ENVIRONMENTAL & ENGINEERING

ESTATE LATE PHILIPPUS CHRISTOFFEL JOHANNES DE JAGER - VAN OUDSHOORNSTROOM COLLIERY

REPORT

DMR Reference Number: MP30/5/1/2/2/10244MR

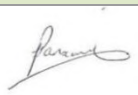
INTEGRATED ENVIRONMENTAL AUTHORISATIONS – DRAFT SCOPING REPORT

REPORT REF: 19-790 AUTH DRAFT SCOPING REPORT

(VAN OUDSHOORNSTROOM COLLIERY EA)

VERSION AA

Document and Quality Control:

Document No:	19-790-AUTH- (Van Oudshoornstroom Colliery EA)			
AA – draft	29/07/2019	Riana Panaino		First draft for review / comments
BB – draft	30/07/2019	Henno Engelbrecht		Technical Review
CC– draft	30/07/2019	Leoni le Roux		Quality review
Approved for Distribution:				
0.0		Henno Engelbrecht		Final report

Quality Control BY:

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Client			

DISCLAIMER:

DECLARATION OF INDEPENDENCE/

I, Riana Panaino, 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:
    - any decision to be taken with respect to the application by the competent authority; and
    - 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.

30/07/2019

_____ _____

Signature **Date**

Mrs. Riana Panaino
BSc Hons Biodiversity and Conservation
IAIA Member
Pr.Sci.Nat

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: Estate late Philippus Christoffel Johannes de Jager

TEL NO: (012) 644 2661

FAX NO:

POSTAL ADDRESS:

PHYSICAL ADDRESS: Merlot Estate No 2
Cnr Wilson & Collin Str
Ermelo
2350

FILE REFERENCE NUMBER SAMRAD: MP 30/5/1/2/2/10244 MR

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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SCOPING REPORT

1. CONTACT PERSON AND CORRESPONDENCE ADDRESS

1.1 DETAILS OF:

1.1.1 The EAP who prepared the report

Table 1: Contact details of EAP

Name of the practitioner	Riana Panaino
Tel Number	012 807 0383
Fax Number	086 714 5397
Email Address	Riana@ecoe.co.za

1.1.2 Expertise of the EAP

1.1.2.1 The qualification of the EAP

The EAP has an Honours degrees in Biodiversity and Conservation, is SACNASP Registered, and has more than 10 years' experience in Environmental Consulting.

Refer to Annexure 2 for a CV of the EAP.

1.1.2.2 Summary of the EAP's past experience

Refer to Annexure 2 for a CV of the EAP.

1.2 DESCRIPTION OF THE PROPERTY

Table 2: Description of Property

Farm Name:	Van Oudshoornstroom 261IT: • Portion 34 (16.5420 ha); • Portion 52 (17.1413 ha); • Portion 53 (62.8291 ha); • Portion 78 (69.3575 ha); and • Remaining Extent of Portion 61 (32.2478 ha)		
Application area (Ha)	165.8699 Ha.		
Magisterial district:	Msukaligwa Local Municipality (MP302), located in the Gert Sibande District Municipality (DC30) of Mpumalanga Province.		
Distance and direction from nearest town	Approximately (~) 1 kilometres (km) southeast of the town of Ermelo.		
21 digit Surveyor General Code for each farm portion	Van Oudshoornstroom 261IT	ptn 34	T0IT00000000026100034
	Van Oudshoornstroom 261IT	ptn 52	T0IT00000000026100052
	Van Oudshoornstroom 261IT	ptn 53	T0IT00000000026100053
	Van Oudshoornstroom 261IT	RE of 61	T0IT00000000026100061
	Van Oudshoornstroom 261IT	ptn 78	T0IT00000000026100078

1.3 LOCALITY MAP

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

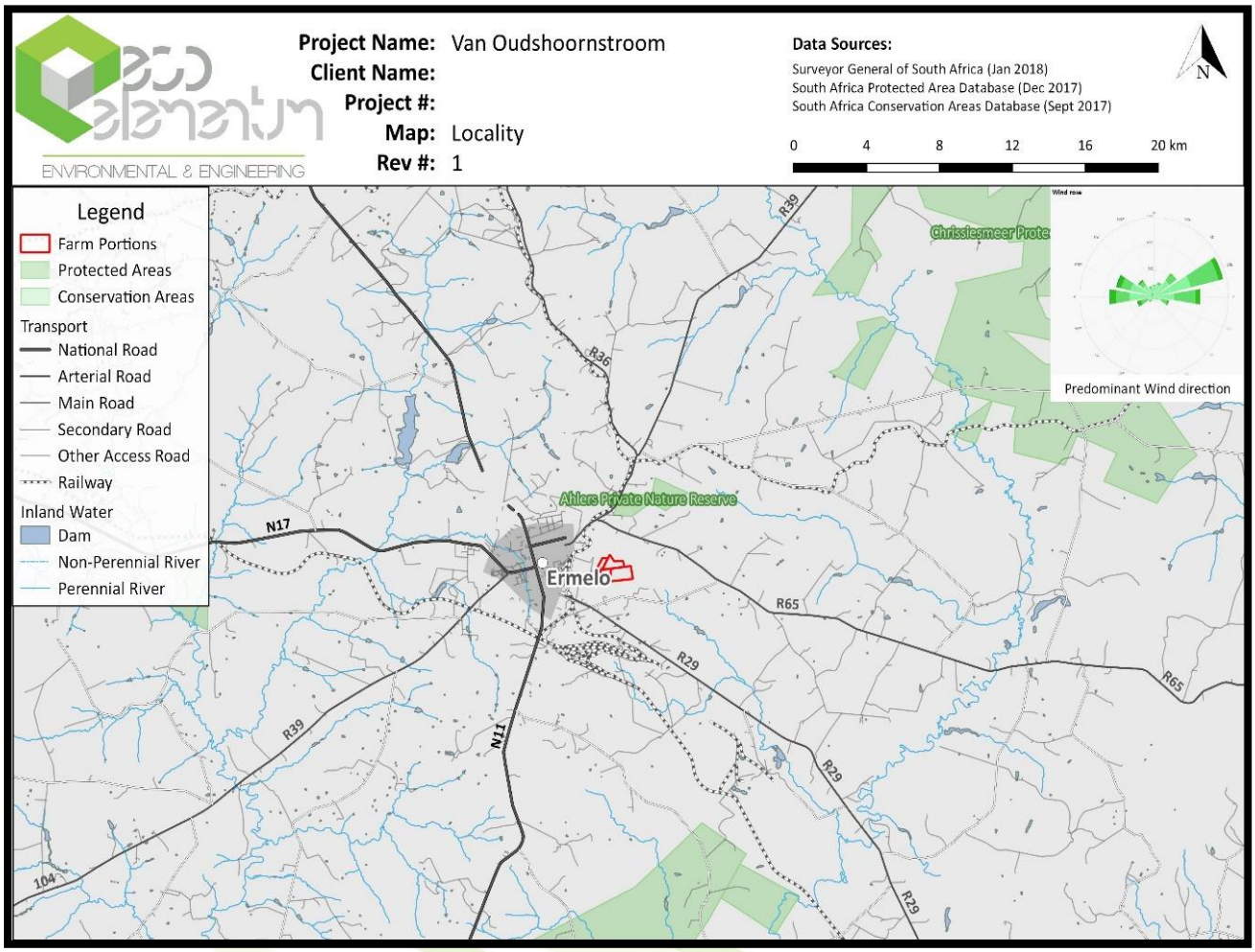


Figure 1: Van Oudshoornstroom Colliery Locality

1.4 DESCRIPTION OF THE SCOPE OF THE PROPOSED OVERALL ACTIVITY.

1.4.1 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.

Table 3: Listed and specified activities

APPLICABLE LISTING NOTICE (GNR 983, GNR 984 or GNR 985; as amended)		NAME OF ACTIVITY	AERIAL EXTENT OF ACTIVITY	WASTE MANAGEMENT AUTHORISATION
Listing Notice 1 (GNR 983)				
9	The development of infrastructure exceeding 1 000 metres in length for the bulk transportation of water or storm water- (i) with an internal diameter of 0,36 metres or more; or (ii) with a peak throughput of 120 litres per second or more; excluding where- (a) such infrastructure is for bulk transportation of water or storm water or storm water drainage inside a road reserve or railway line reserve; or (b) where such development will occur within an urban area.	Storm water management infrastructure for the separation of clean and dirty water.	9.25 ha	
10	The development and related operation of infrastructure exceeding 1 000 metres in length for the bulk transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes- (i) with an internal diameter of 0,36 metres or more; or (ii) with a peak throughput of 120 litres per second or more; excluding where- (a) such infrastructure is for the bulk transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes inside a road reserve or railway line reserve; or (b) where such development will occur within an urban area.	Dirty water channels and return water pipelines on site and at the plant area.	9.25 ha	
12	The development of- (i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; or (ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs- (a) within a watercourse;	Offices, Workshops, change house, Ablution facilities, Plant area.	1 160 m^2	

APPLICABLE LISTING NOTICE (GNR 983, GNR 984 or GNR 985; as amended)		NAME OF ACTIVITY	AERIAL EXTENT OF ACTIVITY	WASTE MANAGEMENT AUTHORISATION
	(b) in front of a development setback; or (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse;- excluding- (aa) the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour; (bb) where such development activities are related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies; (cc) activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies; (dd) where such development occurs within an urban area; (ee) where such development occurs within existing roads, road reserves or railway line reserves; or (ff) the development of temporary infrastructure or structures where such infrastructure or structures will be removed within 6 weeks of the commencement of development and where indigenous vegetation will not be cleared.			
13	The development of facilities or infrastructure for the off-stream storage of water, including dams and reservoirs, with a combined capacity of 50 000 cubic metres or more, unless such storage falls within the ambit of activity 16 in Listing Notice 2 of 2014.	Potable water containers for offices, change house and ablution facilities.		
14	The development and related operation of facilities or infrastructure, for the storage, or for the storage and handling, of a dangerous good, where such storage occurs in containers with a combined capacity of 80 cubic metres or more but not exceeding 500 cubic metres.	Diesel Storage on Site.		
19	The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse; but excluding where such infilling, depositing, dredging, excavation, removal or moving- (a) will occur behind a development setback; (b) is for maintenance purposes undertaken in accordance with a maintenance management plan; (c) falls within the ambit of activity 21 in this Notice, in which case that activity applies; (d) occurs within existing ports or harbours that will not increase the development footprint of the port or harbour; or (e) where such development is related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies.	Site clearance for construction purposes, boxcut excavation.	38.5 ha	
24	The development of a road- (i) for which an environmental authorisation was obtained for the route determination in terms of activity 5 in Government Notice 387 of 2006 or activity 18 in Government Notice 545 of 2010; or (ii) with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres; but excluding a road- (a) which is identified and included in activity 27 in Listing Notice 2 of 2014; (b) where the entire road falls within an urban area; or (c) which is 1 kilometre or shorter.	Haul Roads for coal transport on site.	6 000 m^2	

APPLICABLE LISTING NOTICE (GNR 983, GNR 984 or GNR 985; as amended)		NAME OF ACTIVITY	AERIAL EXTENT OF ACTIVITY	WASTE MANAGEMENT AUTHORISATION
Listing Notice 2 (GNR 984)				
4	The development and related operation of facilities or infrastructure, for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of more than 500 cubic metres.	Diesel Storage on Site.		
6	The development of facilities or infrastructure for any process or activity which requires a permit or licence or an amended permit or licence in terms of national or provincial legislation governing the generation or release of emissions, pollution or effluent, excluding- (i) activities which are identified and included in Listing Notice 1 of 2014; (ii) activities which are included in the list of waste management activities published in terms of section 19 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) in which case the National Environmental Management: Waste Act, 2008 applies; (iii) the development of facilities or infrastructure for the treatment of effluent, polluted water, wastewater or sewage where such facilities have a daily throughput capacity of 2 000 cubic metres or less; or (iv) where the development is directly related to aquaculture facilities or infrastructure where the wastewater discharge capacity will not exceed 50 cubic metres per day.	Stockpiles and Pollution Control Dams will trigger Section 21 (g) application	9.25 ha	1160
15	The clearance of an area of 20 hectares or more of indigenous vegetation, excluding where such clearance of indigenous vegetation is required for- (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan.	Site clearance for construction purposes.	38.5 ha	
17	Any activity including the operation of that activity which requires a mining right as contemplated in section 22 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), including- (a) associated infrastructure, structures and earthworks, directly related to the extraction of a mineral resource; or (b) the primary processing of a mineral resource including winning, extraction, classifying, concentrating, crushing, screening or washing; but excluding the secondary processing of a mineral resource, including the smelting, beneficiation, reduction, refining, calcining or gasification of the mineral resource in which case activity 6 in this Notice applies.	A Mining Permit for the Mining of coal will be applied for.	3.6 ha	
19	The removal and disposal of minerals contemplated in terms of section 20 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), including- (a) associated infrastructure, structures and earthworks, directly related to prospecting of a mineral resource; or (b) the primary processing of a mineral resource including winning, extraction, classifying, concentrating, crushing, screening or washing; but excluding the secondary processing of a mineral resource, including the smelting, beneficiation, reduction, refining, calcining or gasification of the mineral resource in which case activity 6 in this Notice applies.	The opencast and underground mining of coal.	3.6 ha	Category B: Activity 10, 11

1.4.2 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

1.4.2.1 Open Cast Mining

The boxcut (50 meters in width) will be established during the construction phase. Topsoil and overburden from the boxcut will be stockpiled separately at the extremities of the pit for final rehabilitation.

Once the boxcut has been established the normal strip mining roll-over methodology will be applied to the mining operation whereby topsoil is stripped two strips in advance of the current working strip and is either stockpiled or placed directly on the rehabilitated area behind the advancing strip, thereafter subsoil is removed.

The overburden is drilled and blasted and approximately 40% is dozed into the void behind the current strip, after which the balance of overburden is loaded and hauled to the rehabilitation side and back tipped. This sequence continues to the end of the pit. Once reaching the limit of the pit the overburden which has been stockpiled is dozed in to fill the final void and the stockpiled topsoil is then placed onto the levelled area.

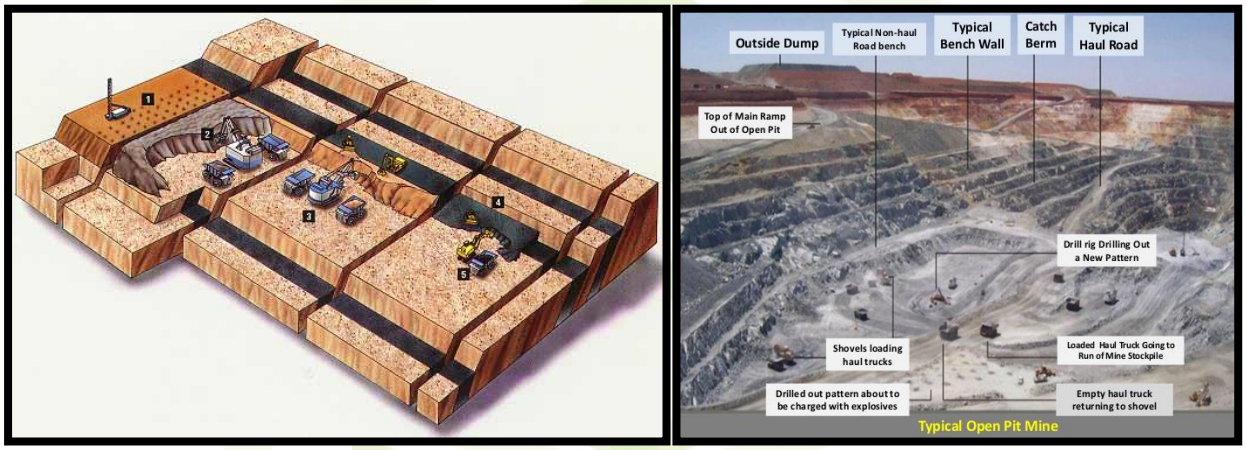


Figure 2: Typical Opencast Concurrent Roll Over Rehabilitation Mining Technique

1.4.2.2 Underground Mining

The conservative mining option for the Van Oudshoornstroom Project will be underground mining, producing ROM thermal coal from conventional board and pillar mining with continuous miners and shuttle cars.

