



mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

SCOPING REPORT

FOR LISTED ACTIVITIES ASSOCIATED WITH MINING RIGHT AND/OR BULK SAMPLING ACTIVITIES INCLUDING TRENCHING IN CASES OF ALLUVIAL DIAMOND PROSPECTING.

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: ILIMA COAL COMPANY (PTY) LTD.

TEL NO: 053 832 3298

FAX NO: NONE

POSTAL ADDRESS: 32 LITER STREET, MIDDLEBURG

PHYSICAL ADDRESS: 32 LITER STREET, MIDDLEBURG

FILE REFERENCE NUMBER SAMRAD: (MP30/5/1/2/2/10224MR)

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.
-

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

LIST OF MAPS

LIST OF ACRONYMS AND ABBREVIATIONS

1	CONTACT PERSON AND CORRESPONDENCE ADDRESS.....	7
1.1	<i>Details of The EAP Who Prepared The Report</i>	7
1.2	<i>Expertise of the EAP</i>	7
2	DESCRIPTION OF THE PROPERTY.....	8
2.1	<i>Overview</i>	8
2.2	<i>Locality map</i>	8
3	DESCRIPTION OF THE SCOPE OF THE PROPOSED OVERALL ACTIVITY.....	9
3.1	<i>Listed and Specified Activities</i>	9
3.2	<i>Description of the Activities to be Undertaken</i>	10
4	POLICY AND LEGISLATIVE CONTEXT.....	20
4.1	<i>Listed Activities Identified in Terms of NEMA, NEM:WA and NWA</i>	23
4.2	<i>Required Environmental Licences</i>	28
5	NEED AND DESIRABILITY OF THE PROPOSED ACTIVITIES.....	28
5.1	<i>Need</i>	29
5.2	<i>Desirability</i>	31
6	PERIOD FOR WHICH THE ENVIRONMENTAL AUTHORISATION IS REQUIRED.....	32
7	DESCRIPTION OF THE PROCESS FOLLOWED TO REACH THE PROPOSED PREFERRED SITE ..	32
7.1	<i>Details of all Alternatives Considered</i>	32
7.2	<i>Details of the Public Participation Process Followed</i>	33
8	THE ENVIRONMENTAL ATTRIBUTES ASSOCIATED WITH THE SITES.....	40
8.1	<i>Baseline Environment - Type of Environment Affected by the Proposed Activity</i>	40
8.2	<i>Description of the Current Land Uses</i>	58
8.3	<i>Description of Specific Environmental Features and Infrastructure on the Site</i>	59
8.4	<i>Environmental and Current Land Use Map</i>	59

9	IMPACTS IDENTIFIED	60
9.1	<i>Methodology Used in Determining the Significance of Environmental Impacts.....</i>	<i>60</i>
9.2	<i>The Positive and Negative Impacts that the Proposed Activity and Alternatives will have on the Environment and the Community that may be Affected</i>	<i>63</i>
9.3	<i>The Possible Mitigation Measures that Could be Applied and the Level of Risk.....</i>	<i>64</i>
10	PLAN OF STUDY FOR THE ENVIRONMENTAL IMPACT ASSESSMENT PROCESS.....	65
10.1	<i>Description of Alternatives to be Considered Including the Option of Not Going Ahead with the Activity.....</i>	<i>65</i>
10.2	<i>Description of the Aspects to be Assessed as Part of the Environmental Impact Assessment Process.....</i>	<i>65</i>
10.3	<i>Description of Aspects to be Assessed by Specialists</i>	<i>65</i>
10.4	<i>Proposed Method of Assessing the Environmental Aspects Including the Proposed Method of Assessing Alternatives</i>	<i>65</i>
10.5	<i>The Stages at which the Competent Authorities will be Consulted.....</i>	<i>71</i>
10.6	<i>Particulars of the Public Participation Process with Regard to the Impact Assessment Process that will be Conducted</i>	<i>72</i>
10.7	<i>Description of the Tasks that will be Undertaken During the Environmental Impact Assessment Process.....</i>	<i>72</i>
10.8	<i>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.</i>	<i>73</i>
10.9	<i>Other Information Required by the Competent Authority.....</i>	<i>79</i>
11	References	80

LIST OF FIGURES

Figure 3-1: Mining Method	12
Figure 3-2: DM Cyclone Plant.....	15
Figure 5-1: Energy Mix in the 2018 Integrated resource Plan	30
Figure 8-1: Classification of Land Units in the Mpumalanga Biodiversity Sector Plan	47
Figure 8-2: Highveld Priority Area PM ₁₀ Concentrations.....	49
Figure 8-3: Highveld Priority Area PM _{2.5} Concentrations.....	49
Figure 8-4: SAHRA Paleontological Sensitivity Map.....	52
Figure 8-5: Local Municipalities	54
Figure 8-6: summary of energy or fuel for cooking, heating & lighting.....	57
Figure 8-7: Summary of Employment and Income	58

LIST OF TABLES

Table 2-1: Description of the Properties	8
Table 2-2: 21 digit Surveyor-General Code for Each Farm Portion	8
Table 4-1: Policy and Legislative Context	20
Table 4-2: NEMA Listed Activities Applicable to the Kranspan Project	23
Table 4-3: NEMWA LISTED ACTIVITIES	27
Table 4-4: Potential Water Uses Identified for the Proposed Project.....	28
Table 7-1: Environmental Buffer Zones	33
Table 8-1. Floristic composition and important taxa in Eastern Highveld Grassland.....	42
Table 8-2: Key Statistics of Chief Albert Luthuli Municipality	55
Table 9-1: Criteria for Assessing the Significance of Impacts	61
Table 9-2: Significance Rating Matrix.....	62
Table 9-3: Positive/Negative Mitigation Ratings	62
Table 10-1: Stages at Which the Competent Authorities will be Consulted.....	71
Table 10-2: The possible mitigation measures that could be applied and the level of risk	74

LIST OF APPENDICES

Appendix 1: EAP CV.....	i
Appendix 2: EAP Company Experience.....	ii
Appendix 3: Summary List of Key Policy and Legislative Instruments.....	iii
Appendix 4: Maps.....	iv
Appendix 5: Record of Registered Land Claims	xvii
Appendix 6: Public Participation Materials.....	xviii
Appendix 7: Terrestrial Ecology Screening Report.....	xix
Appendix 8: Heritage Scoping Study Report.....	xx

LIST OF MAPS IN APPENDIX 4

Map 1: Regional Locality Map.....	v
Map 2: Site Infrastructure Layout.....	vi
Map 3: Surrounding Landowners and Landusers	vii
Map 4: Topography	viii
Map 5: Soils.....	ix
Map 6: Vegetation.....	x
Map 7: Quarternary Catchments	xi
Map 8: Hydrology.....	xii
Map 9: Critical Biodiversity and Ecological Support Areas	xiii
Map 10: Protected Areas	xiv
Map 11: Current Landuses	xv
Map 12: Environmental Sensitivity Plan.....	xvi

LIST OF ACRONYMS AND ABBREVIATIONS

CBA	Critical Biodiversity Area
CRR	Comment and Response Register
DEA	Department of Environmental Affairs
DMR	Department of Mineral Resources
DSR	Draft Scoping Report
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
EMPr	Environmental Management Programme
ESA	Ecological Support Area
FSR	Final Scoping Report
GW	Gigawatts
I&APs	Interested and Affected Parties
IDP	Integrated Development Plan
IRP	Integrated Resource Plan
IWULA	Integrated Water Use Licence Application
IWWMP	Integrated Water and Wastewater Management Plan
kg	kilogramme
Kcal/kg	Kilocalories per kilogramme
kl	Kilolitre
ktpa	Kilotons per annum
ktpm	Kilotons per month
l	litre
m	Metre
mamsl	Metres above mean sea level
Mj/kg	Megajoules per kilogramme
mm	Millimetre
MPRDA	Minerals and Petroleum Resources Development Act
MR	Mining Right
MRA	Mining Right Application
Mtpa	Million tons per annum
MW	Megawatts
NEMA	National Environmental Management Act
NEM:AQA	National Environmental Management: Air Quality Act
NEM:BA	National Environmental Management: Biodiversity Act
NEM:WA	National Environmental Management: Waste Act
NHRA	National Heritage Resources Act
NWA	National Water Act
p.a.	Per annum
PCD	Pollution Control Dam
PR	Prospecting Right

PRA	Prospecting Right Application
RBCT	Richards Bay Coal Terminal
S&EIR	Scoping and Environmental Impact Reporting
SAHRA	South African Heritage Resource Agency
SDF	Spatial Development Framework
WML	Waste Management Licence

SCOPING REPORT

1 CONTACT PERSON AND CORRESPONDENCE ADDRESS

1.1 DETAILS OF THE EAP WHO PREPARED THE REPORT

Name of the Practitioner:	ABS Africa (Pty) Ltd.
Tel No.:	+27 11 805 0061
E-mail address:	paul@abs-africa.com / chane@abs-africa.com

1.2 EXPERTISE OF THE EAP

1.2.1 THE QUALIFICATIONS OF THE EAP

Name: Mr. Paul Furniss

Academic Qualifications:

- Bachelor of Agricultural Science in Animal Science: University of Pretoria, 1998
- Bachelor of Science (Honours) in Wildlife Management: University of Pretoria, 1999
- Master of Science in Environmental Science (Water Resource Management): University of Pretoria, 2000

Professional Registration:

- Pr.Sci.Nat. Professional Natural Scientist (Environmental Science): The South African Council for Natural Scientific Professions, 2007

Name: Ms. Chané Pretorius

Academic Qualifications:

- Bachelor of Science in Tourism: North West University, 2010
- Bachelor of Science (Honours) in Geography: University of Johannesburg, 2011

1.2.2 SUMMARY OF THE EAPs PAST EXPERIENCE

ABS Africa (Pty) Ltd is a professional environmental advisory company with a focus on the mining environment. The ABS Africa personnel included in the project team structure for the independent environmental assessment have collectively completed more than 100 EIAs across the African continent.

Much of this experience has been gained in undertaking complex and challenging EIAs involving the management of specialist teams, conducting public participation processes, aligning international standards with in-country legislation and interfacing with project engineering teams.

The EAP responsible for this submission has 16 years environmental assessment and management experience in the energy, water, mining and infrastructure sectors.

Please refer to Appendix 1 and Appendix 2 for a record of the experience of the EAP.

2 DESCRIPTION OF THE PROPERTY

2.1 OVERVIEW

The applicant is the holder of prospecting right MP30/5/1/2/2/102PR. The coal seams of interest form part of the Ermelo Coalfield. Completed prospecting activities within the prospecting rights area have resulted in the delineation of the coal seam deposits which can be economically mined.

The applicant is thus now applying for a Mining Right. The main activity being applied for in terms of the EIA Regulations, 2014 (as amended) is thus Listed Activity 17 in Listing Notice 2.

