



5. APPLICABLE LEGISLATION AND GUIDELINES

Table 27 below provides an indication of the main legislation, policies and / or guidelines applicable to the rectification application project.

Table 27: Applicable legislation, policies and / or guidelines

Title of legislation, policy or guideline	Administering authority	Aim of legislation, policy or guideline
Laws of General Application		
The Constitution of the Republic of South Africa, 1996 (Act 108 of 1996)		To establish a Constitution with a Bill of Rights for the RSA.
Environment Conservation Act, 1989 (Act 73 of 1989 as amended)	Department of Economic Development, Environment and Tourism	To control environmental conservation.
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.
Promotion of Access to Information Act, 2000 (Act 2 of 2000 as amended)	Department of Economic Development, Environment and Tourism	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.
Air Quality and Noise		
National Environmental Management: Air Quality Act (Act No 39 of 2004)	Department of Economic Development, Environment and Tourism	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.
Environmental Impact Assessment Regulations, 2010 (Government Gazette No. 33306 of 18 June 2010)	Department of Economic Development, Environment and Tourism	Regulations pertaining to environmental impact assessments.
Water Management		
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		To control water management aspects.
Biodiversity		
National Environmental Management: Biodiversity Act, 2004 (Act 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



Title of legislation, policy or guideline	Administering authority	Aim of legislation, policy or guideline
		National Environmental Management Act, 1998; the protection of species and ecosystems that warrant national protection; the sustainable use of indigenous biological resources; the fair and equitable sharing of benefits arising from bio prospecting involving indigenous biological resources; the establishment and functions of a South African Biodiversity Institute; and for matters connected therewith.
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.
Soil and Land Management		
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.
Heritage and Archaeological Resources		
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
Protected Areas		
National Environmental	Department of Economic	To provide for the protection and



Title of legislation, policy or guideline	Administering authority	Aim of legislation, policy or guideline
Management: Protected Areas Act, 2003 (Act No 57 of 2003 as amended)	Development, Environment and Tourism	conservation of ecologically viable areas representative of South Africa's biological diversity and its natural landscapes.
Planning of New Activities		
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.
EIA Regulations R 543, R 544, R 545 and R 546, dated June 2010) under the NEMA, 1998	Department of Economic Development, Environment and Tourism	To regulate and control the authorisation of certain listed activities.
Rectification of commencement or continuation of listed activities		
Section 24g of the National Environmental Management Act, 1998 (Act 107 of 1998)	Department of Economic Development, Environment and Tourism	To rectify unlawful commencement or continuation of listed activities.



6. PUBLIC PARTICIPATION PROCESS

6.1 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”.



6.2 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 E1 for an extract regarding the required public participation process to be followed, taken from the relevant legislation and guidelines

6.3 Public Participation Process followed

6.3.1 Identification and registration of IAPs and key stakeholders

Table 28 below lists the landowners and adjacent landowners (also attached as Appendix E2) identified and notified (by means of e-mail, telephone, fax and/or post) of the activity. Copies of the notifications to the IAPs have been included in Appendix E3.

Table 28: List of landowners and adjacent landowners identified and notified

Name	Post/Email	Post/Email sent
Adam Barnard	john.barnard@mittalsteel.com	E
Attie Jonker	attiej@lantic.net	E
Charlothia E. Fransolet	P.O. Box 16812 Pretoria-North	P
Chris van Rooyen	PO Box 1960, Bedfordview	P
Christopher York (Imberbe (Pty) Ltd)	yorksafaris@mweb.co.za	E
Dr Adriaan Martin (Arries Family Trust)	Martin1@icon.co.za	E
E.B. Nieuwoudt (DEFACTO INV 72 PTY LTD)	ebn@mweb.co.za	E
EJ Pelser	PO Box 541 Thabazimbi 0380	P
Frik Eloff	frikhunt@telkomsa.net	E
Gerald Chapman	gdchapman@mweb.co.za	E
Hilton Botha (SHIRLTON ESTATES cc	shirleybotha@telkomsa.net or shirlton@thabanet.co.za	E
J. L. Human	Posbus 244 Thabazimbi 0381	P
J.H. Schutte	Posbus 822 Thabazimbi	E



Name	Post/Email	Post/Email sent
	quatcpm@lantic.net	
Gerard Boshoff	gjboshoff@mweb.co.za	E
J.M. Greyvenstein	mike.greyvenstein@turboc.co.za	E
Jacoba Johanna Aletta Maree	coba@mjn.co.za	E
Jennifer Gehm	jennifer@cavaleros.co.za	E
Lyon's Lodge	lyonsafaris@mweb.co.za	E
Marakele NP	P.O. Box 800, Thabazimbi, 0380	P
Mr Marius Schrenk - Familie Trust	P.O. Box 647 Thabazimbi, 0380	P
Michael White (Bethel Farm CC)	mswhite@telkomsa.net	E
MJ Raath (Rookpoort Beleggings Pty Ltd)	roadsurf@lantic.net	E
Mr Barry Sigmund York Mr Derek Grant Preece		E
Mr Jan Coetzer	janc@ilc.co.za	E
Mr LLS van der Watt	louis@atterbury.co.za	E
Mr. P.I. de Wet	P.O.Box 141 Thabazimbi, 0380	P
MSA Erasmus	PO BOX 564 THABAZIMBI, 0380	P
Petrus Albertus van Niekerk	P.O Box 7244 Pretoria 0001	P
PH Reeders	PO Box 88 Thabazimbi	P
Pierre Mostert	pierrem@cpac.co.za	E
Piet Steenkamp	Posbus 1630 Thabazimbi,0380	P
Piet Venter	pietv@mics.co.za	E
Tony Visser	tonyv@ilc.co.za	E
John Trollope	john@tmsgroup.co.za	E
Mr. Piet van Staden VAN STADEN (THABAZIMBI JAGPLAAS EDMS BKP -	Accgame@icon.co.za Or pietvs@telkomsa.net	E
Mrs Claudia Coetzee	Claudia@ilaweb.co.za	E
Mr Roelf Crouse	talitha@tcscredit.co.za	E
Mr Gerrit van der Berg	Gerrit@atterbury.co.za	E
Mr Fred Stow	fred@meletsegamerreserve.com	E
Mr EN Sonnenbergs	cfrittelli@ens.co.za	E