The mining scenario is driven by:

- The planned monthly and annual production;
- The positions of the access shafts;
- The shape of the mining blocks;
- The depth, thickness, and distribution of the coal seam;
- The geological structure of the coal seam;
- Known geological features; and
- The position of the access shaft in relation to the C-Upper Coal Seam.

The mine design criteria for board and pillar continuous miner mining included the following:

- A minimum safety factor of 2.0 for all primary development sections.
- A minimum SF of 2.0 for all secondary panels.
- Where panels have to mine through geologically disturbed areas such as dykes and faults or undermine any surface infrastructure such as roads and watercourses, the number of roadways as well as the board widths will be reduced to suite the conditions. A limited number of roadways will be mined through dyke, or fault zones limiting the required stonework.

- All panels that will undermine surface structures or obstacles will be mined at a SF of 2.2 using the Salamon and Munro and Squat Formulae, further described in the geotechnical design section.
- Minimum entries into all secondary panels to ensure sufficient ventilation and immediate and effective sealing-off of the panels upon withdrawal. This is based on three entries allowing for a conveyor, a travelling road, which also serves as the intake airway and a return airway.
- When a section is mined-out and the equipment removed, the panel will be sealed with explosion-proof stoppings. The seals will be built in the barrier pillar entries.
- Maximum board width of 6.5 m and maximum mining height of 3 m.
- Minimum mining height of 1.6 m for C-Upper Seam.
- Up-dip mining wherever possible.
- Barrier pillars between panels of at least the same width as the pillars developed in the respective adjacent panels.
- A dedicated stone development section to ensure that the production sections are not constrained with stonework when having to develop through fault or dyke zones.
- No surface subsidence based on adequate pillar design strength.
- Adequate flooding protection.
- Minimum impact on the environment.
- Apart from the probable ground water drainage into the underground workings, the impact on the environment must be minimised.

The coal produced will be conveyed out of the mine on the shaft conveyor. The following aspects were taken into consideration as general design criteria for the mining design with the panel layouts as well as mining and production scheduling:

- Position of the access shaft;
- Production requirements;
- Gradient of the coal floor;
- Seam thickness;
- Roof conditions;
- Floor conditions;
- Depth to the coal seam roof;
- Incidence and direction of dykes;
- Incidence, size and direction of faults;
- Surface structures;
- Raw coal quality; and
- Product yield and the need for blending ROM coal from different areas.

Figure 3 indicates the mining layout for the C-Upper Seam based on the indicated design criteria.

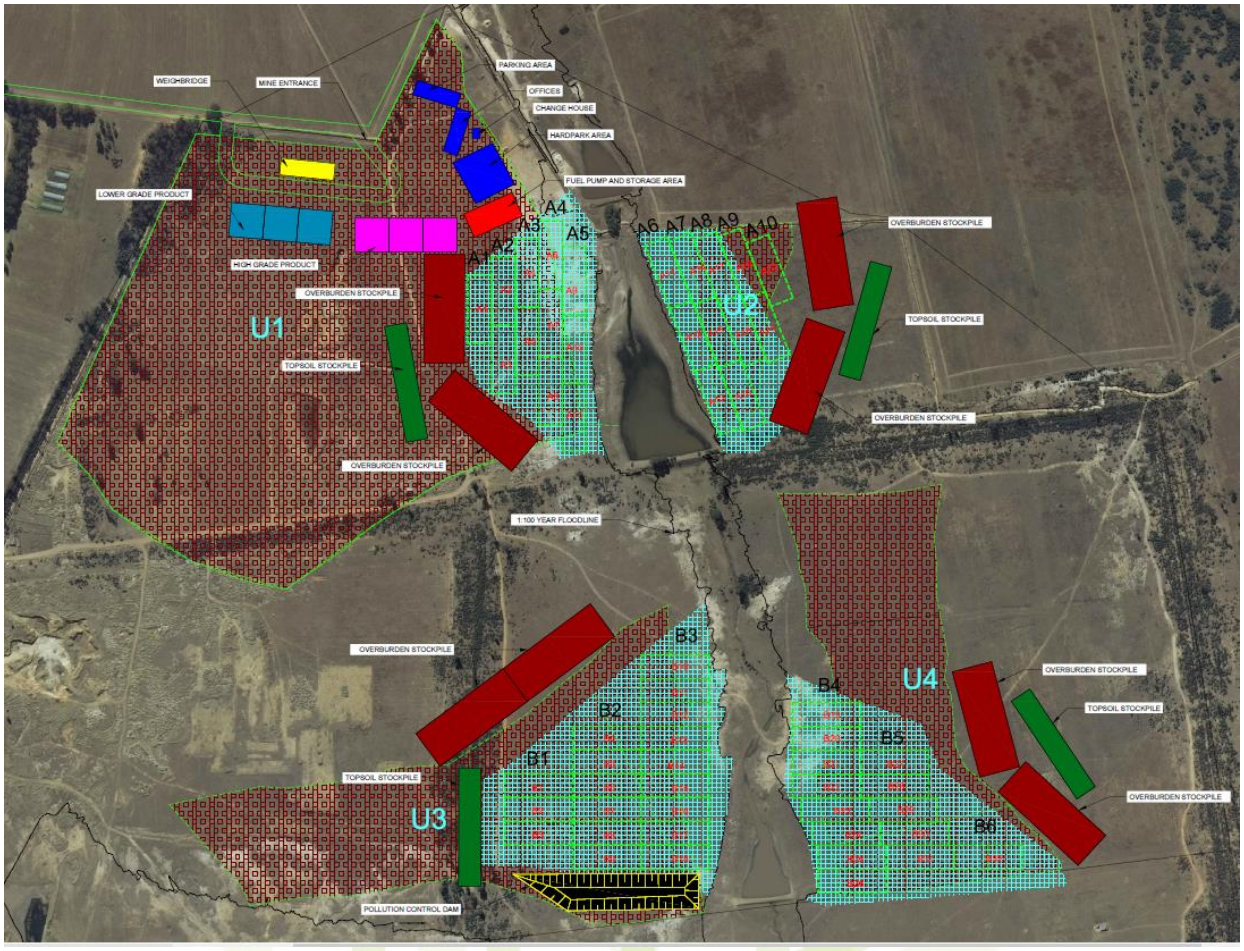


Figure 3: Planned Opencast Cuts in relation to mineable underground panels

1.4.2.3 Run Of Mine Coal and Coal Beneficiation

The ROM coal will be processed by screening and crushing only to a – 50 mm top size suitable for supply to Eskom. However, the same processing plant described in this section can be used to supply other customers or to feed a washing plant if the sales of export products become economically feasible.

The ROM coal stockpile ahead of the planned screening and crushing plant consists of the surface surge stockpile, which has a capacity of ~ 3,000 tonnes. This capacity is equivalent to six hours of plant average feed or four hours of peak rate feed. Under normal circumstances, the stockpile capacity should ensure an uninterrupted supply to the plant. Major maintenance work on the crushing plant that would require more than seven hours would be planned over weekends.

The plant is designed to operate on two ten-hour shifts per day; 22 days per month, with its own dedicated operating team. The plant shifts must be offset from the underground production shifts to allow for later shift start- and shift end times, which will allow for the clearing of all coal from the conveyor system on completion of the underground production shifts. This will not only allow all coal to be cleared from the system, but also ensure that underground belt maintenance can be performed during the night shift, as required.

The product coal will be conveyed to the stockyard by overland conveyor where a 10,000 tonne stockpile will be created. The coal will be loaded onto road trucks from this stockpile and weighed on a road weighbridge.

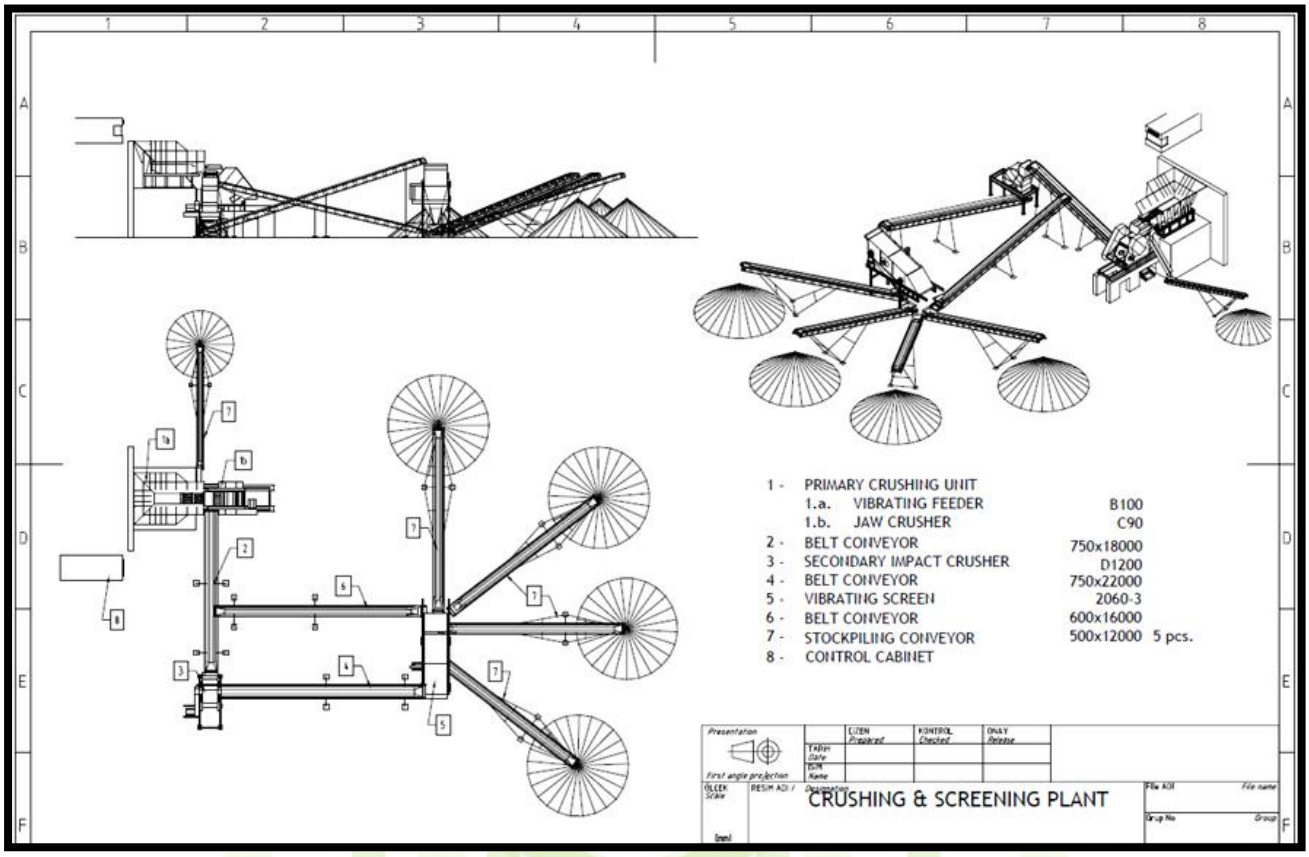


Figure 4: Typical crushing and screening plant layout design

1.4.2.4 Other Mine Infrastructure

Access Roads

An existing gravel road joining the Van Oudshoorn farm and the N12 regional highway passes on the northern side of the proposed mining area. A new access road joining this road with the proposed mining operation needs to be constructed.

Security and Access Control

A permanent security house and boom gates will be constructed at the mine entrance.

Ablution and Change-House Facilities

An area has been identified between the security and contractors camp area for ablution facilities.

Contractors Yard

The contractors' camp area constitutes mobile offices, workshops and bunded diesel storage facilities. The contractor already has most of these facilities and all that is required is levelling and fencing of the area.

Haul Roads

The roads will be constructed of suitable material e.g. laterite and will conform to minimum safety requirements in terms of slopes and widths etc.

Weighbridge

An area in front of security has been identified for the weighbridge and will require limited cut and fill prior to installation. An accredited weighbridge will be installed by contractors.

1.5 Policy and Legislative Context

Table 4: Policy and Legislative Context

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);		REFERENCE WHERE APPLIED
National Environmental Management Act (107 of 1998) 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, an S&EIR process is required.	An Application for Environmental Authorisation and Mining Right has been made to the DMR.
Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) 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.	Section 22- The project requires a mining right authorisation from the DMR.	A section 22 Mining Right Application was lodged with the DMR.
NEMA Environmental Impact Assessment (EIA) Regulations, 2014 (as amended)	In terms of the listed activities, an S&EIR process is required. The process will be followed in terms of the "one environmental system"	An Application for Environmental Authorisation and Mining Right has been made to the DMR.
The South African Constitution 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.	Applied at potential impacts identification as well as mitigation measures and public participation.	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.
National Environmental Management: Biodiversity Act, 2004 The National Environmental Management: Biodiversity Act (Act 10 of 2004) (NEM:BA) provides for listing of threatened or protected species.	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.	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.
National Environmental Management: Waste Act 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,	In terms of the list of Section 19 waste management activities, an S&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.	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.

and Category B activities, which require a full EIA, and Category C waste management activities which do not require a waste management license 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.		
National Heritage Resources Act (Act No. 25 of 1999) 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).	A 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.	The Heritage Report will be uploaded on the SAHRIS website for comment and the development guided by any findings of the Report.
National Water Act (Act No. 36 of 1998) 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. GN 704- Regulations on use of water for mining and related activities aimed at the protection of water resources.	An IWULA will be submitted to DWS for consideration for the following Section 21 water uses including: (a) abstraction from a borehole. (c) and (i) mining activities within 500 m from a wetland. (g) dust suppression, coal stockpiling, mine residue stockpiling and dirty water dams.	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. Management Principles will be applied to the mining operations as per GN704.
National Environmental Management: Air Quality Act, 2004 (Act no.39 of 2004); and applicable Regulations, Standards and Notices published in terms of NEMAQA 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).	Dust monitoring on site during operations	As part of the EMP dust suppression methods will be used.
Mine Health and Safety Act, 1996 (Act No. 29 of 1996); 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.	Health and Safety Policy of mine to be guided by this Act.	Risk Impact Assessment to be conducted.
Mpumalanga Spatial Development Framework (SDF)	Used to identify the municipality's long term spatial development plans. SDF to be considered in terms of the need and desirability.	The SDF should be consulted as part of the Socio-Economic Study's Scope of Work.
National Development Plan (2012) 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.	Used to identify project Need and Desirability and alignment with National Policy.	To form part of the project background and socio-economic evaluation.
Promotion of Access to Information Act, 2000 (Act No. 2 of 2000) (PAIA) 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.	The S&EIR process is aligned with the PAIA and therefore fair and open public participation is undertaken.	NEMA Public Participation Process will be followed as per the 2014 EIA Guidelines.

