

ENVIRONMENTAL & ENGINEERING

# REPORT

## OPSIREX (PTY) LTD - WILDEBEESTFONTEIN COLLIERY

### INTEGRATED ENVIRONMENTAL AUTHORISATIONS – DRAFT SCOPING REPORT

REPORT REF: 19-724 AUTH DRAFT SCOPING REPORT  
(WILDEBEESTFONTEIN COLLIERY EA)

VERSION BB



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CC– draft	Leoni le Roux			Quality review
Approved for Distribution:				
0.0	Henno Engelbrecht	13/05/2019		Final report

**Quality Control BY:**

Nature of Signoff:	Responsible Person:	Role / Responsibility	Qualification
Author	Riana Panaino	Senior Environmental Consultant	BSc Hons Biodiversity and Conservation
Quality Reviewer			
Reviewer	Vernon Siemelink	Senior Environmental Consultant	BSSci: GeoSci (Hons) UP M(EnvMan) Environmental Management UP
Client			

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## DECLARATION OF INDEPENDENCE/

I, Henno Engelbrecht, declare that;

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing:
  - o any decision to be taken with respect to the application by the competent authority; and
  - o the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- all the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of Regulation 71 and is punishable in terms of section 24F of the Act.



13/05/2019

Signature

Mr. Henno Engelbrecht

BSc Honn Environmental Management & Analysis (UP)

MSc Project Management

IAIA Memeber

Date





## mineral resources

Department:  
Mineral Resources  
REPUBLIC OF SOUTH AFRICA

# SCOPING REPORT

## FOR LISTED ACTIVITIES ASSOCIATED WITH MINING RIGHT ACTIVITIES

SUBMITTED FOR ENVIRONMENTAL AUTHORIZATIONS IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 AND THE NATIONAL ENVIRONMENTAL MANAGEMENT WASTE ACT, 2008 IN RESPECT OF LISTED ACTIVITIES THAT HAVE BEEN TRIGGERED BY APPLICATIONS IN TERMS OF THE MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT, 2002 (MPRDA) (AS AMENDED).

**NAME OF APPLICANT:** Opsirex (Pty) Ltd  
**TEL NO:** +27 (11) 783-9810  
**FAX NO:** +27 (86) 625-4121  
**POSTAL ADDRESS:** P.O. Box 1216, Isando, 1600  
**PHYSICAL ADDRESS:** Farm Wildebeestfontein 327 JS, Phola

**FILE REFERENCE NUMBER SAMRAD:** MP 30/5/1/2/3/2/1 (10235) EM



## IMPORTANT NOTICE

In terms of the Mineral and Petroleum Resources Development Act (Act 28 of 2002 as amended), the Minister must grant a prospecting or mining right if among others the mining “will not result in unacceptable pollution, ecological degradation or damage to the environment”.

Unless an Environmental Authorisation can be granted following the evaluation of an Environmental Impact Assessment and an Environmental Management Programme report in terms of the National Environmental Management Act (Act 107 of 1998) (NEMA), it cannot be concluded that the said activities will not result in unacceptable pollution, ecological degradation or damage to the environment.

In terms of section 16(3)(b) of the EIA Regulations, 2014, any report submitted as part of an application must be prepared in a format that may be determined by the Competent Authority and in terms of section 17 (1) (c) the competent Authority must check whether the application has taken into account any minimum requirements applicable or instructions or guidance provided by the competent authority to the submission of applications.

**It is therefore an instruction that** the prescribed reports required in respect of applications for an environmental authorisation for listed activities triggered by an application for a right or permit are submitted in the exact format of, and provide all the information required in terms of, this template. Furthermore please be advised that failure to submit the information required in the format provided in this template will be regarded as a failure to meet the requirements of the Regulation and will lead to the Environmental Authorisation being refused.

**It is furthermore an instruction that** the Environmental Assessment Practitioner must process and interpret his/her research and analysis and use the findings thereof to compile the information required herein. (Unprocessed supporting information may be attached as appendices). The EAP must ensure that the information required is placed correctly in the relevant sections of the Report, in the order, and under the provided headings as set out below, and ensure that the report is not cluttered with un-interpreted information and that it unambiguously represents the interpretation of the applicant.



## OBJECTIVE OF THE SCOPING PROCESS

- 1) The objective of the scoping process is to, through a consultative process—
  - (a) identify the relevant policies and legislation relevant to the activity;
  - (b) motivate the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the preferred location;
  - (c) identify and confirm the preferred activity and technology alternative through an impact and risk assessment and ranking process;
  - (d) identify and confirm the preferred site, through a detailed site selection process, which includes an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified alternatives focusing on the geographical, physical, biological, social, economic, and cultural aspects of the environment;
  - (e) identify the key issues to be addressed in the assessment phase;
  - (f) agree on the level of assessment to be undertaken, including the methodology to be applied, the expertise required as well as the extent of further consultation to be undertaken to determine the impacts and risks the activity will impose on the preferred site through the life of the activity, including the nature, significance, consequence, extent, duration and probability of the impacts to inform the location of the development footprint within the preferred site; and
  - (g) identify suitable measures to avoid, manage, or mitigate identified impacts and to determine the extent of the residual risks that need to be managed and monitored.



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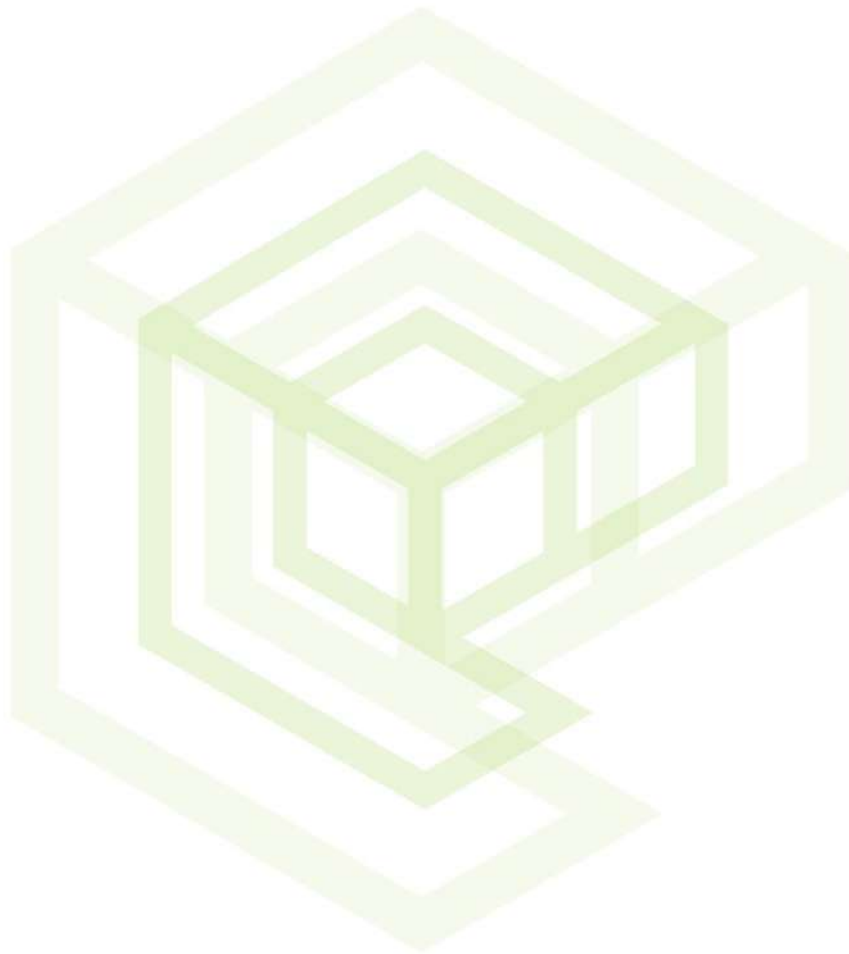
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## SCOPING REPORT



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## 2. CONTACT PERSON AND CORRESPONDENCE ADDRESS

### 2.a DETAILS OF:

#### 2.a.i The EAP who prepared the report

<b>Name of the practitioner</b>	Henno Engelbrecht & Riana Panaino
<b>Tel Number</b>	012 807 0383
<b>Fax Number</b>	086 714 5397
<b>Email Address</b>	henno@ecoe.co.za

#### 2.a.ii Expertise of the EAP

##### *The qualification of the EAP*

The EAP's have Honours degrees in Environmental Management, is SACNASP Registered, and has more than 20 years' experience in Environmental Consulting.

Refer to Annexure 2 for a CV of the EAP.

##### *Summary of the EAP's past experience*

Refer to Annexure 2 for a CV of the EAP.

### 2.b DESCRIPTION OF THE PROPERTY

<b>Farm Name:</b>	WILDEBEESTFONTEIN 327 JS PTN 19 & RE OF PTN 2
<b>Application area (Ha)</b>	254.53 Hectares
<b>Magisterial district:</b>	eMalahleni Local Municipality Nkangala District Municipality
<b>Distance and direction from nearest town</b>	Located approximately 17 km West of Emalahleni, 1.5KM east of the town of Phola, and approximately 3.5 km north of Ogies town in the Mpumalanga Province.
<b>21 digit Surveyor General Code for each farm portion</b>	T0JS00000000032700019 T0JS00000000032700002



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2.c LOCALITY MAP

(show nearest town, scale not smaller than 1:250000 attached as Appendix 3).

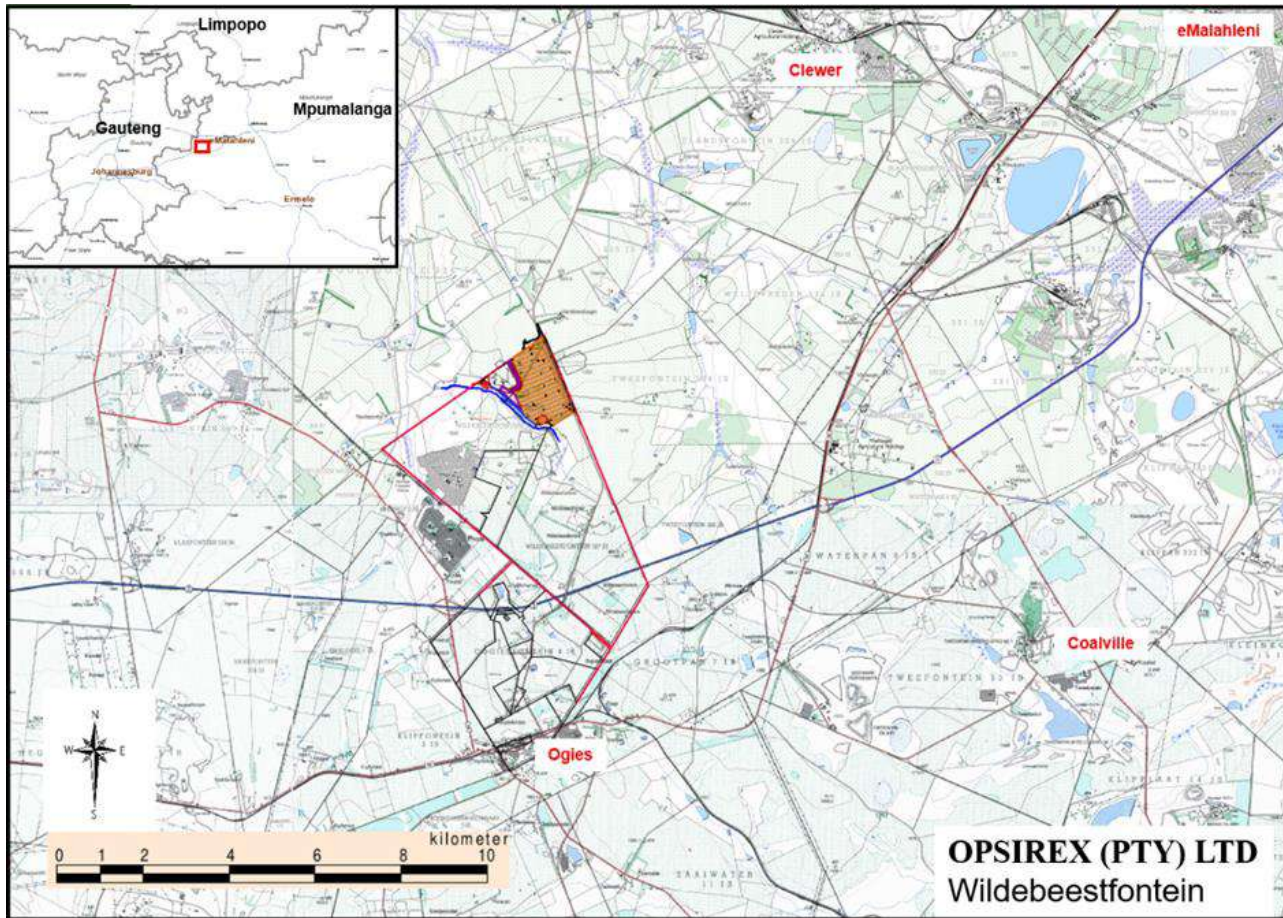


Figure 1: Wilbeestfontein Colliery Locality



2.d DESCRIPTION OF THE SCOPE OF THE PROPOSED OVERALL ACTIVITY.

2.d.i Listed and specified activities

Provide a plan drawn to a scale acceptable to the competent authority but not less than 1: 10 000 that shows the location, and area (hectares) of all the aforesaid main and listed activities, and infrastructure to be placed on site and attach as Appendix 4

NAME OF ACTIVITY	Aerial extent of the Activity Ha or m <sup>2</sup>	LISTED ACTIVITY	APPLICABLE LISTING NOTICE (GNR 544, GNR 545 or GNR 546)	WASTE MANAGEMENT AUTHORISATION
Mining Right Application	254.53 ha	X	GNR 983 – Listing Notice 1: Activity 11, 12, 13, 22, 24, 27, 30. GNR 984 – Listing Notice 2: Activity 6, 15, 17 & 21 GNR 985 – Listing Notice 3: 2, 4, 10, 12 & 14	Norms & Standards Category B: Activity 10, 11
All infrastructure areas, development footprints and associated activities.	Mineral Boundary 254.53 ha Approximate are of surface disturbance 200ha	X	GNR 983 – Listing Notice 1: Activity 11, 12, 13, 22, 24, 27, 30. GNR 984 – Listing Notice 2: Activity 6, 15, 17 & 21 GNR 985 – Listing Notice 3: 2, 4, 10, 12 & 14	Norms & Standards Category B: Activity 10, 11
Boxcut excavation	3ha	X	GNR 984, listed activity 17	
Topsoil & subsoil stripping & stockpiling into berms	Maximum 50 ha area	X	GNR 983, listed activity 27 & 30 GNR 984, listed activity 15	
Overburden stockpiles (non-carbonaceous)	1.5ha	X		Category B: Activity 10, 11
Access and hauling along roads	2000m x 13m	X	GNR 983, listed activity 24 GNR 985, Listed activity 4	
Water supply and storage (potable & process)	Process water: 2ha for PCD Potable water: <1ha for 40m3/day	X	GNR 983, listed activity 13 GNR 985, listed activity 2	
Storm water runoff management features	Dirty water trenches:	X		



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NAME OF ACTIVITY	Aerial extent of the Activity Ha or m <sup>2</sup>	LISTED ACTIVITY	APPLICABLE LISTING NOTICE (GNR 544, GNR 545 or GNR 546)	WASTE MANAGEMENT AUTHORISATION
	3000m			
Water pipelines	<1000m	X	GNR 983, listed activity 9 & 10	
Waste generation & storage	0.1 ha			Norms and Standards
Ablutions & change house with sewage treatment plants	0.5ha	X	GNR.983, listed activity 25	
Fuel storage	0.1ha	X	GNR.985, listed activity 10	
Administration area	2 ha	X		
Substation and power transmission	0.5ha and <1ha cumulative for pylons	X	GNR.983, listed activity 11	
Rehabilitation, including backfilling of boxcut	200ha	X	GNR.983, listed activity 22	Category A: Activity 14
Run Off Mine – in pit stockpiling and hauling directly to Elandsfontein Colliery for beneficiation	0.5ha	X		Category B: Activity 10, 11



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## 2.d.ii Description of the activities to be undertaken

(Describe Methodology or technology to be employed, and for a linear activity, a description of the route of the activity)

### MINING METHOD

The mining method that will be used to exploit the different coal seams will be Roll-over Strip mining concurrently with rehabilitation. The roll over mining will make use of dozer and truck and shovel teams to remove the waste material to expose either the No. 4 or 2 seam. Once the coal seam is exposed, it will be mined by truck and shovel operation and placed on the ROM stockpiles for transport to Elandsfontein Colliery where beneficiation will be done.

The initial boxcut waste mining material will be placed on dumps to create space for the next cut material to be rolled into. This will form a continuous roll over method where the waste material will be placed in the previous mined out cut. The placement of material on the low wall side as part of the rehabilitation strategy will be in the same sequence as the material mined from bottom to top, i.e. hards at the bottom, then subsoil on top of the hards and finally topsoil on top of the soft subsoils.

Drilling and blasting operations will occur on the hard overburden and interburdens during the critical part of mining the hards as well as the coal seams. It is currently foreseen that the No. 1 seam might not require blasting, although planning has been made to blast the No. 1 seam if it should be necessary. All hard material horizons will be drilled at specific patterns and blasted with the use of emulsion and pyrotechnics (shocktube).

### ROM PRODUCTION

The plant feed will be from the Wildebeestfontein Operation. The discard will be discarded in the current Elandsfontein discard handling facility (off site). This will have the effect that the Wildebeestfontein Opencast facility will not be used for any discard from the plant, and therefore the rehabilitation can commence immediately when the operation reaches a steady state scenario.

A truck and shovel mining method will be used to transport the ROM coal to a ROM pad on Wildebeestfontein from where it will be loaded on roadworthy road- hauler trucks, which will transport the coal to the Elandsfontein Facility (off site).

### BASIC CRUSHING & SCREENING PLANT DESIGN

ROM coal from the Wildebeestfontein project will be processed and beneficiated on site via a crushing and screening process, mainly for the local & regional Eskom market.

This plant will consist of a Primary breaker in the form of a Jaw Crusher, which will crush the ROM coal to a -150mm product feed. This feed will be fed onto a single deck screen that will remove the already 0-50mm product before the oversize (+50mm) will be fed to a secondary crusher in the form of an Impact crusher.

The secondary crusher will re-circulate its product back to the screen to ensure that coal within the 0-50mm spectrum does not get crushed for a third time.

The coal gets circulated through the Impact crusher until it is removed through the screen and produced as a 0-50mm Eskom product.

The plant yield will be 100% as no coal is discarded.

The impact crusher creates more fines than some other conventional crushers although its throughput is substantially higher.

It is therefore envisaged that the split will be 30% +30mm, and 70% -30mm.

### COAL PROCESSING

Opsirex (Pty) Ltd has an agreement that all coal mined from the Wildebeestfontein coal reserve, will be transported to Elandsfontein Colliery for beneficiation. The coal will be transported by trucks via a public road that runs past both the two Mine properties.



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The agreement entails that all coal will be run from the Wildebessfontein Colliery as ROM to Elandsfontein where the No. 4 and No. 1 coal seams will be washed and screened into Nuts, Peas and Duff products. The No. 2 coal seam will be crushed and screened to a 0-50mm product.

For this reason, no beneficiation infrastructure need to be build.

### POTABLE WATER

Potable water is for the use in the mine offices, workshops and change house facilities.

### DIESEL STORAGE

Storage facility consist of 2 x 23000l storage tanks. Total storage capacity is 46000 litres.

### GENERAL WASTE STORAGE

For general waste, no authorisation is required as the waste site is kept to less than 100m<sup>3</sup>. The removal of waste will be managed on a daily basis to ensure that the limit is not exceeded.

### HAZARDOUS INDUSTRIAL WASTE

The site is maintained to less than 35m<sup>3</sup>. This is a relatively small waste site and the mine will have a waste removal contract with a reputable company to remove this waste on a regular basis.

### SEWERAGE

Sewerage is removed on a need basis.

### DIRTY WATER

Dirty water on site will be diverted to the PCD. Dust suppression for the operations will be done my means of a water cart. Water from the dirty water storage facility will be used for dust allaying at a rate of 50000-80000 l/day dependant on distance of haulage.