Name	Post/Email	Post/Email sent
Cecil White Mr	cecilwhite@telkomsa.net	E
Mr Andrew Nicholson	Andrew.umhlaba@telkomsa.net	E
Mr Ampie Venter	ampie@thabanet.co.za	E
Dr Wilhelm Schack	Wilhelm@ecowild.co.za	E
Dr Peter Oberem	Peter.oberem@afrivet.co.za	E
Dr Andre van Coller	Andrevancoller@yahoo.com	E
Charles Cornal Jones	Charles@metetoegamereserve.com	E
A. Le Roux	Can't read it	Call
M. Grobler (Solu Gratia)	marulacamp@mweb.co.za	E
J. Blaauw (Chairperson - Thabazimbi Business Chamber)	jnblaauw@telkomsa.net	E
George Ferreira	palanca@vodamail.co.za	E
Tokkie Swanepoel (TBBV, Chamber, TVF)	tokkiesb@gmail.com tbbv@gmail.com	E
S. McKernan (Champion Wildlife)	thababbv@gmail.com champion.wildlife@gmail.com	E
W.T.A. Wilkinson		Call
A.R. Ramogale (Thabazimbi Municipality)	adolf@gmail.com	E
B.K. Makaepa (AISP)	kgauzas1@webmail.co.za	E
L. Erasmus (Manager – Leopard Cave)		
F.J. Niemand (Manager – Meletse Game Breeders)	lvdw@atterbury.co.za piet.ferpa@gmail.com	E
C. Barkhuizen (Chamber of Commerce)	tbzsakekamer@gmail.com chrisbarkhuizen@sankon4v.com????	E
B.S. Swanepoel	ben@lovwill.co.za	E
P. Steenekamp		Call
E. Fouche (Marekele Eco Estate)	eugene.fouche@angloamerican.com	E
Darius (Reserve Manager - Meletse Game Reserve)	darius@meletsegamereserve.com	E
Wilhelm Schack	wilhelm@ecowild.co.za	E

Name	Post/Email	Post/Email sent
E. Bisshoff	ebisshoff@yahoo.com	E
Ampie Venter (JAU)	ampie@thabanet.co.za	E
Harold Braack	harold.abrus@gmail.com	E
Lizzie Wilkinson		Call
A.H. Combrink		Call
Patrick Benson	pbenson.rsa@gmail.com	E
Johan van Rooy	info@ecoza.net	E
Roelf Crause / Talitha Crause	crauseroelf@gmail.com	E
Mrs. Foti	Contact through Fred Stow	Meeting

All organs of state which may have jurisdiction in respect of the activity is considered to be registered I&APs. The following organs of state (Table 29) were notified of the activity:

Table 29: List of organs of state identified and notified

PORTION	NAME
Thabazimbi LM	Councillor Patricia Moshito
Waterberg DM	Municipal Manager Mr. M.V. Letsoalo
Marakele NP	Conservation Manager Mphadeni Nthangeni Conservation Manager
DMR	Kolani T.C: (ASD) Mine Environmental Management
DWA	Mr. A. Matukane (Chief Director)
SAHRA	Phillip Hine
DOA	Makananisi Fonzani Mary
LEDET	Tinyiko Malungani
Thabazimbi LED	Molatlhegi Peter Motlhabane
Thabazimbi Env/Infra/Planning	Piet Van Rensburg
Rooiberg Homeowners Ass.	Mr Philip Nel Petrus Albertus van Niekerk
News Media	Elise Tempelhoff

Copies of the notifications to the organs of state have been included in Appendix E3, and examples are included in Figure 20 below.

6.3.2 Methods of notification

6.3.2.1 Advertisement(s)

The activity was advertised in a local newspaper Kwevoel on the 22nd of November 2013. The Kwevoel was found to be the most appropriate newspaper in terms of its accessibility to the I&APs. A copy of the advertisement and proof of the placement thereof is attached in Appendix E4. Refer also to Figure 21 below.



6.3.2.2 Placement of site- and public notices


Notice was also given to Interested and Affected Parties (IAPs) by notice boards. Notice boards were placed at different, noticeable and conspicuous places refer to (Figures 23 and Table 30) on 25th of November 2013. A copy of the site notice and photographs of the site notices are attached in Appendix E5.