Conservation of Agricultural Resources Act (act no. 43 of 1983) (CARA) 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.	Principles of the Act to be included in the relevant specialist's Scope of Work.	Mine Closure and Rehabilitation strategy to be informed by CARA and stakeholder engagement process.

1.6 NEED AND DESIRABILITY OF THE PROPOSED ACTIVITIES.

(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.

1.7 PERIOD FOR WHICH THE ENVIRONMENTAL AUTHORISATION IS REQUIRED

A 10 year authorisation is requested.

1.8 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.

1.8.1 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 as well as the land owned by the applicant, which is constrained by the location of other mining houses and residential areas. The resource location further restrict the infrastructure layout. The area has also been impacted by historic sand mining and large sections have already been transformed from its natural state. 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, and both are being considered. The current state of most of the land does not lend itself to farming, and therefore coal mining was chosen as the economically preferred alternative.

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 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

The technology proposed will be the most economically viable technology for the proposed operation.

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. Most of the land does not currently lend itself to crop farming due to the disturbed nature caused by historic sand mining activities, and therefore coal mining is a more viable economic alternative.

1.8.2 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 16 August 2019 at the Ermelo Regional 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.

Summary of issues raised by I&APs

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

This will be provided once comments have been received.

1.8.3 The Environmental attributes associated with the sites

1.8.3.1 Baseline Environment

1.8.3.1.1 Type of environment affected by the proposed activity.

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

GEOLOGY

For well over a century and a half coal has played a vital role in South Africa's economy and currently bituminous coal is the primary energy source for domestic electricity generation, as well as being the feedstock for the production of a substantial percentage of the country's liquid fuels. It furthermore provides a considerable source of foreign revenue from exports.

Based on geographic considerations, and variations in the sedimentation, origin, formation, distribution and quality of the coals, 19 coalfields are generally recognised in South Africa as presented in the images below.

The Van Oudshoorn mining areas fall within the Ermelo Coalfield, which extends from Carolina in the north to Dirkiesdorp in the south covering a surface area of approximately 11 250 km^2. The coal seams are alphabetically numbered from A (top) to E (bottom) and the distribution of these coal seams are affected by the topography of the pre-Karoo basement and the present day erosional surface. The area is characterised by consolidated sedimentary layers of the Karoo Supergroup. It consists mainly of sandstone, shale and coal beds of the Vryheid Formation of the Ecca Group and is underlain by the Dwyka Formation of the Karoo Supergroup. Jurassic dolerite intrusions occur throughout the area in the form of sills and outcrops is found throughout the whole area.

The Ecca Group, which is part of the Karoo Supergroup, comprises of sediments deposited in shallow marine and fluvio-deltaic environments with coal accumulated as peat in swamps and marches associated with these environments. The sandstone and coal layers are normally reasonable aquifers, while the shale serves as aquitards. Several layered aquifers perched on the relative impermeable shale are common in such sequences. The Dwyka Formation comprises consolidated products of glaciation (with high amounts of clay) and is normally considered to be an aquiclude.

The generally horizontally disposed sediments of the Karoo Supergroup are typically undulating with a gentle regional dip to the south. The extent of the coal is largely controlled by the pre-Karoo topography. Steep dips can be experienced where the coal buts against pre-Karoo hills. Displacements, resulting from intrusions of dolerite sills, are common. Abundant dolerite intrusions are present in the Ecca sediments. These intrusions comprise sills, which vary from being concordant to transgressive in structure, and feeder dykes. Although these structures serve as aquitards and tend to compartmentalise the groundwater regime, the contact zones with the pre-existing geological formations also serve as groundwater conduits. There are common occurrences of minor slips or faults, particularly in close proximity to the dolerite intrusives. Within the coalfield, these minor slips, displacing the coal seam by a matter of 1 to 2 metres, are likely to be commonplace.

Compared to the adjacent Witbank and Highveld coalfields, the Ermelo Coalfield hosts thinner seams, is more sedimentologically and structurally complex, and is not as well studied nor understood. During the 1980s it was a fairly prolific producer, but in the next two decades production declined (Snyman, 1998; Jeffrey, 2005a). Since 2004 this coalfield has however seen resurgence in exploration and mining due to the higher quality of the coals in relation to the Witbank and Highveld coalfields, as well as its proximity to the Richards Bay Coal Terminal (RBCT) export coal line. The Ermelo Coalfield was previously called the Eastern Transvaal Coalfield.

The Ermelo Coalfield is home to Eskom's 1600 MW capacity Camden Power Station and its commissioning in 1967, mothballing in 1990, and subsequent recommissioning between 2006 and 2008, have played an important role in the history of the coalfield. The 2000

MW Hendrina Power Station occurs in the northern part and the southernmost part of the coalfield hosts the 3600 MW Majuba Power Station.

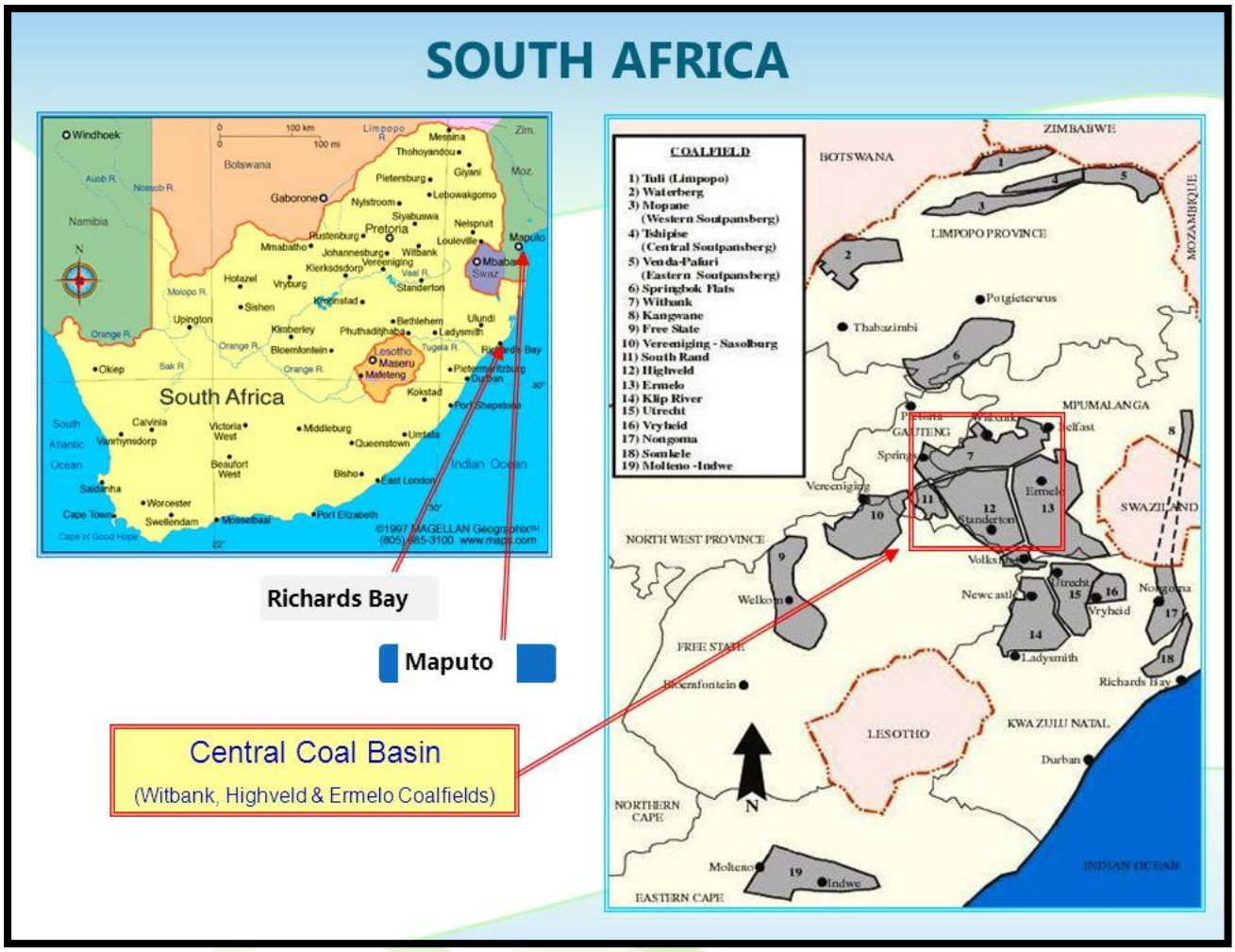


Figure 5: Central Coal Basin Map indicating Ermelo Coalfield

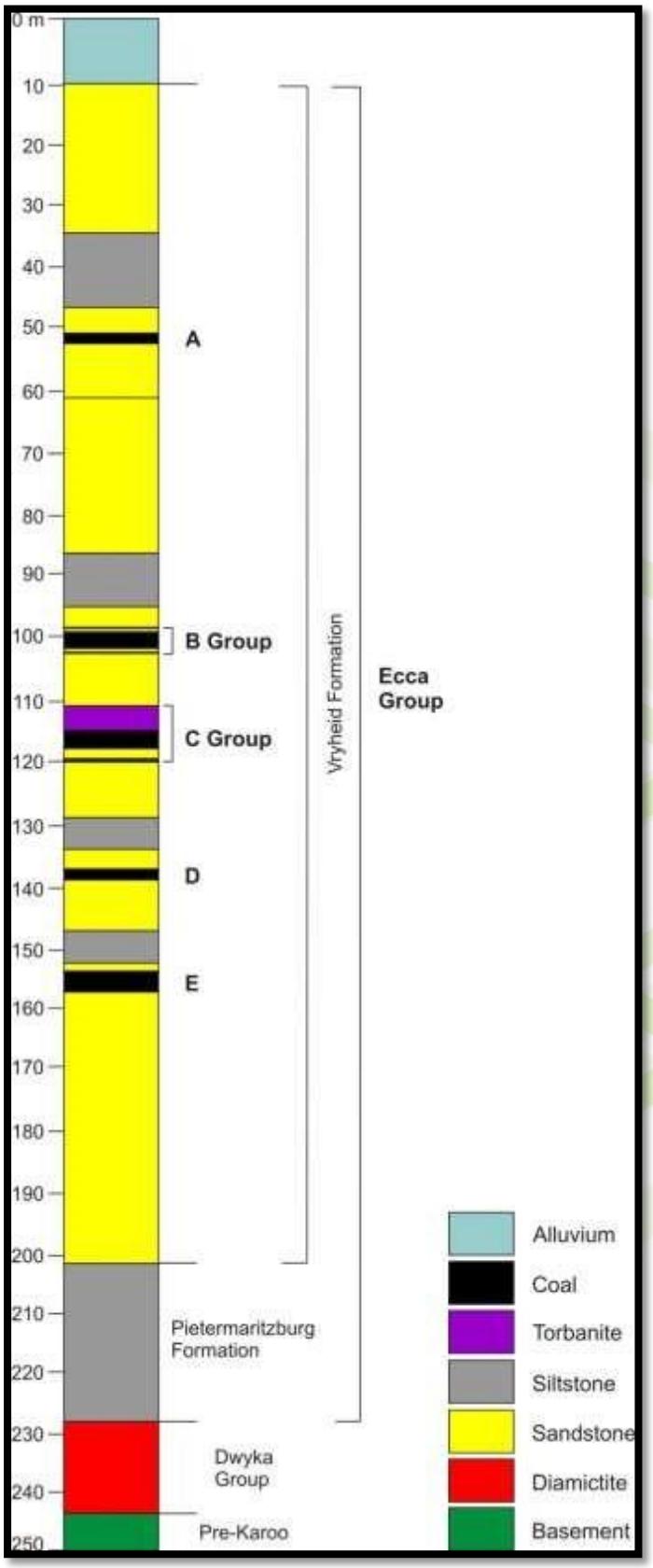


Figure 6: Stratigraphic column of the Karoo Supergroup in the Ermelo Coalfield including the underlying preKaroo basement rocks

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.

CLIMATE

The "mean daily maximum" (solid red line) shows the maximum temperature of an average day for every month for Ermelo. Likewise, "mean daily minimum" (solid blue line) shows the average minimum temperature. Hot days and cold nights (dashed red and blue lines) show the average of the hottest day and coldest night of each month of the last 30 years.

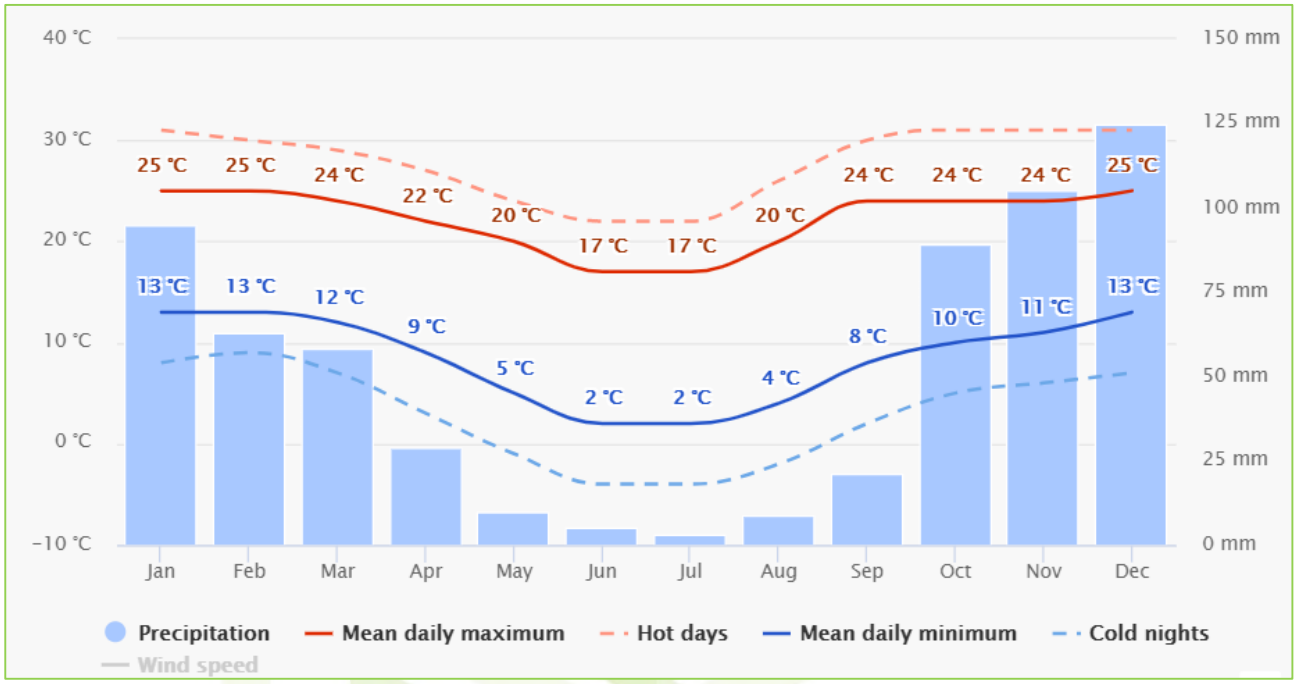


Figure 7: Average Climate Graph by month for Ermelo

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.*"

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 long-lasting and will hold the indications of frequent and prolonged saturation long after a wetland has been drained (perhaps several centuries) (DWAF, 2005).