## 2.e POLICY AND LEGISLATIVE CONTEXT

<b>APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT (a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process);</b>	<b>REFERENCE WHERE APPLIED</b>
<b>National Environmental Management Act (107 of 1998)</b> The NEMA provides the overarching legislation for environmental governance in South Africa, giving effect to Section 24 of the Constitution of the Republic of South Africa. NEMA sets out the fundamental principles of Integrated Environmental Management that must be adhered to in order to ensure sustainable development	Section 28 of the NEMA includes a far-reaching general “Duty of Care” which stipulates the need to protect the environment from degradation and pollution,  In terms of the listed activities, a S&EIR process is required.
<b>Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)</b>	Section 22- The project requires a mining right authorisation from the DMR
	An Application for Environmental Authorisation and Mining Right has been made to the DMR.  A section 22 Mining Right Application was lodged with the DMR





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<p>To make provision for equitable access to and sustainable development of the nation's mineral and petroleum resources; and to provide for matters connected therewith.</p>		
<p><b>NEMA Environmental Impact Assessment (EIA) Regulations, 2014 (as amended)</b></p>	<p>In terms of the listed activities, a S&amp;EIR process is required. The process will be followed in terms of the "one environmental system"</p>	<p>An Application for Environmental Authorisation and Mining Right has been made to the DMR.</p>
<p><b>The South African Constitution</b>                  In terms of Section 24, of the Constitution of the Republic of South Africa (108 of 1996), everyone has the right to an environment that is not harmful to their health or well-being and to have the environment protected, for the benefit of present and future generations, through reasonable legislation and other measures that prevent pollution and ecological degradation, promote conservation and secure ecologically sustainable development and use of natural resources while prompting justifiable economic and social development.</p>	<p>Applied at potential impacts identification as well as mitigation measures and public participation</p>	<p>An open and participatory public participation process will be followed. An EMP and awareness plan will be designed according to the issues raised during this process</p>
<p><b>National Environmental Management: Biodiversity Act, 2004</b>                  The National Environmental Management: Biodiversity Act (Act 10 of 2004) (NEM:BA) provides for listing of threatened or protected species</p>	<p>The fauna and flora prevailing in the proposed project site will be handled in terms of this Act and relevant ecological studies have already been initiated.</p>	<p>The mining footprint will be guided by the results of the ecological studies where possible. Permits will be applied for where and when necessary should any red data species be relocated.</p>
<p><b>National Environmental Management: Waste Act</b>                  The objectives of NEM:WA involve the protection of health, wellbeing and the environment by providing reasonable measures for the minimization of natural resource consumption, avoiding and minimizing the generation of waste, reducing, recycling and recovering waste, and treating and safely disposal of waste as a last resort. In terms of the NEMWA, all waste management activities must be licensed                   A distinction is made between Category A waste management activities, which require a basic assessment, and Category B activities, which require a full EIA, and Category C waste management activities which do not require a waste management licence but compliance with relevant requirements or standards.                   According to Section 44 of the Act, the licensing procedure must be integrated with an EIA process in accordance with the Regulations GNR 982.</p>	<p>In terms of the list of Section 19 waste management activities, a S&amp;EIR process is required. The process is part of the "one environmental system"                   GNR 633 includes the establishment or reclamation of a residue stockpile or residue deposit resulting from prospecting or mining activities as a listed activity</p>	<p>In terms of GN718 of 2009, under NEMWA, various Category A and B waste management activities are applicable to the proposed mining operation. The impacts and associated management and/or mitigation measures will be included in the EIA phase of the project.</p>
<p><b>National Heritage Resources Act (Act No. 25 of 1999)</b>                  The protection and management of South Africa's heritage resources are controlled by the National Heritage Resources Act (Act No. 25 of 1999) (NHRA). The enforcing authority for this act is the South African National Heritage Resources Agency (SAHRA).</p>	<p>An Heritage and Paleontological study has been initiated to identify and assess the project in terms of heritage and paleontological resources. This is mandatory in terms of Section 38 of the NHRA</p>	<p>The Heritage Report will be uploaded on the SAHRIS website for comment and the development guided by any findings of the Report.</p>



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<p><b>National Water Act (Act No. 36 of 1998)</b> The NWA is the primary regulatory legislation, controlling and managing the use of water resources as well as the pollution thereof. This act provides for fundamental reformation of legislation relating to water resource use.</p> <p>GN 704- Regulations on use of water for mining and related activities aimed at the protection of water resources</p>	<p>An IWULA will be submitted to DWS for consideration for the following Section 21 water uses including:</p> <p>(a) abstraction from a borehole (c) and (i) mining activities within 500m from a wetland (g) dust suppression, coal stockpiling, mine residue stockpiling and dirty water dams</p>	<p>The DWS will provide comment and an application will be lodged for their review prior to the undertaking of any water use activities on site</p> <p>Management Principles will be applied to the mining operations as per GN704</p>
<p><b>National Environmental Management: Air Quality Act, 2004 (Act no.39 of 2004); and applicable Regulations, Standards and Notices published in terms of NEMAQA</b></p> <p>The promulgation of this Act marked a turning point in the approach to air pollution control and governance in South Africa, introducing the philosophy of Air Quality Management, in line with international policy developments and the environmental right, i.e. Section 24 of the Constitution (Act No. 108 of 1996).</p>	<p>Dust monitoring on site during operations</p>	<p>As part of the EMP dust suppression methods will be used.</p>
<p><b>Mine Health and Safety Act, 1996 (Act No. 29 of 1996);</b> The Mine Health and Safety Act (Act No. 29 of 1996) (MHSA) aims to provide for protection of the health and safety of all employees and other personnel at the mines of South Africa</p>	<p>Health and Safety Policy of mine to be guided by this Act</p>	<p>Risk Impact Assessment to be conducted</p>
<p><b>Mpumalanga Spatial Development Framework (SDF)</b></p>	<p>Used to identify the municipality's long term spatial development plans. SDF to be considered in terms of the need and desirability</p>	<p>The SDF should be consulted as part of the Socio-Economic Study's Scope of Work.</p>
<p><b>National Development Plan (2012)</b> The National Development Plan outlines what we should do to eradicate poverty, increase employment and reduce inequality by 2030. The Plan has the target of developing people's capabilities to be to improve their lives through education and skills development, health care, better access to public transport, jobs, social protection, rising income, housing and basic services, and safety</p>	<p>Used to identify project Need and Desirability and alignment with National Policy</p>	<p>To form part of the project background and socio-economic evaluation</p>
<p><b>Promotion of Access to Information Act, 2000 (Act No. 2 of 2000) (PAIA)</b> PAIA recognises that everyone has a right of access to any information held by the state and by another person when that information is required to exercise or protect any right</p>	<p>The S&amp;EIR process is aligned with the PAIA and therefore fair and open public participation is undertaken.</p>	<p>NEMA Public Participation Process will be followed as per the 2014 EIA Guidelines.</p>
<p><b>Conservation of Agricultural Resources Act (act no. 43 of 1983) (CARA)</b> CARA provides for control over the utilization of the natural agricultural resources in order to promote the conservation of the soil, the water sources and the vegetation and the combating of weeds and invader plants.</p>	<p>Principles of the Act to be included in the relevant specialist's Scope of Work.</p>	<p>Mine Closure and Rehabilitation strategy to be informed by CARA and stakeholder engagement process.</p>

2.f NEED AND DESIRABILITY OF THE PROPOSED ACTIVITIES.



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(Motivate the need and desirability of the proposed development including the need and desirability of the activity in the context of the preferred location).

- The project is in line with the 2012 National Development Plans' Nine Point Plan which is aimed at reigniting the economy to be able to create much-needed jobs include industrialisation, mining and beneficiation, agriculture and agro-processing, energy, small, medium and micro enterprises (SMMEs), managing workplace conflict, attracting investments, growing the oceans economy and tourism. Cross-cutting areas such as science and technology, water and sanitation infrastructure, transport infrastructure and broadband roll-out have also been added.
- The mining sector generates mass employment opportunities which are mainly situated within the rural areas of the municipality. Although some key sectors of the municipality are slowly declining (due to international and national factors), the mining sector continues to grow
- The activity of mining has numerous social and economic benefits in local, regional and national context. These include: 1. Job creation 2. Skills development 3. SMME development 4. Local economic development 5. Contribution to local and national tax income (royalties, companies tax etc.) 6. Contribution to the national gross domestic product, and 7. Future business opportunities.

## 2.g PERIOD FOR WHICH THE ENVIRONMENTAL AUTHORISATION IS REQUIRED

A 10 year authorisation is requested.

## 2.h DESCRIPTION OF THE PROCESS FOLLOWED TO REACH THE PROPOSED PREFERRED SITE.

NB!! – This section is not about the impact assessment itself; It is about the determination of the specific site layout having taken into consideration (1) the comparison of the originally proposed site plan, the comparison of that plan with the plan of environmental features and current land uses, the issues raised by interested and affected parties, and the consideration of alternatives to the initially proposed site layout as a result.

- GIS and spatial analysis will be used to determine the location of the mining infrastructure by considering environmental sensitivities.
- The site layout will take into account the resource location, watercourse location, and location of built structures and graves.
- The infrastructure layout will be presented during the EIA phase.

### 2.h.i Details of all alternatives considered.

With reference to the site plan provided as Appendix 4 and the location of the individual activities on site, provide details of the alternatives considered with respect to:

(a) *the property on which or location where it is proposed to undertake the activity;*

The site location is limited to the Prospecting Right Area, which is constrained by the location of other mining houses and residential areas. The resource location and the presence of a watercourse on the site boundary further restrict the infrastructure layout. Therefore, no alternative properties were considered.

(b) *the type of activity to be undertaken;*

Opencast or underground mining are the alternatives for the activity to be undertaken. Due to the shallow nature of the Coal seam the preferred alternative is Opencast Rollover mining



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(c) *the design or layout of the activity;*

The infrastructure and mining layout is constrained by the prospecting right boundary, the location of other mining houses and residential areas. The resource location and the presence of a watercourse on the site boundary further restrict the layout options. The final layout will be determined based on the results from the specialist assessments.

(d) *the technology to be used in the activity;*

Opencast Rollover mining is the preferred alternative for mining.

The other alternatives would be beneficiation on site or off site. Due to the limited space available on site, the preferred alternative will be to transport crushed and screened ROM to the Elandsfontein Colliery for further beneficiation. Therefore, no beneficiation plant will be required on site.

(e) *the operational aspects of the activity; and*

as per (d) above

(f) *the option of not implementing the activity.*

The option of not approving the activities will result in a significant loss of revenue and job creation to, and within the municipality. The surrounding properties also consist of mining activities, and including this portion into the mining section will profit the local economy.

## 2.h.ii Details of the Public Participation Process Followed

(Describe the process undertaken to consult interested and affected parties including public meetings and one on one consultation. NB the affected parties must be specifically consulted regardless of whether or not they attended public meetings. (Information to be provided to affected parties must include sufficient detail of the intended operation to enable them to assess what impact the activities will have on them or on the use of their land.))

Section 41 of NEMA Regulation 982 (specifically Chapter 6) set out the Legal and Regulatory Requirement for Public Participation. The Public Participation Process (PPP) aims to involve the authorities and I&APs in the project process, and determines their needs, expectations and perceptions which in turn ensures a complete and comprehensive environmental study. An open and transparent process will/has been followed at all times and is based on reciprocal dissemination of information. The following was/will be undertaken during the PPP:

- Identification of Interested and Affected Parties (IAPs);
- Consultation with selected landowners;
- Notification of IAPs regarding the proposed project via newspaper advert (in the Witbank News); the placing of 4 x site notices at conspicuous places, the sending of notices to affected parties via email (in the form of Background Information Documents) and sms'.
- A public information meeting (open day) with IAPs will be held on 31 May 2019 at the eMalaheni Main Library;
- Gathering comments, issues and concerns from IAPs;
- Responding to IAP comments, issues and concerns;
- Compilation and submission of results of consultation report to the DMR; and
- Providing IAPs with the opportunity to review and comment on the Draft Scoping and EIA Reports



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### 2.h.iii Summary of issues raised by I&APs

(Complete the table summarising comments and issues raised, and reaction to those responses)

*This will be included in the final Scoping Report and going forward into the EIA phase, as the Public consultation will kick off with the public review period of this document.*

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### 2.h.iv The Environmental attributes associated with the sites

#### 2.h.iv.1 Baseline Environment

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##### 2.h.iv.1.a Type of environment affected by the proposed activity.

(its current geographical, physical, biological, socio- economic, and cultural character).

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## GEOLOGY

The Wildebeestfontein Project area lies within the Witbank Coalfield. The project area is mostly covered by rocks of the Karoo Supergroup. Portion 2 RE, as well as Portion 19 (Wildebeestfontein) is covered by the Lebowa Granite Suite and the Rooiberg Group, which has eroded away towards the western side of the area, where only the underlying dwyka formation is still evident in the form of diabase. Over most of the eastern side of the project area, the rocks of the Karoo Supergroup are in turn underlain by sedimentary rocks of the Dwyka Group, dominantly diamictites of the glacial origin, but also as better worked fluvio- glacial outwash deposits and rare varved glacio-lacustrine shales, which may or may not be capped by insignificant stringer coals.

The coal seams are correlated to the Witbank and Highveld Coalfields successions and the following seams, in sedimentary succession, were identified during the original historic exploration as well as during the more recent exploration phase:

- 5 Seam (Unmineable due to very little seam appearance within the project area)
- 4 Upper Seam
- 4 Lower Seam
- 3 Seam (unmineable due to limited thickness)
- 2 Upper Seam
- 2 Lower Seam
- 1 Seam



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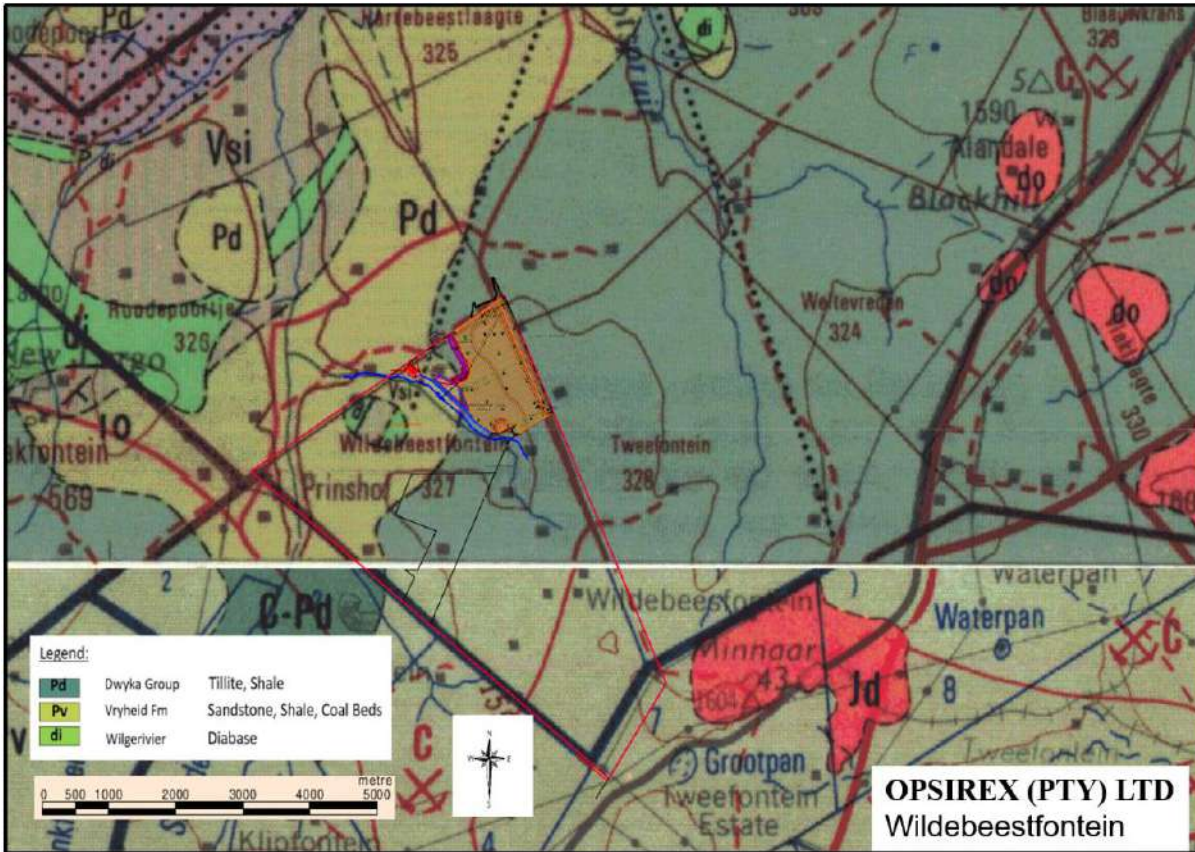


Figure 2: Geology of the project area

TOPOGRAPHY

Eastern Highveld Grassland is characterised by slightly to moderately undulating plains, including some low hills and pan depressions with an altitude 1 520–1 780 m.

Rand Highveld Grassland is characterised by areas between rocky ridges from Pretoria to Witbank, extending onto ridges in the Stoffberg and Roosenekal regions as well as west of Krugersdorp centred in the vicinity of Derby and Potchefstroom, extending southwards and northeastwards from there. The altitude ranges from 1 300–1 635 m

CLIMATE

Strongly seasonal summer rainfall, with very dry winters. MAP 650–900 mm (overall average: 726 mm), MAP relatively uniform across most of this unit, but increases significantly in the extreme southeast. The coefficient of variation in MAP is 25% across most of the unit, but drops to 21% in the east and southeast. Incidence of frost from 13–42 days, but higher at higher elevations.



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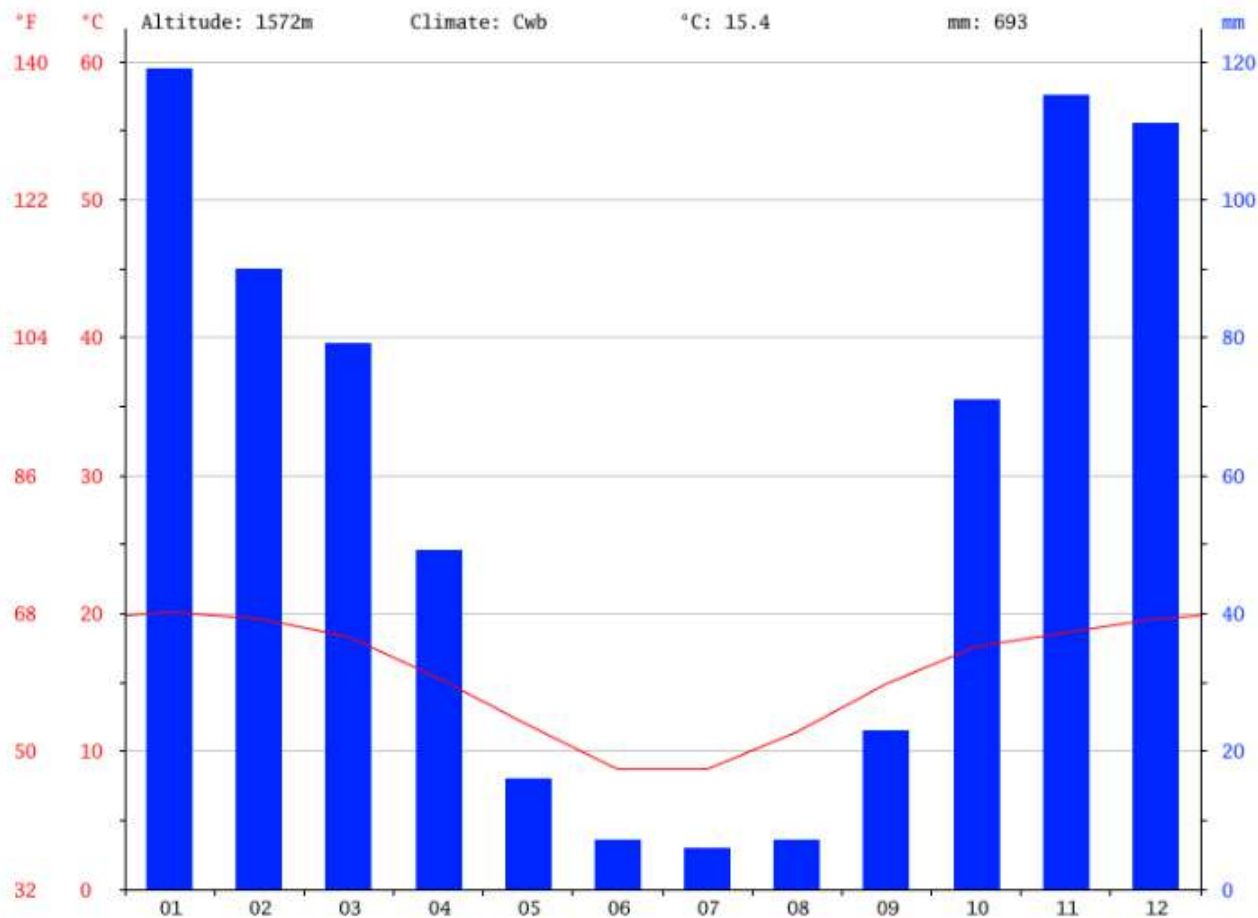


Figure 3: Average Climate Graph by month for eMalahleni

	January	February	March	April	May	June	July	August	September	October	November	December
Avg. Temperature (°C)	20.1	19.6	18.3	15.3	11.9	8.7	8.7	11.4	14.9	17.6	18.8	19.6
Min. Temperature (°C)	13.6	13.2	11.5	7.8	3.4	-0.3	-0.4	2.1	6.2	10	11.8	13.1
Max. Temperature (°C)	26.6	26.1	25.2	22.9	20.4	17.8	17.8	20.7	23.7	25.3	25.4	26.2
Avg. Temperature (°F)	68.2	67.3	64.9	59.5	53.4	47.7	47.7	52.5	58.8	63.7	65.5	67.3
Min. Temperature (°F)	56.5	55.8	52.7	46.0	38.1	31.5	31.3	35.8	43.2	50.0	53.2	55.6
Max. Temperature (°F)	79.9	79.0	77.4	73.2	68.7	64.0	64.0	69.3	74.7	77.5	77.7	79.2
Precipitation / Rainfall (mm)	119	90	79	49	16	7	6	7	23	71	115	111

Figure 4: eMalahleni weather by month

WETLAND ECOLOGY

Wetlands are sensitive ecosystems that perform many complex functions including the maintenance of water quality, carbon storage, stream-flow regulation, flood attenuation, various social benefits as well as the maintenance of biodiversity (Kotze et al.,2007). The Ramsar Convention on Wetlands refers to wetlands as one of the most important life support systems on earth owing to the services provided. Wetlands are defined according to the National Water Act, 1998 (Act 36 of 1998) (NWA) as: “land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil.”



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In accordance with the definition of a wetland in the NWA, vegetation is the primary indicator of a wetland, which must be present under normal circumstances. However, the soil wetness indicator tends to be the most important in practice and the remaining three indicators are then used in a confirmatory role. The reason for this is that the response of vegetation to changes in the soil moisture regime or management is relatively quick and may be transformed whereas the morphological indicators in the soil are significantly more longlasting and will hold the indications of frequent and prolonged saturation long after a wetland has been drained (perhaps several centuries) (DWAf, 2005).

Digby Wells Environmental undertook a Wetland Assessment for the neighbouring South 32 Mine. Figure 5: Wetland Identification for the larger project areahows the wetlands within the larger catchment as identified by the Digby Wells Environmental Report.