6.3.2.3 Notification letters

The Notification letters that provided background information pertaining to the unlawful activity were developed and sent out to all identified IAPs as well as to all organs of state that may have jurisdiction over any aspect of the unlawful activity on the of 22nd November 2013.

Copies of the Notification letters and proof of distribution of the Notification letters to the adjacent landowners and organs of state have been attached as Appendix E3 and Figure 20 & 22.





Shangoni Management Services (Pty) Ltd
Reg: 2002/0000297-VA - 480 019 1309
Tel: +27(0)12 807 7036 Fax: +27(0)12 807 1014
E-mail: info@shangoni.co.za www.shangoni.co.za
Block C8, Block@Nature 472 Botterklapper Street The Wilkows 0081
PO Box 74726, Lynnwood Ridge 0040

21 November 2013

NAME
PO Box 541
Thabazimbi
0380

Dear Sir/Madam,

**NOTICE OF APPLICATION FOR RECTIFICATION FOR AQUILA STEEL (S Africa) (PTY) LTD
REF NO: 12/1 /9-6/S24G/15-W1**

Unlawful commencement or continuation of activities identified in terms of the environmental impact assessment regulations in terms of section 24G, read with section 7 (Transitional provision) of the National Environmental Management Amendment Act (Act No. 8 of 2004). Notice is given, in terms of section 24(G) read together with sections 24(F) and 12(3) of the National Environmental Management Amendment Act (Act No. 62 of 2008) and the Environment Conservation Act (Act No 73 of 1989) that the Limpopo Department of Economic Development, Environment and Tourism (LEDET) is considering:

- Granting Aquila Steel (S Africa) (Pty) Ltd rectification in terms of Sections 24(G), 24(F) and 12(3) of the National Environmental Management Amendment Act (Act No. 62 of 2008); and
- Granting authorisation to Aquila Steel (S Africa) (Pty) Ltd from complying with the Environmental Impact Assessment Regulations (Regulations R 1182 and R 1183, as amended) which have been promulgated in terms of the above Environment Conservation Act (Act 73 of 1989); in correspondence with Regulations R544 of the Environmental Management Amendment Act (Act No. 62 of 2008).

Applicant: Aquila Steel (S Africa) (Pty) Ltd
Project Name: Aquila Steel (S Africa) (Pty) Ltd construction and expansion of existing roads towards the top of the Meletse Mountain to the beacon on the Remainder of the farm Donkerpoort 448 KQ and Remainder of the farm Randstephne 455KQ within Thabazimbi. The activity commenced for the first time on the 12th of September 2007.
Project Location: Donkerpoort 448 KQ and Remainder of the farm Randstephne 455KQ
Section 24 (G) ref nr: 12/1/9-6/S24G/16-W1.

Shangoni Management Services (Pty) Ltd Directors R B Hayes J Nel J A van Rooy C J Potgieter H L De Villiers K Pijs

The following activities were 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	22	Project description: The construction of new access and haul roads where no reserve exists and the road is wider than 8 meters. Listed Activity: The construction of a road, outside urban areas, (i) With a reserve wider than 13,5 meters or, Where no reserve exists where the road is wider than 8 meters,
No. R. 544, 18 June 2010	47	Project description: The widening and lengthening of existing roads where no reserve exists and is wider than 8 meters. Listed Activity: The widening of a road by more than 6 meters, or the lengthening of a road by more than 1 kilometre – (i) With a reserve wider than 13,5 meters or, (ii) Where no reserve exists where the road is wider than 8 meters,
No. R. 544, 18 June 2010	4	Project description: The construction of access and haul roads where no reserve exists and the road is wider than 8 meters. Listed Activity: The construction of a road wider than 4 metres with a reserve less than 13, 5 metres. (gg) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPA or from the core areas of a biosphere reserve;

If you would like to comment on this application, please refer your queries to: Shangoni Management Services (Pty) Ltd. Contact Person: Mrs Khosi Mohlali Tel: (012) 807 7036, Cell: + (0)79 892 4930, Fax: (012) 807 1014 E-mail: khosi@shangoni.co.za PO Box 74726, Lynnwood Ridge, Pretoria, 0040. Please note the comment period is from the 22nd November 2013 to the 9th January 2014.

Objections and comments must be copied to: The Head, Limpopo Department of Economic Development, Environment and Tourism Attention: Section 24G UNIT LEDET Private Bag X 9484, Polokwane, 0700.

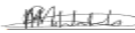
Regards,

Consultant Shangoni Management Services

Figure 20: Example of notification letters sent to I&APs and Organs of State

Friday 22 November 2013 Kwêvoël Page 11

"small" @ R600 stuk.
Kontak
0799333344

DENNON 5.1 channel home theatre system with Denon DVD/CD player and bone speakers @ R1000

TV SAMSUNG plat-skerm en TV-dekdeerder, spintermuut en is hoëdefinisie-reg @ R3 000

0845494277
ANTIEKHEDE: Antieke eikehoutbuffet (met spieël bo), 1 groot antieke eikehouttafel, antieke koper dubbelbed en matras, verskeie antieke silwerware, antieke horlosie, 2x waterverskilder eryl van Tafelberg deur H Anderson (1943), 2x oever-skiidery deur Robert Pohl (1942), Royal Albert teestelle, antieke telefoon, antieke filmkamera en antieke, handgemaakte Indiese tafeltjie