The NFEPA wetland Database do not detect any wetlands within the study area. The Mpumalanga Highveld Wetlands identifies a Channelled Valley Bottom Wetland traversing the site, and from aerial imaginary it can be seen that a minimum of two valley bottom wetlands traverse the site.

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

AQUATIC ECOLOGY

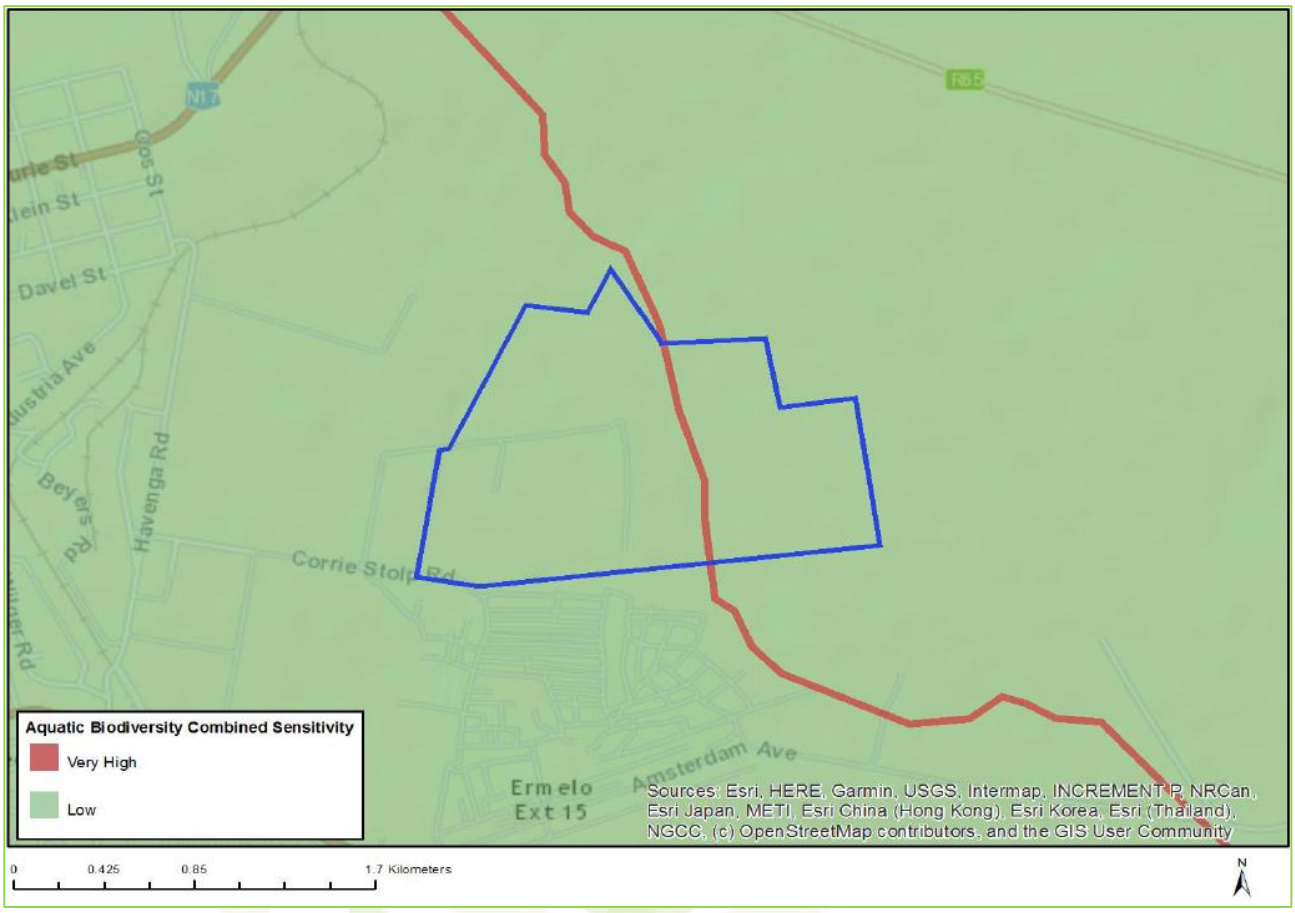


Figure 8: Aquatic Biodiversity combined sensitivity

From the desktop assessment it was found that the combined aquatic biodiversity of the site was of very high with a river of very high sensitivity traversing the site. The remainder of the site has a low sensitivity. The river that traverses the site is the Witpuntspruit which is a class C River, being a moderately modified. The Witpuntspruit falls within catchment C11B.

The Camden Power Station is in the Witpuntspruit catchment and downstream of the Vanoudshoornstroom Site. Some monitoring information of the Power Station was reviewed for the desktop assessment.

The Camden monitoring sites on the Witpuntspruit were dominated by aquatic macro-invertebrate taxa with a range from very low requirement to a moderate requirement for unmodified water quality. No taxon with a high requirement was identified.

Based on available information (Niehaus et al., 2013; Scott et al., 2006), seven fish species can be expected under pre-disturbance conditions in the Vaal River section of concern (the Witpuntspruit section that flows towards the Vaal River). These include Barbus anoplus (Chubbyhead Barb), Barbus paludinosus (Straightfin Barb), Barbus pallidus (Goldie Barb) Labeobarbus aeneus (Smallmouth Yellowfish), Clarias gariepinus (Sharptooth Catfish) and Pseudocrenilabrus philander (Southern Mouthbrooder). Only Pseudocrenilabrus philander was sampled during the November 2015 survey.

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

TERRESTRIAL ECOLOGY

Figure 9: Relative Terrestrial Biodiversity Theme Sensitivity

According to the DEA Screening Tool the Terrestrial Biodiversity has a very high combined sensitivity due to possible Critical Biodiversity Areas, Protected Areas, and FEPA's. This is however a desktop assessment and will be confirmed in field as most of the area is known for historical sand mining disturbance and planted pastures, with very little natural habitat left.

Eastern Highveld Grassland

The site further falls within the Eastern Highveld Grassland vegetation type. 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 Holkranse, Kransbank and Morgenstond (Mucina and Rutherford, 2006).

Important plant species of this vegetation type are given in Table 5.

Table 5: Important plant species of the Eastern Highveld Grassland

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

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

HERITAGE AND PALAEONTOLOGY

The following figures show the relative sensitivity of the area for Archaeological finds and Cultural Heritage (Figure 10).

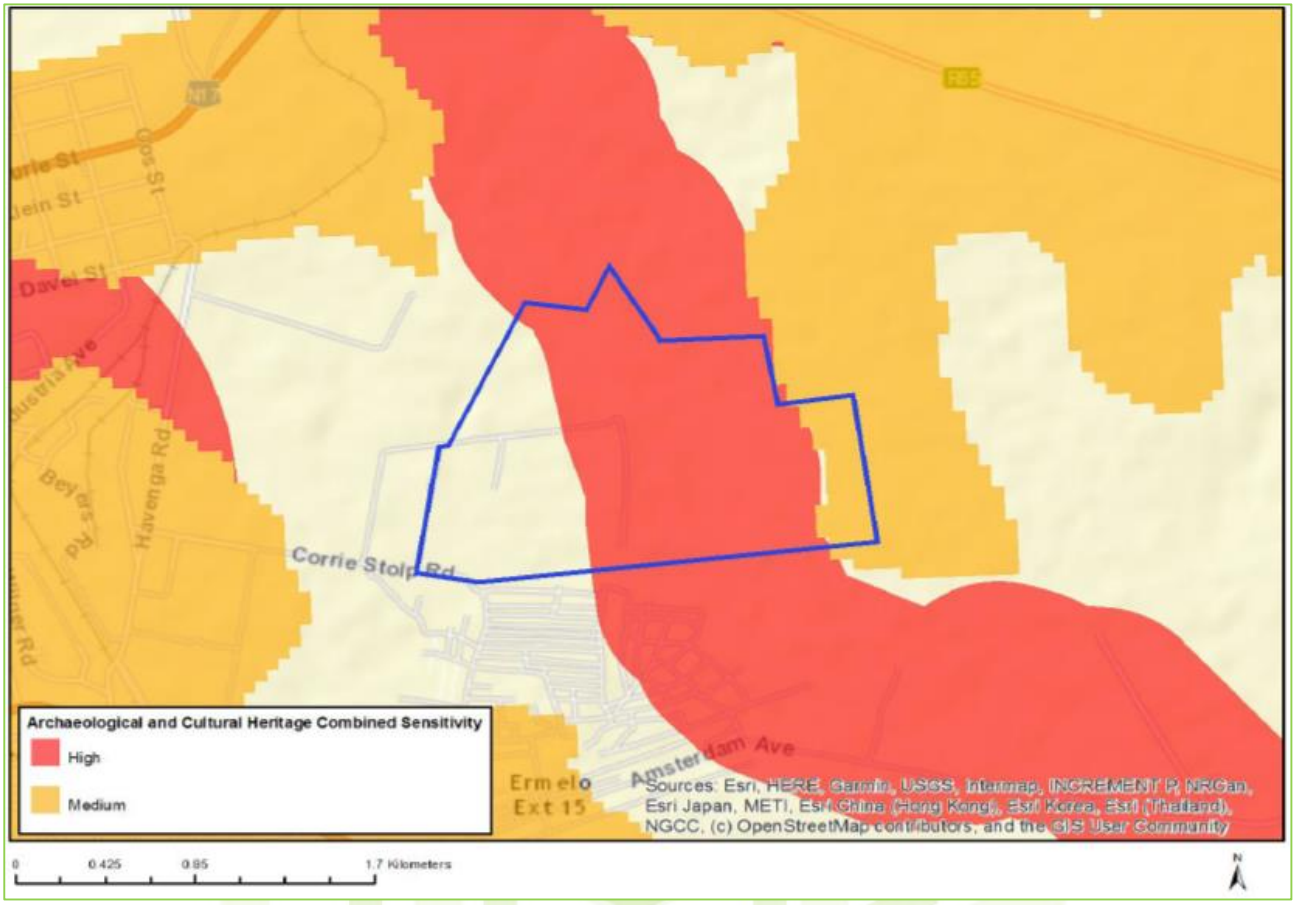


Figure 10: Relative Archaeological and Cultural Heritage Theme Sensitivity

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

SURFACE WATER

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

GROUNDWATER

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^2, including parts of Gauteng and Mpumalanga Provinces, with a single metropolitan municipality, three district municipalities, and nine local municipalities (Figure 11).

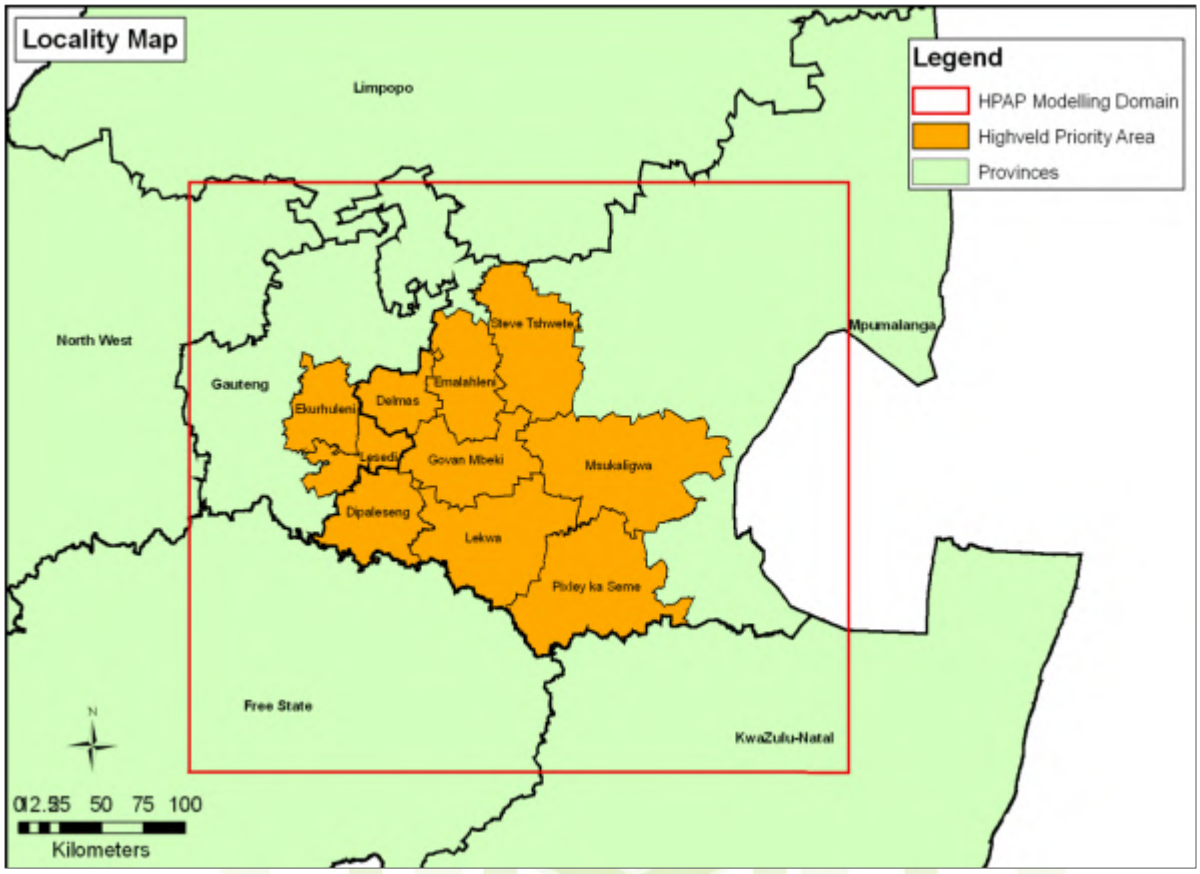


Figure 11: Highveld Priority Areas (HPA)

The total estimated annual emissions of fine particulate matter (PM_{10}) 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_{10} 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_x) emission of 978 781 tons per annum and 82% of the total estimated sulphur dioxide (SO_2) 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 HPA, accounting for 89% of PM_{10}, 90% of NO_x and 99% of SO_2. 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 6: Total emission of PM_{10}, NO_x and SO_2 from the different source types on the HPA (in tons per annum), and the percentage contribution for each source category

Source Category	PM_{10} t/a	%	NO_x t/a	%	SO_2 t/a	%
Ekurhuleni MM Industrial (incl Kelvin)	8 909	3,00	15 636	2	25 772	2
Mpumalanga Industrial	684	0,00	590	0	5 941	0
Clay Brick Manufacturing	9 708	3,00	-		9 963	1
Power Generation	34 373	12,00	716 719	73	1 337 521	82
Primary Metallurgical	46 805	17,00	4 416	0	39 582	2
Secondary Metallurgical	3 060	1,00	229	0	3 223	0
Petrochemical	8 246	3,00	148 434	15	190 172	12
Mine Haul Roads	135 766	49,00	-		-	-
Motor vehicles	5 402	2,00	83 607	9	10 059	1
Household Fuel Burning	17 239	6,00	5 600	1	11 422	1
Biomass Burning	9 438	3,00	3 550	0	-	-
TOTAL HPA	**279 630**	**99***	**978 781**	**100**	**1 633 655**	**101***

* *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_2, PM10 and ozone (O_3) concentrations are exceeded in nine extensive areas. These "hot spots" are illustrated in Figure 11 by the number of modelled exceedances of the 24-hour SO_2 and PM10 standards, and are confirmed by ambient monitoring data (Table 7). 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 cross boundary 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_2 and PM10 air quality standards occur (Table 7).