Although there five coal seams present within the proposed mining right area, only the E Seam can be mined economically (Ilima, 2018). Two coal products are expected to be produced from the mining. Approximately 70% of the mined coal is planned to be beneficiated and then exported via the Richards Bay Coal Terminal (RBCT). The remaining 30% will be thermal coal, supplied to Eskom for power generation.

The planned operations would comprise of surface and underground mining.

A Scoping and Environmental Impact Reporting (S&EIR) process is being undertaken in support of the Mining Right Application (MRA), Environmental Authorisation (EA), Waste Management Licence (WML), and Water Use Licence (WUL) required for the proposed mining and associated activities.

TABLE 2-1: DESCRIPTION OF THE PROPERTIES

FARM NAMES:	Kranspan 49 IT
APPLICATION AREA (HA):	Approximately 3 382 ha
MAGISTERIAL DISTRICT:	Gert Sibande
MUNICIPALITIES	Chief Albert Luthuli Local Municipality
DISTANCE AND DIRECTION TO NEAREST TOWNS	Carolina is situated approximately 13 km north-east of the proposed mining right area

TABLE 2-2: 21 DIGIT SURVEYOR-GENERAL CODE FOR EACH FARM PORTION

FARM NAME	PORTION	TITLE DEED	21 DIGIT SURVEY OR GENERAL CODE FOR EACH FARM PORTION
Kranspan 49 IT	RE	T1717/2013	TOIT00000000004900000
Kranspan 49 IT	1	T38919/1972	TOIT00000000004900001
Kranspan 49 IT	2	T97271/2004	TOIT00000000004900002
Kranspan 49 IT	3	T2076/2012	TOIT00000000004900003
Kranspan 49 IT	4	T16244/1996	TOIT00000000004900004
Kranspan 49 IT	5	T97271/2004	TOIT00000000004900005
Kranspan 49 IT	6	T16243/1996	TOIT00000000004900006
Kranspan 49 IT	7	T175671/2003	TOIT00000000004900007
Kranspan 49 IT	8	T1717/2013	TOIT00000000004900008

2.2 LOCALITY MAP

Please refer to Appendix 4 Map 1.

3 DESCRIPTION OF THE SCOPE OF THE PROPOSED OVERALL ACTIVITY

3.1 LISTED AND SPECIFIED ACTIVITIES

(Please refer to Appendix 4 Map 2 for the proposed layout of the key infrastructure listed below).

NAME OF ACTIVITY (ALL ACTIVITIES INCLUDING ACTIVITIES NOT LISTED) (E.G. EXCAVATIONS, BLASTING, STOCKPILES, DISCARD DUMPS OR DAMS, LOADING, HAULING AND TRANSPORT, WATER SUPPLY DAMS AND BOREHOLES, ACCOMMODATION, OFFICES, ABLUTION, STORES, WORKSHOPS, PROCESSING PLANT, STORM WATER CONTROL, BERMS, ROADS, PIPELINES, POWER LINES, CONVEYORS, ETC...ETC...ETC.)	AERIAL EXTENT OF THE ACTIVITY HA OR M²	LISTED ACTIVITY MARK WITH AN X WHERE APPLICABLE OR AFFECTED	APPLICABLE LISTING NOTICE (GNR 544, GNR 545 OR GNR 546)/ NOT LISTED	WASTE MANAGEMENT AUTHORISATION (INDICATE WHETHER AN AUTHORISATION IS REQUIRED IN TERMS OF THE WASTE MANAGEMENT ACT). (MARK WITH AN X)
Mine Contractors Camp	2 ha	X	GNR 984 (17)	X
Open Pit Mine Areas	1054 ha	X	GNR 984 (17)	-
Overburden Stockpiles	93 ha	X	GNR 984 (17)	X
Topsoil Stockpiles	11 ha	X	GNR 984 (17)	-
Discard Stockpile (alternative to in-pit discard disposal)	26.94 ha	X	GNR 984 (17)	X
Pollution Control Dams	6 ha	X	GNR 984 (17)	X
Fuel Storage Area and Back-Up Power Generation (generator sets)	0.04 ha	X	GNR 984 (17)	-
Explosives Storage Area	TBC	X	GNR 984 (17)	-
Mine Haul Road and Internal Roads – Main Roads	1.4 ha	X	GNR 984 (17)	-
Mine Haul Road and Internal Roads – Pit Roads	1.1 ha	X	GNR 984 (17)	-
Mine Haul Road and Internal Roads – Roads for Final Rehabilitation	0.5 ha	X	GNR 984 (17)	-
Overland Conveyors (Pit to Loading Area)	2 400 m	X	GNR 984 (17)	-
Coal Processing Plant (Dry Crushing and Screening and Wash Plant)	1.7 ha	X	GNR 984 (17)	-
Coal Product Stockpile (Loading Area)	5.3 ha	X	GNR 984 (17)	X
Mine Support and Administration Block (Sewage treatment facility, workshops, offices, ablutions, change houses, lamp room, first aid station, stores, weighbridges, solid waste handling area, vehicle parking area, and vehicle wash bay, water supply boreholes)	1.7 ha	X	GNR 984 (17)	-
Mine Access Shaft and Ventilation Shaft	5.4 ha	X	GNR 984 (17)	-
Underground Mining Area	392 ha	X	GNR 984 (17)	-

The mine planning and detailed engineering is ongoing and the surface area extent of the planned infrastructure may change.

Based on the mine planning studies completed to date, the following is proposed:

- Surface (open pit) mining focusing on extraction of the E Seam via the roll over mining method;
- Follow-up phases of mining focused on extraction of the E Seam will be achieved through underground mining via the bord and pillar method;
- Establishment and maintenance of topsoil, overburden and a discard stockpile;
- Following extraction, the coal product will be dry crushed and screened on-site. To meet the export coal quality specifications, 70% of the coal will be beneficiated on site through an on-site coal washing plant with filter press;
- Coal discard from the wash plant will be disposed of in-pit as part of the rehabilitation of the surface mining. Alternatively, the discard will be disposed of in an engineered stockpile on surface. Both disposal options will be investigated and assessed in the S&EIR process;
- Dewatering of seepage water will be required for both the surface and underground mining over the Life of Mine (LOM). Water removed from pits and the underground workings will be retained in pollution control dams; and
- Establishment and maintenance of various ancillary mine support infrastructure will be required.

Below is a summarised list of the proposed mining activities to be undertaken.

- Exploration geophysical surveying, drilling, pit sampling and trenching;
- Clearing and grubbing (surface mining areas and surface infrastructure footprint);
- Topsoil removal and stockpiling (surface mining areas and surface infrastructure footprint);
- Overburden removal and stockpiling;
- Drilling and blasting (when necessary, surface and underground mining);
- Excavation of coal and material transfer to a coal stockpile area (surface and underground mining);
- Dry crushing and screening at the product loading area;
- Beneficiation of the export coal product; and
- Loading, hauling and transport of coal product (surface and underground mining).

3.2 DESCRIPTION OF THE ACTIVITIES TO BE UNDERTAKEN¹

3.2.1 MINING OVERVIEW

All the required mine infrastructure for the Project Area will be established within the proposed mining right area. The E Seam will be mined through both underground (bord and pillar), and opencast mining methodologies. The mine infrastructure will be situated in the south-eastern portion of the farm Kranspan 49IT.

The mine infrastructure will consist of the following:

- A mine contractors camp;
- Overhead powerlines and related electrical infrastructure from the nearest Eskom take-off position;

¹ The information presented in this section has primarily been summarised from the Kranspan Mining Works Programme (Ilima, 2018)

- Back-up power supply (generators);
- Bunded fuel storage area;
- Potable water supply infrastructure;
- Mine haul roads and associated stormwater control structures;
- Explosives storage area;
- Mine offices, parking area, first aid station, stores, laboratory, workshop, change house and lamp room (pre-fabricated structures);
- Overland conveyor;
- Wash plant;
- Discard stockpile facility (alternative to in-pit disposal of discard);
- Product stockpiles and loading area;
- Weighbridges;
- Brake test ramps;
- Crushing and screening plant;
- Underground mine access shaft and associated equipment;
- Upcast ventilation shaft and fans (underground mine), and
- Wastewater (sewage) treatment infrastructure for the contractor's camp and mine office block area.

The mine will operate on a 2-shift system 6 days per week and the coal preparation plant operates on a 3-shift system 7 days per week. Coal is out-loaded to rail 7 days per week. The raw coal handling, stockpiling, processing, and out-loading facilities are designed to cater for the differences between mining, coal preparation, and product handling operations.

3.2.2 OPENCAST MINING

A conventional strip mining (roll-over) method will be employed for each of the opencast pits. Material from the boxcut phase will be stored per overburden classification, with the bulk of the material placed in a position alongside the final strip, to facilitate filling of the final void (Figure 3-1).

Each of the steps in the open cast mining method is summarised below:

3.2.2.1 *Topsoil*

Topsoil will be removed two strips in advance of the current working strip and will be either stockpiled separately or placed directly on the rehabilitated area behind the advancing strip. Topsoil will be removed using excavators and hauled with Articulated Dump Trucks (ADTs).

3.2.2.2 *Softs Removal*

Soft subsoil will be removed one strip in advance of the current working strip and will be either stockpiled separately or placed directly on the rehabilitated area behind the advancing strip. Softs will be removed using excavators and hauled with Articulated Dump Trucks (ADTs).

3.2.2.3 *Overburden Drill and Blast*

Drilling of the overburden will be done using a mobile drill rig drilling a 110 mm diameter hole and with a planned burden and spacing of 4 m x 5 m. This may be adjusted once mining has commenced.

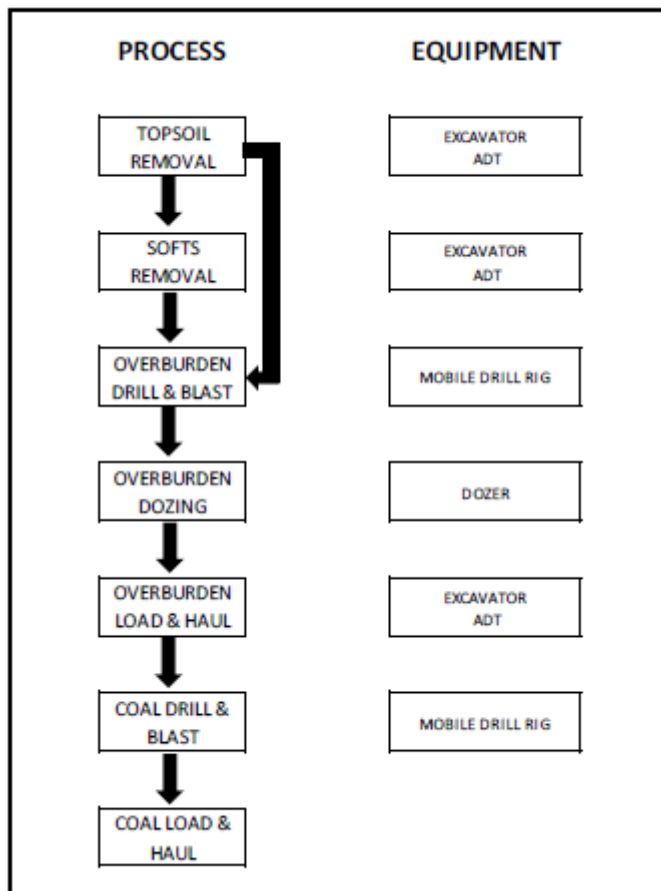


FIGURE 3-1: MINING METHOD

3.2.2.4 Overburden Dozing

The first overburden removal process will be to doze overburden material to the spoil side. For modelling purposes, it is assumed that 30% of the overburden can be dozed. The assumption is based on current mining practice at similar sites where the contractor is employed.