0845494277
1x RICO Cartridge SP4100 - type Black for SP4100/NSP4100 N - brand new, still in plastic cover @ R1 000 and 3x Lexmark 100XL Cartridges - cyan, yellow en magenta, also brand new and still in their covers @ R150 each. Total R450 or R213.82 each

0845494277
TAS met verskeie materiale ens @ R 800 (tas ingesluit in pryse)

0845494277
VOERTUIE

EK koop motors, bakkes en trokke vir kontant. Kontak Shabir 0721267886

URGENTLY! wanted cashbakkes for cash. Best prices paid. Kontak Mark 0832309221

TE koop, Voetstoots: 1x Yamaha DT 500c Scrambler en 1x Lifan 200Cc Vierfel. R5000 onderhandelbaar vir albei. Kontak: 071 9187975/ 0725012860

2.5 ISUZU Diesel enjin. Vyf speed, Cressida rakkas, is nog in 'n goeie toestand en is te koop vir R14000 (ohb) Kontak Robert 0832259229

HONDA XR 125 (wit) 9500km soos nuut @ R8000 Kontak Johan 0824680142

1998 KB 280 Isuzu dubbelkajuit vyfgraan "kappie" "canopy", in baie goeie toestand, te sien in Thabazimbi-dorp. Te koop vir R1500 o.n.a. Kontak 0789685886

FABRIEKSERVAARDIGDE Veldsleepva / "bos trailer" met groot dak/syentkombinasie met ekstrast. O.a. hiltewerende daksaal, stort, skottelskaar ens. Te koop vir R50000 Kontak 0799333344

TOYOTA 2003 RunX 1800Rus met ekstra teersplekoontraksels, nog in 'n puik toestand is te koop Kontak 0835740798

GESOEK

GESOEK om te koop, jungle gym/ klim en kloutraam Kontak 0823053516

LIZZY is looking for accommodation, a room to rent in town, is prepared to work.

083960521
OP SOEK na 'n klein karretjie, verkieslik 'n VW Golfie, maar moet onder R20000 wees

0835740798
GESOEK: Northam Helpende Hand vra asseblief gebruikte linne, kombersse, beddeffare en nie-beddeffare voedsel, ornamentale enjies, wit oilfant in u huis, om te skenk vir behoeftes

Kontak Mari Meintjies 0828064915

BETREKING

BLANKE MAN, 41 jarige betroubare blanke man met sober gewoontes, met vrou en twee kinders, is op soek na werk. Ek is "handy" kan bouwerk, teëlwerk, houtwerk, loodgieterswerk, COF, welding en instandhoudingswerk op plaasimplimente en voertuie doen. Was 5 jaar 'n wildspaaasvoorman. 0738757676

ABRAHAM en PIET is baie bekwame verwers, bousers, instandhoudingswerk en teëlwerkers A-0784042774 P-0832486466

ALBERT is 'n bouer en kan plaveisels lê, teëls, verf, plafonne insit en ook swembaddens bou en met klip ook bou 072164998

BATSILE is op soek na vervoer werk. Sy het 'n kode B en is van Motoswana af. Enige werk is welkom 0738757676

JOHANNA wil graag 3 dae in die week werk of elke dag in die week te kan werk 0793940057

JOHANNA wil graag elke dag werk, enige werk is welkom. Sy kan skoonmaak en wasgoed was 0736295525

JOHANNES is 'n bouer en hy kan teël, verf, pleister, draadspan, houtwerk en loodgieterswerk doen. Hy kan ook met messe werk 0717037020

JOSAPHINE is 'n chef en het ses jaar by Kaya-Kaya gewerk. Sy sal enige algemene werk doen. Sy het ook 'n kode 10 Iensensie. Sy sal ook skoonmaak en in lodges werk 0796094281

KLAAS is 'n bouer en hy kan teëls lê, pleister en plavei ens 0788692424

LIESBET wil graag Dinsdae en Donderdae werk. Sy praat mooi Afrikaans en is nog van die ou garde 0785902491

LOUISA wil graag elke dag werk 0838668403

MARIA wil graag 3 dae in die week of elke dag werk 0792778546

MARIA wil graag elke dag werk in die week 0734636813

NVENGETERA would like to work everyday 0810056133

ONIKA wil graag elke dag werk 0810637767

RINA wil graag Maandae, Woensdae en Vrydae werk. Sy is baie ordentlik en praat mooi Afrikaans 0724176158

SINA wil graag elke dag werk. 0737639367

STEPHINA is 'n huiswerker en is beskikbaar Januarie 2014, Dinsdae, Woensdae en Vrydae. Kontak Isa vir 'n goeie getuigskrif 0828928803

TAPELA kan pleister, bou, teël, plavei en bou met klip 0717622211

VENGAI is a Liebherr Excavator driver and is looking for work 0746218996

WILEMINA wil graag elke dag werk, sy kan in die kombuis werk, kook en mool skoon maak 0731544346

VAKATURE

OLD Mutual is op soek na kandidaat as Finansiële Adviseurs in Thabazimbi area. Moet aan die volgende vereistes voldoen: Matricsertifikaat, rekenaaruvervaardig, eie vervoer/bestuur-lisensie, ouderdom 25+, opleiding word voorsien. Stuur cv na jduplessis2@oldmut