Table 7: Exceedances at HPA sites based on historic and new monitoring data

Municipality	Area	NO_2 *1-hr (88)*	O_3 *8-hr (11)*	PM_{10} *24-hr (4)*	SO_2 *24-hr (4); 1 hr. (88)*
Emalahleni LM	Kendal 2	1	**58**		**34; 343**
	Phola	0		3	7; 27
	Witbank	37	9	**9**	**4**; 51
	Witbank 2		**17**	**25**	1; 11
Steve Tshwete LM	Columbus				
	Komati 2			**26**	1; 14
	Hendrina	1	**22**	3	1; 2
	Middelburg	71	**60**	**7**	1; 4

Municipality	Area	NO_2 *1-hr (88)*	O_3 *8-hr (11)*	PM_{10} *24-hr (4)*	SO_2 *24-hr (4); 1 hr. (88)*
	Middelburg 2		1	**7**	0; 1
Govan Mbeki LM	Sasol Club	1		0	0; 25
	Langverwacht	1		0	2; 78
	Bosjesspruit				2; 27
	Elandsfontein	0	**73**	3	4; 33
	Leandra				6; 114
	eMbalenhle	2	4	**39**	0; 1
Msukaligwa LM	Camden	0	**24**	1	0; 4
	Ermelo	1	**73**	**22**	**21**; 10
Pixley Ka Seme LM	Amersfoort				
	Majuba 1				4; 87
	Majuba 2				
	Verkykkop	0	**46**	0	1; 7
Lekwa	Standerton	4	10	**29**	1; 6
Dipaleseng	Balfour		**29**	**8**	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.

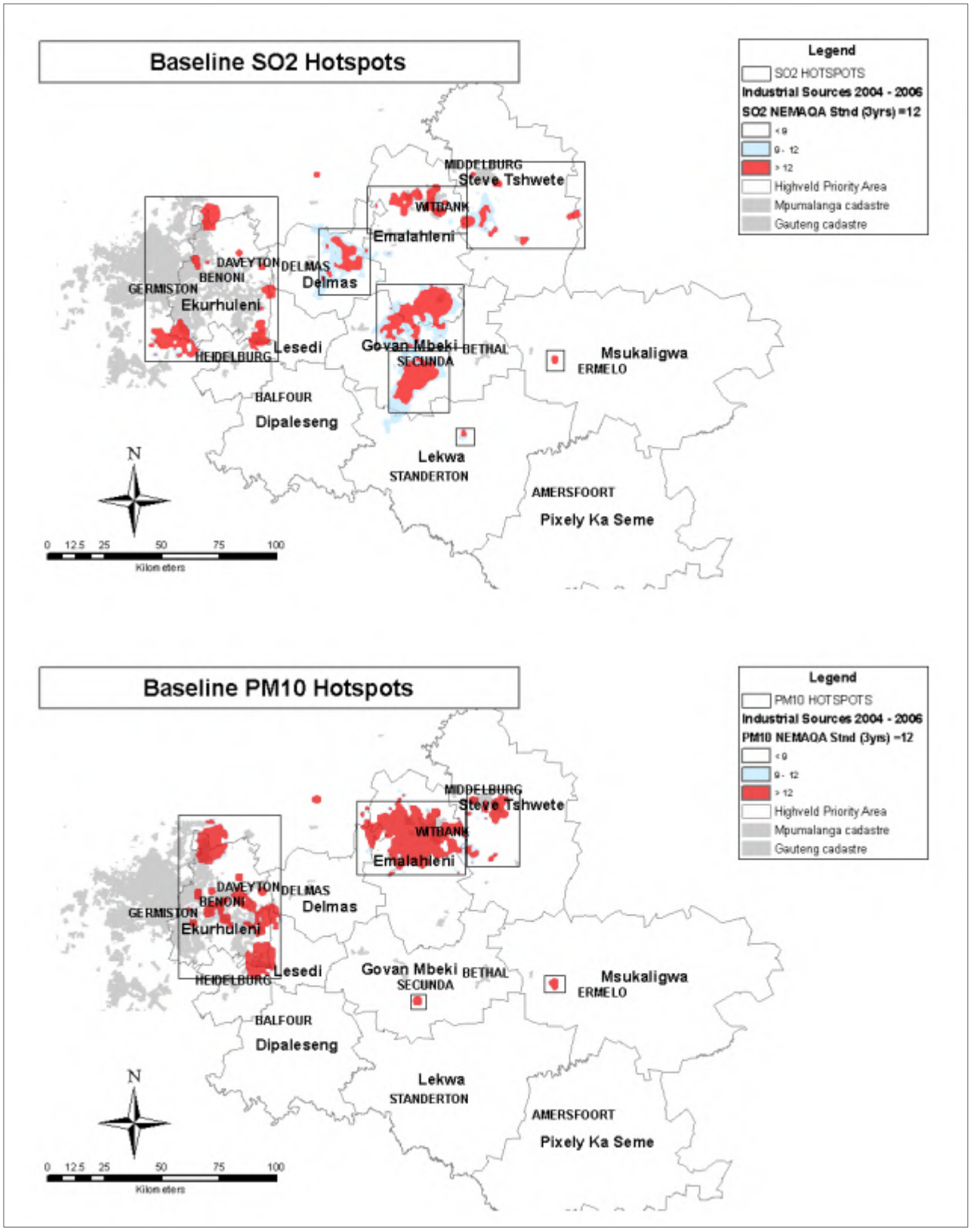


Figure 12: Modelled frequency of exceedance of 24-hour ambient SO_2 and PM_{10} standards in the HPA, indicating the modelled air quality Hot Spot areas

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

NOISE

Table 8 depicts acceptable noise levels within districts according to the SANS 10103 guideline.

Table 8: Acceptable rating levels for noise in districts (SANS 10103, 2008)

Type of District	Equivalent continuous rating level ($L_{Reg.T}$) for noise (dBA)					
	Outdoors			Indoors, with open windows		
	Day-night	Day-time	Night-time	Day-night	Day-time	Night-time
	$L_{R,dna}$	$L_{Req,db}$	$L_{Req,nb}$	$L_{R,dna}$	$L_{Req,db}$	$L_{Req,nb}$
RESIDENTIAL DISTRICTS						
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
NON-RESIDENTIAL DISTRICTS						
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, LReq,d = LReq,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 9, where LReq,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.

Table 9: Categories of community/group response (SANS 10103, 2008)

Excess ($\Delta L_{Req,T}$)[a]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 LReq,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

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 Msukaligwa Local Municipality (MLM), within the Gert Sibande District Municipality (GSDM) in Mpumalanga Province. The socio-economic characteristics of the population within the aforementioned areas are listed below.

The Msukaligwa LM borders the Steve Tshwete, Govan Mbeki, Albert Luthuli, Mkhondo and Lekwa local municipalities. There are no areas in the municipal area that are under the management of traditional authorities. Main towns in the area are Breyten, Kwazanele, Ermelo, Wesselton, Chrissiesmeer, Kwachibikulu, Davel, Kwadela, Sheepmoor, Camden, Lothair, Silindile and Warburton. The municipality is predominantly rural with key anchor towns that dominate the urban settlements. There are also a number of farms in the area. The main economic activities in the Msukaligwa area are coal mining, agriculture, forestry and timber processing. The area hosts Eskom's Camden power station that is being fed by surrounding coal mines in the district. Tourism also contributes to economic growth of the municipality and is boosted by areas like the Lake Chrissie wetlands, the Big Foot at Athurseat, the bushman paintings in the Breyten area and hospitality areas like the Indawo game lodge.

According to Census 2011, Msukaligwa Local Municipality has a total population of 149 377 people, of which 88,1% are black African, 9,8% are white, 1,1% are Indian/Asian, and 0,6% are coloured. The other population groups make up the remaining 0,3%. Of those aged 20 years and older, 4,5% have completed primary school, 32,7% have some secondary education, 29,3% have completed matric, 9,6% have some form of higher education, and 12,3% have no form of schooling.

There are 40 932 households in the municipality, with an average household size of 3,5 persons per household. The figures indicate that 53% of households have access to piped water in their dwelling and 25% have access to piped water in the yard. Only 9,4% of households do not have access to piped water. In Msukaligwa Local Municipality, 74,7% of households have access to electricity for lighting.

According to Census 2011, 41 698 are employed whereas 5 311 are discouraged work-seekers. The unemployment rate is 26,8%. There are 15 267 unemployed people. Of the youth aged 15–34, 20 261 are employed while 10 679 are unemployed. The unemployment rate for the youth is 34, 5%.

a) Description of the current land uses.

The current land use for the project area is planted pastures and grazing with Agriculture, Mining activities and urbanisation surrounding the project area. Sand was also mined previously on the property.

b) Description of specific environmental features and infrastructure on the site.

The site is traversed by two watercourses, and was previous mined for sand and is still impacted due to this. A farm house is also located on site.

c) Environmental and current land use map.

(Show all environmental, and current land use features)

Refer to Annexure 3.

1.8.4 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 10: List of Preliminary Issues

PRELIMINARY IMPACTTO 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	✓	✓	✓	-
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	✓	✓	✓	+

1.8.5 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
Statement	A brief written statement, stating which environmental aspect is impacted by a particular project activity or sequence of project activities.
Type of Impact	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.
Direct	Direct result (impact) of an action (aspect).
Indirect	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.
Cumulative	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.

CATEGORY	VALUE	DESCRIPTION OR DEFINITION
Extent		Extent to which the impact will occur.
Site	1	Only as far as the activity.
Local	2	Site and immediate surroundings.
Regional	3	Impact on a regional scale.
National / International	4	National or International.
Duration		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.
Temporary	1	This is very short term, usually a construction impact.
Short term	2	During the operational activities.
Long term	3	During closure / decommissioning of the operation.
Permanent	4	Post-closure phase.

Severity		The magnitude of the potential impact.
Very Low	1	Natural, cultural and social functions are not affected.
Low	2	Affected environment is altered but natural, cultural, and social functions and process continue both in a modified way.
Moderate	3	Natural, cultural and social functions and processes are altered to the extent that it would temporarily cease.
High	4	Natural, cultural and social functions and process are altered to the extent that it would permanently cease.
Probability		The likelihood of the impact occurring.
Improbable	1	Low possibility because of design or historic experience.
Probable	2	Distinct probability to occur.
Highly probable	3	Most likely to occur.
Definitely	4	Will occur regardless of any prevention measures and/or there is a history of (an) incident/s and/or complaints.
Significance		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.
No impact		A potential concern or impact, which, upon evaluation, is found to have no impact.
Very Low	1 - 4	Impacts will be of very low significance if the added values are between 1 and 4.
Low	5 - 8	Impacts will be of low significance if the added values are between 5 and 8.
Moderate	9 - 12	Impacts will be of moderate significance if the added values are between 9 and 12.
High	13 - 16	Impacts will be of high significance if the added values are between 13 and 16.
Very High	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 11: 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

1.8.6 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 10.

1.8.7 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.
- 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 40 km/h will be enforced. Liaise with landowner on areas sensitive to noise. Provide a buffer of 100 m 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.

1.8.8 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.

1.8.9 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 further restrict the infrastructure layout. Therefore, no alternative sites were considered.

1.8.10 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 further restrict the infrastructure layout.

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

1.9 Plan of Study for the Environmental Impact Assessment Process

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

Refer to Section 1.8.1.

1.9.2 Description of the aspects to be assessed as part of the environmental impact assessment process

(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 Palaeontology.
- Soils, land use and land capability.

Specialists' Scope of Work

Table 12: Specialist Scope of Work

Specialist Study	Scope of Work
Air quality	The purpose of this baseline study is to: - Study the available information relevant to the pre and post-development ambient air quality pollution concentrations in the environment; - Identify the major existing air emission sources in the environment; - Identify the existing sensitive air pollution areas in the environment; - Estimate by means of measurements and integration of the results with those of any relevant existing information the present ambient air quality climate; - Identify the processes and equipment that will cause the major contribution to the future air quality impact; - Consider, evaluate and rate the potential air quality impacts; and - Propose relevant management and mitigation measures to lessen the anticipated impacts. It is highly recommended that baseline dust monitoring be conducted for at least 3 months prior to the start of the project.
Aquatic Ecology	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. 1. Rapid desktop assessment: Google Earth satellite imagery Aerial photographs GIS mapping software 2. Field assessment by identifying the presence of one (at least) or more of the following attributes: Wetland/hydromorphic soils Hydrophytes High water table 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 The following sections deal with the Wetland Index of Habitat Integrity as performed as part of the third phase of the study approach.
Social Impact Assessment	1) Identification of key stakeholders; 2) Development of a social profile of the affected community; 3) Identifying all applicable legislative and regulatory considerations; 4) Undertaking stakeholder consultation; 5) Assessment of possible social and economic impacts; 6) Rating of impacts according to significance (severity, probability, duration, spatial extent and 7) stakeholder sensitivity; 8) Making a clear distinction between objective and subjective impacts; 9) Provision of management guidelines for anticipated impacts; and

Specialist Study	Scope of Work
Ecological Assessment	The study will include two phases: 10) Desktop study: - Review of existing information e.g. EIA, Specialist studies, Mining right, WULA etc.; - Analysis of recent Google maps; - Literature review of fauna and flora in the area; - Review of endangered species known to occur in the area; 11) Detailed Terrestrial Ecology Report including a wetland delineation and functional assessment.
Geo-hydrological	The scoping groundwater study will include, amongst others, the following information as required in terms of the MPRDA: - A description of the groundwater environment likely to be affected by the proposed mining activities; - An assessment of potential impacts on the groundwater environment. - A summary of the potential significance of identified impacts; - Proposed mitigation and management measures to minimise adverse impacts and to optimise benefits; - Planned monitoring and performance assessment of the EMP and Rehabilitation measures of areas disturbed during mining activities.
Surface water	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 1. Rapid desktop assessment: Google Earth satellite imagery. Aerial photographs GIS mapping software 2. Field assessment by identifying the presence of one (at least) or more of the following attributes: Wetland/hydromorphic soils. Hydrophytes. High water table. 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.
Wetland Impact Assessment	As above.
Heritage, Archaeological, and Paleo	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: a. Location of the sites that are found; b. Short descriptions of the characteristics of each site; c. Short assessments of how important each site is, indicating which should be conserved and which mitigated; d. Assessments of the potential impact of the development on the site(s); e. 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 f. Recommendations for conservation or mitigation.

Specialist Study	Scope of Work
	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: a. Whether or not it has objections to a development; b. What the conditions are upon which such development might proceed; c. Which sites require permits for mitigation or destruction; d. Which sites require mitigation and what this should comprise; e. 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 f. What measures should or could be put in place to protect the sites which should be conserved.
Visual	The scope of work for this Visual Impact Assessment will include: - Describe the existing visual characteristics of the proposed sites and its environs; - Viewshed and viewing distance; - Visual Exposure Analysis; - Viewer Sensitivity; - 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.
Soils, land use and land capability	The following scope of work is proposed: · 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). · 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: - 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; - The accumulation of ferrihydrate, lepridocrosite, goethite and hematite in vesicular nodules (mottling) owing to the reduction of Fe(III) to Fe(II), under conditions of a fluctuating water table; - 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; - The occurrence of bleached soil horizons that indicate lateral drainage of water; - The occurrence of uniform red and yellow colouration that is indicative of well drained areas; - Signs of Mn mobilisation and/or precipitation as indicating a fluctuating water table; - 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. - Texture of the soil horizons as a means to assess the water holding capacity, saturated water content and saturated hydraulic conductivity, - Textural changes and other aspects in the soil profile that will influence saturated and unsaturated flow of water. - Occurrence of layers, such as the rocks, ferricrete and/or calcrete, which impede water flow. - Occurrence of concretions, stones or pebbles in the soil horizons and the effect on water holding capacity, saturated water content and saturated hydraulic conductivity. · Representative soil samples will be collected and subjected to chemical and physical analyses. The following analyses will be conducted: - Water soluble cations and anions; - pH and EC (electrical conductivity); - Exchangeable/weakly complexed fraction of major cationic plant nutrients – calcium (Ca), sodium (Na), magnesium (Mg), potassium (K)

Specialist Study	Scope of Work
	- Cation exchange capacity; - Plant available phosphorus (P), nitrogen content; - Organic carbon content; - Soil particle size distribution (texture including clay and silt content); and - Soil salinity levels will be calculated.