3.2.2.5 Overburden Load and Haul

After dozing, remaining overburden will be loaded and hauled and dumped on the spoil side of the current strip. The load and haul will be conducted using excavators and ADTs.

3.2.2.6 Coal Drill and Blast

Drilling of the overburden will be done using a mobile drill rig drilling a 110 mm diameter hole and with a planned burden and spacing of 7 m x 8 m. This may be adjusted once mining has commenced.

3.2.2.7 Coal Load and Haul

Permanent haul roads will be constructed in line with relevant safety requirements. The coal be loaded and hauled to the Run of Mine Stockpile using excavators and ADTs.

3.2.2.8 Rehabilitation

Rehabilitation of the open pit will be done concurrently with the opencast mining using the recognised roll over method of mining and the stated mining sequence.

Materials are placed back into the void in the former stratigraphic sequence i.e. topsoil on the surface, subsoil directly below the topsoil, while all hard material (sandstone and shale) is deposited in the bottom of the void. It is envisaged that the final reinstated surface level will be approximately 0.52 m above the original surface level. However, the existing surface drainage pattern will remain unchanged and the total disturbed area will be free draining. On completion of surface reinstatement, the area will be re-vegetated with suitable pasture grass species.

3.2.3 UNDERGROUND MINING

The underground mining method will be a conventional bord and pillar mining operation deploying continuous miners with shuttle cars, supported by roof bolters for roof support and load haul dumpers for sweeping. The mine will be designed for the maximum extraction on the advance with no pillar extraction on retreat. The safety factors applied for main developments is 2.0 and for secondary production panels 1.6.

It is planned to establish three continuous miner production sections producing between 120,000 and 130,000 tpm. A stone development section will be established for developing through dykes and faults. This will ensure that the continuous miner sections focus on coal production only.

The mine design will allow for the introduction of additional production sections, if required in the future.

3.2.3.1 *Underground Material Handling Systems*

Broken ore will be transported from the production faces by means of an LHD and tipped into underground dump trucks for transporting to the underground crushing circuit.

Ore will be tipped directly onto a grizzly. The undersize will pass through the grizzly screen onto an apron feeder and vibrating grizzly, which will convey the ore to the underground crusher. Oversize will undergo secondary breakage using a hydraulic rock breaker.

Ore will be pre-crushed before being discharged via a chute onto a conveyor feeding into the shaft loading facility. Material skips will hoist the ore to surface and discharge into loading bins on surface. The surface reef conveyor will transfer the run-of-mine ore to the secondary crushing circuit.

3.2.4 BENEFICIATION

The raw coal handling facilities, coal preparation plant (wash plant) and product out-loading facilities are designed to receive and process coal from both opencast and underground mining operations and to produce 3.0 Mt/a of saleable product at 5,500 kcal/kg net as received which is to be out-loaded on rail for delivery to the RBCT.

The coal preparation plant design capacity and product out-loading systems are calculated on the following basis:

➤ Raw coal feed	4.24 Mt/a AD
➤ Sales	3.00 Mt/a AD
➤ Operating time	6360 h/a
➤ Theoretical Yield	80.8%
➤ Plant Efficiency	87.6%
➤ Plant Yield	70.8% (+10% maximum -15% minimum)
➤ Average plant capacity	670 t/h AD
➤ Design plant capacity	+10%-740t/h AD

The coal preparation plant is designed on a modular basis to allow for a phased build-up in coal production.

The washing plant design comprises of the following modules: -

- Dense medium cyclone modules each inclusive of de-sliming screen clean coal drain and rinse screen, 2 x 600 dense medium cyclones and associated tanks and pumps;
- Discard modules comprising 1 drain and rinse screen fed from 2 dense medium cyclone modules;
- Fines treatment plants fed from 2 dense medium cyclone modules each module inclusive of de-sliming cyclones, spirals, spiral clean coal dewatering cyclones and screens, spiral discard dewatering cyclones and water clarification system;
- Clean coal dewatering module fed from the 4 dense medium cyclone modules by a common conveyor feeding 2 clean coal centrifuges; and
- Plant services for magnetite addition, compressed air, and high-pressure water.

The modules are sized to handle the design tonnage plus 10% and the expected variations in yield and size consist as set down in the design criteria.

The 40 mm x 0 raw coal is fed onto fixed sieve panels followed by de-sliming screens where water is added and the 1mm x fines are removed. The 40 x 1 mm de-slimed raw coal is then mixed in a magnetite in water suspension and laundered to a dense medium cyclone feed tank from where it is pumped to 2 x 600 mm dense medium cyclones. The cyclones are sized to handle the feed tonnage and particle top size. The 1 mm x 0 fines gravitate to a de-sliming tank and are pumped to the fines treatment for further processing.

The dense medium cyclones separate the coal by density into clean coal and discard fractions. Clean coal gravitates over a fixed sieve to a horizontal vibrating drain and rinse screen where medium is drained from the coal and the coal is then rinsed with water to remove any adhering medium. Discard from the cyclones similarly gravitates to a horizontal vibrating drain and rinse screen where medium is again drained from the coal and the coal is again rinsed with water to remove any adhering medium.

Correct medium from the fixed sieve and drainage section of the drain and rinse screens gravitates to a correct medium tank and is then pumped to a head-box from where it is distributed to the pump tank and bleed-off to dilute medium to remove excess water entering the circuit with the raw coal.

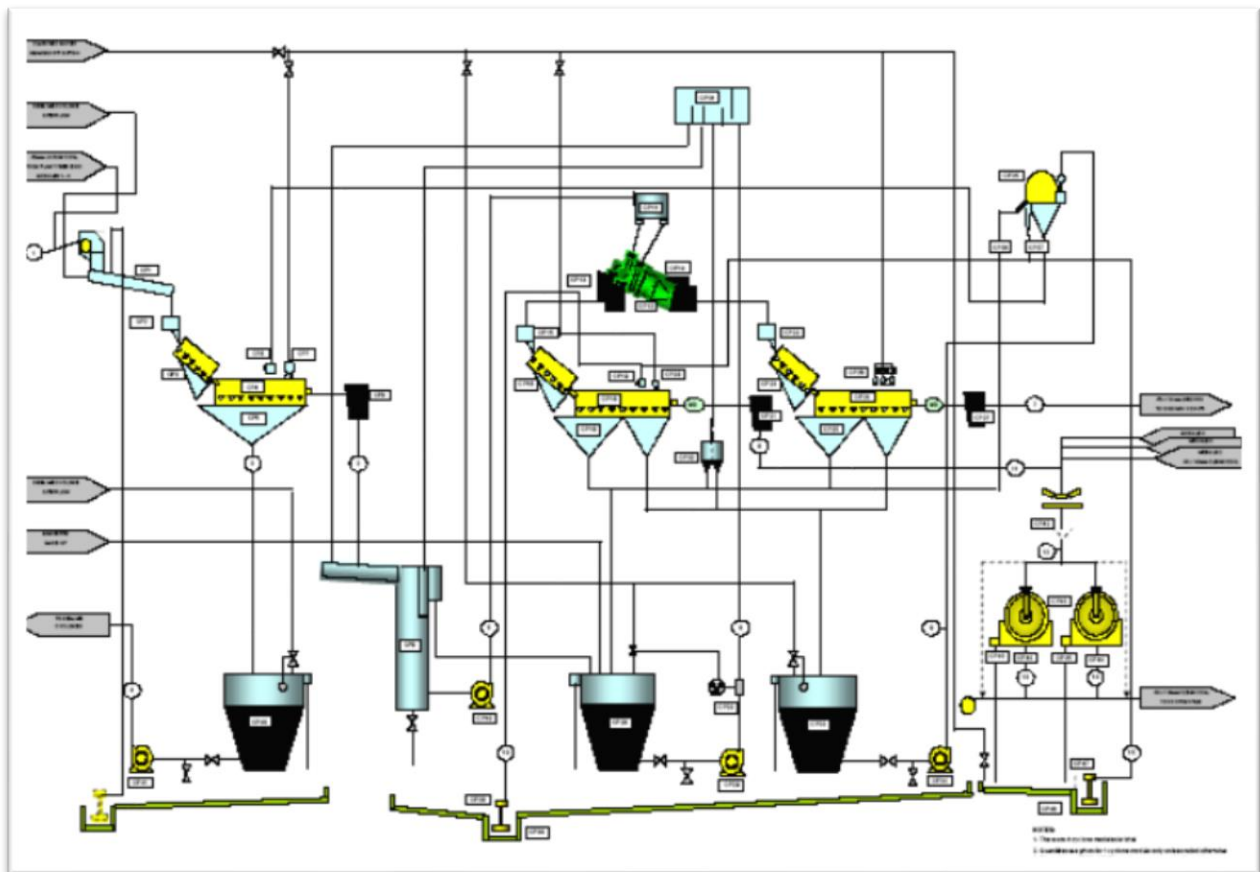
Dilute medium from the drainage section of the drain and rinse screens gravitates to a dilute medium tank from where it is pumped to a magnetic separator for recovery of the magnetite. Magnetic separator effluent is used as primary rinse water on the drain and rinse screens or flood box water on the de-sliming screen. Over dense magnetite from the magnetic separator gravitates to the correct medium tank.

An automatic nucleonic density controller measures the density of the correct medium and controls the addition of clarified water into the correct medium tank to maintain the correct density in the circuit.

Fresh magnetite slurry is periodically added at the required density to the correct medium tank from the magnetite mixing plant if the density of the medium or the tank level drops.

Clean coal from the drain and rinse screens is discharged onto a common collection conveyor and fed to clean coal centrifuges for further dewatering of the coal. Effluent from the centrifuges is pumped back via flood-box onto the drainage section of the clean coal drain and rinse screens.

Discard from the drain and rinse screens is collected on a common discard conveyor and conveyed to the discard bin. Floor clean-up sumps and pumps are provided in each module.