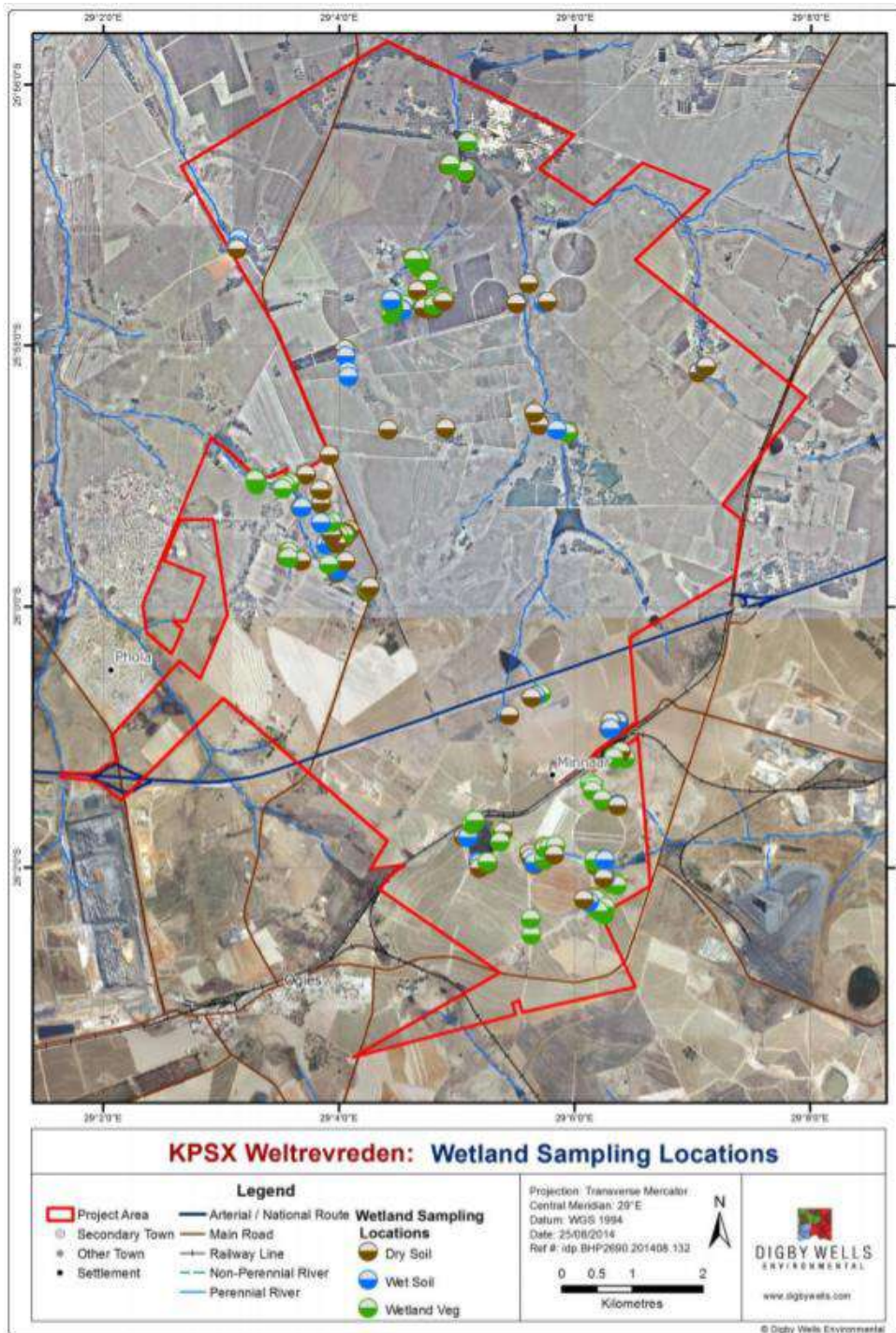


Figure 5: Wetland Identification for the larger project area





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A Wetland Impact Assessment will be conducted and included in the EIA.

**AQUATIC ECOLOGY**



**Figure 6: Aquatic Biodiversity combined sensitivity**

From the desktop assessment it was found that the combined aquatic biodiversity of the site was of a low sensitivity.

**National Freshwater Ecological Priority Areas (NFEPA)**

Catchment B20G fall outside of the defined NFEPA categories which imply that they are not currently priority areas in terms of the NFEPA guidelines (Nel et al. 2011).

**Potential fish species within the affected rivers**

Quaternary catchment B20H was selected as a reference site for B20G (B20G does not have expected fish data) as they both report to the Wilge River. B20H is affected by open cast mining within their catchments and as such may contain more sensitive species than B20G.

**Table 1: Species potentially occurring in the project area**

Scientific Name	Common Name	IUCN Red data status (Ver 3)
<i>Barbus anoplus</i>	Chubby head barb	Least concern
<i>Barbus neefi</i>	Sidespot barb	Least concern
<i>Barbus paludinosus</i>	Straightfin barb	Least concern
<i>Labeobarbus polylepis</i>	Smallscale yellowfish	Least concern



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<i>Barbus trimaculatus</i>	Theespot barb	Least concern
<i>Cyprinus carpio</i>	Carp (exotic)	Least
<i>Clarias gariepinus</i>	Sharptooth catfish	Least concern
<i>Gabusia affinus</i>	Mosquito fish (exotic)	Least concern
<i>Labeo umbratus</i>	Moggel	Least concern
<i>Microterus salmoides</i>	Largemouth bass (exotic)	Least concern
<i>Pseudocrenulabus philander</i>	Southern Mouthbrooder	Not Assessed
<i>Tilapia sparrmanii</i>	Banded tilapia	Least concern
<i>Labeobarbus marequensis</i>	Largescale yellowfish	Least concern
<i>Labeo cylindricus</i>	Redeye labeo	Least concern

Adapted from Kleynhans (2007)

*An Aquatic Impact Assessment will be conducted and included in the EIA.*

## TERRESTRIAL ECOLOGY

*A Terrestrial Impact Assessment will be conducted and included in the EIA.*

### Eastern Highveld Grassland

This vegetation type corresponds partially with Bankenveld and North-eastern Sandy Highveld according to the Acocks (1975) and also Moist Sandy Highveld Grassland as described by Low and Rebelo (1996).

This vegetation type occurs within the Gauteng and Mpumalanga Provinces on the plains in the areas between Belfast in the East and the eastern side of Johannesburg in the West and southwards to Bethal, Ermelo and West of Piet Retief.

The conservation status of this vegetation type is Endangered and the conservation target is 24%. By 2006 some 44% was already transformed primarily by cultivation, plantations, mining, urbanisation and building of dams. No serious invasions are reported, although *Acacia mearnsii* can become dominant in disturbed sites. Erosion is generally low. Only a small part of this vegetation type is conserved in the statutory nature reserves Nooitgedacht dam - and Jericho dam Nature Reserve of the Mpumalanga Tourism and Parks Agency and in Private Nature Reserves such as Holkrans, Kransbank and Morgenstond (Mucina and Rutherford, 2006).

Important plant species of this vegetation type are given in Table 2.



Updated- 13/5/2019

**Table 2: Important plant species of the Eastern Highveld Grassland**

FAMILY	SPECIES	STATUS
POACEA	<i>Aristida aequiglumis</i>	D
POACEA	<i>A. congesta</i>	D
POACEA	<i>A. junciformis</i> subsp. <i>galpinii</i>	D
POACEA	<i>Brachiaria serrata</i>	D
POACEA	<i>Cynodon dactylon</i>	D
POACEA	<i>Digitaria monodactyla</i>	D
POACEA	<i>D. tricholaenoides</i>	D
POACEA	<i>Elionurus muticus</i>	D
POACEA	<i>Eragrostis chloromelas</i>	D
POACEA	<i>E. curvula</i>	D
POACEA	<i>E. racemosa</i>	D
POACEA	<i>E. sclerantha</i>	D
POACEA	<i>Heteropogon contortus</i>	D
POACEA	<i>Loudetia simplex</i>	D
POACEA	<i>Microchloa caffra</i>	D
POACEA	<i>Monocymbium cerasiiforme</i>	D
POACEA	<i>Setaria sphacelata</i>	D
POACEA	<i>Sporobolus africanus</i>	D
POACEA	<i>S. pectinatus</i>	D
POACEA	<i>Themeda triandra</i>	D
POACEA	<i>Trachypogon spicatus</i>	D
POACEA	<i>Tristachya leucothrix</i>	D
POACEA	<i>T. rehmannii</i>	D
POACEA	<i>Alloteropsis semialata</i> subsp. <i>eckloniana</i>	
POACEA	<i>Andropogon appendiculatus</i>	
POACEA	<i>A. schirensis</i>	
POACEA	<i>Bewisia biflora</i>	
POACEA	<i>Ctenium concinnum</i>	
POACEA	<i>Diheteropogon amplexans</i>	
POACEA	<i>Eragrostis capensis</i>	
POACEA	<i>E. gummiiflua</i>	
POACEA	<i>E. patentissima</i>	
POACEA	<i>Harporchloa falx</i>	
POACEA	<i>Panicum natalense</i>	
POACEA	<i>Rendlia altera</i>	
POACEA	<i>Schizachyrium sanguineum</i>	
POACEA	<i>Setaria nigrirostris</i>	
POACEA	<i>Urelytrum agropyroides</i>	
ASTERACEAE	<i>Berkheya setifera</i>	D
ASTERACEAE	<i>Haplocarpha scaposa</i>	D
ACANTHACEAE	<i>Justicia anagalloides</i>	D
GERANIACEAE	<i>Pelargonium luridum</i>	D
EUPHORBIACEAE	<i>Acalypha angustata</i>	
FABACEAE	<i>Chamaecrista mimosoides</i>	
ASTERACEAE	<i>Euryops gilfillanii</i>	
ASTERACEAE	<i>E. transvaalensis</i> subsp. <i>setilobus</i>	
ASTERACEAE	<i>Helichrysum aureonitens</i>	
ASTERACEAE	<i>H. caespitium</i>	
ASTERACEAE	<i>H. callicomum</i>	
ASTERACEAE	<i>H. oreophilum</i>	
ASTERACEAE	<i>H. rugulosum</i>	
CONVOLVULACEAE	<i>Ipomoea crassipes</i>	
RUBIACEAE	<i>Pentanisia prunelloides</i> subsp. <i>latifolia</i>	
SCROPHULARIACEAE	<i>Selago densiflora</i>	
ASTERACEAE	<i>Senecio coronatus</i>	
ASTERACEAE	<i>Vernonia oligocephala</i>	
CAMPANULACEAE	<i>Wahlenbergia undulata</i>	
IRIDACEAE	<i>Gladiolus crassifolius</i>	
AMARYLLIDACEAE	<i>Haemanthus humilis</i> subsp. <i>hirsutus</i>	
HYPOXIDACEAE	<i>Hypoxis rigidula</i> var. <i>pilosissima</i>	
HYACINTHACEAE	<i>Ledebouria ovatifolia</i>	
ASPHODELACEAE	<i>Aloe ecklonis</i>	
RUBIACEAE	<i>Anthospermum rigidum</i> subsp. <i>pumilum</i>	
ASTERACEAE	<i>Stoebe plumosa</i>	

**Rand Highveld Grassland**

This vegetation type corresponds partially with the Bankenveld (64%) of Acocks (1953) and with the Rocky Highveld Grassland (45%) and Moist Sandy Highveld Grassland (21%) of Low & Rebelo (1996).



Updated- 13/5/2019

Rand Highveld Grassland is distributed in parts of Gauteng, North-West, Free State and Mpumalanga Provinces in areas between rocky ridges from Pretoria to Witbank (eMalahleni), extending onto ridges in the Stoffberg and Roossenekal regions as well as west of Krugersdorp centred in the vicinity of Derby and Potchefstroom, extending southwards and northeast wards from there. Altitude 1 300- 1 635 m, but reaches 1 760 m in places.

Vegetation & landscape features display a highly variable landscape with extensive sloping plains and a series of ridges slightly elevated over undulating surrounding plains. The vegetation is species-rich, wiry, sour grassland alternating with low, sour shrubland on rocky outcrops and steeper slopes. Most common grasses on the plains belong to the genera *Themeda*, *Eragrostis*, *Heteropogon* and *Elionurus*. High diversity of herbs, many of which belong to the Asteraceae, is also a typical feature. Rocky hills and ridges carry sparse (savannoid) woodlands with *Protea caffra* subsp. *caffra*, *P. welwitschii*, *Acacia caffra* and *Celtis africana*, accompanied by a rich suite of shrubs among which the genus *Rhus* (especially *R. magalismontana*) is most prominent.

Biogeographically Important Taxa (all Northern sourveld endemics) Geophytic Herbs: *Agapanthus inapertus* subsp. *pendulus*, *Eucomis vandermerwei*. Succulent Herb: *Huernia insigniflora*. Low Shrub: *Melhania randii*. Endemic Taxa Herbs: *Melanospermum rudolfii*, *Polygala spicata*. Succulent Herbs: *Anacampseros subnuda* subsp. *lubbersii*, *Frithia humilis*. Succulent Shrubs: *Crassula arborescens* subsp. *undulatifolia*, *Delosperma purpureum*. Small Trees: *Encephalartos lanatus*, *E. middelburgensis*.

The Conservation status is Endangered and the conservation target is 24%. It is currently poorly conserved (only 1 %). Small patches are protected in statutory reserves such as Kwaggavoetpad, Van Riebeeck Park, Bronkhorstspuit and Boskop Dam Nature Reserves as well as in private conservation areas such as Doornkop, Ezemvelo, Rhenosterpoort and Mpopomeni. Almost half of the vegetation type has been transformed mostly by cultivation, plantations, urbanisation or dam-building. Cultivation may also have had an impact on an additional portion of the surface area of the unit where old lands are currently classified as grasslands in landcover classifications and poor land management has led to degradation of significant portions of the remainder of this unit. Scattered aliens (most prominently *Acacia mearnsii*) occur in about 7% of this unit. Only about 7% has been subjected to moderate to high erosion levels.

Important plant species of this vegetation type are given in Table 3.



Updated- 13/5/2019

**Table 3: Important plant species of the Rand Highveld Grassland**

FAMILY	SPECIES	STATUS
POACEAE	<i>Ctenium concinnum</i>	D
POACEAE	<i>Cynodon dactylon</i>	D
POACEAE	<i>Digitaria monodactyla</i>	D
POACEAE	<i>Diheteropogon amplexans</i>	D
POACEAE	<i>Eragrostis chloromelas</i>	D
POACEAE	<i>Heteropogon contortus</i>	D
POACEAE	<i>Loudetia simplex</i>	D
POACEAE	<i>Monocymbium ceresiiforme</i>	D
POACEAE	<i>Panicum natalense</i>	D
POACEAE	<i>Schizachyrium sanguineum</i>	D
POACEAE	<i>Setaria sphacelata</i>	D
POACEAE	<i>Themeda triandra</i>	D
POACEAE	<i>Trachypogon spicatus</i>	D
POACEAE	<i>Tristachya biseriata</i>	D
POACEAE	<i>T. rehmannii</i>	D
POACEAE	<i>Andropogon schirensis</i>	
POACEAE	<i>Aristida aequiglumis</i>	
POACEAE	<i>A. congesta</i>	
POACEAE	<i>A. junciformis</i> subsp. <i>galpinii</i>	
POACEAE	<i>Bewisia biflora</i>	
POACEAE	<i>Brachiaria nigropedata</i>	
POACEAE	<i>B. serrata</i>	
POACEAE	<i>Cymbopogon caesius</i>	
POACEAE	<i>Digitaria tricholaenoides</i>	
POACEAE	<i>Eilonurus muticus</i>	
POACEAE	<i>Eragrostis capensis</i>	
POACEAE	<i>E. curvula</i>	
POACEAE	<i>E. gummiflua</i>	
POACEAE	<i>E. plana</i>	
POACEAE	<i>E. racemosa</i>	
POACEAE	<i>Hyparrhenia hirta</i>	
POACEAE	<i>Melinis nerviglumis</i>	
POACEAE	<i>M. repens</i> subsp. <i>repens</i>	
POACEAE	<i>Microchloa caffra</i>	
POACEAE	<i>Setaria nigrirostris</i>	
POACEAE	<i>Sporobolus pectinatus</i>	
POACEAE	<i>Trichoneura grandiglumis</i>	
POACEAE	<i>Urelytrum agropyroides</i>	
CYPERACEAE	<i>Bulbostylis burchellii</i>	
ASTERACEAE	<i>Acanthospermum australe</i>	D
ACANTHACEAE	<i>Justicia anagalloides</i>	D
ILLECEBRACEAE	<i>Pollichia campestris</i>	D
EUPHORBIACEAE	<i>Acalypha angustata</i>	
FABACEAE	<i>Chamaecrista mimosoides</i>	
ASTERACEAE	<i>Dicoma anomala</i>	
ASTERACEAE	<i>Helichrysum caespitium</i>	
ASTERACEAE	<i>H. nudifolium</i> var. <i>nudifolium</i>	
ASTERACEAE	<i>H. rugulosum</i>	
CONVOLVULACEAE	<i>Ipomoea crassipes</i>	
RUBIACEAE	<i>Kohautia amatymbica</i>	
ASTERACEAE	<i>Lactuca inermis</i>	
ASTERACEAE	<i>Macledium zeyheri</i> subsp. <i>argyrophyllum</i>	
ASTERACEAE	<i>Nidorella hottentotica</i>	
RUBIACEAE	<i>Oldenlandia herbacea</i>	
LAMIACEAE	<i>Rothea hirsuta</i>	
SELAGINACEAE	<i>Selago densiflora</i>	
ASTERACEAE	<i>Senecio coronatus</i>	

Plant species previously recorded in the grid square 2529CC, according to the PRECIS database are listed in Table 4





HERITAGE AND PALAEOLOGY

The following figures show the relative sensitivity of the area for Archaeological finds, Cultural Heritage (Figure 7) and Palaeontology (Figure 8).

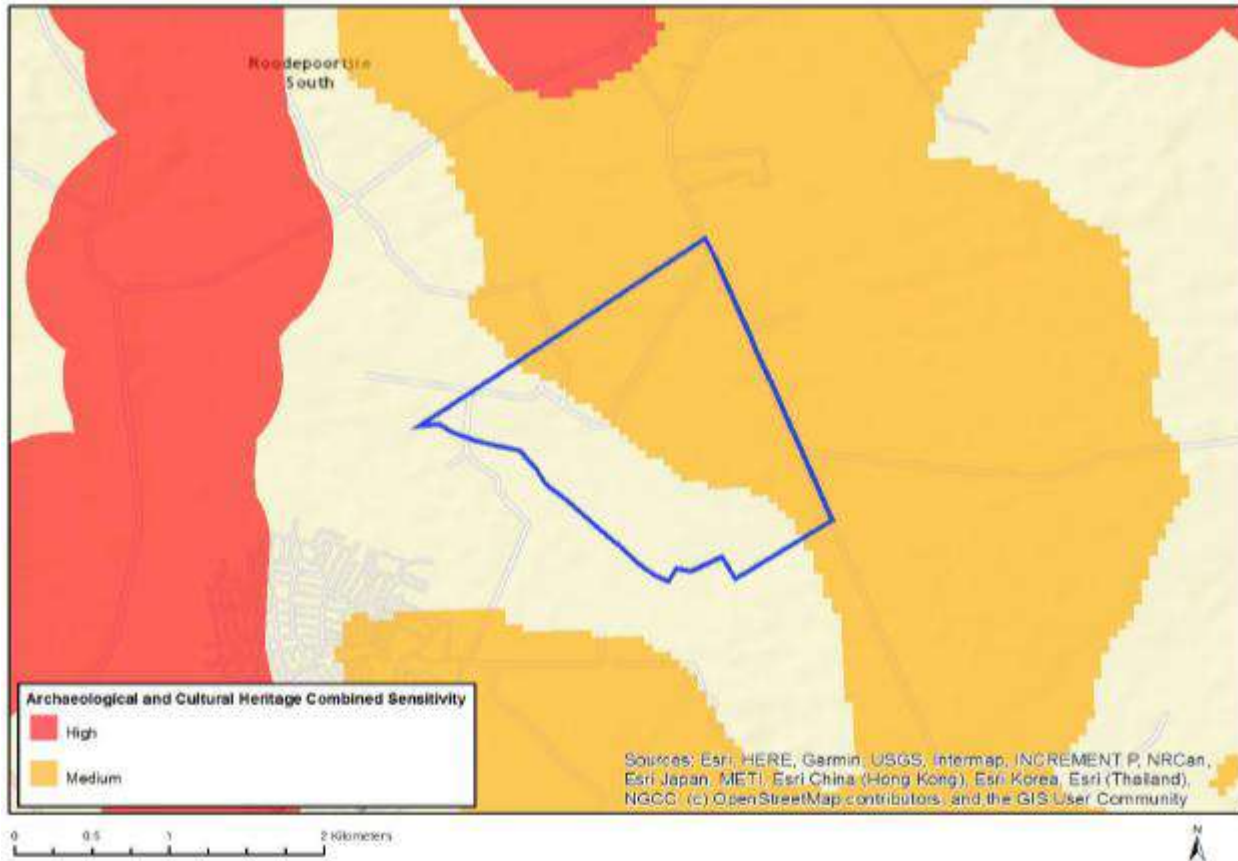
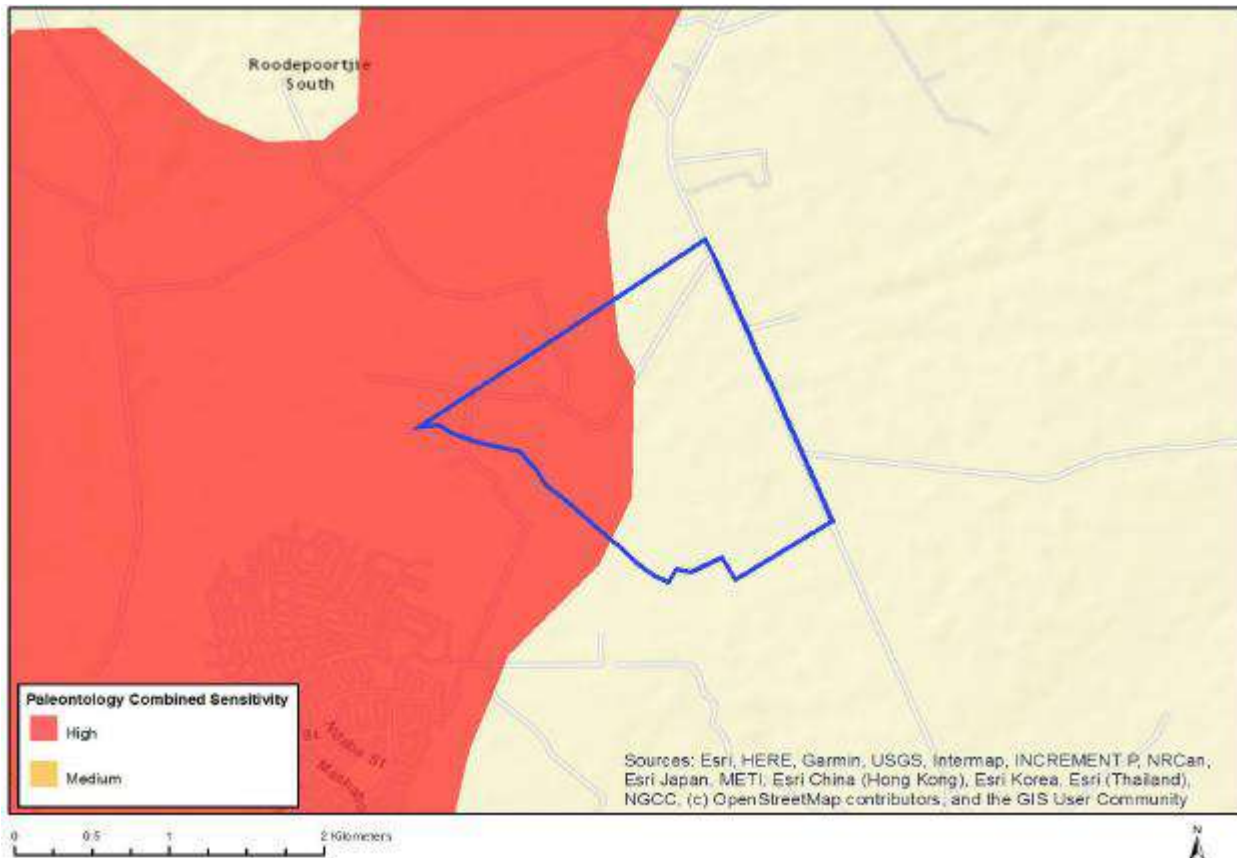