KENNISGEWING

NOTICE OF ENVIRONMENTAL ASSESSMENT Call for interested and Affected Parties Reference No: 12/19/6/S24G-W11

Application for environmental authorisation submitted to Department of Economic Development, Environment and Tourism and Agriculture, Forestry & Fisheries, in terms of EIA Regulations 2010, to undertake the following:

Rectification of continuation of a listed activity (Activity 14 Government Notice R546) in terms of section 24G of the National Environmental Management Act (Act 107 of 1998) in respect of the development of 4 agricultural crop crates on the Farm Faure 72 KQ portion & Makoppa District, Thabazimbi Local Municipality, Limpopo Province.

Interested and affected parties (I & Aps) are given an opportunity to register and participate and provide written comments/inputs regarding the above mentioned development. I & Aps should please refer to the reference number above and provide any comments together with your name, contact details (e.g. email address, fax number)

Interested and affected parties (I & Aps) are given an opportunity to register and participate and provide written comments/inputs regarding the above mentioned development. I & Aps should please refer to the reference number above and provide any comments together with your name, contact details (e.g. email address, fax number)

and an indication of any direct business, financial, personal or other interest which they have in the application, to the contact person indicated below within 30 days from the date of notice. P.O. Box 70, Koedoeskop, 0361 Email: bothadp@gmail.com Fax: (014) 785 0611

For more information please contact Ms L. du Plessis, Joint Begn Environmental Services at above address.

ENVIRONMENTAL ASSESSMENT - PUBLIC PARTICIPATION PROCESS Call for interested and Affected Parties Reference No: LEDET Reference No: 12/19/1/W74. NEAS Reference: LIM/EIA/000/0706/2013

NOTICE DATE: 22 November 2013

Project title: Proposed development of 90 hectares dry lands and expansion of an Earthem Irrigation Dam on the Farm Wislei 423 KQ portion I, Koedoeskop, Thabazimbi Local Municipality. Amended Application for Environmental Authorisation to undertake the following: Listing Notice (Activity 4): The expansion of facilities or infrastructure for the off-stream storage of water including dams and reservoirs, where the contained capacity will be increased by 50 000 cubic metres or more.

Planet Nails Sonja 073 578 8728

Bargain Corner Koop & verkoop van enige iets 072 650 7143

SKULD Slapelose nagte? Skakel ons vir 'n oplossing wat werk en word skuldvry. 0878020086 (Landlyn - geen sms) of gaan na www.ragconsulting.co.za

Die smalls sluit DINSDAE 12:00 stiptelik

ALLIED COMPUTERS EN IKATISENG SECURITY ALARMS
hou op Vrydag 29 November 2013 vanaf 10:00 tot laat 'n spitbraai oorkant Markea Gebou, voor Standard Bank parkeer area.
Kom geniet 'n stukkie vleis, pap en sous terwyl ons nuwe produkte ten toon stel.
Ikatiseng het promoesies op alarms. Ons stel bekend die 'protector kit' vir slegs R4 000.00, installasie ingesluit.
Kom kyk hoe ons stelsels werk om u huis of besigheid te beveilig met monitering, asook reaksie.
Hiermee wil ons graag al ons kliënte bedank vir julle lojale ondersteuning.
Kom geniet die dag saam met ons.

NOTICE OF APPLICATION FOR RECTIFICATION FOR AQUILA STEEL (S Africa) (PTY) LTD REF NO: 12/1/9-6/S24G/15-W1

Unlawful commencement or continuation of activities identified in terms of the environmental impact assessment regulations in terms of section 24G, read with section 7 (Transitional provision) of the National Environmental Management Amendment Act (Act No. 8 of 2004).

Notice is given, in terms of section 24(G) read together with sections 24(F) and 12(3) of the National Environmental Management Amendment Act (Act No. 62 of 2008) and the Environment Conservation Act (Act No 73 of 1989) that the Limpopo Department of Economic Development, Environment and Tourism (LEDET) is considering:

a. Granting Aquila Steel (S Africa) (Pty) Ltd rectification in terms of Sections 24(G), 24(F) and 12(3) of the National Environmental Management Amendment Act (Act No. 62 of 2008); and

b. Granting authorisation to Aquila Steel (S Africa) (Pty) Ltd from complying with the Environmental Impact Assessment Regulations (Regulations R 1182 and R 1183, as amended) which have been promulgated in terms of the Environment Conservation Act (Act 73 of 1989) - in correspondence with Regulations R544 of the Environmental Management Amendment Act (Act No. 62 of 2008).

For the Aquila Steel (S Africa) (Pty) Ltd construction and expansion of existing roads towards the top of the Meletse Mountain to the beacon on the Remainder of the farm Donkerpoort 448 KQ and Remainder of the farm Randstephne 455KQ within Thabazimbi reference number 12/1/9-6/S24G/16-W1. The activity commenced for the first time on the 12th of September 2007.