Source: Kranspan Mining Works Programme (Ilima, 2018)

FIGURE 3-2: DM CYCLONE PLANT

3.2.5 DISCARD

Discard from the coal preparation plant is planned to be deposited back into the open pits, after extraction of the target coal seam has been completed.

The alternative to in-pit disposal of the discard material will be the establishment of an engineered surface discard stockpile. This stockpile will be situated in proximity to the coal preparation plant (Appendix 4 Map 2) and will be designed in compliance with the Regulations regarding the Planning and Management of Residue Stockpiles and Residue Deposits, 2015 (as amended)².

The selection of the preferred option for discard disposal will be informed by the findings of the S&EIR Process, particularly the geochemical characterisation and groundwater modelling.

3.2.6 CONVEYOR

The underground shaft conveyor will be elevated to ~15 m, which allows for a 7,000-tonnes ROM coal stockpile on surface. From the underground ROM stockpile, an overland conveyor of 2.5 km will be constructed to convey the coal to the screening and crushing plant complex.

² Government Notice No. R. 632 of 24 July 2015, promulgated in terms of the National Environmental Management: Waste Act 59 of 2008

An access road will be constructed running along the overland conveyor that will provide access to the underground shaft complex. The underground ROM coal will be fed from the ROM stockpile onto the overland conveyor.

3.2.7 POWER

Based on the planned mining operation, surface plant, and product handling information planned for the Kranspan Project, the calculated Total Power Demand is 7.0 megavolt amperes (MVA). The Maximum Demand is dependent on correct operation of a Power Factor Correction (PFC) system to keep the Power Factor above 0.96. Should the PFC system fail, the Maximum Demand can substantially increase to 9.3 MVA.

Calculation of the Maximum Demand is based on:

- Underground power requirements
 - Three continuous miner sections;
 - Conveyor systems; and
 - Auxiliaries installations such as water reticulation systems.
- Surface power requirements
 - Office complexes;
 - Change house facilities;
 - Ventilation fans;
 - Incline conveyors;
 - Surface stockpile conveyors;
 - Crushing and screening plant;
 - Modular Coal Processing Plant;
 - Water purification and sewer plants; and
 - Workshops.

In order to mitigate risks to underground operations and to comply with legislation, an alternate power supply to the ventilation fans has been recommended and other critical infrastructure is mitigated by installing standby diesel generators for the purposes of fulfilling the alternate power supply.

The Surface Consumer Substation for Kranspan will typically consist of the following:

- Two 22 kV pole-mounted Ganged Isolators with surge arrestors.
- Two 22 kV / 11 kV 10 MVA DY11 skid-mounted Oil Natural Air-cooled transformers fitted with:
 - Automatic 16-step tap switch changer
 - Primary circuit breaker
 - Secondary circuit breaker
 - 25-Amp dry-type continuously rated Neutral Earthing Resistor
 - Primary, secondary, transformer, and neutral earthing resistor protection
 - Controllers
 - Automatic tap switch changer

- 22 kV voltage transformer
- ➡ One skid-mounted breaker skid with:
 - Two incoming breakers
 - One lighting transformer
 - Bus section breaker
 - Two reactor capacitor inductive system feeders
 - Two underground feeders
 - Four surface feeders
- ➡ Earthing system as per SANS requirements.
- ➡ Two PFC systems.

3.2.8 EXPLOSIVES MAGAZINE

Explosives for blasting of overburden and coal will be stored at selected areas across the site. Storage areas will comply with all relevant legislation.

3.2.9 POLLUTION CONTROL DAMS

Several PCDs will be established on the mine site, where all dirty water will be collected and stored for reuse. The proposed location of the PCDs is shown in Appendix 4 Map 2.

3.2.10 WATER

Water requirements for use by the mine staff is calculated at 100 litres (L) per person per day. The total number of employees and subcontractors are estimated to be between 350 and 400 and the water supply capacity has therefore been calculated at 40 kilolitres (kL) per day.

Boreholes will be established to supply water for staff requirements. A small water treatment plant will be built at the mine to produce potable water from the borehole water.

Industrial water requirements include:

- ➡ Beneficiation Plant (Dense medium);
- ➡ Dust suppression (Surface and Underground);
- ➡ Cooling (Underground)

The processing plant water consumption has been estimated to be between 10,000 and 20,000 m³) per month.

Two sources for the supply of water, especially to the beneficiation plant, have been identified, namely:

- ➡ Water from ground or surface water resources; and
- ➡ Water from dirty water containment facilities.

3.2.11 SEWAGE

New facilities for sewage will be constructed within the footprint of the process plant. The technology is likely to be a modular sewage package plant with a design throughout capacity suitable for the expected mine labour.

Chemical toilets will be used for the underground mining. These will be serviced at the required frequency by a contractor.

3.2.12 WATER MANAGEMENT

All dirty rainfall run-off will be separated from clean water through cut-off drains. The polluted run-off water collected will be stored in high-density polyethylene-lined (HDPE) pollution control dams (PCDs). The latter will be located adjacent to the screening and crushing plant and in proximity to the open pits. The water from the PCDs will be used for dust suppression around the plants and the ROM and product stockpiles.

Water management across the site will be in compliance with all requirements of Government Notice 704, promulgated in terms of the National Water Act, Act 36 of 1998, specifically in respect of the following:

- Collection of the water arising within any dirty area, including water seeping from mining operations, outcrops or any other activity, into a dirty water system;
- Design, construction, maintenance and operation of the clean water and dirty water management systems so that it is not likely for either system to spill into the other more than once in 50 years;
- Design, construction, maintenance and operation of any dam that forms part of a dirty water system to have a minimum freeboard of 0.8 m above full supply level, unless otherwise specified in terms of Chapter 12 of the Act;
- Design, construction, and maintenance of all water systems in such a manner as to guarantee the serviceability of such conveyances, for flows up to and including those arising as a result of the maximum flood, with an average period of recurrence of once in 50 years; and
- Prevention of erosion or leaching of materials from any residue deposit or stockpile from any area and containment of material or substances so eroded or leached in such area by providing suitable barrier dams, evaporation dams or any other effective measures to prevent this material or substance from entering and polluting any water resources.

3.2.13 NON-MINERAL WASTE MANAGEMENT

No solid waste disposal facilities are to be constructed as part of the mine development. All waste will be managed in accordance with the waste management hierarchy as required by the National Environmental Management: Waste Management Act 59 of 2008.

Waste will be segregated into general and hazardous waste and contractors will be appointed to remove the waste to licensed waste disposal facilities.

Recyclable waste like glass, wood and plastic will similarly be segregated on site and removed by licensed waste transporters. An oil recycling company will also be appointed to remove waste oil generated by the mining activities. Medical waste arising from the on-site clinic will also be removed from site by a contractor.

The on-site waste storage area is proposed to be located within the process plant footprint.

3.2.14 MAIN MINE ACCESS ROAD AND INTERNAL ROADS

The Project Area will be directly accessed from the R36 Provincial Road, which runs in a north to south direction from Carolina to Breyten. The administrative offices, main store, main workshop, and the processing plant infrastructure will be constructed adjacent to the R36.

The internal roads will be 6 m wide surfaced roads, with semi-mountable curbs and non-mountable curbs on both sides of the road, as required. These roads will be equipped with all the required storm water systems and structures to prevent any possible flooding. Dust from these roads will be controlled by applying road binders and regular watering with water tankers.

3.2.15 RAIL

No new rail infrastructure is proposed to be constructed as part of the Kranspan Project. Product destined for the export market will be transported via truck to an existing rail siding. The rail route links to the RBCT mainline at Ermelo and onto the export facility at Richards Bay.

The rail haul route from the Project Area to Majuba Power Station goes south to Ermelo, and then onto the newly constructed rail line that links the export rail line at Ermelo with the Majuba Power Station.

3.2.16 OFFICES, WORKSHOPS AND CHANGE HOUSES

Based on the anticipated management structure at the Kranspan Project, office and ablution facilities have been designed to accommodate all on-site personnel. The office design contains the reception area, eight offices, boardroom, male and female ablution facilities, kitchen, and change house and laundry facility.

The processing plant offices will be incorporated into the main office complex that is situated close to the plant. An office complex, including offices, a small boardroom, a change house, stores, lamp room, and workshops will be established at the underground adit area.

4 POLICY AND LEGISLATIVE CONTEXT

A non-exhaustive summary list of the various legislation applicable to the proposed development is provided in Appendix 3.

Table 4-1 provides a description of the legislation which has particular importance to the S&EIR process being undertaken for the development.

TABLE 4-1: POLICY AND LEGISLATIVE CONTEXT

<p style="text-align: center;">APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT</p> <p style="text-align: center;">(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);</p>	<p style="text-align: center;">REFERENCE WHERE APPLIED</p>
<p>Acts</p>	
<p>National Environmental Management Act, 1998 (Act No. 107 of 1998)(NEMA)</p>	<p>NEMA provides 18 specific principles relating to Environmental Management. Of key importance are the precautionary principle and the polluter pays principle. The 18 principles of NEMA are to be recognised during the undertaking of the Impact Assessment Process and play a key role during the decision-making process.</p> <p>Section 24 of NEMA requires environmental authorisation to be obtained for certain activities identified in three listing notices, published on 4 December 2014. The procedure for obtaining an environmental authorisation requires either a basic assessment (activities in Listing Notice 1 and 3) or scoping and Environmental Impact Assessment (activities in Listing Notice 2) process to be undertaken to inform the application for authorisation.</p> <p>The proposed mining activities fall within the ambit of various listed activities in Listing Notice 1, 2 and 3. Since activities in Listing Notice 2 apply to the proposed mining activities, a S&EIR process is being followed. The S&EIR process is being undertaken in compliance with the requirements of NEMA and the EIA Regulations, 2014.</p>
<p>Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) (MPRDA)</p>	<p>The MPRDA regulates the acquisition, use and disposal of mineral and petroleum rights.</p> <p>Ilima is applying for a mining right in terms of section 22 of the MPRDA.</p>
<p>National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) (NEM:WA)</p>	<p>The NEM: WA provides for the reform of waste management legislation and repeals or amends the legislation under which waste was previously regulated.</p>