Figure 7: Relative Archaeological and Cultural Heritage Theme Sensitivity



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**Figure 8: Relative Palaeontology Theme Sensitivity**

**Paleontological Record**

The stratigraphic composition of the local geology contains diamictite deposits. The diamictite deposits are overlain by rocks from the Vryheid Formation consisting mainly of shales alternating with coal seams. These coal seams developed through the deposition of plant materials over a long period of time. Palaeontologically, the deposition of organic material increases the likelihood of fossil remains and therefore this coal rich formation has a high sensitivity rating. Vertebrates that occurred at this time are seldom preserved with the plants, (Bamford, 2012; SAHRIS, 2014), and none have been recorded in the Vryheid Formation. Plant fossils described by Bamford (2011) include; *Azaniodendron fertile*, *Cyclodendron leslii*, *sphenophyllum hammanskraalensis*, *Annularia* sp., *Raniganjia* sp., *Asterotheca* spp, *Liknopetalon enigmata*, *Glossopteris* > 20 species, *Hirsutum* 4 spp., *Scutum* 4 spp, *Ottokaria* 3 spp., *Estcourtia* sp., *Arberia* 4 spp., *Lidgettonia* sp., *Noeggerathiopsis* sp. and *Podocarpidites* sp.

**The Archaeological Record**

The archaeological record begins with the Stone Age. Artefacts associated with the Middle Stone Age (MSA) and Late Stone Age (LSA) have been identified in the vicinity of the study area (Fourie, Steyn, Birkholtz, & Salomon, 2000). Briefly, this period is associated with the manipulation of stone to create tools, from both cores and flakes, which through time became more specialised and varied. The Stone Age dates from as early as 2.5 million years ago through to less than 150 years ago (Goodwin & Van Riet Lowe, 1929; Deacon & Deacon, 1999; Lombard, et al., 2012). During the MSA, commonly produced tools included long parallel-sided and triangular flakes. Delius and Cope (2007) notes that the MSA has not been extensively studied in the region. The LSA is marked by a series of technological changes from approximately 20 000 years ago. These include the bow and link-shaft arrow, bored stones and small stone tools for cutting meat and scraping hides (Delius & Cope, 2007). Early Iron Age sites are underrepresented in the Mpumalanga Province. These groups moved into the eastern lowlands by the 5th century AD. Found in similar areas, most are located within close proximity to water courses to utilise nutrient rich alluvial soils for agriculture (Esterhuysen & Smith, 2007). Late Iron Age (LIA) stonewalling was also identified along the Olifants River (Fourie, Steyn, Birkholtz, & Salomon, 2000). As discussed in Delius & Cope (2007) and reproduced in De Jong (2009), the LIA in Mpumalanga dates to the 15th century onwards. These are commonly associated with the Sotho, Swazi and



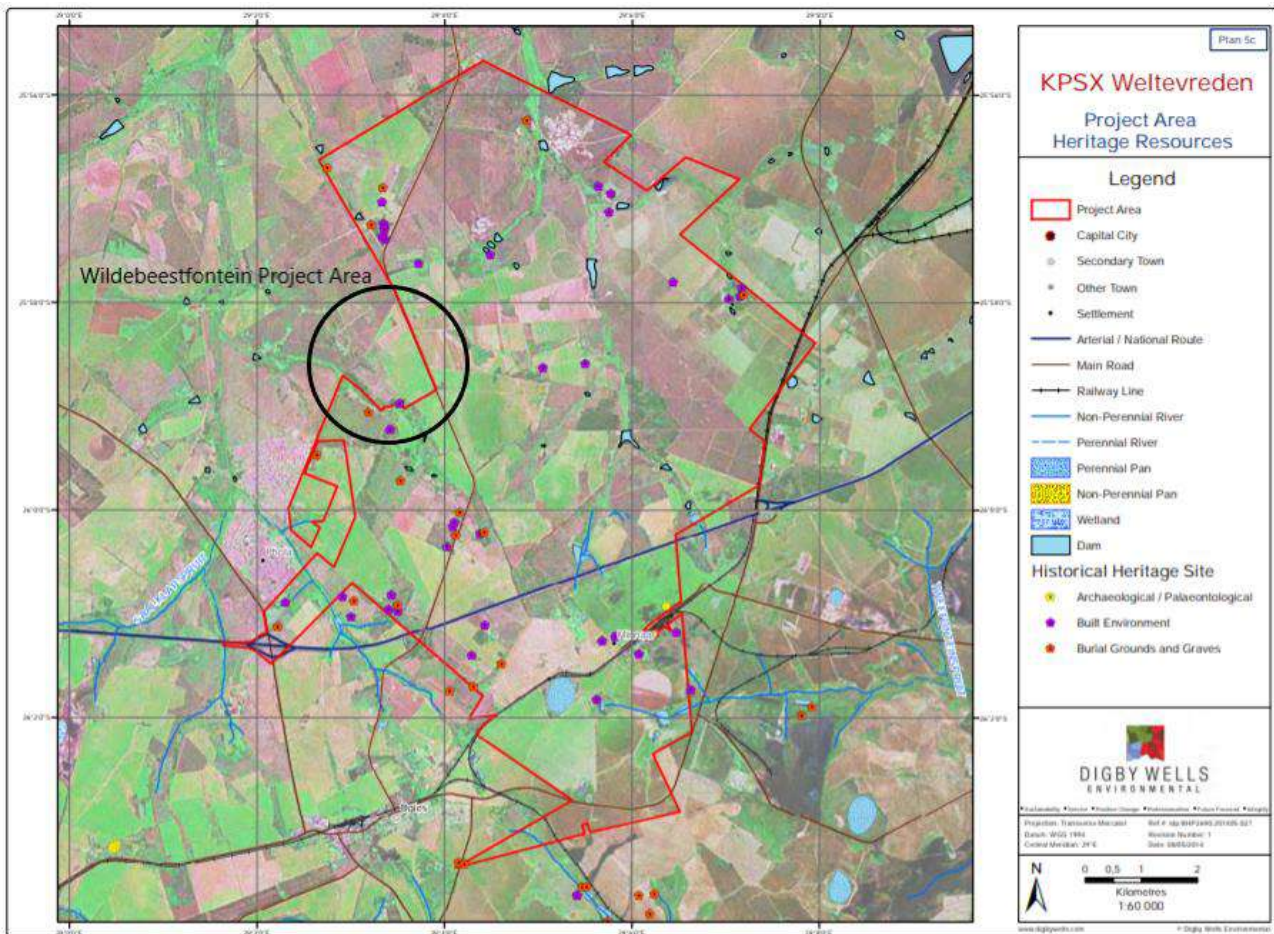


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Ndebele in this region of Mpumalanga, however the Eastern Highveld has not been extensively researched (Maggs, 1974). Characteristic of settlements of this time period are extensive stone walling. Current understanding of the natural environment of the project area suggest that the identification of archaeological remains associated with the Stone Age and Iron Age periods are exceptions rather than the rule. This is consistent with findings contained in heritage studies previously conducted in the region, where Stone Age and Iron Age finds only constitute 4.42% of the identified heritage resources.

**Historical Sites**

Digby Wells Environmental (2014) undertook a heritage impact assessment (HIA) for a project area neighbouring the Wildebessfontein Project Area which shows built structures and graves in close proximity to the Wildebessfontein Project Area. A detailed HIA will be undertaken for EIA.



**Figure 9: Historical Heritage Sites of the Area.**

*A Heritage Impact Assessment will be conducted and included in the EIA.*

**SURFACE WATER**

The Wildebessfontein colliery is located at the headwaters of the B20G quaternary catchment which is in the Wilge River catchment of the Olifants Water Management Area (WMA).

The project is located in the Upper Olifants River catchment and there are a large number of defunct mines scattered over the Wilge, Middelburg Dam and Witbank Dam catchments. The DWS report (DWAF, 2009) has reiterated on the deteriorating water quality, where Total Dissolved Solids (TDS) and sulfate concentrations in the Witbank, Middelburg and Loskop Dams have been increasing since 1970. Owing to the impacts, it is imperative that the DWS developed water management strategies. Hence the development of the Integrated Water Resource Management Plan for the Upper and Middle Olifants Catchment in 2009 (DWAF, 2009) which was responsible for



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setting up the Resource Water Quality Objectives (RWQO) used in this assessment. The project area lies in the greater Wilge River Catchment, which is upstream of the Loskop Dam Catchment. The confluences of the Klein Olifants, Spookspruit, Klipspruit and Wilge Rivers with the Olifants River are between Witbank and Loskop Dams.

### Water Use

According to the Department of Water and Sanitation (DWS) water use database (WARMS), the main use of water in the catchment area is for agricultural irrigation and mining. Other uses identified in the area include:

- Domestic use, mainly limited to informal communities that use water for bathing and laundry, but the potential exist that the water could be used for drinking;
- Livestock watering for cattle and game.; and
- Irrigation of land. There are 36 registered users of which 98% is for irrigation use and the remaining 2% is used for mining purposes.

*A detailed surface water Impact Assessment will be conducted and included in the EIA.*

## GROUNDWATER

### Aquifer types

Hodgson and Krantz (1998) identified three distinct groundwater systems for the Olifants Catchment, namely:

- Upper weathered aquifer;
- Fractured aquifer; and
- Pre-Karoo fractured aquifer.

The weathering profile of the Ecca Group sediments on average varies between 5 m to 12 m in thickness. The upper weathered aquifer occurs within this zone, usually as a perched aquifer overlying impermeable shale or clay layers. This aquifer is generally low yielding, but of good quality as a result of dynamic groundwater flow washing away leachable salts (Hodgson and Krantz, 1998). The fractured aquifer occurs beneath the weathered aquifer, within fresh sediments. These sediments are typically well cemented, limiting significant permeation of water through, with the presence of secondary structures (fractures) providing the only pathway for groundwater movement. However, not all secondary structures are water bearing. The yields for this aquifer system are typically low with the coal seams frequently having the highest hydraulic conductivities. The water quality associated with this aquifer system contains higher salt loads as a result of longer residence times in the aquifer. The Dwyka tillite which underlay the Ecca Group sediments form a hydraulic barrier limiting the impact of mining activities (in the Ecca Group sediments) to the underlying aquifer systems (Hodgson and Krantz, 1998). Pre-Karoo aquifers have only been intersected on a few occasions, as a result of great depths required to reach the aquifer. Boreholes which have intersected this aquifer are generally low yielding with inferior water quality and low recharge capabilities due to the overlying impermeable Dwyka tillite (Hodgson and Krantz, 1998). Where dolomites of the Transvaal Supergroup underlay the Karoo Supergroup, boreholes may obtain high yields with good water quality.

### Aquifer Classification

The aquifers of South Africa are defined according to their water supply potential, water quality and local importance for strategic purposes within an aquifer classification scheme and map. The aquifer classification map (Parsons, 1993) identifies the Karoo aquifers as minor systems with relatively good water quality (TDS <300mg/L), moderate vulnerability and medium susceptibility to contamination, where:

- Vulnerability is defined as the tendency or likelihood for contamination to reach a specified position in the aquifer; and
- Susceptibility is defined as a qualitative measure of the relative ease with which contamination can reach a groundwater aquifer.



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A detailed Groundwater Impact Assessment will be undertaken for the EIA

BLASTING AND VIBRATION

A detailed Blasting and Vibration Impact Assessment will be undertaken for the EIA once more detail about the blasting methods have become available.

AIR QUALITY

The following baseline information was sourced from the **Baseline Assessment, Problem Analysis and the Air Quality Management Plan for the Highveld Priority Area (2011)**.

The Highveld area in South Africa is associated with poor air quality, and elevated concentrations of criteria pollutants occur due to the concentration of industrial and nonindustrial sources (Held et al, 1996; DEAT, 2006). The Minister of Environmental Affairs and Tourism, Martinus van Schalkwyk, therefore, declared the Highveld Priority Area (HPA) on 23 November 2007. The priority area covers 31 106 km<sup>2</sup>, including parts of Gauteng and Mpumalanga Provinces, with a single metropolitan municipality, three district municipalities, and nine local municipalities (Figure 10)

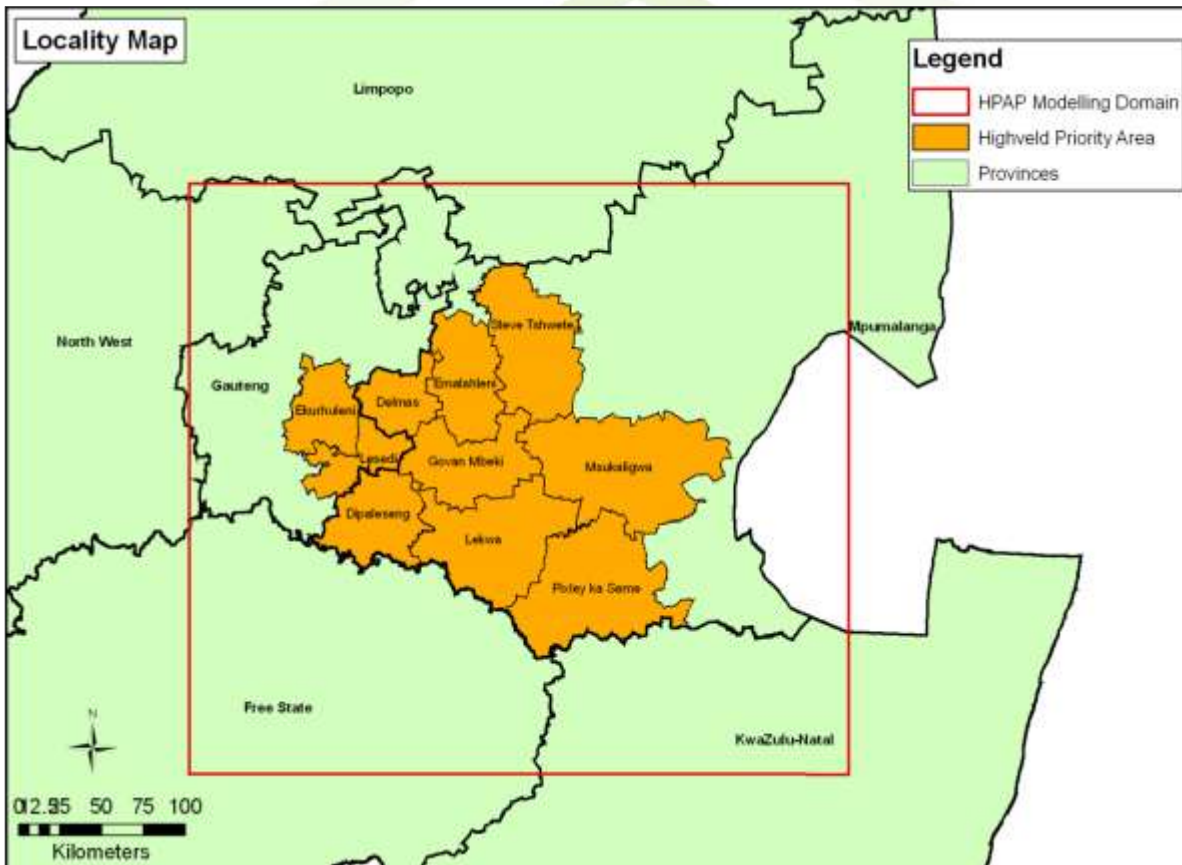


Figure 10: Highveld Priority Areas (HPA)

The total estimated annual emissions of fine particulate matter (PM<sub>10</sub>) on the HPA is 279 630 tons, of which approximately half is attributed to particulate entrainment on opencast mine haul roads. The emission of PM<sub>10</sub> from the primary metallurgical industry accounts for 17% of the total emission, with 12% of the total from power generation. By contrast, power generation contributes 73% of the total estimated oxides of nitrogen (NO<sub>x</sub>) emission of 978 781 tons per annum and 82% of the total estimated sulphur dioxide (SO<sub>2</sub>) emission of 1 633 655 tons per annum. The emission inventory for industrial sources was relatively complete and included all industries on the HPA with scheduled processes in terms of the APPA. Industrial sources in total are by far the largest contributor of emissions in the



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HPA, accounting for 89% of PM<sub>10</sub>, 90% of NO<sub>x</sub> and 99% of SO<sub>2</sub>. Major industrial source contributors were grouped into the following categories:

- Power Generation
- Coal Mining
- Primary Metallurgical Operations
- Secondary Metallurgical Operations
- Brick Manufacturers
- Petrochemical Industry
- Ekurhuleni Industrial Sources
- Mpumalanga Industrial Sources

**Table 5: Total emission of PM<sub>10</sub>, NO<sub>x</sub> and SO<sub>2</sub> from the different source types on the HPA (in tons per annum), and the percentage contribution for each source category**

Source Category	PM <sub>10</sub> t/a	%	NO <sub>x</sub> t/a	%	SO <sub>2</sub> t/a	%
Ekurhuleni MM Industrial (incl Kelvin)	8909	3,00	15 636	2	25 772	2
Mpumalanga Industrial	684	0,00	590	0	5 941	0
Clay Brick Manufacturing	9708	3,00	-		9 963	1
Power Generation	34373	12,00	716 719	73	1 337 521	82
Primary Metallurgical	46805	17,00	4 416	0	39 582	2
Secondary Metallurgical	3060	1,00	229	0	3 223	0
Petrochemical	8246	3,00	148 434	15	190 172	12
Mine Haul Roads	135766	49,00	-		-	-
Motor vehicles	5402	2,00	83 607	9	10 059	1
Household Fuel Burning	17239	6,00	5 600	1	11 422	1
Biomass Burning	9438	3,00	3 550	0	-	-
<b>TOTAL HPA</b>	<b>279630</b>	<b>99*</b>	<b>978781</b>	<b>100</b>	<b>1633655</b>	<b>101*</b>

\* Total Percentage does not count to 100% due to rounding of figures.

**Ambient air quality**

Most of the HPA experiences relatively good air quality, but ambient air quality standards for SO<sub>2</sub>, PM<sub>10</sub> and ozone (O<sub>3</sub>) concentrations are exceeded in nine extensive areas. These “hot spots” are illustrated in Figure 10 by the number of modelled exceedances of the 24-hour SO<sub>2</sub> and PM<sub>10</sub> standards, and are confirmed by ambient monitoring data (Table 6). The air quality hot spots result mostly from a combination of emissions from the different industrial sectors and residential fuel burning, with motor vehicle emissions, **mining** and crossboundary transport of pollutants into the HPA adding to the base loading.

Available monitoring confirms that the areas of concern are in the vicinity of **Witbank 2**, Middelburg, Secunda, Ermelo, Standerton, Balfour, and Komati where exceedances of ambient SO<sub>2</sub> and PM<sub>10</sub> air quality standards occur (Table 6).