1.9.3 Description of aspects to be assessed by specialists

Refer to previous section 1.9.2, Table 12.

1.9.4 Proposed method of assessing the environmental aspects including the proposed method of assessing alternatives

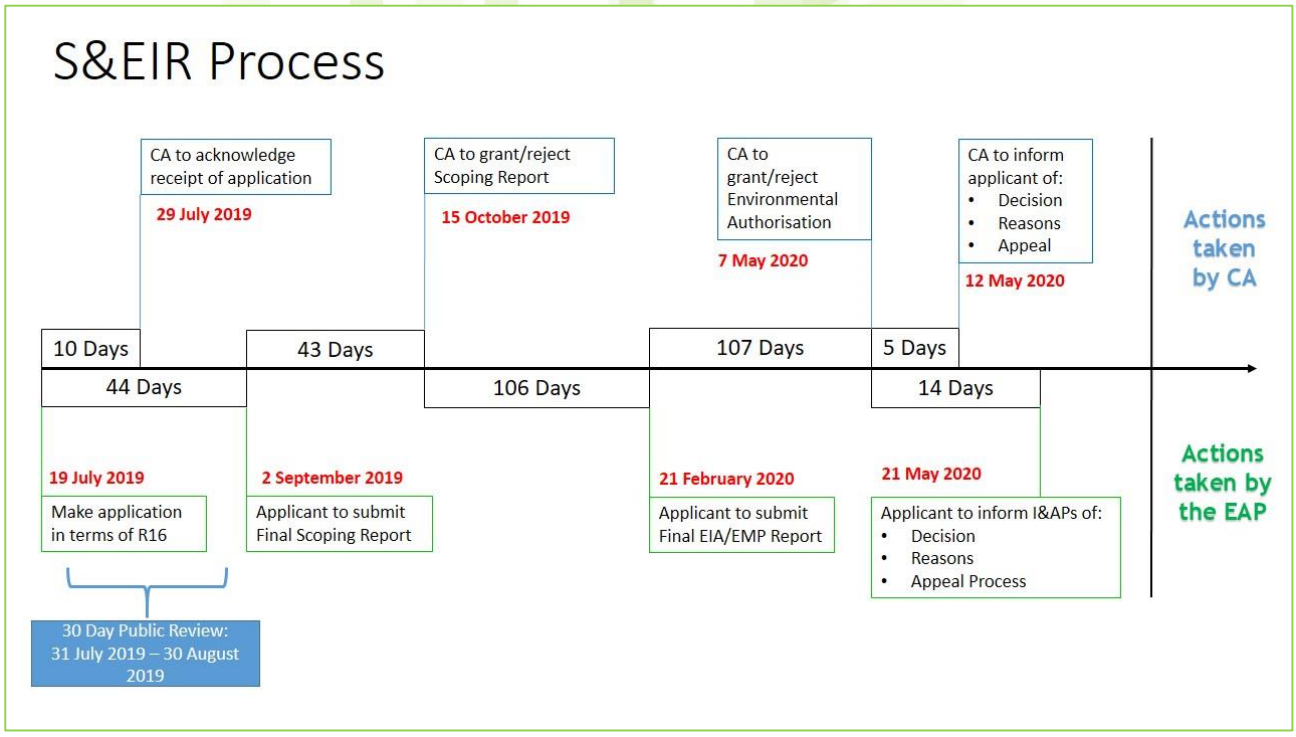
Refer to previous section 1.9.2, Table 12.

1.9.5 The proposed method of assessing duration significance

Refer to previous section 1.9.2, Table 12.

1.9.6 The stages at which the competent authority will be consulted

- Application Stage (application form submitted on 19 July 2019).
- Copy of the Draft Scoping Report to be submitted for their records (31 July 2019).
- Submission of the Final Scoping Report for review and comment (2 September 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).



1.9.7 Particulars of the public participation process with regard to the Impact Assessment process that will be conducted

1.9.7.1 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 16 August 2019 at the Ermelo Regional 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;

g. Providing IAPs with the opportunity to review and comment on the Draft Scoping and EIA Reports; and

h. Further personal consultation with affected landowners.

1.9.7.2 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 were 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 EMPr for submission to authorities. During the EIA and EMPr 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.

1.9.7.3 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.

1.9.8 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; and
- Finalisation of the EIA Report and EMP, submission to the DMR for decision making.

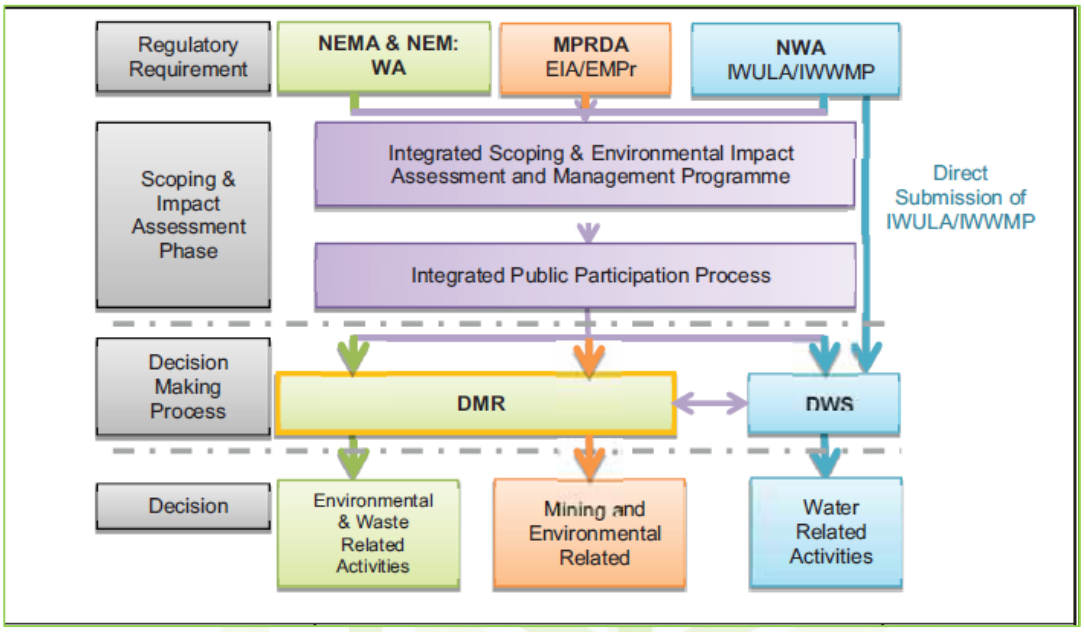


Figure 13 Authorisation Process Overview

1.9.9 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 40 km/h will be enforced. Liaise with landowner on areas sensitive to noise. Provide a buffer of 100 m 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.

1.12 Other Information required by the competent Authority

1.12.1 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:-

1.12.1.1 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.

1.12.2 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.

1.13 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 further restrict the infrastructure layout. Therefore, no alternative sites were considered.

1.10 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

1.11 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: QUALIFICATION OF EAP

8501310045082

UNIVERSITY OF JOHANNESBURG

TELEPHONE :

ACADEMIC RECORD

920417064 PAGE 1
29-JUL-2008

IT IS HEREBY CERTIFIED THAT

JOHANNA ADRIANA HEYL
(DATE OF BIRTH : 31-JAN-1985)

WAS ENROLLED AT THIS UNIVERSITY FOR THE DEGREE(S) :
B SC HONS BIODIVERSITY & CONSERVATION

IT IS FURTHER CERTIFIED THAT HIS/HER RESULTS ARE AS FOLLOWS :

2004

B SC (BOTANY AND ZOOLOGY) 1 VT

SEMESTER ONE

BIC1A FUNDAMENTALS OF BIOCHEMISTRY	44	SUPP EXAM GRANTED
CEM1A INTRODUCTION TO GENERAL CHEMISTRY	50	PASSED
CHM1A ENVIRONMENTAL CHEMISTRY: ATMOSPHE		CANCEL 14-FEB-2004
DKE1A INVERTEBRATE DIVERSITY	67	PASSED
PKE1A PLANT DIVERSITY	74	PASSED

SEMESTER TWO

BIC1B CELLULAR BIOLOGY	72	PASSED
CEM1B INTRODUCTION TO ORGANIC CHEMISTRY	78	PASSED WITH DISTINCTION
CEM1B INTRODUCTION TO PHYSICAL CHEMISTR	62	PASSED
DKE1B VERTEBRATE DIVERSITY	75	PASSED WITH DISTINCTION
PKE1B ETHNO AND ECONOMIC BOTANY	61	PASSED
PKE1B PLANTS IN ACTION	81	PASSED WITH DISTINCTION

JULY RE-EXAM SEM 1

BIC1A FUNDAMENTALS OF BIOCHEMISTRY	41	FAILED

2005

B SC (BOTANY AND ZOOLOGY) 2 VT

SEMESTER ONE

CHM1A ENVIRONM. CHEM: HYDROSPHERE & SOI	78	PASSED WITH DISTINCTION

CONTINUE

CHM1A ENVIRONMENTAL CHEMISTRY: ATMOSPHE	63	PASSED
DKE2A GENERAL PARASITOLOGY	63	PASSED
MKB2A BACTERIOLOGY	66	PASSED
MKB2A VIROLOGY	55	PASSED
PKE2A PLANT ANATOMY & CYTOLOGY	63	PASSED

SEMESTER TWO

DKE2B APPLIED ECOTOXICOLOGY	82	PASSED WITH DISTINCTION
DKE2B INTRODUCTORY ECOTOXICOLOGY	68	PASSED
MKB2B PLANT PATHOLOGY	82	PASSED WITH DISTINCTION
MKB2B WATER-BORNE DISEASES	77	PASSED WITH DISTINCTION
PKE2B PLANT PHYSIOLOGY	76	PASSED WITH DISTINCTION

2006

B SC (BOTANY AND ZOOLOGY) 3 VT

SEMESTER ONE

DKE3A BASIC AND MARINE ECOLOGY	71	PASSED
DKE3A LIMNOLOGY AND TERRESTRIAL ECOLOGY	72	PASSED
PKE3A BIOTECHNOLOGY	83	PASSED WITH DISTINCTION

SEMESTER TWO

DKE3B ANIMAL PHYSIOLOGY: PROCESSES	70	PASSED
DKE3B ANIMAL PHYSIOLOGY:INTEGRATED	81	PASSED WITH DISTINCTION
PKE3B PLANT TAXONOMY	62	PASSED

OBTAIN B SC (BOTANY AND ZOOLOGY)
05-DEC-2006

2007

B SC HONS BIODIVERSITY & CONSERVATION 1 VT

SEMESTER ONE

DKE7 LABORATORY AND FIELDWORK COMPETENC	78	PASSED WITH DISTINCTION
DKE7 MAMMAL DIVERSITY	68	PASSED
DKE7 NATURE CONSERVATION	72	PASSED
DKE7 PARASITOLOGY	61	PASSED

CONTINUE

DKE7 PHILOS. & RESEARCH METHODOL: ZOOLO	70	PASSED
DKE7 POPULATION GENETICS & BIOSISTEMATI	71	PASSED

SEMESTER TWO

DKE7 HERPETOLOGY	67	PASSED
DKE7 MOLECULAR EVOLUTION	64	PASSED
DKE7 RESEARCH PROJECT	72	PASSED
DKE7 RESOURCE MANAGEMENT	67	PASSED
DKE7 TERRESTRIAL AND CONSERVATION ECOLO	66	PASSED

OBTAIN B SC HONS BIODIVERSITY & CONSERVATION
05-DEC-2007

I HEREBY DECLARE THAT THE ABOVEMENTIONED STUDENT WAS/IS A REGISTERED STUDENT OF THE UNIVERSITY DURING THE PERIOD STATED ABOVE. HIS/HER CONDUCT WAS/IS SATISFACTORY.

THIS CERTIFICATE IS ISSUED WITHOUT CHANGE OR DELETION OF ANY NATURE.

THE ACADEMIC RECORD IS OFFICIAL WHEN IT CARRIES THE SIGNATURE OF THE RELEVANT FACULTY OFFICER AND THE DATE STAMP OF THE RELEVANT FACULTY.

N STRYDOM
FACULTY OFFICER.
FACULTY : SCIENCE

FACULTY OF SCIENCE
2008 -07- 29
UNIVERSITY OF JOHANNESBURG

ANNEXURE 2: EAP CV

Riana Panaino

ENVIRONMENTAL CONSULTANT

ENVIRONMENTAL & ENGINEERING

ABOUT

With more than 10 years' experience in the environmental consulting industry she has a firm understanding of Environmental Management. She can adapt to a wide range of working environments, has a strong problem-solving ability and work towards team and client satisfaction. Riana has a passion for Environmental Authorisation Processes (Basic Assessments, Environmental Impact Assessments, Monitoring, Environmental Management Plans, Waste Licence Applications, Closure Application and Integrated Water Use License Applications) in terms of the South African legislative regime.

CAREER HISTORY

Environmental Consultant
Eco Elementum (Pty) Ltd
Pretoria
April 2019 - Present

Role: Environmental Impact Assessments, Water Use Licenses, Waste Applications, Rectification Applications, Stakeholder Engagement, Project Mangement, Specialist Management.

Senior Environmental Consultant
GCS
Pretoria
March 2012 – March 2019

Role: Project Management, management and coordination of specialists, compilation of Environmental Impact Assessments, Environmental Waste Licence application, Public Participation, Environmental Management Programs.

QUALIFICATIONS

BSc Hons (Biodiversity & Conservation)
University of Johannesburg
2007

BSc (Botany and Zoology)
University of Johannesburg
2004 - 2006

Senior Certificate Matric
Hoërskool Westernaria
2003

EXPERTISE AND SKILLS

Skills include, but are not limited to:

- Specialist Co-ordination
- Project Management
- Moniting and Compliance
- Compilation of Environmental Management
- Compilation of Environmental Impact Assessment
- Government Department Liaison
- Assessment of Wetland Status and Functionality
- Determination of Wetland Boundaries

REGISTRATIONS

Professional Registrations

- Environmental Law Association (ELA)
- South African Council of Natural Science Professionals (SACNASP)

442 Rodericks Road, Lynnwood, Pretoria, 0081
riana@ecoe.co.za
012 807 0383
www.ecoelementum.co.za

Riana Panaino

ENVIRONMENTAL CONSULTANT

ENVIRONMENTAL & ENGINEERING

PROJECT EXPERIENCE

ENVIRONMENTAL MANAGEMENT AND MONITORING

2008, 2009, 2010 — **Matla,Mpumalanga, South Africa**
Matla Wetland Monitoring and Management Plan for Matla coal mine. Responsibilities included: weekly site visits and reporting of findings during the construction of the Matla river diversion and assisted in compilation of the wetland management plan

BIOLOGICAL SCIENCES

2009 — **Eskom DPSS, Freestate/KwaZulu Natal, South Africa**
Assisted in the capture of fish for genetic sampling to map distribution patterns between two different catchment.