The following activities were applied for:


Indicate the number and date of the relevant notice	Activity No (s) (in terms of the relevant notice):	Describe each listed activity as per project description.
R 544, 18 June 2010	22	Project description: The construction of new access and haul roads where no reserve exists and the road is wider than 8 meters. Listed Activity: 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 meters.
R 544, 18 June 2010	47	Project description: The widening and lengthening of existing roads where no reserve exists and is wider than 8 meters. Listed Activity: The widening of a road by more than 6 meters, or the lengthening of a road by more than 1 kilometre - (I) With a reserve wider than 13,5 meters or, (II) Where no reserve exists where the road is wider than 8 meters.
R 546, 18 June 2010	4	Project description: The construction of access and haul roads where no reserve exists and the road is wider than 8 meters. Listed Activity: The construction of a road wider than 4 meter with a reserve less than 13,5 meters. (gg) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of ENMPAA or form the core areas of a biosphere reserve;

Queries regarding this matter must be referred to: Shangoni Management Services (Pty) Ltd. Contact Person: Mrs Khosi Mholaho Tel: (012) 807 7036, Cell: + (0)79 892 4930, Fax: (012) 807 1014 E-mail: kholi@shangoni.co.za PO Box 74726, Lynnwood Ridge, Pretoria, 0040. Comment period: 22 November 2013 – 9 January 2014.
Objections and comments must be copied to: The Head, Limpopo Department of Economic Development, Environment and Tourism Attention: Section 24G Unit: LEDET Private Bag X 9484, Polokwane, 0700

Figure 21: Copy of newspaper advert

List of REGISTERED LETTERS Lys van GEREGISTREERDE BRIEWE (with an insurance option/met 'n versekeringsopsie) Full tracking and tracing/Volledige volg en spoor

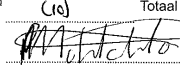
Name and address of sender: Shangoni Management Services (Pty) Ltd
Naam en adres van afvender: Shangoni Management Services (Pty) Ltd
PO Box 74726 Lynnwood Ridge 0040




Post Office

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

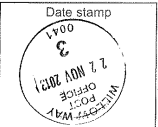
No	Name and address of addressee Naam en adres van geadresseerde	Insured amount Versekerde bedrag	Insurance fee Versekeringsgeld	Postage Postgeld	Service fee Diensgeld	Affix Track and Trace customer copy Plak Volg-en-Spoor-klantskrif
1	Councillor Patricia Mxshito Private bag X 536 Thabazimbi Councillor Patricia Mxshito	0380				REGISTERED LETTER Affix a 1000 111 502 www.postnet.co.za RD 856 133 177 ZA CUSTOMER COPY 301028R
2	MSA Ericinus PO Box 501, Tlokoeng D. Sibi Madem	0380				REGISTERED LETTER Affix a 1000 111 502 www.postnet.co.za RD 856 133 146 ZA CUSTOMER COPY 301028R
3	Mr. Piet Stenkenp PO Box 1630 Thabazimbi Mr. Piet Stenkenp	0380				REGISTERED LETTER Affix a 1000 111 502 www.postnet.co.za RD 856 133 132 ZA CUSTOMER COPY 301028R
4	E.J. Paker PO Box Thabazimbi Siri Madem	0380				REGISTERED LETTER Affix a 1000 111 502 www.postnet.co.za RD 856 133 115 ZA CUSTOMER COPY 301028R
5	Mr. Chris van Rooyen PO Box 1160 Beckersview 2008 Mr. Chris van Rooyen					REGISTERED LETTER Affix a 1000 111 502 www.postnet.co.za RD 856 133 129 ZA CUSTOMER COPY 301028R
6	PO Box 141 Thabazimbi Mr. Pi de Wer	0380				REGISTERED LETTER Affix a 1000 111 502 www.postnet.co.za RD 856 133 092 ZA CUSTOMER COPY 301028R
7	Mr. Remus Allkens van Niekerk PO Box 7244 Pretoria 009					REGISTERED LETTER Affix a 1000 111 502 www.postnet.co.za RD 856 133 101 ZA CUSTOMER COPY 301028R
8	J.L. Human Postbus 244 Middelam Esir	0380				REGISTERED LETTER Affix a 1000 111 502 www.postnet.co.za RD 856 133 075 ZA CUSTOMER COPY 301028R
9	Kenneth Madiba PO Box 9009 Thabazimbi Siri Madem	0380				REGISTERED LETTER Affix a 1000 111 502 www.postnet.co.za RD 856 133 150 ZA CUSTOMER COPY 301028R
10	Mr. M.W. Letsabo Private bag 11016 Medunville 0136					REGISTERED LETTER Affix a 1000 111 502 www.postnet.co.za RD 856 133 225 ZA CUSTOMER COPY 301028R
Number of letters posted Getal briewe gepos		(10)	Total Totaal	R	R	R

Signature of client
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 dokumentêre bewys betaalbaar nie. Opsionele versekering van tot R2 000,00 is beskikbaar en is slegs op binne landse geregistreerde briewe van toepassing.

Date stamp

Datumstempel

MASIQHAME PRINTERS

701248

Figure 22: Proof of registered letters sent





Figure 23: Locations of site notices



Table 30: Copy of notices placed on-site and in public places

		
<p>Photo 3: Alma and Marakele road crossing</p>	<p>Photo 4: Junction Eland Str and Marakele Rd</p>	<p>Photo 5: Post office</p>
		
<p>Photo 6: Site entrance gate</p>	<p>Photo 7: Thabazimbi municipal office</p>	



6.3.3 Public meeting(s)

A public meeting was held on 1st of February 2014. Notifications of this meeting were sent via email and telephonically. The minutes of the public meeting, a copy of the presentation and the attendance register are attached as Appendix E7.