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**Table 6: Exceedances at HPA sites based on historic and new monitoring data**

Municipality	Area	NO <sub>2</sub> 1-hr (88)	O <sub>3</sub> 8-hr (11)	PM <sub>10</sub> 24-hr (4)	SO <sub>2</sub> 24-hr (4); 1-hr (88)
Emalahleni LM	Kendal 2	1	<b>58</b>		<b>34; 343</b>
	Phola	0		3	7; 27
	<b>Witbank</b>	<b>37</b>	<b>9</b>	<b>9</b>	<b>4; 51</b>
	<b>Witbank 2</b>		<b>17</b>	<b>25</b>	<b>1; 11</b>
Steve Tshwete LM	Columbus				
	Komati 2			<b>26</b>	1; 14
	Hendrina	1	<b>22</b>	3	1; 2
	Middelburg	71	<b>60</b>	<b>7</b>	1; 4
	Middelburg 2		1	<b>7</b>	0; 1
Govan Mbeki LM	Sasol Club	1		0	0; 25
	Langverwacht	1		0	2; 78
	Bosjesspruit				2; 27
	Elandsfontein	0	<b>73</b>	3	4; 33
	Leandra				6; 114
	eMbalenhle	2	4	<b>39</b>	0; 1
Msukaligwa LM	Camden	0	<b>24</b>	1	0; 4
	Ermelo	1	<b>73</b>	<b>22</b>	<b>21; 10</b>
Pixley Ka Seme LM	Amersfoort				
	Majuba 1				4; 87
	Majuba 2				
	Verkykkop	0	<b>46</b>	0	1; 7
Lekwa	Standerton	4	10	<b>29</b>	1; 6
Dipaleseng	Balfour		<b>29</b>	<b>8</b>	0; 4

NB. - Row 1: The averaging period for the relevant pollutant's standard is represented below the pollutant and following the allowed frequency of exceedance in brackets - Exceedances in bold are greater than the permitted frequency in the standard for the monitoring period. The permitted frequency of exceedance varies according to period for which data is presented at each monitoring site, and for Eskom and Sasol stations must be assessed against a cumulative permitted frequency of exceedance for 3 years of data



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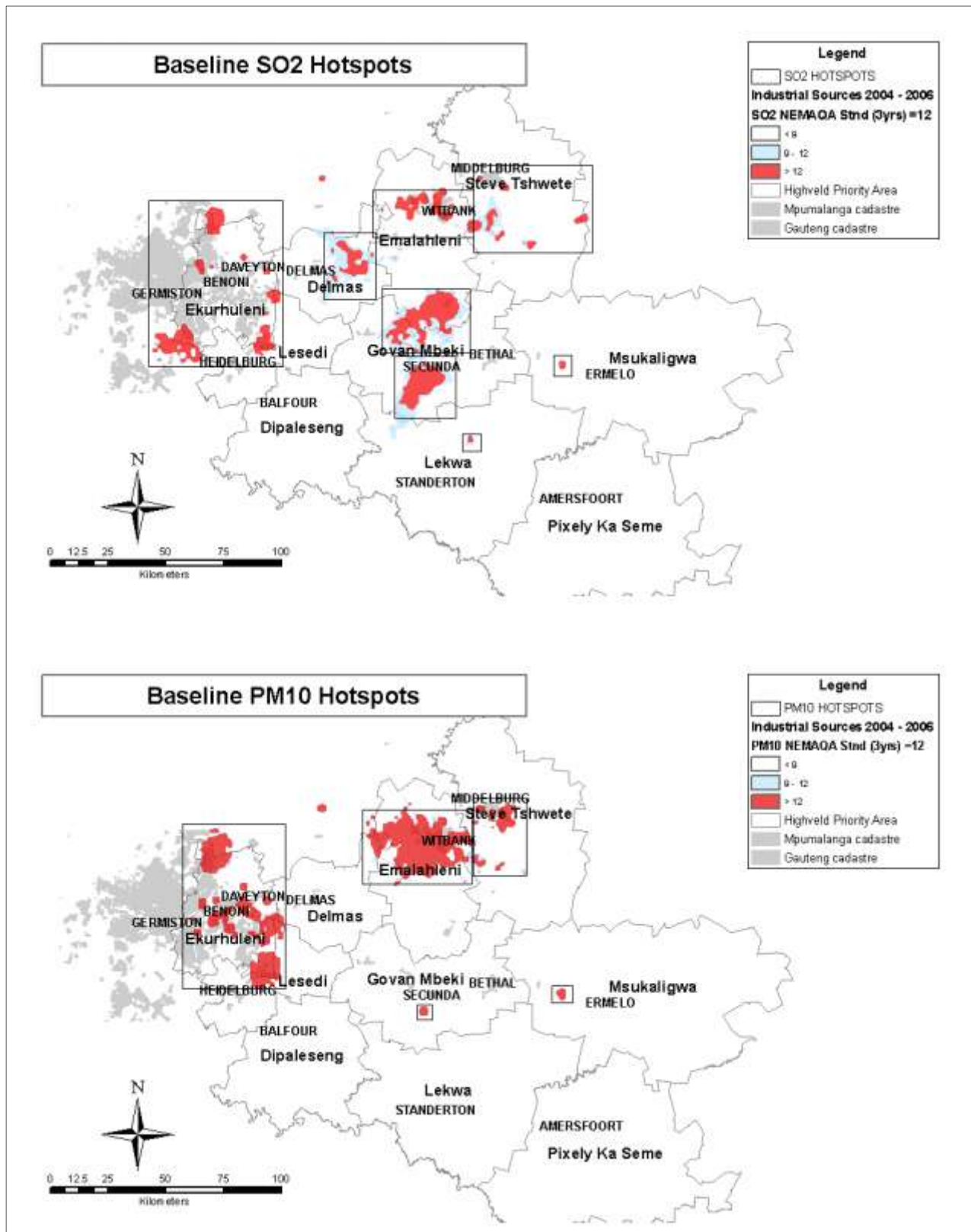


Figure 11: Modelled frequency of exceedance of 24-hour ambient SO<sub>2</sub> and PM<sub>10</sub> standards in the HPA, indicating the modelled air quality Hot Spot areas

*Detailed Air Quality Impact assessment will be undertaken for inclusion in the EIA report*



NOISE

Table 7 depicts acceptable noise levels within districts according to the SANS 10103 guideline.

**Table 7: Acceptable rating levels for noise in districts (SANS 10103, 2008)**

Type of District	Equivalent continuous rating level ( $L_{Req,T}$ ) for noise (dBA)					
	Outdoors			Indoors, with open windows		
	Day-night	Day-time	Night-time	Day-night	Day-time	Night-time
	$L_{R,dna}$	$L_{Req,db}$	$L_{Req,nb}$	$L_{R,dna}$	$L_{Req,db}$	$L_{Req,nb}$
<b>RESIDENTIAL DISTRICTS</b>						
a) Rural districts	45	45	35	35	35	25
b) Suburban districts with little road traffic	50	50	40	40	40	30
c) Urban districts	55	55	45	45	45	35
<b>NON-RESIDENTIAL DISTRICTS</b>						
d) Urban districts with some workshops, with 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
NOTE 1 If the measurement or calculation time interval is considerably shorter than the reference time intervals, significant deviations from the values given in the table might result.						
NOTE 2 If the spectrum of the sound contains significant low frequency components, or when an unbalanced spectrum towards the low frequencies is suspected, special precautions should be taken and specialist advice should be obtained. In this case the indoor sound levels might significantly differ from the values given in columns 5 to 7						
NOTE 3 In districts where outdoor $L_{R,dn}$ exceeds 55 dBA, residential buildings (e.g. dormitories, hotel accommodation and residences) should preferably be treated acoustically to obtain indoor $L_{Req,T}$ values in line with those given in table 1.						
NOTE 4 For industrial districts, the $L_{R,dn}$ concept does not necessarily hold. For industries legitimately operating in an industrial district during the entire 24 h day/night cycle, $L_{Req,d} = L_{Req,n} = 70$ dBA can be considered as typical and normal.						
NOTE 5 The values given in columns 2 and 5 in this table are equivalent continuous rating levels and include corrections for tonal character, impulsiveness of the noise and the time of day.						
NOTE 6 The noise from individual noise sources produced, or caused to be produced, by humans within natural quiet spaces such as national parks, wilderness areas and bird sanctuaries, should not exceed a maximum Weighted sound pressure level of 50 dBA at a distance of 15 m from each individual source.						
a The values given in columns 2 and 5 are equivalent continuous rating levels and include corrections for tonal character and impulsiveness of the noise and the time of day.						
b The values given in columns 3, 4, 6 and 7 are equivalent continuous rating levels and include corrections for tonal character and impulsiveness.						

The probable community/group response to levels in excess of the acceptable rating levels are presented in Table 8, where  $L_{Req,T}$  is the equivalent continuous A-weighted sound pressure level, in decibels (dBA), determined over a specific time period. 'A-weighted' is a standard weighting of the audible frequencies designed to reflect the response of the human ear to noise.



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**Table 8: Categories of community/group response (SANS 10103, 2008)**

Excess ( $\Delta L_{Req,T}$ ) <sup>a</sup> dBA	Estimated community/group response	
	Category	Description
0 – 10	Little	Sporadic complaints
5 – 15	Medium	Widespread complaints
10 - 20	Strong	Threats of action
>15	Very strong	Vigorous action

NOTE Overlapping ranges for the excess values are given because a spread in the community reaction might be anticipated.

a  $\Delta L_{Req,T}$  should be calculated from the appropriate of the following:

- 1)  $\Delta L_{Req,T} = L_{Req,T}$  of ambient noise under investigation MINUS  $L_{Req,T}$  of the residual noise (determined in the absence of the specific noise under investigation);
- 2)  $\Delta L_{Req,T} = L_{Req,T}$  of ambient noise under investigation MINUS the maximum rating level for the ambient noise given in table 1;
- 3)  $\Delta L_{Req,T} = L_{Req,T}$  of ambient noise under investigation MINUS the typical rating level for the applicable district as determined from table 2; or
- 4)  $\Delta L_{Req,T} =$  Expected increase in  $L_{Req,T}$  of ambient noise in an area because of a proposed development under investigation.

*A baseline assessment will be undertaken to determine the current ambient noise level at the nearest noise sensitive receptor to the proposed project.*

## SOILS

The land type occupying the project area is Bb 13 land type of the 2528 and 2628 Pretoria and East Rand Land Type maps (Land Type Survey Staff, 1989). The presence of a plinthic catena dominates this land type. A very large area of Mpumalanga Province is occupied by plinthic catena that in its perfect sequence is represented by (in order from highest to lowest in the upland landscape crest, midslope and foot slope positions). Red well drained soils for example Hutton soil types, yellow Clovelly soils in the midslope landscape position and less well drained soil in foot slope and valley bottom positions such as the Fernwood and Longlands soil forms. In addition, shallow Glencoe and Dresden soils, underlain by hard plinthite, occur in some places within the landscape.

The underlying geology of land type Bb 13 consists of sandstone, grit, shaly sandstone and shale of the Eccca Group, Karoo Sequence. The area occupied by the Bb 13 land type is 40 316 ha. The Bb 13 land type is, is dominated by 40 % crest and 45 % midslope positions, the remainder (15 %) is occupied by valley bottom landscape positions.

The Bb13 Land type is dominated by deep well drained yellow-brown apedal soils, with about 70% of the land type having these soils; they have an average slope of around 3 %. The following list of soil types occurs within the crest (40%) in this land type:

- Clovelly (Cv) – 45%
- Avalon (Av) – 15%
- Other shallow soil types such as the Glencoe (Gc) soil – 40%

The following list of soil types occurs within the midslope (45%) in this land type:

- Clovelly (Cv) – 35%
- Avalon (Av) – 35%





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- Other shallow soil types such as the Glencoe (Gc) soil – 30%

*A detailed soils, land use, and land capability assessment will be undertaken for inclusion in the EIA*

## SOCIAL ECONOMIC

The proposed Project is located in eMalahleni Local Municipality (ELM), within the Nkangala District Municipality (NDM) in Mpumalanga Province. The socio-economic characteristics of the population within each of the aforementioned areas are listed below.

### Population and Demographics

According to the ELM 2013-2014 IDP, this municipality is the largest economic contributor to the NDM of the six local municipalities, contributing 45% to the districts economy. Dominant economic contributors include utilities (74.1%), mining (52.8%) and construction (52.5%). Emalahleni's population size, as recorded by Stats SA 2011, was 395 466 people which makes up 30% Nkangala District's population. The population lives in 119 874 households with an average household size of 3.3 people. This is a relatively low family size, which may reflect the young age of the urban centres in the district, in which large family structures have not had time to develop. More established towns generally have average family sizes in excess of 4.5 people, while rural areas often average 5.5 people or more per household. The ELM's population grew by 43.1% between 2001 and 2011 while annualised population growth rate was measured at 3.6%.

### Educational Status

Educational achievement is a key development indicator of a population. The majority of the population (ages over twenty) in the local study area as well as district municipality have not completed matric, however, there is a large percentage of learners who complete primary level education.

### Employment and Labour

According to Statistics South Africa, (2011) the employment rate for Mpumalanga Province and Nkangala District Municipality was 24% and 27% respectively (Stats SA, 2011). There has been a drop in unemployment rate in the ELM from 38.4% to 27% between 2001 and 2011. A large portion of those employed are absorbed into the mining, construction, power generation and agricultural sectors.

### Annual Household Income

Over 40% of people in Mpumalanga Province have no annual income at all. Average income figures for the local study area, the ELM and the NDM are all very much in line with the provincial average; however, the income earning figures are slightly higher for the local study area, with more people earning between R3 201 and R12 800 (Stats SA, 2011). It can be gathered that the ELM has a higher income production than the provincial figures. This is attributed to the concentration of mining and power generation activities, and construction industry in this area (Stats SA, 2011).

### Social Infrastructure and Services

All the urban areas within ELM (with the exception of informal settlements and townships) are fully reticulated in terms of potable water supply. A large percentage of households in the local study area have access to piped water either inside their house or within a communal yard, with an average of 77% having access to municipal water, whilst 8% have access to water through a borehole. In terms of sanitation, data from the 2011 census, show that an estimated 57% of households in the local study area have access to waterborne sewer services (flush toilets, with or without septic tanks); the majority (33%) of the remaining households use pit latrines (Stats SA, 2011). An estimated 69% of waste generated within the ELM is collected weekly by the local municipality. In contrast to the ELM, the most common means of waste disposal for populations in Ward 30 is through utilisation of their own refuse dumps (39%), 36% make use of municipal services and a significant amount of the population has no means of waste disposal at all. Of the households in local study area, 53% use electricity for cooking, heating and lighting. In contrast 69% of the households in the ELM use electricity. The bulk electricity provider throughout the municipality is Eskom (ELM IDP, 2012 - 2013). The ELM is strategically located in terms of the provincial context and transport network. It is situated in close proximity to the City of Johannesburg, City of Tshwane and Ekurhuleni Metropolitan Municipalities in Gauteng, and is connected to these areas by the N4 and N12 freeways. Although roads in the ELM are



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sufficiently connected with district, provincial and national roads, many secondary road systems are in a state of disrepair, being insufficient to handle the increased traffic created by mining and other industrial developments. Crime and community safety is generally a cause of concern for communities in the local study area. There has been a history of substance abuse and widespread criminal activity in the area, with several instances of community conflict, industrial action and opposition towards the local municipality and surrounding mining companies.

**Health Services**

It was found in an interview with the head nurses at the Phola Community Health Centre and the Ogies Clinic that prostitution has become an increased problem within the region as a result of the mining operations; this then in turn leads to an increase in HIV/AIDS rates. The mining operations also have resulted in an influx of inhabitants into the area which has put tremendous strain on health facilities.

*2.h.iv.1.b Description of the current land uses.*

The current land use for the project area is agriculture (crop production) with Mining activities and urbanisation surrounding the project area.

*2.h.iv.1.c Description of specific environmental features and infrastructure on the site.*

The site is traversed by a watercourse on its southern and western boundary, with some grave sites and built structures located on site.

*2.h.iv.1.d Environmental and current land use map.*

(Show all environmental, and current land use features)

Refer to Annexure 3

*2.h.v Impacts identified*

(Provide a list of the potential impacts identified of the activities described in the initial site layout that will be undertaken, as informed by both the typical known impacts of such activities, and as informed by the consultations with affected parties together with the significance, probability and duration of the impacts

The anticipated impacts associated with the project is as follows:

**Table 9: List of Preliminary Issues**

PRELIMINARY IMPACT TO BE ASSESSED	CONSTRUCTION PHASE	OPERATIONAL PHASE	DECOMMISSIONING PHASE	POSTIVE/ NEGATIVE
POTENTIAL TO ALTER THE TOPOGRAPHY	✓	✓	✓	-
LOSS OF SOIL CHARACTERISTICS - EROSION AND COMPACTION	✓	✓	✓	-
CHANGE IN LAND USE FROM FARMING TO MINING	✓	✓	✓	-
LOSS OF BIODIVERSITY – VEGETATION CLEARANCE, HABITAT DESTRUCTION AND FAUNAL DISPLACEMENT	✓	✓	✓	-
POTENTIAL FOR ALIEN INVASIVE ESTABLISHMENT	✓	✓	✓	-



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REDUCED FLOW TO DOWNSTREAM WATER CATCHMENT	✓	✓	✓	-
POTENTIAL POLLUTION TO WATER RESOURCES (SURFACE AND GROUNDWATER)	✓	✓	✓	-
DRAWDOWN CONE FROM DEWATERING ACTIVITIES (GROUNDWATER QUANTITY)	✓	✓	✓	-
INCREASED DUST AND EMISSIONS	✓	✓	✓	-
INCREASED NOISE LEVELS	✓	✓	✓	-
VISUAL AESTHETICS AND SENSE OF PLACE WILL BE ALTERED	✓	✓	✓	-
DAMAGE TO PROPERTY/INFRASTRUCTURE FROM BLAST EVENTS	✓	✓	✓	-
POTENTIAL DAMAGE TO HERITAGE SITES (GRAVE AND/OR ARCHAEOLOGICAL ARTEFACTS)	✓	✓	✓	-
INFLUX OF JOB SEEKERS TO THE AREA	✓	✓	✓	-
INCREASED TRAFFIC – COAL HAULAGE	✓	✓	✓	-
EMPLOYMENT OPPORTUNITIES	✓	✓	✓	+
ECONOMIC STIMULATION	✓	✓	✓	+

2.h.vi Methodology used in determining the significance of environmental impacts

(Describe how the significance, probability, and duration of the aforesaid identified impacts that were identified through the consultation process was determined in order to decide the extent to which the initial site layout needs revision).

The assessment and evaluation of environmental impacts is often complicated by the subjective nature of these impacts. Ideally, the degree of severity or significance of a particular impact should be expressed in quantitative terms, against a quantitative assessment of the conditions that pertained before a particular activity started. There must also be some expression as to whether a particular impact is desirable or not, as the desirability of an impact will depend largely on the attitude and experience of the assessment team, subjectivity is unavoidable.

In order to address these issues and to provide a basis for comparison of the different impacts associated with the activities, a number of standard definitions and approaches will be used.

CATEGORY	DESCRIPTION OR DEFINITION
<b>Statement</b>	A brief written statement, stating which environmental aspect is impacted by a particular project activity or sequence of project activities.
<b>Type of Impact</b>	This defines what type of impact takes place. No value is allocated for a type of impact. Cumulative impacts will be dealt with in a separate table.
<b>Direct</b>	Direct result (impact) of an action (aspect).
<b>Indirect</b>	Impacts that are not a direct result (impact) of the strategic action (aspect) but occur away from the original source of impact or as a result of a complex pathway. Indirect impacts are often called secondary, tertiary etc. impacts, depending on how many steps there are between the original source and its impact



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<b>Cumulative</b>	The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions.
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CATEGORY	VALUE	DESCRIPTION OR DEFINITION
<b><u>Extent</u></b>		
		Extent to which the impact will occur
<b>Site</b>	1	Only as far as the activity
<b>Local</b>	2	Site and immediate surroundings
<b>Regional</b>	3	Impact on a regional scale
<b>National / International</b>	4	National or International
<b><u>Duration</u></b>		
		The term or time period during which the impact is expressed, not the time until the impact is expressed. Where necessary, the latter is separately specified.
<b>Temporary</b>	1	This is very short term, usually a construction impact
<b>Short term</b>	2	During the operational activities
<b>Long term</b>	3	During closure / decommissioning of the operation
<b>Permanent</b>	4	Post-closure phase
<b><u>Severity</u></b>		
		The magnitude of the potential impact
<b>Very Low</b>	1	Natural, cultural and social functions are not affected
<b>Low</b>	2	Affected environment is altered but natural, cultural, and social functions and process continue both in a modified way
<b>Moderate</b>	3	Natural, cultural and social functions and processes are altered to the extent that it would temporarily cease
<b>High</b>	4	Natural, cultural and social functions and process are altered to the extent that it would permanently cease
<b><u>Probability</u></b>		
		The likelihood of the impact occurring
<b>Improbable</b>	1	Low possibility because of design or historic experience
<b>Probable</b>	2	Distinct probability to occur
<b>Highly probable</b>	3	Most likely to occur
<b>Definitely</b>	4	Will occur regardless of any prevention measures and/or there is a history of (an) incident/s and/or complaints
<b><u>Significance</u></b>		
		This is integration (i.e.an opinion) of the severity, type, extent, probability and duration of the impact. It is the best judgment of whether the impact is important or not within the broad context, once mitigation is taken into account.
		By adding the value of the extent, duration, severity and probability, a significance value will be obtained for each impact. A significance rating is assigned twice to the impact. Firstly, to indicate significance without mitigation or optimization and secondly, to indicate significance after mitigation or optimization. This is done to highlight the importance of mitigation or optimization of potential impacts.



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<b>No impact</b>		A potential concern or impact, which, upon evaluation, is found to have no impact.
<b>Very Low</b>	1 - 4	Impacts will be of very low significance if the added values are between 1 and 4.
<b>Low</b>	5 - 8	Impacts will be of low significance if the added values are between 5 and 8.
<b>Moderate</b>	9 - 12	Impacts will be of moderate significance if the added values are between 9 and 12.
<b>High</b>	13 - 16	Impacts will be of high significance if the added values are between 13 and 16.
<b>Very High</b>	17 - 20	Impacts will be of very high significance if the added values are between 17 and 20.

Description of bio-physical assessment parameters with its respective weighting

**Table 10: Rating Table**

Extent	Duration	Intensity	Probability	Weighting Factor (WF)	Significance Rating (SR)	Mitigation Efficiency (ME)	Significance Following Mitigation (SFM)
Footprint 1	Short term 1	Low 1	Probable 1	Low 1	Low 0-19	High 0,2	Low 0-19
Site 2	Short to medium 2		Possible 2	Low to medium 2	Low to medium 20-39	Medium to high 0,4	Low to medium 20-39
Regional 3	Medium term 3	Medium 3	Likely 3	Medium 3	Medium 40-59	Medium 0,6	Medium 40-59
National 4	Long term 4		Highly Likely 4	Medium to high 4	Medium to high 60-79	Low to medium 0,8	Medium to high 60-79
International 5	Permanent 5	High 5	Definite 5	High 5	High 80-100	Low 1,0	High 80-100

2.h.vii The positive and negative impacts that the proposed activity (in terms of the initial site layout) and alternatives will have on the environment and the community that may be affected.