ENVIRONMENTAL IMPACT ASSESSMENT

2016 — **Exxaro NBC Project**
Project Consultant, coordination, BA and EMP report compilation as well as public consultation of the various aspects on this project.

2016 — **Exxaro Coal Central Eloff Project, Mpumalanga, South Africa**
Project Consultant, coordination and EIA and EMP report compilation as well as public consultation of the various aspects on this project.

2015 — **Exxaro Belfast Project, Mpumalanga, South Africa**
Environmental Control Officer

2015 — **Exxaro Matla Project, Mpumalanga, South Africa**
Project Consultant, coordination and EIA and EMP report compilation as well as public consultation of the various aspects on this project.

2015 — **Exxaro UCG Project, Limpopo, South Africa**
Project Management, coordination and public consultation of the various aspects on this project.

2014 — **Quantum Crushing and Screening, KwaZulu-Natal, South Africa**
Project Management, coordination and BA and EMP report compilation as well as public consultation of the various aspects on this project.

2013 — **Glencore Rietvly – Northwest, South Africa**
Project Management, coordination and BA and EMP report compilation as well as public consultation of the various aspects on this project.

2012 — **Jacomynspan, Northern Cape, South Africa**
Project Management, coordination and EIA and EMP report compilation as well as public consultation of the various aspects on this project.

2012 — **Bighorn Substation, Northwest, South Africa**
Project assistance, coordination and report compilation as well as public consultation of the various aspects on this project.

2012 — **Otjozondu, Namibia**
Environmental Impact Assessment Report Compilation

2012 — **Leeuwpan, Mpumalanga, South Africa**
Project Management, coordination and EIA and EMP report compilation as well as public consultation of the various aspects on this project.

2008 — **Lonmin Akanani, Limpopo, South Africa**
Project assistance, coordination and report compilation of the various studies done during this project.

ECOLOGY

2012 — **Schoongezicht, Mpumalanga South Africa**
Ecological studies with responsibilities that included wetland input for the IWULA. Wetland delineation, classification and characterisation were done on the wetlands found during this study.

2012 — **Mooiplaats, Mpumalanga South Africa**
Ecological studies with responsibilities that included wetland input for the IWULA. Wetland delineation, classification and characterisation were done on the wetlands found during this study.

2011 — **Kromdraai Pipeline, Mpumalanga, South Africa**
Ecological studies with responsibilities that included wetland input for the project EIA. Wetland delineation, classification and characterisation were done on the wetlands found during this study.

2010 — **New Vaal Life Expansion, Freestate, South Africa**
Ecological studies with responsibilities that included wetland input for the project EIA. Wetland delineation, classification and characterisation were done on the wetlands found during this study.

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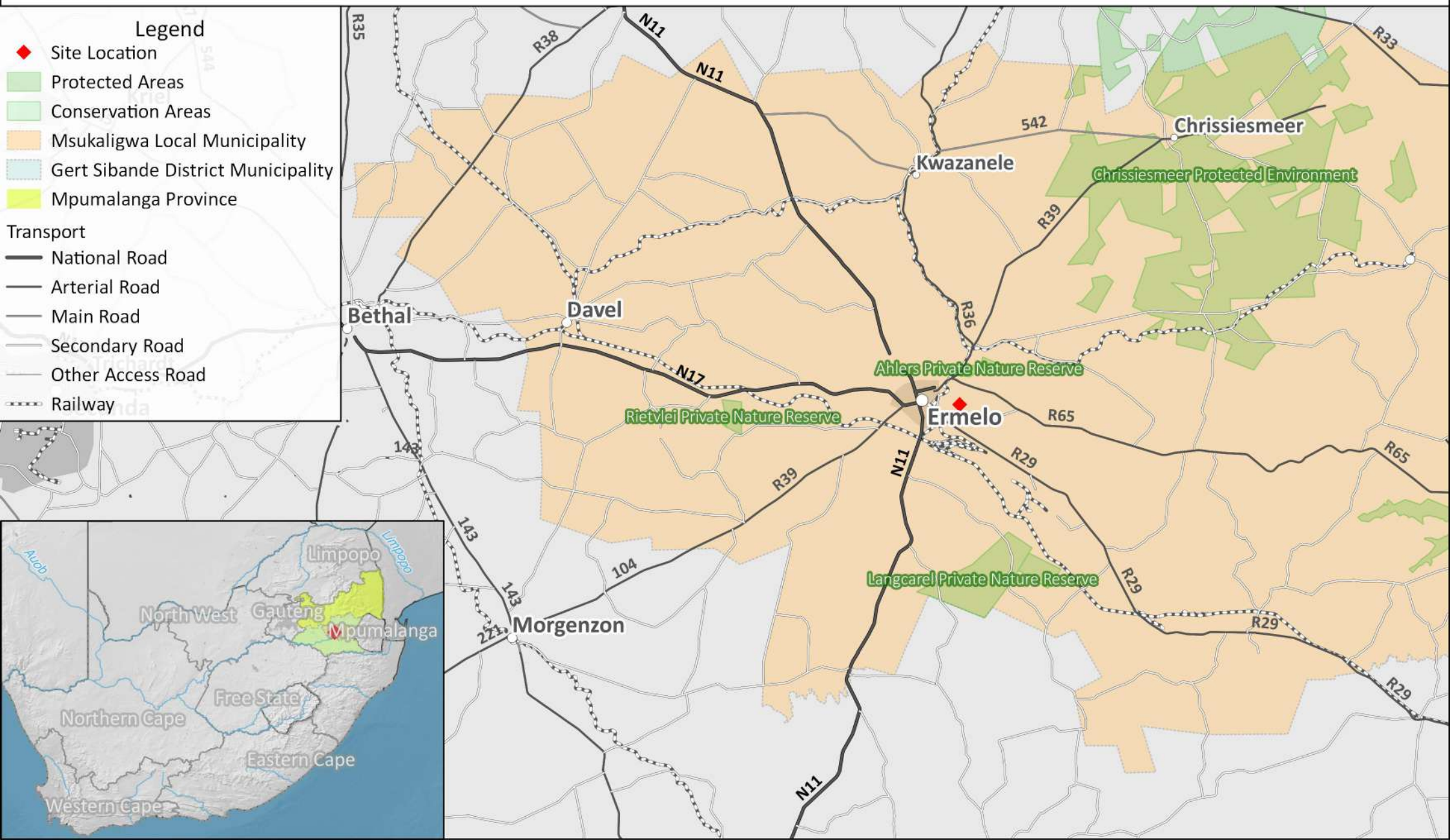
ANNEXURE 3: LOCALITY MAPS

ENVIRONMENTAL & ENGINEERING

Project Name: Van Oudshoornstroom
Client Name: Estate Late Philippus Christoffel Johannes De Jager
Project #: 19-790
Map: Regional Overview
Rev #: 1

Data Sources:
Surveyor General of South Africa (Jan 2018)

0 9 18 27 36 45 km



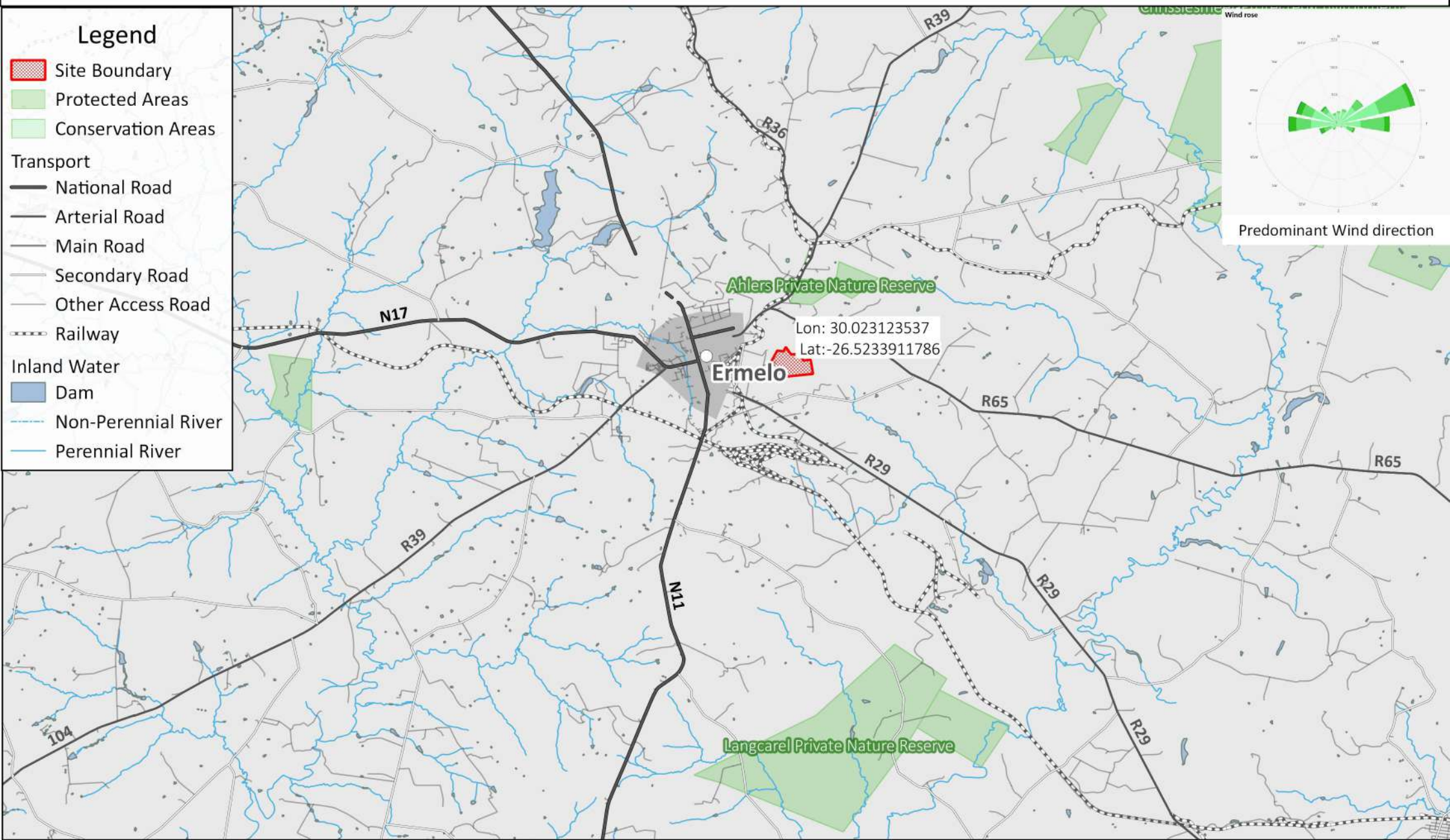
ENVIRONMENTAL & ENGINEERING

Project Name: Van Oudshoornstroom
Client Name: Estate Late Philippus Christoffel Johannes De Jager
Project #: 19-790
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

N



ENVIRONMENTAL & ENGINEERING

Project Name: Van Oudshoornstroom
Client Name: Estate Late Philippus Christoffel Johannes De Jager
Project #: 19-790
Map: Landcover
Rev #: 1

Data Sources:
Surveyor General of South Africa (Jan 2018)
DEA Landcover (2013-2014)

0 0.5 1 1.5 2 2.5 km

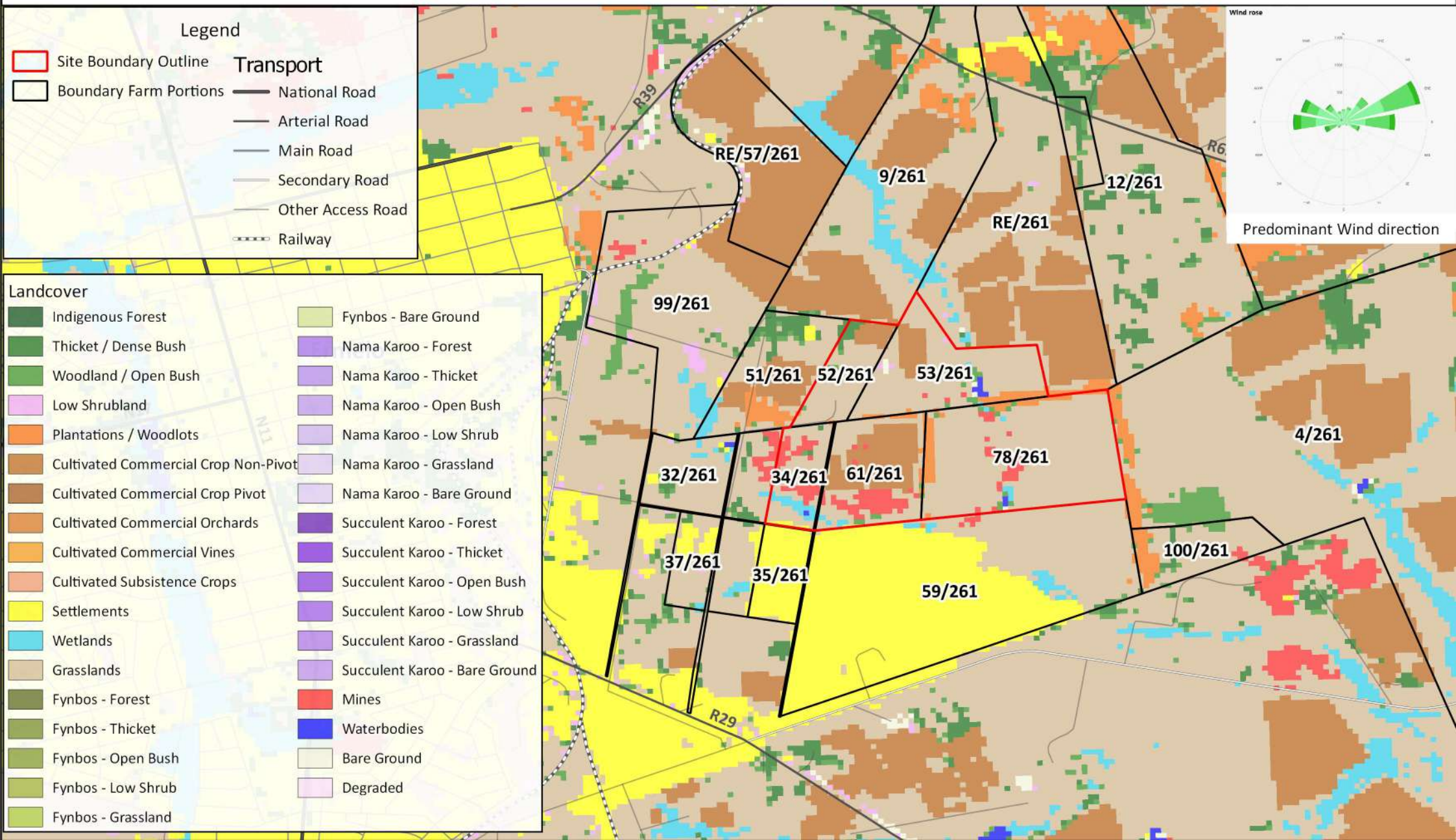
N

Legend

Site Boundary Outline
Boundary Farm Portions

Transport
National Road
Arterial Road
Main Road
Secondary Road
Other Access Road
Railway