6.3.4 Access and opportunity to comment on written submissions

A draft copy of this report will be made available to the public for review for a period of fourteen (14) days, from 28 February 2014 to 14 March 2014. Hard copies of the mentioned draft document will be made available at the Thabazimbi Library for the I&APs to view and a copy of the draft document has been submitted to LEDET and DWA for review.

A register and comment sheet will accompany the hard copies at the public viewing station. An electronic copy of the draft S24G Application Report will also be posted on the Shangoni Management Services' website (www.shangoni.co.za) for public comment for the same period of fourteen days.

All the registered IAPs will be notified of the availability of the draft S24G Application Report for public review by 28 February 2014. The I&APs will also be informed to complete the register subsequent to reviewing the draft S24G Application Report and also to submit any comments to Shangoni Management Services to the contact person below by no later than 14 March 2014.

EAP contact details: Khosi Mohlahlo, Shangoni Management Services, P.O. Box 74726, Lynnwood Ridge, 0040, Cell: 079 892 4930 Tel: 012 807 7036 Fax 012 807 1014, e-mail: khosi@shangoni.co.za.

6.3.5 Consultation with the relevant Authorities

6.3.5.1 Application form in terms of the NEMA, 1998

The amended Section 24G rectification application form under NEMA, 1998 was submitted to LEDET on the 24th of January 2014. A reference number (**12/1 /9-6/S24G/15-W1**) was issued by LEDET on. The letter of acknowledgement letter (Appendix C2) was issued by LEDET on the 11th of February 2014.

6.3.5.2 Authority's meeting(s)

A meeting/information session was held on the 1st of February 2014 at the Kumba Cinema Hall. The purpose of the meeting was to give clarity and more information on the section 24g application. The minutes of the meeting and attendance register are attached hereto as Appendix E7.



6.3.5.3 Comments and responses

Comments and response were received from IAPs listed on Table 32 below. All issues, comments and questions received from the IAPs up to date have been summarised in Table 33 below. Where responses are already available as part of the process, these have been included in the report in the table below. In all other cases, responses will be provided as part of the final report. Copies of the comments received have also been included in Appendix E8.

Table 31: List of I&APs who forwarded comments

Name of contact person	Company	Method of comment
Mr Louis van der Watt	Meletse game breeders	Objection letter sent via e-mail
MR EB Nieuwoudt	Rooiberg Bewaria	Objection letter sent via e-mail
MR EB Nieuwoudt	Catwalk Investment 380 (Pty) Ltd	Objection letter sent via e-mail
Dr Wilhelm Schack	Portions 11 and 27 of the farm Groothoek 278 KQ,	Objection letter sent via e-mail
Mr C York	Portion 1 of the farm Zandriverspoort KQ442	Objection letter sent via e-mail
Umhlaba Environmental Consulting CC	Calshelf Investments 171 (Pty) Ltd, Calshelf Investments 172 (Pty) Ltd and Calshelf 173 (Pty) Ltd	Objection letter sent via e-mail as well as a registered letter.
Mr Fred Staw	SARPHC Properties (Pty) Ltd t/a Meletse Game Reserve's	Objection letter sent via e-mail

Table 32: Comments and responses

Issue raised	Response
Provide a copy of the application form submitted to LEDET.	Refer to Appendix C1
Details concerning the timelines for the construction of roads. Please advise as to when road construction commenced, how many roads were constructed per year from commencement of the activity and when road construction activities were stopped.	According to the information provided by the applicant the road construction commenced in September 2007 and was stopped in June 2011. The total area disturbed to date is ± 1563.4310m ² 0.19% of total surface area is disturbed.



Issue raised	Response
Details of the length and width of roads created.	±22 kilometres of gravel roads has been created
Details of environmental considerations given during the construction of the roads.	According to the applicant, the gravel roads were constructed to cause as little as possible damage while being safe. Storm water runoff points were made to limit the force of runoff water and limit erosion. As far as possible trees were avoided from being damaged.
Which specific roads act as a fire break?	Only roads along the boundary fences act as firebreaks. The road to the top of the mountain allows for access to fires on the mountain and in cases in the past has acted as firebreaks if one considers that the fire did not cross the road which then limited the overall impact of the fire.
Provide an indication of the distance of the visual impact of the roads.	Refer to the visual impact assessment attached as Appendix F9.
Provide a draft copy of the environmental assessment report which should detail how Aquila are going to rectify there illegal activities for comment.	Refer to mitigation measures proposed on section 4.2 of this technical report.
A visual impact assessment – detailing the extent of visual impact resulting from the illegal roads on the surrounding area. (this should be represented visually). This study should be completed by an independent specialist.	Refer to the visual impact assessment attached as Appendix F9.
Details of the river / non perennial stream that the roads have crossed.	Refer to Figure 2 for the details of the river / non perennial stream that the roads have crossed. , as well as to the
Details of the sensitivity of the habitat fragmented by the illegal roads.	Refer to Figure 13 for a map illustrating sensitive areas
An indication of which roads are actual fire breaks and used to maintain boundary fences.	Only roads along the boundary fences act as firebreaks. The road to the top of the mountain allows for access to fires on the mountain and in cases in the past has acted as firebreaks if one considers that the fire did not cross the road which then limited the overall impact of the fire.
Which roads have been rehabilitated.	Refer to Appendix B3 for a map illustrating rehabilitated and non-rehabilitated roads.
Which roads will be rehabilitated.	Refer to Appendix B3 for a map illustrating rehabilitated and non-rehabilitated roads.
Which roads does the applicant intend to leave.	Refer to Appendix B3 for a map illustrating roads that Aquila intends to leave.
A programme linked to timelines of which roads are going to be rehabilitated and when.	Aquila plans to rehabilitate the roads as illustrated on Appendix B3. The timeframe for rehabilitation is the 31 December 2014. The roads remaining either fall within the pit area or is needed for further exploration.
Detailed indication of how the road will be	Refer to Section 4.2 of the technical report. The road cut