(Provide a discussion in terms of advantages and disadvantages of the initial site layout compared to alternative layout options to accommodate concerns raised by affected parties)

Refer to Table 9

2.h.viii The possible mitigation measures that could be applied and the level of risk.

(With regard to the issues and concerns raised by affected parties provide a list of the issues raised and an assessment/ discussion of the mitigations or site layout alternatives available to accommodate or address their concerns, together with an assessment of the impacts or risks associated with the mitigation or alternatives considered).

To be updated once the specialist has completed their studies and comment has been received from I&APs during the Draft EIA Phase. The following is proposed in the interim:

- Design the surface and storm water infrastructure to be within the footprint of the project area
- Separate clean from dirty water and allow discharge of water to designated areas.
- Vegetate disturbed areas to limit erosion
- Implement berms, trenches and storm water management measures in accordance with GN 704 Regulations
- Pollution Control Dams to be designed to cater for the required storage capacity



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- Compacted soil areas in and around the periphery of the wetland will be ripped to break up compacted soil and vegetated with indigenous seed mix
- Comply with the National Air Quality Standards and Dust Control Regulations
- Comply with the SANS noise standard
- Avoid travelling past residences. Speed limit of 40km/h will be enforced. Liaise with landowner on areas sensitive to noise. Provide a buffer of 100m from households
- Prescribe to the DWS Catchment Water Quality Standards
- Restrict traveling speed of vehicles to reduce vehicle entrainment of dust. Wet gravel roads if dust is found to be excessive.
- No-go areas to be identified. Environmental awareness training of all employees
- Preference to be given to the use of local employment, contractors and local suppliers.
- Implement measures to protect soils from pollution.
- Reduce the visual impacts of mining activities, i.e. rehabilitation
- Site selection aimed at minimising disturbance to sensitive animal habitats and breeding areas.
- Utilise existing access roads as far as possible.
- Access roads to follow slope contours where possible. Vegetation to be left in place at the sides of the road to protect the soils.

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2.h.ix The outcome of the site selection Matrix. Final Site Layout Plan

(Provide a final site layout plan as informed by the process of consultation with interested and affected parties)

To be submitted with the Draft EIA Report once the specialist has given their input.

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2.h.x Motivation where no alternative sites were considered.

The site location is limited to the Prospecting Right Area, which is constrained by the location of other mining houses and residential areas. The resource location and the presence of a watercourse on the site boundary further restrict the infrastructure layout. Therefore, no alternative sites were considered.

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2.h.xi Statement motivating the preferred site.

(Provide a statement motivation the final site layout that is proposed)

The site location is limited to the Prospecting Right Area, which is constrained by the location of other mining houses and residential areas. The resource location and the presence of a watercourse on the site boundary further restrict the infrastructure layout.

Once specialist studies have been undertaken the most suitable layout will be finalised and presented in the EIA.

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2.i PLAN OF STUDY FOR THE ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

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2.i.i Description of alternatives to be considered including the option of not going ahead with the activity.

Refer to Section 2.h.i

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2.i.ii Description of the aspects to be assessed as part of the environmental impact assessment process



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(The EAP must undertake to assess the aspects affected by each individual mining activity whether listed or not, including activities such as blasting, Loading, hauling and transport, and mining activities such as Excavations, stockpiles, discard dumps or dams, water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.).

A team of specialist Scientists and Engineers have been appointed to undertake the following specialist studies. These studies will investigate the baseline environment, potential impacts and provide management measures where applicable.

- Socio-Economic Impact Study
- Air quality
- Traffic
- Aquatic Ecology
- Storm Water Management Plans
- Ecological
- Geo-hydrological
- Surface water
- Wetland
- Heritage, Archaeological, and Paleontology
- Soils, land use and land capability

**Specialists’ Scope of Work**

**Table 11: Specialist Scope of Work**

Specialist Study	Scope of Work
Air quality	<p>The purpose of this baseline study is to:</p> <ul style="list-style-type: none"> <li>- Study the available information relevant to the pre and post-development ambient air quality pollution concentrations in the environment;</li> <li>- Identify the major existing air emission sources in the environment;</li> <li>- Identify the existing sensitive air pollution areas in the environment;</li> <li>- Estimate by means of measurements and integration of the results with those of any relevant existing information the present ambient air quality climate;</li> <li>- Identify the processes and equipment that will cause the major contribution to the future air quality impact;</li> <li>- Consider, evaluate and rate the potential air quality impacts; and</li> <li>- Propose relevant management and mitigation measures to lessen the anticipated impacts.</li> </ul> <p>It is highly recommended that baseline dust monitoring be conducted for at least 3 months prior to the start of the project.</p>
Aquatic Ecology	<p>The assessment will be conducted as part of a three phase approach. The first phase consisted of a rapid desktop assessment. The second phase was conducted in field to gather data. The third phase consisted of an impact assessment and reporting by combining field data and desktop data.</p> <p>1. Rapid desktop assessment:                      Google Earth satellite imagery                      Aerial photographs                      GIS mapping software</p> <p>2. Field assessment by identifying the presence of one (at least) or more of the following attributes:                      Wetland/hydromorphic soils</p>



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Specialist Study	Scope of Work
	<p>Hydrophytes High water table</p> <p>3. Combining desktop data, field data and calculating the Wetland Index of Habitat Integrity (DWA, 2007) by using the following indices: Present Ecological status Ecological Importance and Sensitivity Ecosystem Services supplied by wetland</p> <p>The following sections deal with the Wetland Index of Habitat Integrity as performed as part of the third phase of the study approach.</p>
Social Impact Assessment	<ol style="list-style-type: none"> <li>1) Identification of key stakeholders;</li> <li>2) Development of a social profile of the affected community;</li> <li>3) Identifying all applicable legislative and regulatory considerations;</li> <li>4) Undertaking stakeholder consultation;</li> <li>5) Assessment of possible social and economic impacts;</li> <li>6) Rating of impacts according to significance (severity, probability, duration, spatial extent and stakeholder sensitivity);</li> <li>7) stakeholder sensitivity;</li> <li>8) Making a clear distinction between objective and subjective impacts;</li> <li>9) Provision of management guidelines for anticipated impacts; and</li> </ol>
Ecological Assessment	<p>The study will include two phases:</p> <ol style="list-style-type: none"> <li>10) Desktop study: <ul style="list-style-type: none"> <li>- Review of existing information e.g. EIA, Specialist studies, Mining right, WULA etc.;</li> <li>- Analysis of recent Google maps;</li> <li>- Literature review of fauna and flora in the area;</li> <li>- Review of endangered species known to occur in the area;</li> </ul> </li> <li>11) Detailed Terrestrial Ecology Report including a wetland delineation and functional assessment</li> </ol>
Geo-hydrological	<p>The scoping groundwater study will include, amongst others, the following information as required in terms of the MPRDA:</p> <ul style="list-style-type: none"> <li>- A description of the groundwater environment likely to be affected by the proposed mining activities;</li> <li>- An assessment of potential impacts on the groundwater environment.</li> <li>- A summary of the potential significance of identified impacts;</li> <li>- Proposed mitigation and management measures to minimise adverse impacts and to optimise benefits;</li> <li>- Planned monitoring and performance assessment of the EMP and Rehabilitation measures of areas disturbed during mining activities.</li> </ul>
Surface water	<p>The assessment will be conducted as part of a three-phase approach. The first phase consisted of a rapid desktop assessment. The second phase was conducted in field to gather data. The third phase consisted of an impact assessment and reporting by combining field data and desktop data</p> <ol style="list-style-type: none"> <li>1. Rapid desktop assessment: <ul style="list-style-type: none"> <li>Google Earth satellite imagery</li> <li>Aerial photographs</li> <li>GIS mapping software</li> </ul> </li> <li>2. Field assessment by identifying the presence of one (at least) or more of the following attributes: <ul style="list-style-type: none"> <li>Wetland/hydromorphic soils</li> <li>Hydrophytes</li> <li>High water table</li> </ul> </li> <li>3. Combining desktop data, field data and calculating the Wetland Index of Habitat Integrity (DWA, 2007) by using the following indices: <ul style="list-style-type: none"> <li>Present Ecological status</li> <li>Ecological Importance and Sensitivity</li> </ul> </li> </ol>





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Specialist Study	Scope of Work
	Ecosystem Services supplied by wetland
Wetland Impact Assessment	As above
Heritage, Archaeological, and Paleo	<p>Phase 1 Archaeological Impact Assessments generally involve the identification of sites during a field survey with assessment of their significance, the possible impact development might have and relevant recommendations. All Archaeological Impact Assessment reports should include:</p> <ol style="list-style-type: none"> <li>Location of the sites that are found;</li> <li>Short descriptions of the characteristics of each site;</li> <li>Short assessments of how important each site is, indicating which should be conserved and which mitigated;</li> <li>Assessments of the potential impact of the development on the site(s);</li> <li>In some cases a shovel test, to establish the extent of a site, or collection of material, to identify the associations of the site, may be necessary (a pre-arranged SAHRA permit is required); and</li> <li>Recommendations for conservation or mitigation.</li> </ol> <p>This AIA report is intended to inform the client about the legislative protection of heritage resources and their significance and make appropriate recommendations. It is essential to also provide the heritage authority with sufficient information about the sites to enable the authority to assess with confidence:</p> <ol style="list-style-type: none"> <li>Whether or not it has objections to a development;</li> <li>What the conditions are upon which such development might proceed;</li> <li>Which sites require permits for mitigation or destruction;</li> <li>Which sites require mitigation and what this should comprise;</li> <li>Whether sites must be conserved and what alternatives can be proposed to relocate the development in such a way as to conserve other sites; and</li> <li>What measures should or could be put in place to protect the sites which should be conserved.</li> </ol>
Visual	<p>The scope of work for this Visual Impact Assessment will include:</p> <ul style="list-style-type: none"> <li>- Describe the existing visual characteristics of the proposed sites and its environs;</li> <li>- Viewshed and viewing distance;</li> <li>- Visual Exposure Analysis;</li> <li>- Viewer Sensitivity;</li> <li>- The overall objective of the Visual Impact Assessment (VIA) is to assess the significance of the visual impacts that will be caused by the mining activities.</li> </ul>
Soils, land use and land capability	<p>The following scope of work is proposed:</p> <ul style="list-style-type: none"> <li>· A study of the diagnostic soil horizons, soil forms and soil series for the area, including an assessment of effective profile depth and the classification of soils according to the South African Soil Classification System (Soil Working Group, 1991).</li> <li>· An assessment of the pedohydrological functioning of the area in order to shed light on the water storage capacity of the soils and occurrence of wetland or hydromorphic soils. Characteristics that will be noted include:             <ul style="list-style-type: none"> <li>- Fe(II)/Fe(III) layered double hydroxides (green rusts) that is indicative of moderate conditions of reductions and soils that are moist for prolonged periods;</li> <li>- The accumulation of ferrihydrate, lepidocrosite, goethite and hematite in vesicular nodules (mottling) owing to the reduction of Fe(III) to Fe(II), under conditions of a fluctuating water table;</li> <li>- The occurrence of grey colours, especially where mottling is not present, as a further indication of Fe mobilisation and semi-permanent or permanent conditions of water saturation;</li> <li>- The occurrence of bleached soil horizons that indicate lateral drainage of water;</li> <li>- The occurrence of uniform red and yellow colouration that is indicative of well drained areas;</li> <li>- Signs of Mn mobilisation and/or precipitation as indicating a fluctuating water table;</li> <li>- The occurrence of smectite clays that lead to swelling and shrinking characteristics in soil and that is conducive to water flow in the dry state but not in the wet state.</li> <li>- Texture of the soil horizons as a means to assess the water holding capacity, saturated water content and saturated hydraulic conductivity,</li> <li>- Textural changes, and other aspects, in the soil profile that will influence saturated and unsaturated flow of water.</li> <li>- Occurrence of layers, such as the rocks, ferricrete and/or calcrete, which impede water flow.</li> </ul> </li> </ul>



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Specialist Study	Scope of Work
	<ul style="list-style-type: none"> <li>- Occurrence of concretions, stones or pebbles in the soil horizons and the effect on water holding capacity, saturated water content and saturated hydraulic conductivity.</li> <li>- Representative soil samples will be collected and subjected to chemical and physical analyses. The following analyses will be conducted:                             <ul style="list-style-type: none"> <li>- Water soluble cations and anions;</li> <li>- pH and EC (electrical conductivity);</li> <li>- Exchangeable/weakly complexed fraction of major cationic plant nutrients – calcium (Ca), sodium (Na), magnesium (Mg), potassium (K)</li> <li>- Cation exchange capacity</li> <li>- Plant available phosphorus (P), nitrogen content</li> <li>- Organic carbon content</li> <li>- Soil particle size distribution (texture including clay and silt content)</li> <li>- Soil salinity levels will be calculated.</li> </ul> </li> </ul>

2.i.iii Description of aspects to be assessed by specialists

Refer to previous section 2.i.ii, Table 11

2.i.iv Proposed method of assessing the environmental aspects including the proposed method of assessing alternatives

Refer to previous section 2.i.ii, Table 11

2.i.v The proposed method of assessing duration significance

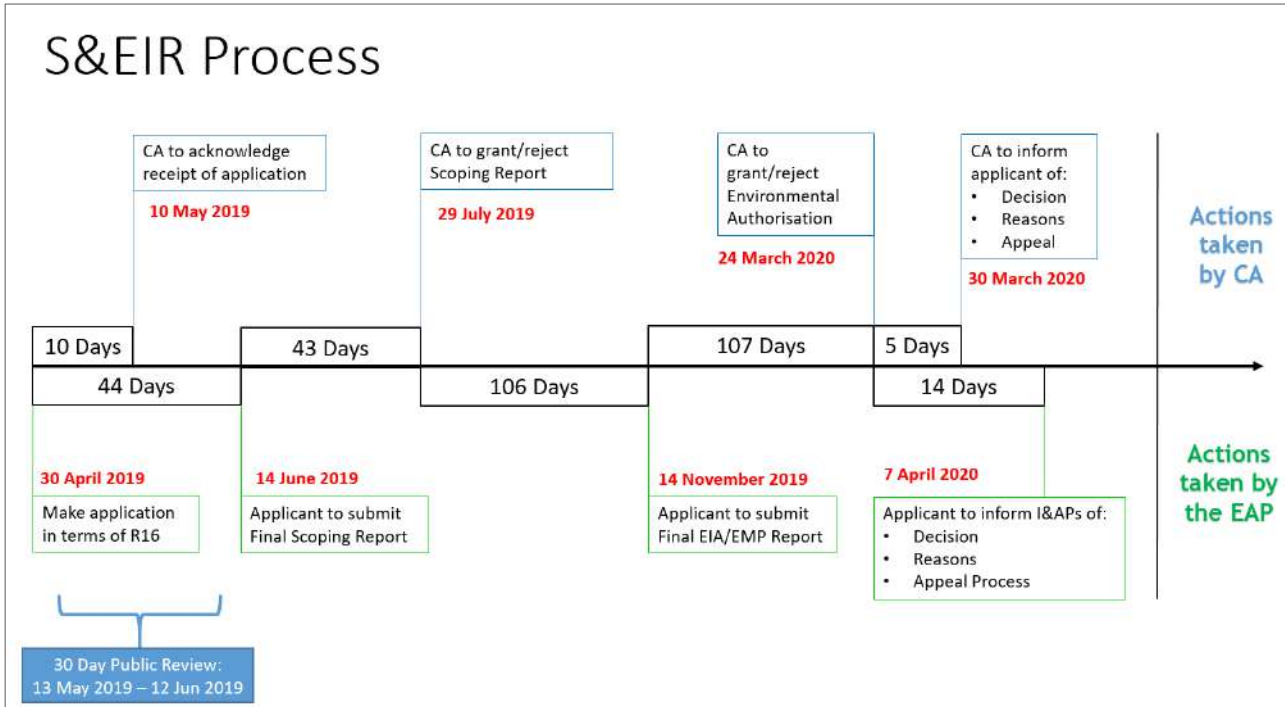
Refer to previous section 2.i.ii, Table 11

2.i.vi The stages at which the competent authority will be consulted

- Application Stage (application form submitted on 30 April 2019)
- Copy of the Draft Scoping Report to be submitted for their records (13 May 2019)
- Submission of the Final Scoping Report for review and comment (14 June 2019)
- Copy of the Draft EIA Report to be submitted for their records (TBC)
- Copy of the Final EIA Report to be submitted for review and decision making (TBC)



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2.i.vii Particulars of the public participation process with regard to the Impact Assessment process that will be conducted

2.i.vii.1 Steps to be taken to notify interested and affected parties.

(These steps must include the steps that will be taken to ensure consultation with the affected parties identified in (h) (ii) herein).

Section 41 of NEMA Regulation 982 (specifically Chapter 6) set out the Legal and Regulatory Requirement for Public Participation. The Public Participation Process (PPP) aims to involve the authorities and I&APs in the project process, and determines their needs, expectations and perceptions which in turn ensures a complete and comprehensive environmental study. An open and transparent process will/has been followed at all times and is based on reciprocal dissemination of information. The following was undertaken during the PPP:

- a. Identification of Interested and Affected Parties (IAPs);
- b. Notification of IAPs regarding the proposed project via newspaper adverts (in the Witbank News); the placing of site notices at conspicuous places, the sending of notices to affected parties via email and sms (in the form of Background Information Documents) to adjacent landowners.
- c. A public information meeting (open day) with IAPs held on 31 May 2019 at the eMalahleni Public Library;
- d. Gathering comments, issues and concerns from IAPs;
- e. Responding to IAP comments, issues and concerns;
- f. Compilation and submission of results of consultation report to the DMR; and
- g. Providing IAPs with the opportunity to review and comment on the Draft Scoping and EIA Reports
- h. Further personal consultation with affected landowners



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2.i.vii.2 *Details of the engagement process to be followed.*

(Describe the process to be undertaken to consult interested and affected parties including public meetings and one on one consultation. NB the affected parties must be specifically consulted regardless of whether or not they attended public meetings and records of such consultation will be required in the EIA at a later stage).

All persons registered as I&APs and organs of state identified through the scoping phase PPP will be sent invites to attend the Scoping and EIA Phase PPP meeting. The meeting will address specialist findings, focusing on sensitive issues, and provide information on the impact probability and significance. Proposed mitigation measures will also be discussed. The meeting will be recorded and minuted, and the minutes distributed to all attendees and I&APs for comment.

I&APs will be notified of the availability of the Scoping Report and EIA and EMP reports and associated Appendices for public review and comment, the location where the hard copy and electronic copies can be viewed and the timeframe (30 calendar days, which will be extended if significant public holidays occur within this period as per NEMA EIA regulations) for comment. All comments received from the review phase will be incorporated into the issues and response table and incorporated into the Final PPP Report and Final EIA and EMP for submission to authorities. During the EIA and EMP phase, if the need is identified to have one-on-one micro consultations, then these will be organised with the relevant I&AP. Upon receipt of an Environmental Authorisation, all registered I&APs will be notified of decision and the appeal process they can follow under NEMA.

2.i.vii.3 *Description of the information to be provided to Interested and Affected Parties.*

(Information to be provided must include the initial site plan and sufficient detail of the intended operation and the typical impacts of each activity, to enable them to assess what impact the activities will have on them or on the use of their land).

I&APs will have access to any of the project information as per the NEMA and PAIA. They will also be given ample opportunity to comment and provide input on the relevant pieces of information during the S&EIR process.

2.i.viii *Description of the tasks that will be undertaken during the environmental impact assessment process*

- Public Review of the Draft Scoping Report (30 days)
- Public Engagement and gathering of issues and comments
- Finalising of the Scoping Report and submission to the DMR for consideration
- Undertaking of the specialist studies and risk assessment phase
- Drafting of the EIA Report, EMP and IWULA
- Public Review of the Draft EIA Report and EMP (30 days) including the IWULA
- Public Engagement and gathering of issues and comments
- Finalisation of the EIA Report and EMP, submission to the DMR for decision making



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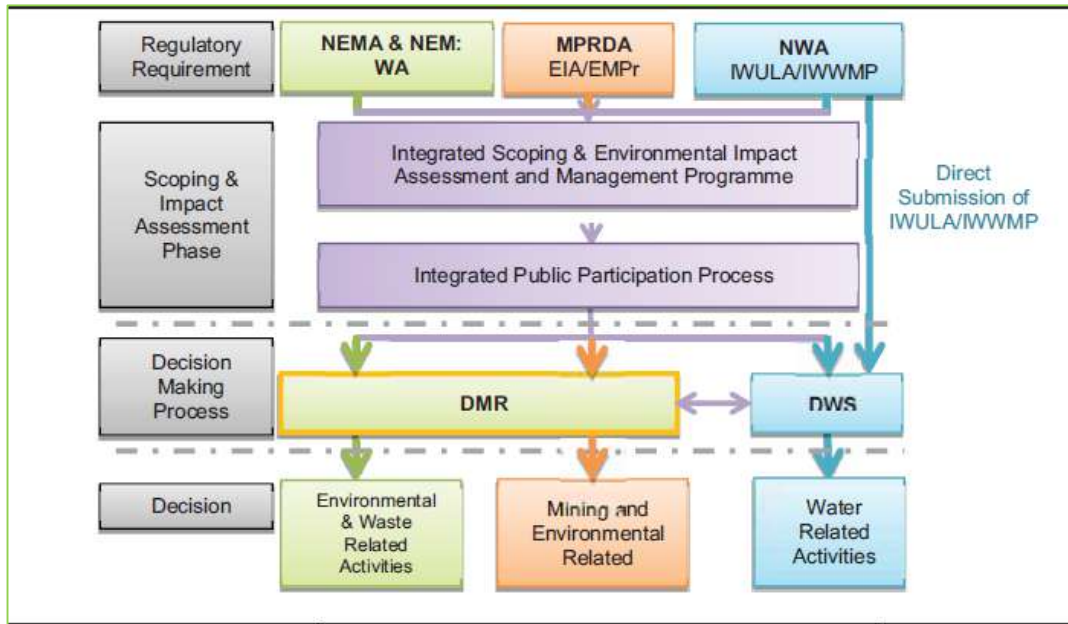


Figure 12: Authorisation Process Overview

2.i.ix Measures to avoid, reverse, mitigate, or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored.