	<p>Part 4 of the NEM: WA pertains to listed waste management activities. In accordance with section 19(2) of the NEM: WA, the Minister published a schedule of listed waste management activities in Government Notice (GN) 921 of 29 November 2013. These are considered activities that have or are likely to have a detrimental effect on the environment.</p> <p>According to regulation 2 of GN 921, no person may commence, undertake, or conduct a listed waste management activity unless a licence is issued in respect of that activity.</p> <p>The Kranspan Project will require a WML for the required for the PCD, mineral stockpiles and mine residue stockpiles. Mine residue stockpiles are included in the definition of hazardous waste in NEMWA. In addition, all mineral and non-mineral waste generated by the mine activities will need to be managed in accordance with the provisions of NEMWA and its associated regulations, norms and standards.</p>
<p>Mine Health and Safety Act, 1996 (Act No. 29 of 1996) (MHSA)</p>	<p>The objective of the Act is to cover all aspects relating to health and safety of employees and other persons on the mine property. The Act places the responsibility on the mine owner for ensuring that the mine is designed, constructed and equipped in a manner which allows for a safe and healthy working environment.</p> <p>The safety precautions in Section 7 of the MHSA have been incorporated in the environmental sensitivity map compiled for the Kranspan Project.</p>
<p>The National Water Act, 1998 (Act No. 36 of 1998)(NWA)</p>	<p>The National Water Act, 1998 (Act No. 36 of 1998), identifies 11 consumptive and non-consumptive water uses, which must be authorised under a tiered authorisation system, which include Scheduled uses, General Authorisations, or Licenses. In terms of the National Water Act, the following water uses are identified:</p> <ul style="list-style-type: none"> (a) Taking water from a water resource; (b) Storing water; (c) Impeding or diverting the flow of water in a watercourse; (d) Engaging in a stream flow reduction activity contemplated in section 36; (e) Engaging in a controlled activity identified as such in section 37(1) or declared under section 38(1); (f) Discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit; (g) Disposing of waste in a manner which may detrimentally impact on a water resource; (h) Disposing in any manner of water which contains waste from, or which has been heated in, any industrial or power generation process; (i) Altering the bed, banks, course or characteristics of a watercourse; (j) Removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people; and (k) Using water for recreational purposes. <p>The proposed mining activities require a water use licence for a number of listed water uses. An Integrated Water Use Licence</p>

	<p>Application (IWULA) is in preparation in parallel with the S&EIR process.</p>
<p>National Environmental Management: Air Quality Act 2004 (Act No. 39 of 2004)(NEM:AQA)</p>	<p>The main objectives of the NEM: AQA are to protect the environment by providing reasonable legislative and other measures to prevent air pollution and promote conservation and secure ecologically sustainable development.</p> <p>The Project will involve the generation of emissions to atmosphere, including dust, and air pollutants. These will need to be monitored and managed in accordance with the requirements of the Act. The Project site is also situated within a declared air quality priority area, namely the Highveld Priority Area, which was declared in 2007.</p> <p>No AEL application has been identified as being necessary for the Kranspan Project.</p>
<p>Hazardous Substances Act (Act No. 15 of 1973)</p>	<p>The objective of the Act is to provide for the control of substances which may cause injury or ill health to or death of human beings due to their toxic, corrosive, irritant, strongly sensitizing or flammable nature or the generation of pressure. In terms of the Act, substances are divided into schedules, based on their relative degree of toxicity and the Act provides for the control of importation, manufacture, sale, use, operation, application, modification, disposal and dumping of substances in each schedule.</p> <p>The chemicals typically found in petroleum products, for example, benzene, are regulated in terms of this Act. The coal preparation plant, chemical storage area, proposed fuel storage facility and refuelling bay, with all appropriate controls in place, will not conflict with the Act. The EMPr will provide details in this regard.</p>
<p>National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA)</p>	<p>The NHRA describes the importance of heritage in the South African context, and designates the South African Heritage Resource Agency (SAHRA) as guardian of the national estate which may include heritage resources of cultural significance that link to biodiversity, such as places to which oral traditions are attached or which are associated with living heritage, historical settlements, landscapes and natural features of cultural significance, archaeological and paleontological sites, graves and burial grounds, or movable objects associated with living heritage.</p> <p>Section 38 of the Act requires a Heritage Impact Assessment (HIA) to be undertaken for various types of development. If the HIA demonstrates that the development will have an impact on a heritage resource, approval from the South African Heritage Resource Agency, or the relevant provincial heritage authority is needed prior to proceeding with the development.</p> <p>An HIA is being undertaken as part of the environmental authorisation process.</p>
<p>GUIDELINES</p>	
<p>Department of Environmental Affairs Guideline Series 7: Public Participation (2012)</p>	<p>The public participation guideline outlines the importance of public participation as well as the minimum legal requirements for the public participation process, the steps to be taken and the guideline for planning a public participation process.</p> <p>The public participation process for this application has incorporated relevant requirements of the guideline.</p>

<p>Department of Environmental Affairs Guideline Series 9: Need and Desirability (2012)</p>	<p>The need and desirability guideline highlights the importance of establishing and assessing the need and desirability for a project. The consideration of need and desirability in the EIA decision making process requires the consideration of the strategic importance of the development alongside the broader societal need and public interests.</p> <p>The need and desirability description for the proposed development has taken cognisance of this guideline.</p>
---	--

4.1 LISTED ACTIVITIES IDENTIFIED IN TERMS OF NEMA, NEM:WA AND NWA

TABLE 4-2: NEMA LISTED ACTIVITIES APPLICABLE TO THE KRANSPAN PROJECT

NEMA LISTED ACTIVITIES		
REGULATION	ACTIVITY NUMBER	SUMMARY DESCRIPTION
<p>GN R.983, 8 December 2014 (as amended on 7 April 2017)</p> <p>Listing Notice 1: Basic Assessment</p>	1(2)	<p>The development and related operation of facilities or infrastructure for the generation of electricity from a non-renewable resource where (i) the electricity output is more than 10 megawatts but less than 20 megawatts or (ii) the output is 10 megawatts or less but the total extent of the facility covers an area in excess of 1 hectare.</p> <p>The back-up power requirements (diesel generator sets), in the event of a power failure, may fall within the ambit of this activity.</p>
	1(9)	<p>The development of infrastructure exceeding 1 000 metres in length for the bulk transportation of water or storm water.</p> <p>Mine support infrastructure will include pipelines for potable water, storm water and dewatering of the open pits and underground mine workings.</p>
	1(10)	<p>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.</p> <p>Mine support infrastructure may include pipelines for transportation of sewage and water from pollution control dams.</p>
	1(12)	<p>The development of (i) dams or weirs, where the dam or weir, including infrastructure and water surface area, is expanded by 100 square metres or more; or (ii) infrastructure or structures where the physical footprint is expanded by 100 square metres or more; where such development occurs—</p> <p>(a) within a watercourse;</p> <p>(b) in front of a development setback; or</p> <p>(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse.</p> <p>The placement of dams required for effectively managing water on the site, including pollution control dams, as well as road infrastructure and material stockpiles, may fall within the ambit of this activity. Avoidance of these areas is prioritised as part of the environmental sensitivity planning to be undertaken in the S&EIR Process.</p>
	1(13)	<p>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.</p> <p>The dams required for effectively managing water on the site, including pollution control dams, may exceed a combined capacity of 50 000 m³ whilst not necessarily failing within the ambit of activity 16 in Listing Notice 2.</p>

	1(14)	<p>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.</p> <p>This includes explosives, solvents, lubricants, vehicle and generator fuel, waste oils etc. Various storage containers and storage areas, each of different sizes will be required for the different dangerous goods that will be necessary for the mining activity.</p>
	1(19)	<p>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.</p> <p>The placement of dams required for effectively managing water on the site, including pollution control dams, as well as road infrastructure and material stockpiles, may fall within the ambit of this activity. Avoidance of these areas is prioritised as part of the environmental sensitivity planning to be undertaken in the S&EIR Process.</p>
	1(20)	<p>Any activity including the operation of that activity which requires a prospecting right in terms of section 16 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 Listing Notice 2 applies.</p> <p>This activity may be triggered by prospecting activities for minerals applied for by the Applicant.</p>
	1(21)	<p>Any activity including the operation of that activity which requires a mining permit in terms of section 27 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 Listing Notice 2 applies.</p> <p>This activity may be triggered by the establishment of borrow pits and other small-scale mining of minerals applied for by the Applicant.</p>
	1(24)	<p>The development of a road—</p> <p>(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</p> <p>(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.</p> <p>This activity may be triggered by the cumulative extent of internal mine haul roads developed to provide safe and efficient movement of man and materials across the site.</p>
	1(25)	<p>The development and related operation of facilities or infrastructure for the treatment of effluent, wastewater or sewage with a daily throughput capacity of more than 2 000 cubic metres but less than 15 000 cubic metres.</p> <p>A wastewater treatment facility will be required for the treatment of sewage while a treatment facility for contaminated water may also be necessary.</p>
	1(28)	<p>Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after</p>

		<p>1 April 1998 and where such development will occur outside an urban area, where the total land to be developed is bigger than 1 hectare.</p> <p>The area to be affected by mining and infrastructure development exceeds 1 ha.</p>
	1(56)	<p>The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre (i) where the existing reserve is wider than 13,5 meters; or (ii) where no reserve exists, where the existing road is wider than 8 metres; excluding where widening or lengthening occur inside urban areas.</p> <p>This activity may be triggered by the cumulative extent of widening or lengthening existing roads necessary for the safe and efficient transport of man and materials.</p>
<p>GN R.984, 8 December 2014 (as amended on 7 April 2017)</p> <p>Listing Notice 2: Scoping and EIA</p>	2(6)	<p>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—</p> <p>(i) activities which are identified and included in Listing Notice 1 of 2014;</p> <p>(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;</p> <p>(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</p> <p>(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.</p> <p>The mining operation will require a water use licence as per the NWA.</p>
	2(11)	<p>The development of facilities or infrastructure for the transfer of 50 000 cubic metres or more water per day, from and to or between any combination of the following —</p> <p>(i) water catchments;</p> <p>(ii) water treatment works; or</p> <p>(iii) impoundments;</p> <p>excluding treatment works where water is to be treated for drinking purposes.</p> <p>Although considered unlikely, the removal of water from the dewatering of the underground mine workings may fall within the ambit of this activity.</p>
	2(15)	<p>The clearance of an area of 20 hectares or more of indigenous vegetation, excluding where such clearance of indigenous vegetation is required for—</p> <p>(i) the undertaking of a linear activity; or</p> <p>(ii) maintenance purposes undertaken in accordance with a maintenance management plan.</p> <p>More than 20 ha of indigenous vegetation is planned to be removed for the development of the mine.</p>
	2(17)	<p>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</p> <p>(a) associated infrastructure, structures and earthworks, directly related to the extraction of a mineral resource; or</p> <p>(b) the primary processing of a mineral resource including winning, extraction, classifying, concentrating, crushing, screening or washing.</p> <p>This application for EA / WML is submitted in support of a mining right application as per the Mineral and Petroleum Resources Development Act 84 of 2002.</p>