Issue raised	Response
rehabilitated. A definition of a successful rehabilitated road should be provided.	material will be replace on the road and levelled to conform to the mountain slope. A successfully rehabilitated road will be covered in natural vegetation to have the look and feel of the environment before the road was there. This will take a few years to happen and as such Aquila will have to monitor it for success.
Details on how the impacts associated with the roads they intend to leave will be minimised	Refer to section 4.2 for potential impacts and proposed mitigation measures. The roads will be maintained with run-off water points to limit erosion. Eventually all roads not needed either be rehabilitated or be covered under the proposed waste rock dump
A storm water management plan.	Refer to Appendix F6 for a stormwater management plan attached as
An erosion management plan.	Refer to section 4.2 for erosion management measures as well to the stormwater management plan attached as Appendix F6.
A monitoring programme for rehabilitated roads.	<p>A detailed rehabilitation plan with regards to the gravel roads shall be developed by a specialist registered at the South African Council for Natural Scientific Professions. The rehabilitation plan shall include the following, including the following:</p> <ul style="list-style-type: none"> • Soil sourcing and usage, • Vegetation establishment, • Sloping methods • End land use requirements. • Long-term erosion prevention • Confirmatory monitoring • Security measures <p>Rehabilitation will be undertaken to the natural angle of repose.</p>
A maintenance programme for roads to be left.	The roads will be graded as and when needed to repair damage and ensure that drainage is maintained in accordance with the Storm Water Management Plan.
The budget required for the rehabilitation of the roads and the ongoing monitoring / maintenance programme.	The cost of rehabilitation is estimated at R150 per linear metre of the road, while the cost of maintenance is estimated to be R30 per linear metre.
Aquila must explain why it did not have sufficient internal control measures in place to avoid such intentional and extensive ecological damage, or face the inevitable conclusion that it had no intention of abiding by any limitations as set out by LEDET or DMR, thus making a complete mockery of the entire environmental	In this specific circumstances Aquila Steel's understanding of the applicable laws was flawed, in that Aquila Steel accepted that roads can be established to access drill locations. Once advised that Aquila Steel was in contravention, a rectification application was lodged, and constant follow ups were made. When enquiries did not yield anything Aquila continued assuming (which was



Issue raised	Response
management process, to the potential embarrassment of the various government departments responsible for the safeguarding of South Africa's environmental heritage	again flawed) that they can continue since they had applied for rectification. In terms of the damage caused, this was inevitable since this was the only way to reach the top of the mountain as is evidenced in other areas also, i.e access roads to the top of the Kransberg Mountain in the Marakele park.



6.3.9 Conclusions of the PPP

In conclusion, the Public Participation exercise has provided adequate information to enable an understanding of what the Section 24G rectification application would entail and to address the concerns and comments received during the process.



7. CONCLUSION

This S24G Application has been carried out in accordance with the EIA Regulations R386 (List of activities and competent authorities identified in terms of Sections 24 and 24D of the National Environmental Management Act, 1998) and EIA regulations R.544 / R.545 / R.546 of the National Environmental Management Amendment Act (Act No. 62 of 2008).

Based on the outcomes of the risk assessments conducted as part of the Section 24G rectification process, coupled with the recommendations made by the EAP, the overall negative impact of the project is of **High significance**, which can be reduced to **Medium significance** through the implementation of simple, effective mitigation measures as well as the proposed rehabilitation activities.

The following recommendations are thus made:-

- 1) The mitigation measures proposed above, which has been incorporated into the EMP in more detail, must be implemented during the Operational Phase.
- 2) A communications pathway must be established that would allow the designated ECO to accept and deal with stakeholder complaints.
- 3) Mitigation measures proposed above should be incorporated as far as possible into the operation.
- 4) A detailed rehabilitation plan with regards to the gravel roads shall be developed by a specialist registered at the South African Council for Natural Scientific Professions. The rehabilitation plan shall include the following, including the following:
 - Soil sourcing and usage,
 - Vegetation establishment,
 - Sloping methods
 - End land use requirements.
 - Long-term erosion prevention
 - Confirmatory monitoring
 - Security measures
- 5) Strict monitoring and enforcement of requirements of the EMP and the rehabilitation plan must be undertaken to ensure that employees adhere to these requirements.