- Design the surface and storm water infrastructure to be within the footprint of the project area
- The water from the voids must be pumped out in order to facilitate and ensure safe and effective mining.
- The water from the voids must be contained in the PCDs because it is considered polluted. The water can therefore not be discharged into the nearest river, nor be used as potable or irrigation water. As a result, it can only be used on the dirty water areas of the mine, for dust suppression. The area has windy dry seasons and the mine will require dust suppression on site.
- The stockpiling of potentially acid-generating material (interburden material and ROM coal) is only a temporary measure. This material will be stockpiled on a compacted surface, with adequate surrounding drainage systems that will contain any polluted water arising off these stockpiles. This dirty water will be directed to the PCDs. There is no other option for the handling of this material other than stockpiling temporarily. The interburden material will be placed back into the progressively rehabilitated pits, and the ROM coal will be loaded and transported after it has been crushed.
- Separate clean from dirty water and allow discharge of water to designated areas.
- Vegetate disturbed areas to limit erosion
- Implement berms, trenches and storm water management measures in accordance with GN 704 Regulations
- Pollution Control Dams to be designed to cater for the required storage capacity
- Compacted soil areas in and around the periphery of the wetland will be ripped to break up compacted soil and vegetated with indigenous seed mix
- Comply with the National Air Quality Standards and Dust Control Regulations
- Comply with the SANS noise standard
- Avoid travelling past residences. Speed limit of 40km/h will be enforced. Liaise with landowner on areas sensitive to noise. Provide a buffer of 100m from households
- Prescribe to the DWS Catchment Water Quality Standards



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- Restrict traveling speed of vehicles to reduce vehicle entrainment of dust. Wet gravel roads if dust is found to be excessive.
- No-go areas to be identified. Environmental awareness training of all employees
- Preference to be given to the use of local employment, contractors and local suppliers.
- Implement measures to protect soils from pollution.
- Reduce the visual impacts of mining activities, i.e. rehabilitation
- Site selection aimed at minimising disturbance to sensitive animal habitats and breeding areas.
- Utilise existing access roads as far as possible.
- Access roads to follow slope contours where possible. Vegetation to be left in place at the sides of the road to protect the soils.

## 2.1 OTHER INFORMATION REQUIRED BY THE COMPETENT AUTHORITY

2.1.i Compliance with the provisions of sections 24(4)(a) and (b) read with section 24 (3) (a) and (7) of the National Environmental Management Act (Act 107 of 1998). the EIA report must include the:-

2.1.i.1 *Impact on the socio-economic conditions of any directly affected person. (Provide the results of Investigation, assessment, and evaluation of the impact of the mining, bulk sampling or alluvial diamond prospecting on any directly affected person including the landowner, lawful occupier, or, where applicable, potential beneficiaries of any land restitution claim, attach the investigation report as Appendix 2.19.1 and confirm that the applicable mitigation is reflected in 2.5.3; 2.11.6.and 2.12.herein).*

Section to be populated once the public participation process of the Draft EIA Phase commences.

2.1.i.2 *Impact on any national estate referred to in section 3(2) of the National Heritage Resources Act. (Provide the results of Investigation, assessment, and evaluation of the impact of the mining, bulk sampling or alluvial diamond prospecting on any national estate referred to in section 3(2) of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) with the exception of the national estate contemplated in section 3(2)(i)(vi) and (vii) of that Act, attach the investigation report as Appendix 2.19.2 and confirm that the applicable mitigation is reflected in 2.5.3; 2.11.6.and 2.12.herein).*

Section to be populated once the public participation process commences. Information to be uploaded on the SAHRIS website once received.

## 2.m OTHER MATTERS REQUIRED IN TERMS OF SECTIONS 24(4)(A) AND (B) OF THE ACT.

(the EAP managing the application must provide the competent authority with detailed, written proof of an investigation as required by section 24(4)(b)(i) of the Act and motivation if no reasonable or feasible alternatives, as contemplated in sub-regulation 22(2)(h), exist. The EAP must attach such motivation as Appendix 4).

The site location is limited to the Prospecting Right Area, which is constrained by the location of other mining houses and residential areas. The resource location and the presence of a watercourse on the site boundary further restrict the infrastructure layout. Therefore, no alternative sites were considered.

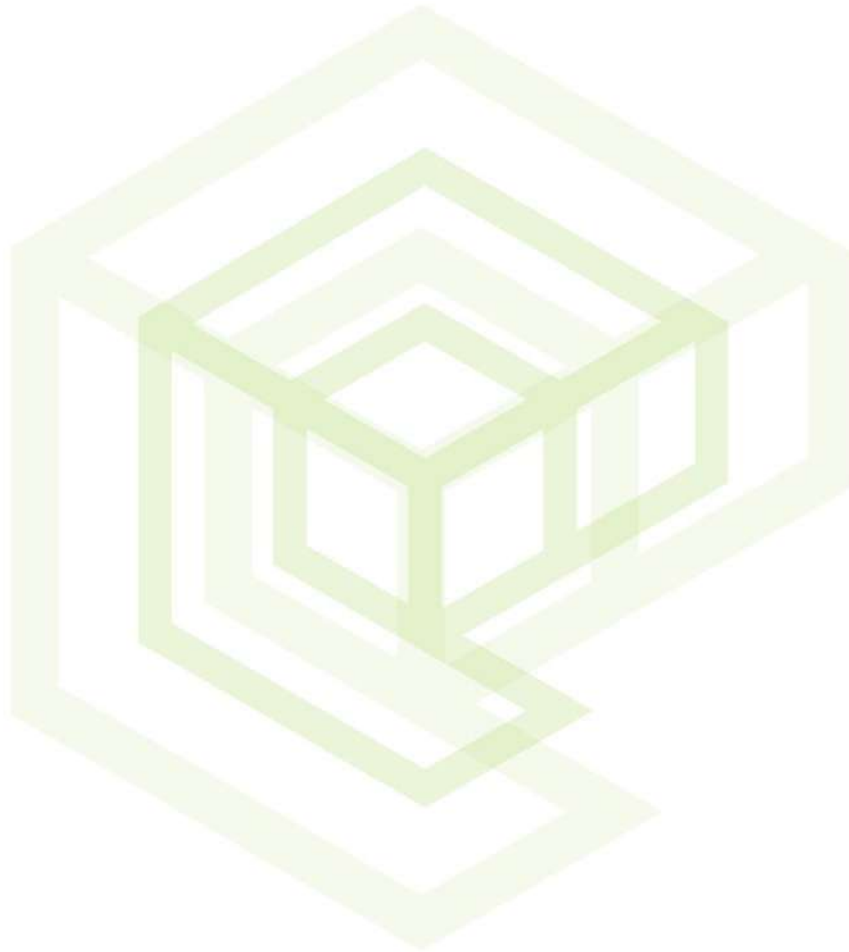


2.j UNDERTAKING REGARDING CORRECTNESS OF INFORMATION

I \_\_\_\_\_ herewith undertake that the information provided in the foregoing report is correct, and that the comments and inputs from stakeholders and Interested and Affected parties has been correctly recorded in the report.

\_\_\_\_\_  
Signature of the EAP

\_\_\_\_\_  
DATE



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2.k UNDERTAKING REGARDING LEVEL OF AGREEMENT

I \_\_\_\_\_ herewith undertake that the information provided in the foregoing report is correct, and that the level of agreement with interested and Affected Parties and stakeholders has been correctly recorded and reported herein.

\_\_\_\_\_  
Signature of the EAP

\_\_\_\_\_  
DATE:





## ANNEXURE 1: QUALIFICATIONS OF THE EAP





# University of Pretoria

The Council and Senate hereby declare that  
at a congregation of the University the degree

## Baccalaureus Scientiae Honores with specialization in Environmental Analysis and Management (with distinction)

with all the associated rights and privileges  
was conferred on

**HENNO ENGELBRECHT**

in terms of the Higher Education Act, 1997 and the Statute of the University

On behalf of the Council and Senate

Vice-Chancellor and Principal

On behalf of the Faculty of  
Natural and Agricultural Sciences

Dean

**EDWIN KRUGER**  
Commissioner of Oaths / Kommissaris van Ede  
Ex Officio  
Professional Accountant (S.A.)  
Professionele Rekenmeester (S.A.)  
SAIPA Membership number / SAIPA Lidnommer 20229  
208 Propshaft str, Samcorpark, Pretoria, 0184

Certified a true copy of the  
original

Gesertifiseer 'n ware afskif  
van die oorspronklike

Registrar



2009-04-17



# University of Pretoria

The Council and Senate hereby declare that  
at a congregation of the University the degree

## Master of Science in Project Management

with all the associated rights and privileges was conferred on

**Henno Engelbrecht**

in terms of the Higher Education Act, 1997 and the  
Statute of the University

On behalf of the Council and Senate

Vice-Chancellor and Principal

Registrar



**EDWIN KRUGER**  
Commissioner of Oaths / Kommissaris van Ede  
Ex Officio  
Professional Accountant (S.A.)  
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Gesertifiseer 'n ware afskrif  
van die oorspronklike

04/04/19  
E. Kruger

00025363



2016-04-19

## ANNEXURE 2: EAP CV





# HENNO ENGELBRECHT

2018

## ABOUT



With more than 10 years experience in the consulting arena, Henno is an open-minded, friendly and resourceful business and project manager with a sound and optimistic outlook on all things in life. He possesses an excellent ability to motivate others, coupled with the ability to communicate comfortably at all levels, therefore ensuring an excellent working environment for all members of the team enabling them to perform at their best. Henno is self-motivated, competent, enthusiastic, creative, adaptable and advocates a solution driven approach to any challenges to ensure an inspired shared vision.

## CAREER HISTORY



### Manager

Environmental Assurance (Pty) Ltd  
Pretoria  
2009 - 2013

### Role:

Environmental Analysis and Management  
Mine Closure and Liability Specialist

### Co-Founder & Director

Eco Elementum (Pty) Ltd  
Pretoria  
2013 - 2018

### Role:

Business, Project and Portfolio Management  
Senior Environmental Consultant  
Environmental Assessment Practitioner

## QUALIFICATIONS



### Senior Certificate Matric (Cum Laude)

Randburg Hoërskool  
2008

### BSc Geography (Cum Laude)

University of Pretoria  
2008

### BSc (Hons) Env Mgmt & Analysis (Cum Laude)

University of Pretoria  
2009

### MSc Project Management (Thesis Cum Laude)

University of Pretoria  
2016

## KEY ACHIEVEMENTS



### Awards

- 2008 – Academic Honorary Colours for BSc Geography (UP)
- 2008 – Lecturers Award for Geography (UP)
- 2009 – Academic Honorary Colours for BSc (Hons) Environmental Management and Analysis (UP)
- 2009 – Department of Geography, Geoinformatics and Meteorology Prize (UP)
- 2009 – South African Association of Geomorphologists Student Certificate of Excellence (Nationally)

### Academic Papers & Publications

- 2008 – Changes in the Matigulu/Nyoni Estuary: A Time Series Analysis (UP)
- 2017 – Escalation of commitment: evaluating project termination behaviour (Journal of Contemporary Management)

## REGISTRATIONS



### Professional Registrations

- Golden Key International Honour Society (In recognition of outstanding scholastic achievement and excellence)
- IAIAsa – International Association for Impact Assessment South Africa
- SACESHA – South African Collieries Environmental Safety Ventilation and Occupational Hygiene Association
- NACA – National Association for Clean Air

## EXPERIENCE



### ENVIRONMENTAL AUTHORISATIONS

DATE	CLIENT	DESCRIPTION
2012	Vunene Mining Usutu Colliery	S102 EMP Amendment and IWUL Application
2012	Makoya Blinkpan Siding	IWUL Application
2013	SA Brix and Mining	Air Emission License Renewal Application
2013	Rosema Bricks and Mining	Air Emission License Renewal Application
2013	Victoria Bricks and Mining	Air Emission License Renewal Application
2013	Sterkfontein Bricks and Mining	Air Emission License Renewal Application
2013	Wesbrix and Mining	Air Emission License Renewal Application
2013	Ocon Bricks and Mining	Air Emission License Renewal Application
2013	FRA Coal Mining	Prospecting Right Application
2013	Eyethu Coal Kebrafield Mining	NEMA EIA and IWUL
2014	Yctolux Investments	Weltevreden Mining Permit Application
2014	Eyethu Kebrafield Mining	Screening Assessment
2014	Yoctolux Investments	Aangewys Prospecting Right Application
2014	Yoctolux Investments	Driefontein Mining Permit Application
2014	Portnex International	Nkomati Anthracite Due Diligence Assessment
2015	Yoctolux Investments	Onspoed Prospecting Right Application
2015	Transnet	Koedoespoort Hazardous Landfill WML Public Participation Process
2015	Yoctolux Investments	Wildfontein Prospecting Right Application
2015	Portnex International	TATA Steel Richardsbay Due Diligence Assessment
2015	EcoGain	Independent External EAP Review of s24G Application
2016	Archaen Resources	Ricocure Prospecting Right Public Participation Process
2016	Archaen Resources	Venavax Prospecting Right Public Participation Process
2016	Portnex International	Zimasco Environmental Management Plan Report
2017	Portnex International	Highveld Steel Due Diligence Assessment
2017	Burgh Group Kebrafield Colliery	S102 EMP Amendment and IWUL Application
2017	Iningi Uitspan Colliery	IWUL Application
2017	Capricorn Municipality	Environmental Management Framework Development Support
2017	Vhembe Municipality	Environmental Management Framework Development Support
2018	Portnex Elmacast Foundry	NEMA BA and AEL Application
2018	Londani Coal	S102 EMP Amendment and IWUL Application
2018	Kleinfontein Mining Holdings	S102 EMP Amendment and IWUL Application
2018	Madini Mining Doornrug Colliery	IWUL Renewal Application



## EXPERIENCE



ENVIRONMENTAL MONITORING AND COMPLIANCE		
DATE	CLIENT	DESCRIPTION
2010-2013	Kilo Sand Mining	Environmental Monitoring and ECO Services
2010-2013	Ilanga Coal Mining	Environmental Monitoring and ECO Services
2010-2013	SACMH Umlabu Colliery	Environmental Monitoring and ECO Services
2010-2013	Vunene Mining Usutu Colliery	Environmental Monitoring and ECO Services
2010-2013	SA Brix and Mining	Environmental Monitoring and ECO Services
2010-2013	Rosema Bricks and Mining	Environmental Monitoring and ECO Services
2010-2013	Victoria Bricks and Mining	Environmental Monitoring and ECO Services
2010-2013	Sterkfontein Bricks and Mining	Environmental Monitoring and ECO Services
2010-2017	Wesbrix and Mining	Environmental Monitoring and ECO Services
2010-2013	Ocon Bricks and Mining	Environmental Monitoring and ECO Services
2010-2013	Group 5 Bernoberg Milling	Environmental Monitoring and ECO Services
2010-2013	Samancor Western Chrome	Environmental Monitoring
2012	Esor Construction Borrowpit	Environmental Monitoring and ECO Services
2010-2013	Sublime Technologies	Environmental Monitoring
2010-2013	SACMH Voorslag Siding	Environmental Monitoring and ECO Services
2010-2013	Makoya Blinkpan Siding	Environmental Monitoring and ECO Services
2012-2013	Ferret Mining	Environmental Monitoring
2013-2015	AEMFC Vlakfontein Colliery	Environmental Monitoring
2013-2016	Yoctolux Elandsfontein Colliery	Environmental Monitoring and ECO Services
2014-2016	Marico Mining	Environmental Monitoring and ECO Services
2014-2016	Metier Mixed Concrete	Environmental Monitoring
2014-2016	Valitrade Clewer Siding	Environmental Monitoring
ENVIRONMENTAL AUDITING		
DATE	CLIENT	DESCRIPTION
2010	Group 5 Intertoll	ISO14001 Environmental Audit
2010	Mkulu Coal Prospecting	EMP Performance Assessment
2010	Anker Coal Leliefontein Colliery	Environmental Legal Compliance Audit
2010	Anker Coal Elandsfontein Colliery	Environmental Legal Compliance Audit
2010-2013	Kilo Sand Mining	EMP Performance Assessment
2010-2013	Ilanga Coal Mining	EMP Performance Assessment
2010-2013	Umlabu Colliery	EMP Performance Assessment
2010-2013	Vunene Colliery	EMP Performance Assessment
2010-2013	SA Brix and Mining	EMP Performance Assessment
2010-2013	Rosema Bricks and Mining	EMP Performance Assessment
2010-2013	Victoria Bricks and Mining	EMP Performance Assessment
2010-2013	Sterkfontein Bricks and Mining	EMP Performance Assessment
2010-2013	Wesbrix and Mining	EMP Performance Assessment
2010-2013	Ocon Bricks and Mining	EMP Performance Assessment
2010-2013	Group 5 Bernoberg Milling	EMP Performance Assessment
2012	Amari Resources Prospecting	EMP Performance Assessment

## EXPERIENCE



MINE CLOSURE AND REHABILITATION		
DATE	CLIENT	DESCRIPTION
2010	Exxaro Grootegeluk	Financial Mine Closure Quantum Determination and Reporting
2010-2013	Samancor Western Chrome	Financial Mine Closure Quantum Determination and Reporting
	Group 5 Skysands	Financial Mine Closure Quantum Determination and Reporting
2010-2013	Kilo Sand Mining	Financial Mine Closure Quantum Determination and Reporting
2010-2013	Ilanga Coal Mining	Financial Mine Closure Quantum Determination and Reporting
2010-2013	SACMH Umlabu Colliery	Financial Mine Closure Quantum Determination and Reporting
2010-2013	Vunene Colliery	Financial Mine Closure Quantum Determination and Reporting
2010-2013	SA Brix and Mining	Financial Mine Closure Quantum Determination and Reporting
2010-2013	Rosema Bricks and Mining	Financial Mine Closure Quantum Determination and Reporting
2010-2013	Victoria Bricks and Mining	Financial Mine Closure Quantum Determination and Reporting
2010-2013	Sterkfontein Bricks and Mining	Financial Mine Closure Quantum Determination and Reporting
2010-2013	Wesbrix and Mining	Financial Mine Closure Quantum Determination and Reporting
2010-2013	Ocon Bricks and Mining	Financial Mine Closure Quantum Determination and Reporting
2012	Amari Manganese Shaft	Financial Mine Closure Quantum Determination and Reporting
2013	Shanduka MTC Collieries	Financial Mine Closure Quantum Determination and Reporting
2013-2018	AEMFC Vlakfontein Colliery	Financial Mine Closure Quantum Determination and Reporting
2013-2018	Vunene Mining Usutu Colliery	Wetland Rehabilitation Project Management
2013-2018	Yoctolux Elandsfontien Colliery	Financial Mine Closure Quantum Determination and Reporting
2013-2018	Madini Mining Doornrug Colliery	Financial Mine Closure Quantum Determination and Reporting
2013-2018	Penumbra Colliery	Financial Mine Closure Quantum Determination and Reporting
2014	SCIP Engineering	Wetland Rehabilitation Plan Project Management
2015	GeoPollution Technologies	Omnia Passive Treatment Wetland Design, Costing and Reporting
2016	Portnex International	Zimasco Smelters Remediation Assessment, Costing and Reporting
2016	Ukufisa Lefa Colliery	Financial Mine Closure Quantum Determination and Reporting
2016-2018	Shanduka Lakeside Colliery	Financial Mine Closure Quantum Determination and Reporting
2016-2018	Shanduka Leeuwfontein Colliery	Financial Mine Closure Quantum Determination and Reporting
2016-2018	Shanduka Bankfontein Colliery	Financial Mine Closure Quantum Determination and Reporting
2016	REC Services	Bonaero Filling Station Closure Quantum Calculation
2017	Portnex International	Highveld Steel Remediation Assessment, Costing and Reporting
2017	Yoctolux Elandsfontein Colliery	Wetland Rehabilitation and Mine Closure Planning
2018	Londani Coal	Financial Mine Closure Quantum Determination and Reporting
2018	Londani Coal	Wetland Rehabilitation and Mine Closure Planning