<p>GN R.985, 8 December 2014 (as amended on 7 April 2017) Listing Notice 3: Basic Assessment</p>	3(4)	<p>The development of a road wider than 4 metres with a reserve less than 13,5 metres (i) outside urban areas (ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans.</p> <p>The development of mine roads may trigger this activity. Avoidance of these areas is prioritised as part of the environmental sensitivity planning to be undertaken in the S&EIR Process.</p>
	3(10)	<p>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 30 but not exceeding 80 cubic metres (i) outside urban areas (ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans (hh) Areas within a watercourse or wetland, or within 100 metres of a watercourse or wetland.</p> <p>The proposed fuel storage facilities may trigger this activity. Avoidance of these areas is prioritised as part of the environmental sensitivity planning to be undertaken in the S&EIR Process.</p>
	3(12)	<p>The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan (i) Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004 (ii) within critical biodiversity areas identified in bioregional plans (iv) On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning.</p> <p>Cumulative removal of more than 300 m² of indigenous vegetation from sections identified as a critical biodiversity area and/or endangered ecosystem may be required. Avoidance of these areas is prioritised as part of the environmental sensitivity planning to be undertaken in the S&EIR Process.</p>
	3(14)	<p>The development of (i) dams or weirs, where the dam or weir, including infrastructure and water surface area exceeds 10 square metres; or (ii) infrastructure or structures with a physical footprint of 10 square metres or more; where such development occurs—</p> <p>(a) within a watercourse;</p> <p>(b) in front of a development setback; or</p> <p>(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse</p> <p>(i) outside urban areas (ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans</p> <p>The placement of dams required for effectively managing water on the site, including pollution control dams, as well as road infrastructure and material stockpiles, may fall within the ambit of this activity. Avoidance of these areas is prioritised as part of the environmental sensitivity planning to be undertaken in the S&EIR Process.</p>
	3(18)	<p>The widening of a road by more than 4 metres, or the lengthening of a road by more than 1 kilometre. (i) outside urban areas (ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans.</p> <p>The development of mine roads may trigger this activity. Avoidance of these areas is prioritised as part of the environmental sensitivity planning to be undertaken in the S&EIR Process.</p>
	3(23)	<p>The expansion of (i) dams or weirs, where the dam or weir, is expanded by 10 square metres or more; or (ii) infrastructure or structures where the physical footprint is expanded by 10 square metres or more; where such expansion occurs—</p>

		<p>(ii) infrastructure or structures with a physical footprint of 10 square metres or more; where such development occurs—</p> <p>(a) within a watercourse;</p> <p>(b) in front of a development setback adopted in the prescribed manner; or</p> <p>(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse</p> <p>(i) outside urban areas (ff) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans</p> <p>The placement of dams required for effectively managing water on the site, including pollution control dams, as well as road infrastructure and material stockpiles, may fall within the ambit of this activity. Avoidance of these areas is prioritised as part of the environmental sensitivity planning to be undertaken in the S&EIR Process.</p>
--	--	---

TABLE 4-3: NEMWA LISTED ACTIVITIES

REGULATION	ACTIVITY NUMBER	SUMMARY DESCRIPTION
GN R.921, 29 November 2013 Category A: Basic Assessment	1	The storage of general waste in lagoons. The pollution control dams, needed for management of dirty stormwater, are regarded as evaporation dams, as per the definition of lagoon in GN R. 921.
GN R.921, 29 November 2013 Category A: Basic Assessment	12	The construction of a facility for a waste management activity listed in Category A of this Schedule (not in isolation to associated waste management activity). The construction of the pollution control dams will fall within the ambit of this activity.
GN R.921, 29 November 2013 Category B: Scoping and EIA	1	The storage of hazardous waste in lagoons excluding storage of effluent, wastewater or sewage. The pollution control dams, needed for management of dirty stormwater, are regarded as evaporation dams, as per the definition of lagoon in GN R. 921.
GN R.921, 29 November 2013 Category B: Scoping and EIA	10	The construction of a facility for a waste management activity listed in Category B of this Schedule (not in isolation to associated waste management activity). The construction of the pollution control dams and residue stockpiles will fall within the ambit of this activity.
GN R.921, 29 November 2013 Category B: Scoping and EIA	11	The establishment or reclamation of a residue stockpile or residue deposit resulting from activities which require a mining right, exploration right or production right in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002). The material stockpiles (topsoil, overburden) and the discard disposal options (in-pit and surface discard stockpile facility) fall within the definition of a residue stockpile.

TABLE 4-4: POTENTIAL WATER USES IDENTIFIED FOR THE PROPOSED PROJECT

PROPERTY AND PORTION NUMBER	WATER USE	DESCRIPTION
Kranspan 49	Section 21 (a)	Taking of water from a water resource
	Section 21 (b)	Storing of water
	Section 21(c)	Impeding or diverting the flow of water in a water course
	Section 21(i)	Altering the bed, banks, course or characteristics of a water course
	Section 21 (g)	Disposing of waste in a manner which may impact on a water resource
	Section 21 (j)	Removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity, or for the safety of people

The Integrated Water Use Licence Application (IWULA) and IWWMP will specify the water uses per farm portion associated with the preferred site infrastructure layout options.

4.2 REQUIRED ENVIRONMENTAL LICENCES

The proposed mine development requires a Mining Right as contemplated in section 22 of the Mineral and Petroleum Resources Development Act No. 28 of 2002 (MPRDA). In addition to the Mining Right, the proposed activities also require that the applicant obtain the following:

- Environmental Authorisation in terms of the National Environmental Management Act 107 of 1998 (NEMA);
- Waste Management Licence in terms of the National Environmental Management: Waste Act 59 of 2008; and
- Water Use Licence in terms of the National Water Act 36 of 1998.

5 NEED AND DESIRABILITY OF THE PROPOSED ACTIVITIES

Ilima is a coal mining company. Although considered small in comparison with the bigger coal mining companies, it contributes significantly to local and regional economic development through, among others, royalties and taxes, direct and indirect employment and procurement of various goods and services.

The SA Chamber of Mines (2018) noted the following with respect to the contribution of the coal mining sector as a whole to the economy of South Africa for the year 2016:

- The coal industry employed 77,506 people, representing 17% of total employment in the mining sector;
- Employees earned R21 billion in wages and salaries;
- R 60 billion was spent on the procurement of goods and services, most of it locally. This contributed to creating and maintaining jobs in other industries; and
- Indirectly, the coal industry created 173,093 jobs mainly in the transport and storage sector where almost 120,000 jobs were created representing 69% of all indirect jobs created by the coal industry.

The Ilima intention is to provide value to their shareholders through responsibly developing the Kranspan Colliery, managing it safely and in a manner that does not result in a significant detrimental impact to the environment and in compliance with the requirements of the relevant legislation.

The establishment of the Kranspan Colliery is an important component of the company's business development and future planning. Design and licensing of the mine is needed to ensure that the company can continue to operate when it has completed mining and rehabilitation activities at its other mining right area in the Carolina region.

Over and above the Ilima need for the Kranspan Colliery, the broader need and desirability aspects of the proposed coal mine, are discussed below.

5.1 NEED

The proposed mining rights area comprises part of the Mpumalanga coal fields. The latter accounts for over 82% of South Africa's coal production (SA Chamber of Mines, 2018).

At a macro-level, there are essentially three market segments for bituminous coal, these are (Ilima, 2018):

- Eskom Low Grade Coal (19.0 Mj/kg – 23.3 Mj/kg)
- Export RB1 Grade Steam Coal (> 5,900 Kcal/kg)
RB2 Grade Steam Coal (> 5,500 Kcal/kg)
- Metallurgical High-Grade Coal

In 2016, South Africa produced 253.1 Mt of coal of which 181.4 Mt were sold internally with a value of R 61.5 billion while 68.9 Mt, worth R 50.5 billion, were exported (SA Chamber of Mines, 2018).

Given the size and quality of the reserve, the proposed Kranspan Colliery intends to target both the export and Eskom markets and will be a multiproduct operation (Ilima, 2018).

5.1.1 ESKOM MARKET

Coal plays an important role in the South African economy and is the primary energy source for electricity generation (Department of Energy, 2018). At present, approximately 82% of South Africa's power generation is from coal (SA Chamber of Mines, 2018).

The domestic demand for coal is led by electricity generation (53%), then the basic iron and steel sector (20%), followed by the synthetic fuel and chemical industries (10%).

Security of energy supply is recognised throughout the world as a key factor for the economic and social development of a country. In addition, the availability of a secure electricity supply is a fundamental consideration for any investment decision, particularly for energy-intensive sectors like industry and manufacturing. South Africa's economic development policies and plans, including the National Development Plan 2030, provide a strong focus on the latter and the availability of a cost-effective and consistent quality electricity supply is therefore vital for the country's economy.

The National Development Plan 2030 also identifies the need for South Africa to reduce its reliance on coal for power generation. The draft Integrated Resource Plan (IRP), published by the Department of Energy in August 2018, indicates that by 2030, coal will comprise approximately 44% of total installed power generation capacity (Figure 5-1). This is inclusive of the planned decommissioning of approximately 12 GW of installed coal capacity over the same period. Other notable aspects from the draft 2018 IRP with respect to coal include:

- An additional 1 000 MW of new installed coal power generation is planned for the period 2023-2024; and
- By 2040, coal is projected to contribute less than 30% of the energy supplied and less than 20% by 2050.

	Coal	Nuclear	Hydro	Storage (Pumped Storage)	PV	Wind	CSP	Gas/Diesel	Other (CoGen, Biomass, Landfill)	Embedded Generation
2018	39,126	1,860	2,196	2,912	1,474	1,980	300	3,830	499	Unknown
2019	2,155					244	300			200
2020	1,433				114	300				200
2021	1,433				300	818				200
2022	711				400					200
2023	500									200
2024	500									200
2025					670	200				200
2026					1,000	1,500		2,250		200
2027					1,000	1,600		1,200		200
2028					1,000	1,600		1,800		200
2029					1,000	1,600		2,850		200
2030			2,500		1,000	1,600				200
TOTAL INSTALLED	33,847	1,860	4,696	2,912	7,958	11,442	600	11,930	499	2,600
Installed Capacity Mix (%)	44.6	2.5	6.2	3.8	10.5	15.1	0.9	15.7	0.7	
	Installed Capacity									
	Committed/Already Contracted Capacity									
	New Additional Capacity (IRP Update)									
	Embedded Generation Capacity (Generation for own use allocation)									

Source: <https://www.cliffedekkerhofmeyr.com/en/news/publications/2018/projects/energy-alert-28-august-the-draft-integrated-resource-plan-2018-the-roadmap-for-future-generation-capacity-.html>

FIGURE 5-1: ENERGY MIX IN THE 2018 INTEGRATED RESOURCE PLAN

From the above, it can be concluded that the demand for coal for use in the electricity sector will decrease as other primary energy sources and the related installed generation capacity is established. However, there will be a need for coal for the country's power generation requirements for at least the next three decades.

5.1.2 EXPORT MARKET

South Africa is a net exporter of coal and exports amount to 6% of total global exports (SA Chamber of Mines, 2018). Almost all coal exported from South Africa is steam coal, most of which is exported through RBCT.