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



Predominant Wind direction

ENVIRONMENTAL & ENGINEERING

Project Name: Van Oudshoornstroom
Client Name: Estate Late Philippus Christoffel Johannes De Jager
Project #: 19-790
Map: Topography
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)
Geo-i 5m Contours (2014)

0 1 2 3 4 5 km

N

Legend

- Site Boundary Outline
- Conservation Areas
- Protected Areas

Transport
- National Road
- Arterial Road
- Main Road
- Secondary Road
- Other Access Road
- Railway

Contours
- 20m
- 5m

Inland Water
- Dam
- Non-Perennial River
- Perennial River

Wind rose

Predominant Wind direction

Ermelo
R39
R65
N17
N11
R29

ENVIRONMENTAL & ENGINEERING

Project Name: Van Oudshoornstroom
Client Name: Estate Late Philippus Christoffel Johannes De Jager
Project #: 19-790
Map: Satellite
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 0.2 0.4 0.6 0.8 1 km

N

ENVIRONMENTAL & ENGINEERING

Project Name: Van Oudshoornstroom
Client Name: Estate Late Philippus Christoffel Johannes De Jager
Project #: 19-790
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 0.5 1 1.5 2 2.5 km

N

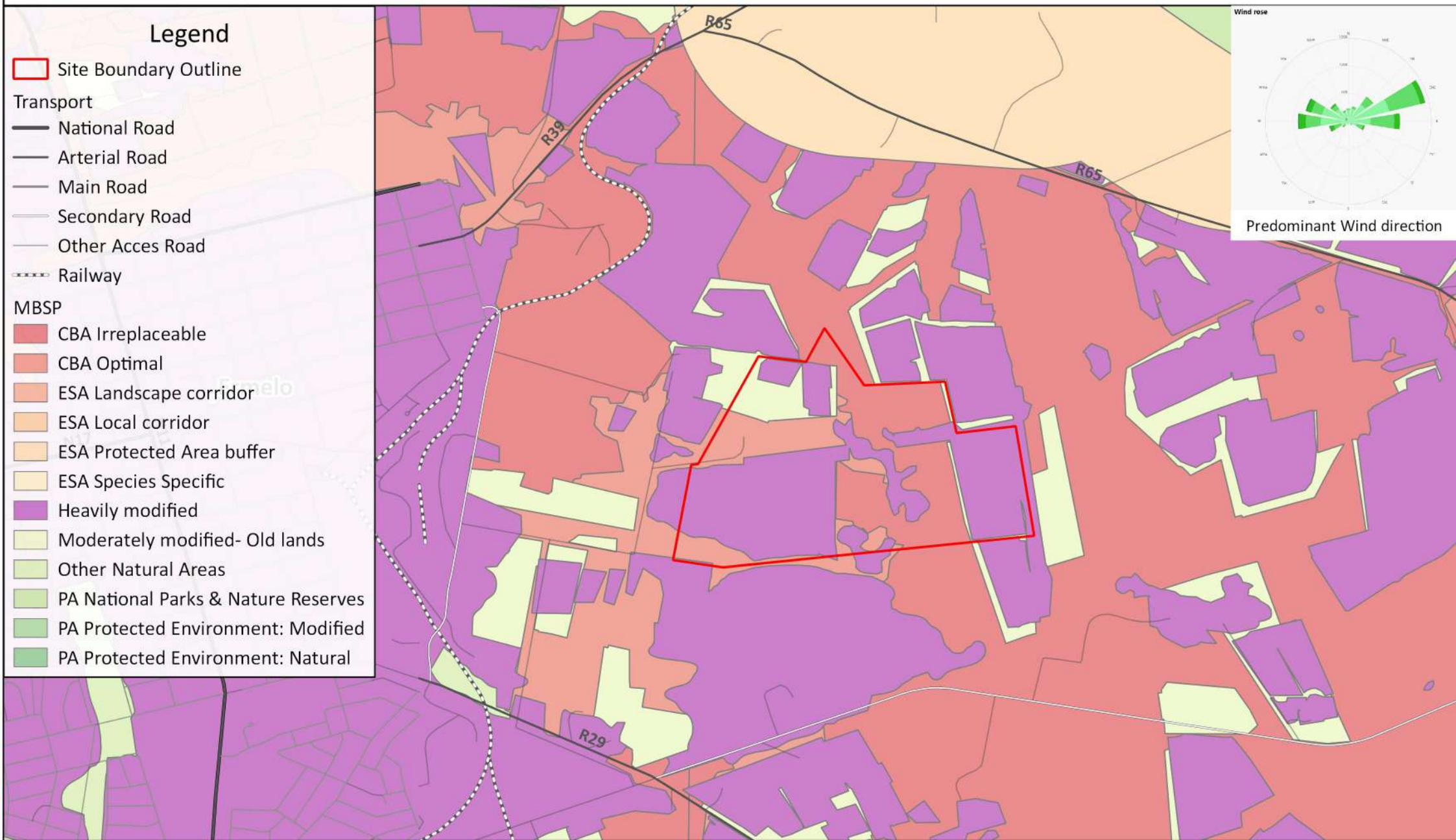
ENVIRONMENTAL & ENGINEERING

Project Name: Van Oudshoornstroom
Client Name: Estate Late Philippus Christoffel Johannes De Jager
Project #: 19-790
Map: MBSP
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 0.5 1 1.5 2 2.5 km

N



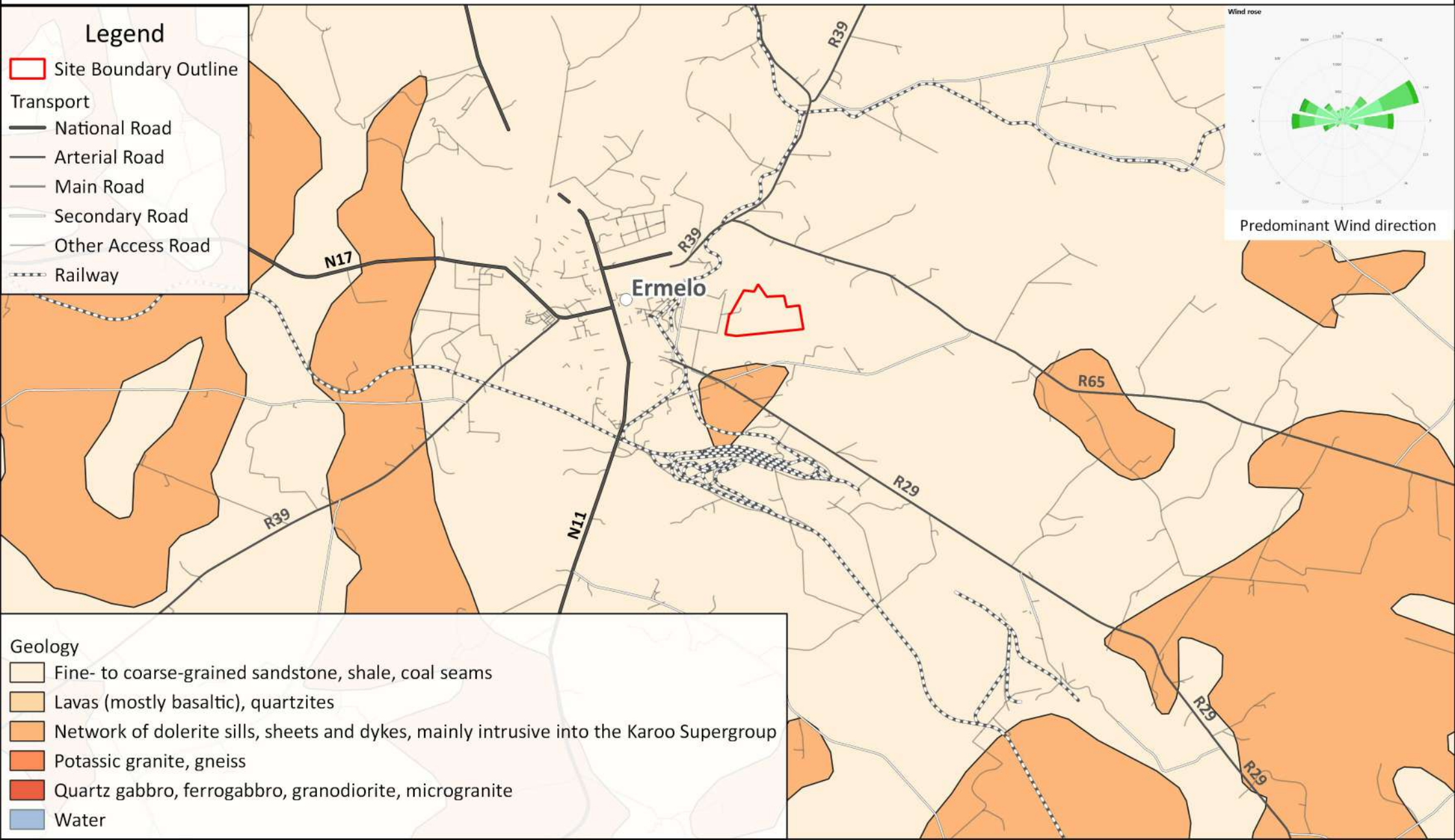
ENVIRONMENTAL & ENGINEERING

Project Name: Van Oudshoornstroom
Client Name: Estate Late Philippus Christoffel Johannes De Jager
Project #: 19-790
Map: Geology
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 0.2 0.4 0.6 0.8 1 km

N



ENVIRONMENTAL & ENGINEERING

Project Name: Van Oudshoornstroom
Client Name: Estate Late Philippus Christoffel Johannes De Jager
Project #: 19-790
Map: Vegetation Type
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 3 6 9 12 15 km

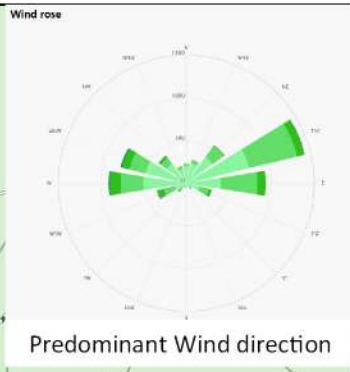
N

Legend

Site Boundary Outline

Transport
- National Road
- Arterial Road
- Main Road
- Secondary Road
- Other Acces Road
- Railway

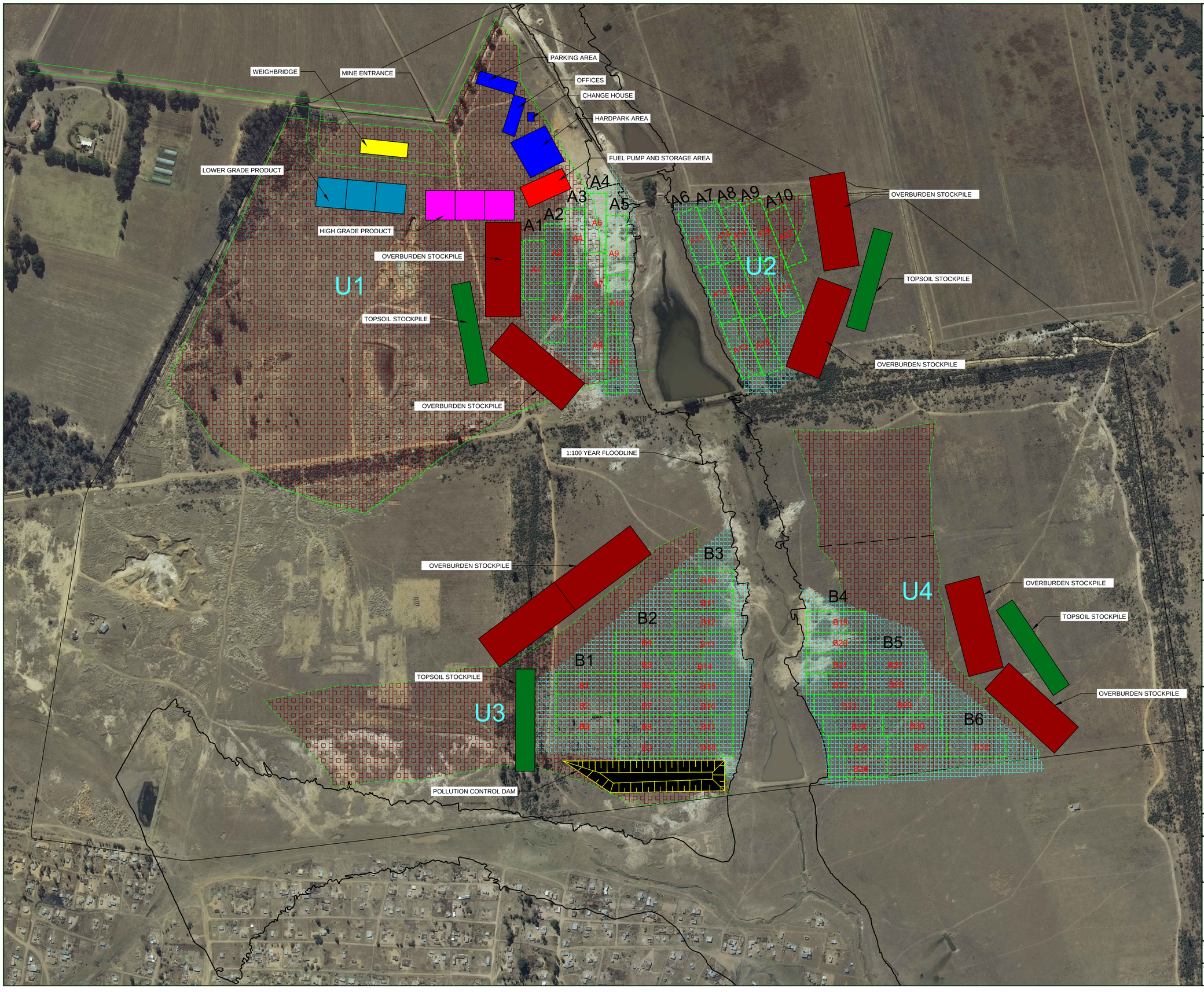
Vegetation Types
- Amersfoort Highveld Clay Grassland
- Eastern Highveld Grassland
- Eastern Temperate Freshwater Wetlands
- Soweto Highveld Grassland
- Wakkerstroom Montane Grassland



Predominant Wind direction

R36
R39
R39
Ermelo
R65
R29
N11
R39
R29
R29

ANNEXURE 4: SITE LAYOUT AND INFRASTRUCTURE



LEGEND

- UNDERGROUND MINING AREA
- OPENCAST MINING AREA
- PROPOSED OPENCAST BOX CUTS

REFERENCE DRAWINGS

Drg No	Reference

REVISIONS

Rev	Date	Description	By
A	12/07/2019	-	-

PROJECT STATUS

CONCEPT DRAWING | TENDER DRAWING | APPROVED CONSTRUCTION DRAWING | AS BUILT DRAWING

Design By	Signature:	Date
-		-
Design Checked	**Signature:**	**Date**
-		-

Approval

For Client:	Name:	Prof Reg No:
	Signature:	Date:
	-	-
For Consulting Engineers:	Name:	Prof Reg No:
	Signature:	Date: -

Consultant Details

Client Details

CLIENT DRAWING NUMBER:
19-782-SW-01

Project
VAN OUDSHOORNSTROOM

Drawing Title
GENERAL LAYOUT

Paper Size	Sheet	Project No	Scale	Revision
A1	1 of 1	18-464	1:3000	A

CONSULTING ENGINEER'S DRAWING NUMBER:
19-702-SW-01