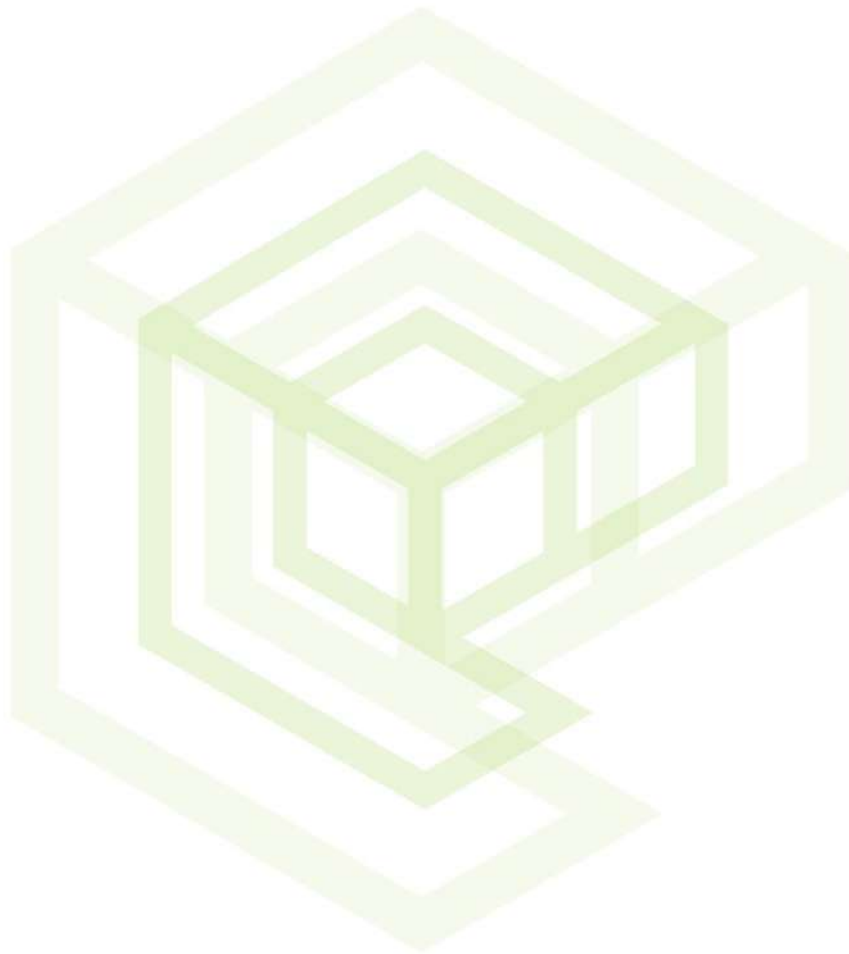
## EXPERIENCE



SPECIALIST ENVIRONMENTAL PROJECTS		
DATE	CLIENT	DESCRIPTION
2010	Hernic Ferrochrome	Tailing Storage Facility Visual Impact Assessment Report
2010	Hernic Ferrochrome	Tailing Storage Facility Baseline Air Quality Assessment Report
2010	Exxaro Grootegeluk	Expansion Project Baseline Air Quality Assessment Report
2010	Group 5 Bernoberg Milling	Baseline Air Quality Assessment Report
2010	Zeis Optromics	Baseline Air Quality Assessment Report
2010	Clay Brick Association	Baseline Air Quality Assessment to establish Clay Brick Emissions
2011	Sud Chemie	Soil Contamination Assessment
2012	Ferret Mining	Baseline Air Quality Assessment Report
2012	Cell C Midrand	Spill Assessment Report
2012	GHT Eskom	Air Quality Complaint Assessment and Report
2012	Amari Manganese	Baseline Air and Noise Assessment Report
2012	Makoya Inland Coal Terminal	Baseline Air and Noise Assessment Report
2012	Group 5 Everite	Dump Closure Air and Noise Assessment Report
2012	Samancor ECM Middelburg	Kloof Slag Dump Soil Contamination Assessment
2012	PS Invest Meepo Sandmine	Baseline Air and Noise Assessment Report
2013	Yoctolux Elandsfontein Colliery	Baseline Air and Noise Assessment Report
2014	Eyethu Coal Kebrafield Colliery	Baseline Air and Noise Assessment Report
2014	Metier Mixed Concrete	Air Quality Complaint Assessment and Report
2014	Rietspruit Crushers	Baseline Air Quality Assessment Report
2014	Setso Foods	Water Contamination Assessment Report
2015	Marico Mining	Waste Classification Report
2015	Grassvally Chrome	Baseline Air Quality Assessment Report
2015	Moeijelik Chrome	Baseline Air Quality Assessment Report
2015	Portnex International	TATA Steel Richardsbay Contamination Assessment Report
2015	Grassvally Chrome	Asbestos Air Quality Assessment Report
2016	Heineken	Baseline Air Quality Assessment Report
2016	Heineken	Oudour Impact Assessment Report
2016	Portnex International	Zimasco Smelters Contamination Assessment Report
2016	Samancor WCM	Environmental Ambient Noise Assessment Report
2016	Jomela Consulting	Universal Coal Makhado Baseline Air Quality Assessment Report
2016	Moloi Granite	Baseline Air and Noise Assessment Report
2017	Afrimat	Witbank Ash Dump Baseline Air and Noise Assessment Report
2017	Ergosat	Baseline Air Quality Assessment Report
2017	Flori Scientific Services	Mozambique Powerline Visual Impact Assessment Report
2017	Archean Resources	Welkom Gold Baseline Air and Noise Assessment Report
2017	Afrimat	Freyersdale Baseline Air and Noise Assessment Report
2017	Black Chrome	Air Quality Impact Assessment Report
2018	Kleinfontein Mining Holdings	Air Quality Impact Assessment Report



## ANNEXURE 3: LOCALITY MAPS



**Project Name:** Wildebeestfontein Colliery

**Client Name:** Opsirex (Pty) Ltd

**Project #:** 19-724-AUTH

**Map:** Locality

**Rev #:** 1

**Data Sources:**

Surveyor General of South Africa (Jan 2018)

South Africa Protected Area Database (Dec 2017)













South Africa Conservation Areas Database (Sept 2017)

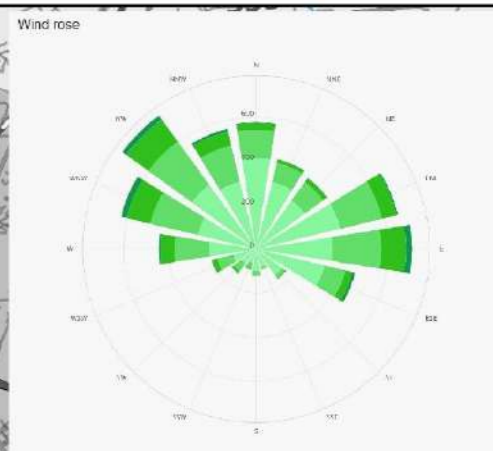
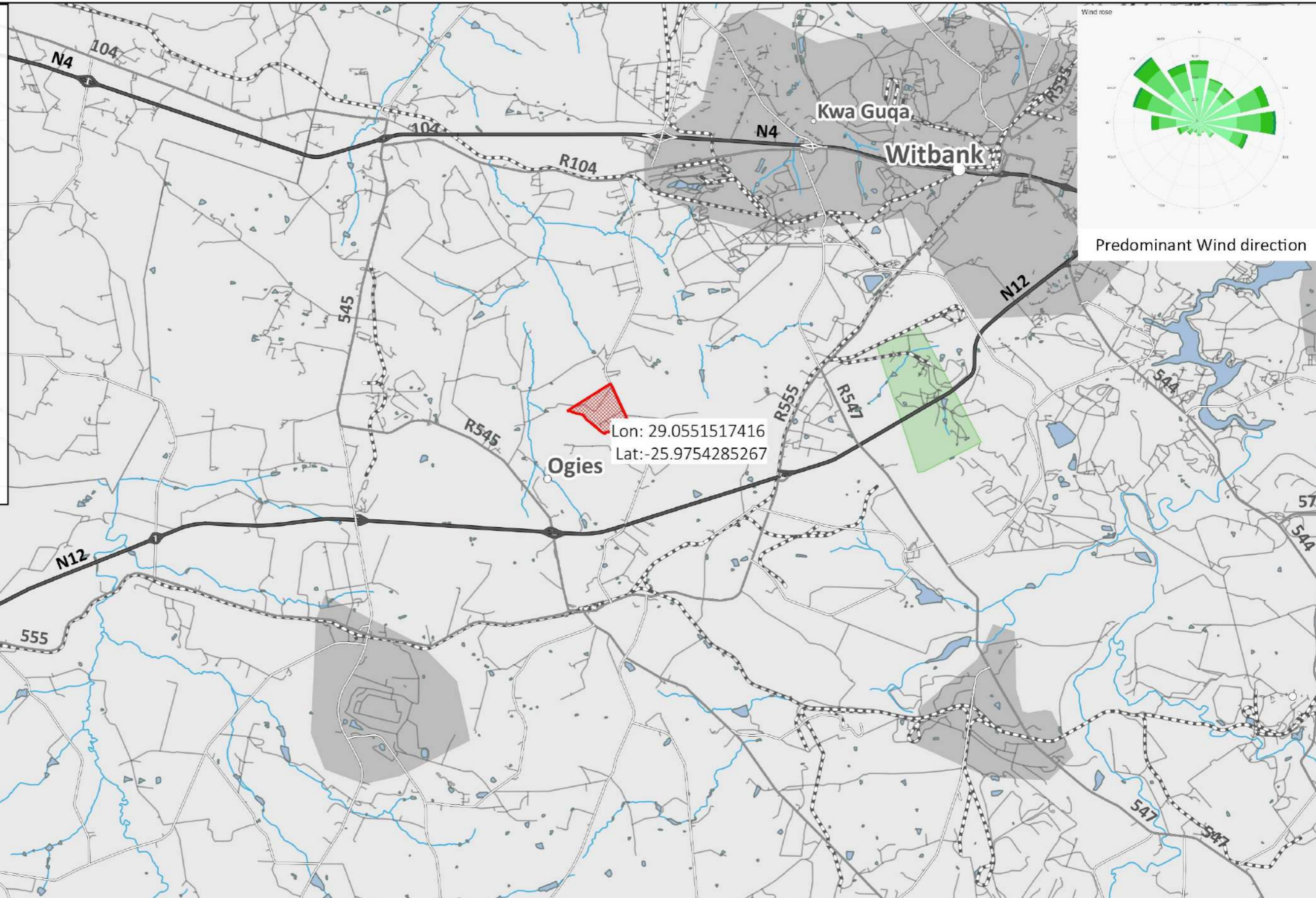


0 4 8 12 16 20 km



**Legend**

-  Site Boundary
-  Protected Areas
-  Conservation Areas
- Transport**
-  National Road
-  Arterial Road
-  Main Road
-  Secondary Road
-  Other Access Road
-  Railway
- Inland Water**
-  Dam
-  Non-Perennial River
-  Perennial River



Predominant Wind direction

## ANNEXURE 4: SITE LAYOUT AND INFRASTRUCTURE



**Project Name:** Wildebeestfontein Colliery

**Client Name:** Opsirex (Pty) Ltd

**Project #:** 19-724-AUTH

**Map:** NFEPA

**Rev #:** 1

**Data Sources:**

Surveyor General of South Africa (Jan 2018)

South Africa Protected Area Database (Dec 2017)

South Africa Conservation Areas Database (Sept 2017)

SANBI NFEPA Project (2011)



0 0.8 1.6 2.4 3.2 4 km



**Legend**

Site Boundary Outline

Protected Areas

Conservation Areas

**Transport**

National Road

Arterial Road

Main Road

Secondary Road

Other Access Road

Railway

**Inland Water**

Dam

Non-Perennial River

Perennial River

NFEPA Rivers

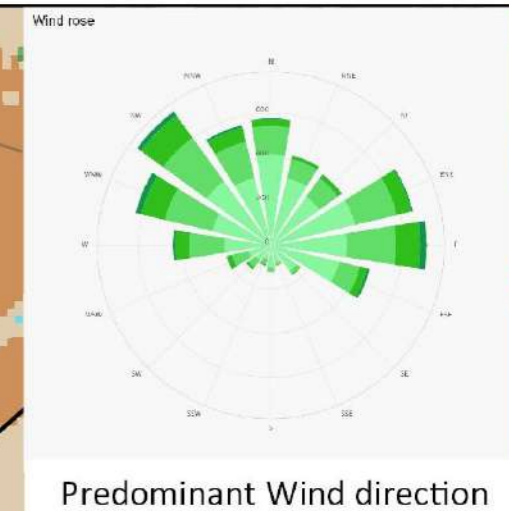
NFEPA Wetlands





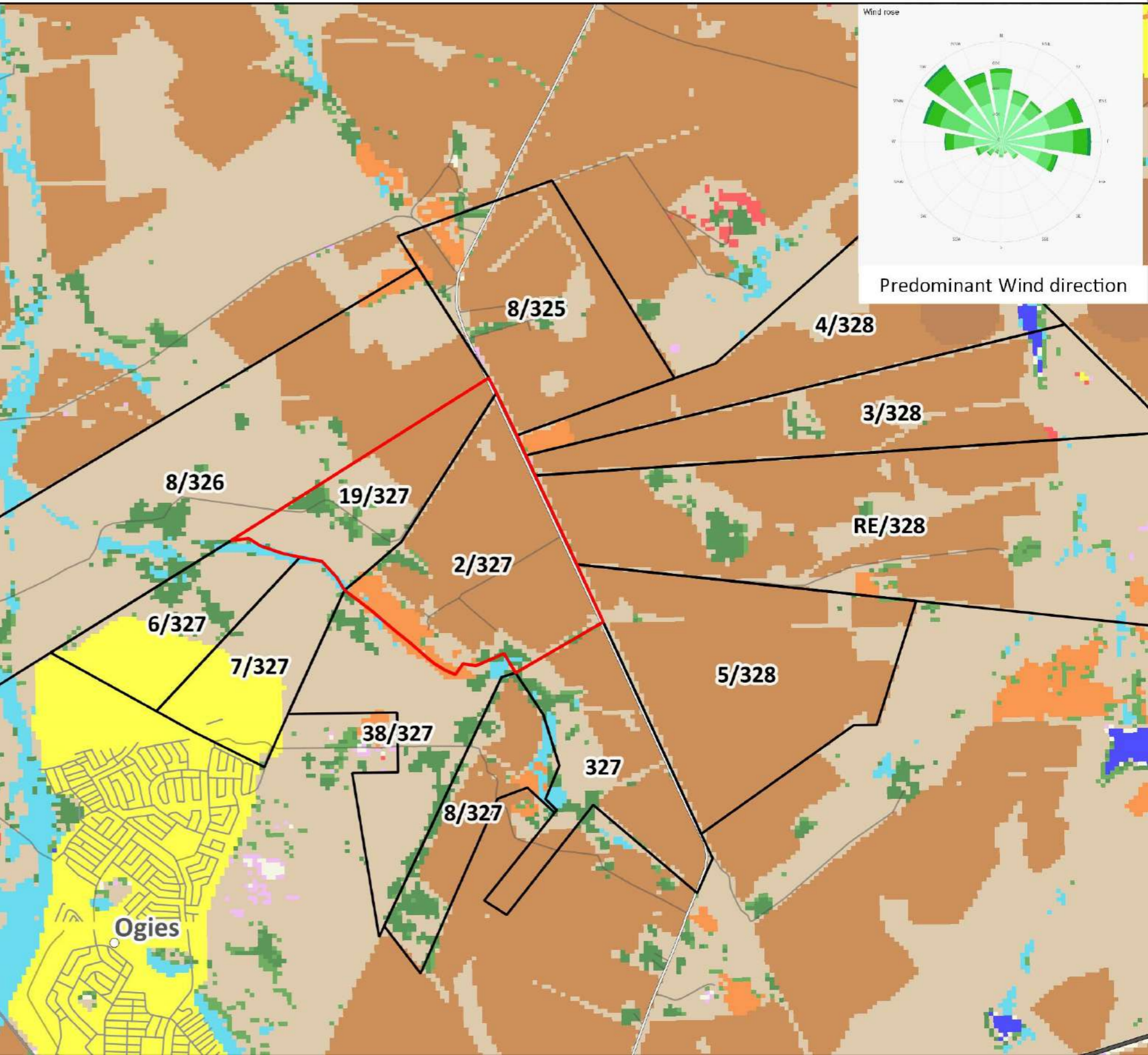
**Legend**

Site Boundary Outline	<b>Transport</b>
Boundary Farm Portions	National Road
	Arterial Road
	Main Road
	Secondary Road
	Other Access Road
	Railway



**Landcover**

Indigenous Forest	Fynbos - Bare Ground
Thicket / Dense Bush	Nama Karoo - Forest
Woodland / Open Bush	Nama Karoo - Thicket
Low Shrubland	Nama Karoo - Open Bush
Plantations / Woodlots	Nama Karoo - Low Shrub
Cultivated Commercial Crop Non-Pivot	Nama Karoo - Grassland
Cultivated Commercial Crop Pivot	Nama Karoo - Bare Ground
Cultivated Commercial Orchards	Succulent Karoo - Forest
Cultivated Commercial Vines	Succulent Karoo - Thicket
Cultivated Subsistence Crops	Succulent Karoo - Open Bush
Settlements	Succulent Karoo - Low Shrub
Wetlands	Succulent Karoo - Grassland
Grasslands	Succulent Karoo - Bare Ground
Fynbos - Forest	Mines
Fynbos - Thicket	Waterbodies
Fynbos - Open Bush	Bare Ground
Fynbos - Low Shrub	Degraded
Fynbos - Grassland	



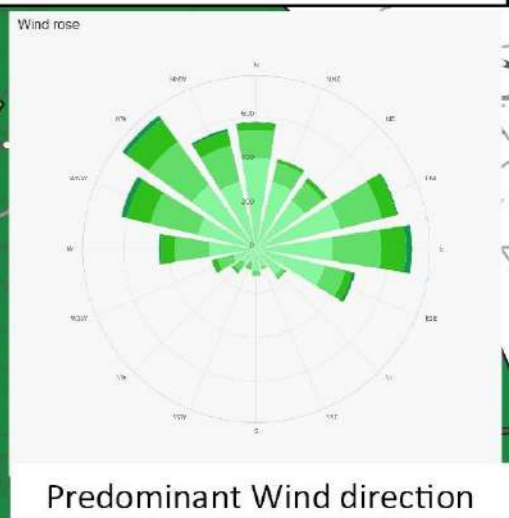
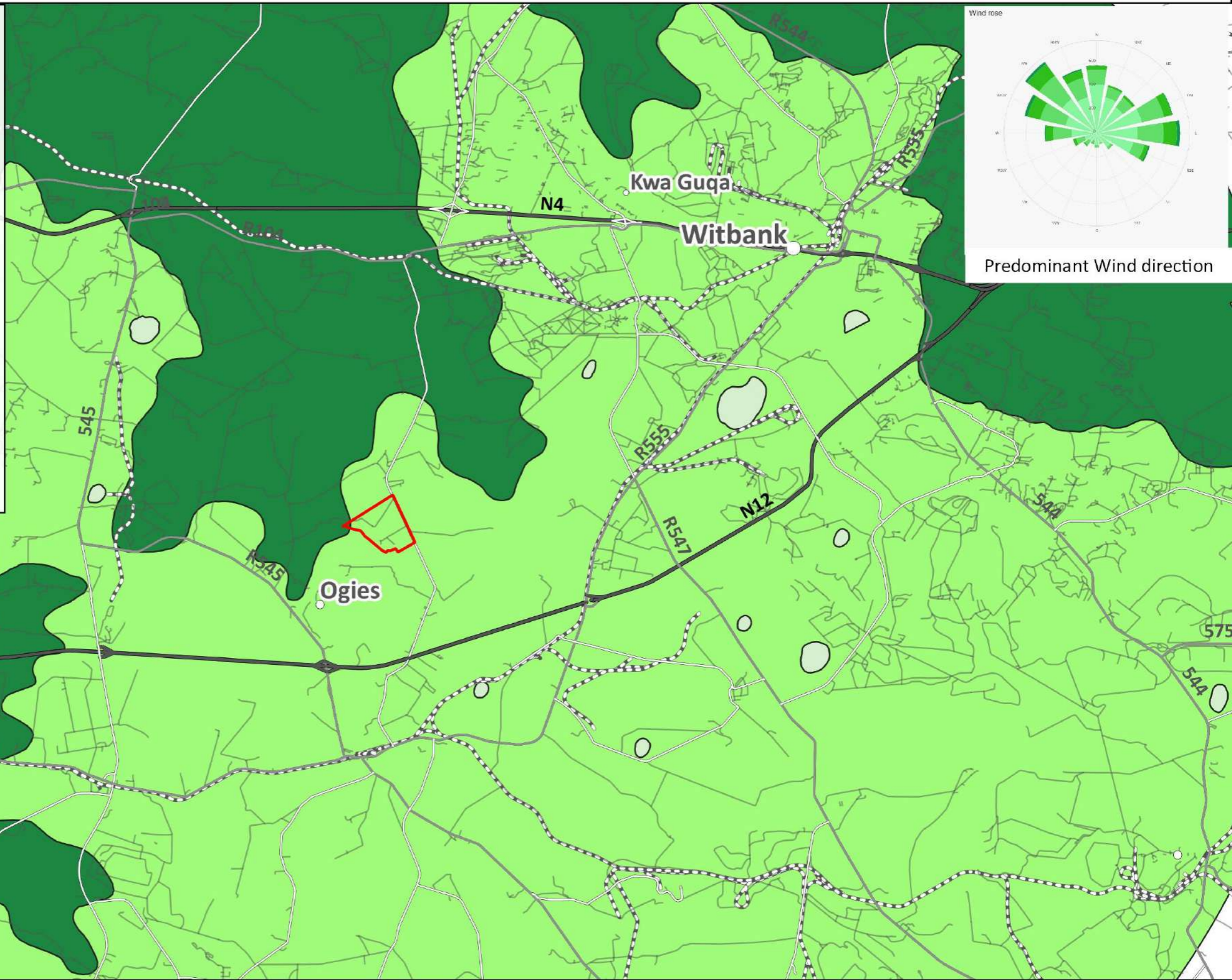
**Data Sources:**

Surveyor General of South Africa (Jan 2018)  
 SANBI Vegetation Biomes (2006)



### Legend

- Site Boundary Outline
- Transport**
- National Road
- Arterial Road
- Main Road
- Secondary Road
- Other Access Road
- Vegetation Types**
- Eastern Highveld Grassland
- Eastern Temperate Freshwater Wetlands
- Gold Reef Mountain Bushveld
- Loskop Mountain Bushveld
- Rand Highveld Grassland



**Data Sources:**

Surveyor General of South Africa (Jan 2018)  
 South Africa Protected Area Database (Dec 2017)  
 South Africa Conservation Areas Database (Sept 2017)  
 SANBI MBSP-Mpumalanga (?)

0 1 2 3 4 5 km



**Legend**

- Site Boundary Outline
- Transport**
- National Road
- Arterial Road
- Main Road
- Secondary Road
- Other Access Road
- Railway
- MBSP**
- CBA Irreplaceable
- CBA Optimal
- ESA Landscape corridor
- ESA Local corridor
- ESA Protected Area buffer
- ESA Species Specific
- Heavily modified
- Moderately modified- Old lands
- Other Natural Areas
- PA National Parks & Nature Reserves
- PA Protected Environment: Modified
- PA Protected Environment: Natural