In 2016, total coal exports were valued at R 50.5 billion. Although subject to significant price volatility, the average export price per tonne is typically higher than the average domestic price per tonne. Approximately 70% of the proposed Kranspan Colliery is planned to be sold to the export market via the RBCT (Ilima, 2018).

Between 2004 and 2009, the export market was previously dominated by export to countries in Europe (Netherlands, Spain, and the United Kingdom). From 2009 to 2014, China and India were the most important export markets for South African coal. Almost 45% of all export coal from South Africa is currently shipped to India.

The SA Chamber of Mines (2018) indicates that India's coal demand is expected to increase in the foreseeable future, despite that country's commitment to reduce its GHG emissions intensity by between 20% to 25% by 2020. Other potential markets are noted to be Pakistan, Malaysia, Taiwan, Bangladesh and South Korea. Export risk factors which may influence the export market for South African coal are:

- Demand reduction as a result of more stringent environmental legislation in importing countries; and
- The adoption of new coal power generation technology which requires a higher quality coal.

5.2 DESIRABILITY

The desirable aspects of the proposed Kranspan Colliery include the significant socio-economic benefits associated with employment, procurement of goods and services. Community benefits such as skills development and education opportunities will also be realised from the implementation of the mine Social and Labour Plan.

Furthermore, royalties and taxes from the coal mine will accrue to the government of South Africa.

Notwithstanding these benefits, coal extraction and processing does present several physical, social and environmental hazards. These hazards can generally be managed through the application of various engineering design standards and the health, safety and environmental procedures and plans which the operating company implements during the day to day operation of the site.

Other specific aspects related to the desirability of the proposed Kranspan Colliery include:

- The proposed colliery will introduce a new source of air emissions within the Highveld Priority Area. Coal mining, handling and transportation results in the release of various airborne pollutants like NO₂, SO₂ and particulate matter which, depending on pollutant concentration and duration of exposure among others, can have a negative impact on human and ecosystem health;
- Given the proximity of mining to surface and groundwater resources, there is a high likelihood of water pollution if water management on the site is not properly practiced;
- For the Life of Mine, the colliery will result in an increase in traffic volume on the R36, including heavy vehicles like ADTs. This may negatively influence traffic flows, accelerate degradation of the road surface and possibly result in collision incidents;
- The mining and mineral processing is likely to result in a loss of some remaining natural habitat within a listed threatened ecosystem; and
- In response to climate change concerns and the dominant contribution of CO₂ emissions from coal combustion, several developed economies in the world are selecting low carbon alternatives to coal-fired power plants. Recently, global institutions like the Organisation for Economic Co-operation and Development (OECD), World Bank Group and various financial institutions have agreed to limit public financing of coal-fired power plants.

The desirability of the Project, within the context of the above, is summarised as follows:

- The Project will result in the availability of an additional source of coal for the Eskom market;
- Benefits will accrue with respect to royalties and taxes to the Government of South Africa;
- Direct and indirect employment opportunities will be created at a time when unemployment is historically at its highest;
- South Africa has committed to becoming less reliant on coal and moving towards a low carbon economy. However, this transition is expected to be gradual, with the draft IRP (2018) identifying the need for coal for power generation for at least the next two decades;
- The scoping study conducted for the proposed development has not identified any significant risks or impacts associated with the development at the proposed site which are irreversible, or which cannot be mitigated;
- With the appropriate environmental controls in place, the proposed development is considered to be compatible with surrounding land uses;
- The proposed development is consistent with the spatial development planning context applicable to the area; and

- With proper rehabilitation and mine closure planning and implementation, the land surface can be restored to productive use post-mining with no latent or residual environmental impacts.

Accordingly, it is concluded that there is a need for the Project and that undesirable aspects of the development can be satisfactorily mitigated.

6 PERIOD FOR WHICH THE ENVIRONMENTAL AUTHORISATION IS REQUIRED

In terms of the MPRDA, the maximum period a mining right may be issued for is 30 years, with the option to renew for another 30 years. The application is therefore for a period of 30 years.

7 DESCRIPTION OF THE PROCESS FOLLOWED TO REACH THE PROPOSED PREFERRED SITE

7.1 DETAILS OF ALL ALTERNATIVES CONSIDERED

7.1.1 THE PROPERTY ON WHICH OR LOCATION WHERE IT IS PROPOSED TO UNDERTAKE THE ACTIVITY

The proposed surface and underground mining activities are defined by the location and extent of the coal seam which is being targeted and which has been defined through the prospecting phase.

7.1.2 THE TYPE OF ACTIVITY TO BE UNDERTAKEN

The E Seam will be mined via both underground (bord and pillar), and opencast (roll-over) mining methodologies. The mining activities and required infrastructure are described in more detail in section 3.

7.1.3 THE DESIGN OR LAYOUT OF THE ACTIVITY

The proposed underground mining will be undertaken on a section of Portion 4, the northern section of Portion 2, the north western section of Portion 3 and the southern section of Portion 7 of the farm Kranspan.

The surface mining will be undertaken on sections of Portion RE, 2, 3, 5, and 7 of the farm Kranspan.

The broad placement of the surface infrastructure was informed by an environmental sensitivity plan which considered the location of all known sensitive physical, social and environmental features within the Mining Rights Application surface area:

- Natural features, for example wetlands, and existing physical structures, such as roads, railways were identified;
- The extent of the proposed coal seam, as presently understood, to be mined over the Life of Mine was delineated; and
- Other development activities in the area, current and planned, were identified.

Buffer distances (minimum safe distances), determined primarily from legislation, including GN704 and the MHSA, were then applied (Table 7-1).

The placement of proposed site infrastructure options in relation to the identified sensitive areas is shown in Appendix 4 Map 12.

Following the completion of the scoping phase consultation process, input from the public and authorities will be taken into consideration and the site selection updated based on inputs received.

TABLE 7-1: ENVIRONMENTAL BUFFER ZONES

INFRASTRUCTURE	BUFFER (M)	LEGISLATION / COMMENT
Buildings	100	MHSA and Regulations
Roads		
Railways		
Tailings Storage Facility and Waste Rock Dump		
Structures		
Restricted areas	50	MHSA GN93
Watercourses	100	NWA GN704
Wetlands	500	NWA GN704 GN1199
Powerlines	25	A proposed buffer (either side of centre-line) for protection of powerline infrastructure

7.1.4 THE TECHNOLOGY TO BE USED IN THE ACTIVITY AND THE OPERATIONAL ASPECTS OF THE ACTIVITY

A conventional strip mining [roll-over] method will be employed for each of the opencast pits and bord and pillar mining will be implemented for underground mining.

The coal preparation plant (wash plant) is a modular dense medium cyclone. The plant is described in section 3.2.4.

7.1.5 THE OPTION OF NOT IMPLEMENTING THE ACTIVITY

Should the proposed project not be implemented, the Kranspan Farm will remain as is and:

- The royalties and tax revenue from mining will not accrue to the South African Government;
- The local economic development opportunities associated with the procurement of local goods and services to support the mine activities will not be realised;
- Projected employment opportunities during the construction and operational phases will not be fulfilled;
- The various social development projects under discussion with local government as part of the applicant's social and labour plan commitments, will not be implemented;
- An additional supply of coal needed for power generation will not be available to Eskom; and
- The potential environmental risks and impacts of the coal mining and beneficiation process will be eliminated.

7.2 DETAILS OF THE PUBLIC PARTICIPATION PROCESS FOLLOWED

7.2.1 SCOPING REPORT

As part of project notification, a Draft Scoping Report was made available for public review and comment for a period of 30 days from 7 December 2018 to 28 January 2018. The report was made available as follows:

- By download: <http://www.abs-africa.com/project-documents/>
- By e-mail on request: kranspan@abs-africa.com

- Hard copies were made available publicly for review at the Carolina Public Library, 11 Voortrekker Street, Carolina

Registered I&APs were notified of the application and the availability of the Draft Scoping Report (DSR) through letters sent by e-mail and where no e-mail address was provided, through registered mail. The application and availability of the DSR was also announced through sms, and placement of site notices. Notification pamphlets were made available in isiZulu at the shop on Portion 1 of Kranspan.

Newspaper advertisements were placed in a local and regional newspaper in two languages (isiZulu and English). Letter notifications were distributed in Afrikaans and English and sms notifications were sent in Afrikaans. Site notices were placed in English and Afrikaans.

Key stakeholder meetings undertaken as part of the Notification Phase of the Project are summarised in Table 7-2. The minutes to this meeting are included in Appendix 6

TABLE 7-2: STAKEHOLDER MEETINGS

STAKEHOLDER	DATE
Mr. Klein (Landowner of Portion 4 of the Farm Kranspan)	8 January 2019

The register of I&APs, copies of written and sms notifications, site notices and newspaper notices developed and distributed to date are provided in Appendix 6.

7.2.2 REGISTERED I&APs WILL BE NOTIFIED OF THE SUBMISSION OF THE FINAL SCOPING REPORT AND PROVIDED WITH COPIES THEREOF ON REQUEST. SUMMARY OF ISSUES RAISED BY I&APs

Comments received to date and responses thereto are provided in Table 7-3.

7.2.3 NOTIFICATION OF DECISION

Upon receipt of the decision on the EA the EIA Project Team will assist the applicant in making the application decisions available to all registered I&APs and notifying them of the appeal procedure to be followed in terms of the National Appeal Regulations [Government Notice No. R.993 promulgated in terms of section 44(1a) and 43(4) of NEMA].

TABLE 7-3: SUMMARY OF ISSUES RAISED BY I&APS

INTERESTED AND AFFECTED PARTIES		DATE COMMENTS RECEIVED	ISSUES RAISED	EAPS RESPONSE TO THE ISSUES RAISED
LIST THE NAMES OF PERSONS CONSULTED IN THIS COLUMN; AND MARK WITH AN X WHERE THOSE WHO MUST BE CONSULTED WERE IN FACT CONSULTED				
AFFECTED PARTIES				
Landowner/s (Owners of land included in the Mining Rights Area Boundary)	X			
G. Klein Portion 4 Kranspan		Meeting 8 January 2019	Please refer to the minutes of the meeting in Appendix 6.	
Occupiers of the Site (Parties using land within the Mining Rights Area Boundary)	X			
No comments received.				

Adjacent Landowners (Owners of land immediately adjacent to the Mining Rights Area Boundary)	X			
Sibongile Booie Portion 1 Roodebloem 51 Ingwe Surface Holdings Ltd, (a subsidiary of South32)		Comment received via email on 16 January 2019	Would you send me a copy of the acceptance for this mining right application? I am requesting the above in order for me to establish who I need to involve internally.	You are welcome to contact Allan Bullock for further information on the mining right application and associated queries not relating to the Scoping and Environmental Impact process.
G. Klein Portion 14 Naudesbank 172		Meeting 8 January 2019	Please refer to the minutes of the meeting in Appendix 6.	
D. Swart Portion 0 and Portion 1 of Roetz 210		Comment received via email on 16 January 2019	Noted.	No response necessary.
Adjacent Occupiers of Site (Occupiers and users of land immediately adjacent to the Mining Rights Area Boundary)	X			
No comments received.				

Competent Authorities	X			
Vusi Khoza Department of Rural Development and Land Reform		Comment received via email on 10 December 2018	Kindly note that your enquiry has been received and forwarded to Mr Ntokozo Nkambule who will respond to you.	Comment noted.
Municipal Councillor	X			
Mxolisi Gumede Chief Albert Luthuli Local Municipality		Comment received via email on 18 December 2018	Herewith Areas where I am looking for more information in future studies of clarity as per current draft report: Section 5.2 (bullet 2) Clarity on the mentioned possible mining impact of surface/ground water bodies. What kind of impacts, are they on quality or quantity (how can the Municipality as a Water Service Authority, plan to cope with such impacts).	The impacts of the proposed mining project on surface and groundwater resources will be assessed through the specialist studies as described in Section 10 of the Final Scoping Report. These studies will be incorporated into the Draft Environmental Impact Report (EIR). On completion of the studies, registered I&APs will be provided with an opportunity to review the Draft EIR, including the specialist study reports.
Mxolisi Gumede Chief Albert Luthuli Local Municipality		Comment received via email on 18 December 2018	Section 5.2 (bullet 5) The mentioned climate change related impacts (what % contribution will the mining impact have in the region?)	The climate change impacts in Section 5.2 of the Scoping Report relate to coal combustion, particularly from coal-fired power stations, and not coal mining. The greenhouse gas emissions generated by the proposed mining activities will be considered in the air quality specialist study.
Mxolisi Gumede Chief Albert Luthuli Local Municipality		Comment received via email on 18 December 2018	Section 5.2 (bullet 11&12) Please recheck the SPLUMA or perhaps is the SPLUMA of another municipality (not Chief Albert Luthuli Local Municipality)	Comment noted. The spatial planning context will be discussed in more detail in the Draft EIR.

Mxolisi Gumede Chief Albert Luthuli Local Municipality		Comment received via email on 18 December 2018	Section 8.1.6 Please check the applicability of the EMP that was done by SRK in 2008/9 for Gert Sibande District Municipality	Thank you for notifying us of this document. Any relevant aspects thereof will be incorporated into the Draft EIR.
Local and District Municipality	X			
No comments received.				
Communities	X			
No comments received.				
Traditional Leaders	N/A			
There is no traditional leadership structure known to be applicable to the Mining Right Application Area.				
Department of Environmental Affairs	X			
Tinyiko Nxumalo Office of the HOD Support DEDT		Comment received via email on 30 January 2019	Dear Ms Nkosi, Kindly receive the attached correspondence for your attention and further management.	Noted.
Organs of State with Jurisdiction	N/A			
Thabo Rasiuba		Comment received via	Kindly send hard copies to Inkomati-Usuthu Catchment Management Agency for comment.	A hard copy of the Draft Scoping Report has been delivered to the IUCMA for review as requested.

Inkomati Usuthu Catchment Management Agency (IUCMA)		email on 15 January 2019		Please note that comments should reach ABS Africa by 28 January.
Nonqubeko Mfeka Department of Rural Development and Land Reform		Comment received via email on 8 January 2019	Kindly advise if the involvement of the Commission is required in the matter. Kindly indicate the location of the farm so that I can refer you to the relevant person in the Department whom will be able to participate in the process.	You are receiving notifications to the Kranspan Project because you have been identified as an organ of state with jurisdiction. Please see the attached locality map for the proposed project near Carolina.
Other Competent Authorities Affected	X			
Tinyiko Nxumalo Office of the HOD Support DEDT		Comment received via email on 30 January 2019	Dear Ms Nkosi, Kindly receive the attached correspondence for your attention and further management.	Noted.
Other Affected Parties	N/A			
No other affected parties identified to date.				
Interested Parties	X			
Jack Armour		Comment received via email on 7 January 2019	As the potentially affected area falls outside of the Free State, I refer this to Robert Davel of our Agri Mpumalanga office. If you do any work in the Free State affecting agricultural land, I'll be happy to assist / register as IAP and to forward to our members.	Comment noted. The correct contact has been added to the I&AP register.

8 THE ENVIRONMENTAL ATTRIBUTES ASSOCIATED WITH THE SITES

8.1 BASELINE ENVIRONMENT - TYPE OF ENVIRONMENT AFFECTED BY THE PROPOSED ACTIVITY

8.1.1 CLIMATE

Rain occurs almost exclusively as showers (mild to heavy) and thunderstorms that fall during the summer months between November and February of each year, with an average of 500 to 750mm per year (IDP, 2017). From the records, the maximum rainfall occurs between November and February. The winter months are dry. Heavy falls (100mm and more) in a single 24-hour period do not occur.

The mean daily maximum temperature in January for the Middelburg region is 27°C and 20°C in July. The range in mean daily minimum is from 13°C in January to 0°C in July. Extreme minimum may be as low as -4°C. Frost can occur annually over a range of about 120 days, the number of actual incidences being about 30 to 40. The intensity may range from mild to severe.

Overall, the climate is mild to warm during the summer and cool to cold during the winter. During the rainy season it is sub-humid, but during the cold dry season it is mildly sub-arid.

The mean annual number of thunderstorms in the Mpumalanga Highveld is approximately 75. Lightening is common and hail storms are a feature of the highveld rains.

8.1.2 TOPOGRAPHY

From a regional topographical perspective, the largest part of the Gert Sibande District Municipality is situated on the Highveld Grasslands of Mpumalanga. Undulating to strongly undulating landscape with intermittent hills are generally associated with this district. The intensity of the undulations generally increases from west to east, in the direction of the Drakensberg Escarpment and Swaziland. Once past the escarpment (in the general direction of Piet Retief), the landscape is characterised by undulating hills and lowlands. The far north-eastern and south-eastern extents of the District (in the direction of Barberton and Volksrust / Wakkerstroom) are characterised by the occurrence of low to high mountains (IDP, 2017).

Appendix 4 Map 4 shows the topography across the proposed mining right area. The highest elevation is in the western and central western parts of the area. The highest elevation is at approximately 1738 m and the lowest elevation, towards the north of the mining right area is at approximately 1650 m.

8.1.3 GEOLOGY

The study area is underlain by Karoo Supergroup sedimentary rocks of the Vryheid Formation of the Ecca Group. These are largely comprised of sandstone, mudstone, shale, siltstone, and coal seams.

The Vryheid coal classified as follows (Jeffrey, 2005) :

- E Seam- High quality and low ash and has a thickness of 3 m,
- D Seam- is overlain by a sandstone layer followed by a persistent shale layer and has a thickness of 0.5 m,
- C Seam-The C seam consists of a C Lower Seam which is 1.5 m in thickness with sandstone partings in upper section and a C Upper Seam which varies from 0.7m–4 m in thickness. The C Lower Seam is the most important seam as it is the main source of export coal whereas The C Upper Seam is generally of poorer quality.
- B Seam- Consist of a B upper and a B lower seam separated by a sandstone parting. Coal in this seem has a low quality and high ash content
- A Seam – This seem has mainly been removed by recent erosion and has thickness of 0–1.5 m.

8.1.4 SOILS AND AGRICULTURAL LAND CAPABILITY

The following six soil types are identified in the Gert Sibande District Municipality (IDP, 2017):

- Black and red strongly structured clayey soils with high base status;
- Red and yellow massive or weak structured soils;
- Red-yellow and greyish soils with low to medium base status;
- Rock with limited soils;
- Soils with a marked clay accumulation - strongly structured and a reddish colour; and
- Soils with minimal development, usually shallow on hard or weathering rock with or without intermittent diverse soils.

It is expected that soils typically associated with the Highveld Soils Cantena will be present including pedologically young and shallow lithosols of the Hutton (Hu), Shortlands (Sd), Swartland (Sw) and Glenrosa (Gs) Formations. These soils generally have a red and yellow colour and are considered to be weak structured soils with a high organic content.

Approximately 40% of the Kranspan Farm is under cultivation, primarily with maize. The soil classification across the site and agricultural capability of the soils will be further described in the soils specialist study which will be undertaken in the impact assessment phase.

The baseline soils map is shown in Appendix 4 Map 5.

8.1.5 TERRESTRIAL ECOLOGY

A terrestrial ecology screening report was undertaken by ECOREX (2018). A summary of the report is provided below and the complete report is provided in Appendix 7.

8.1.5.1 Flora – National Vegetation Types

The study area is situated within the Grassland Biome, which dominates the high central and eastern plateau of South Africa (Highveld), as well as the mountainous region of Mpumalanga, western KZN and the Eastern Cape (Drakensberg). This area is characterised by summer rainfall and winter drought, and regular frost in winter (Mucina & Rutherford, 2006).

Local plant species richness is high in the Grassland Biome and five centres of plant endemism have been described within the biome. Four geographically distinct bioregions are present within this biome, namely Drakensberg Grassland, Dry Highveld Grassland, Mesic Highveld Grassland and Sub-escarpment Grassland. The study area is situated within the Mesic Highveld Grassland Bioregion within the Eastern Highveld Grassland national vegetation type (Gm12). (Appendix 4 Map 6).

This vegetation type is endemic to Gauteng and Mpumalanga provinces, occurring from the East Rand in the west to Belfast in the east, and extending as far south as Bethal, Ermelo and Piet Retief. Terrain comprises slightly to moderately undulating plains with scattered rocky outcrops and pan depressions. Soils are mostly red to yellow sandy soils on shale and sandstone of the Madzaringwe Formation (Karoo Supergroup). Mean annual precipitation varies from 650 to 900 mm, of which almost all occurs in summer, and frost incidence varies from 13-42 days per year. Floristic composition and important taxa are indicated in Table 8-1 below.

Eastern Highveld Grassland has a conservation status of Endangered because of a very high level of habitat loss (44%) and very low level of protection.

TABLE 8-1. FLORISTIC COMPOSITION AND IMPORTANT TAXA IN EASTERN HIGHVELD GRASSLAND

IMPORTANT TAXA	
Dominant Grasses	<i>Aristida aequiglumis</i> , <i>A. congesta</i> , <i>A. junciformis</i> , <i>Brachiaria serrata</i> , <i>Cynodon dactylon</i> , <i>Digitaria monodactyla</i> , <i>D. tricholaenoides</i> , <i>Elionurus muticus</i> , <i>Eragrostis chloromelas</i> , <i>E. curvula</i> , <i>E. plana</i> , <i>E. racemosa</i> , <i>E. sclerantha</i> , <i>Heteropogon contortus</i> , <i>Loudetia simplex</i> , <i>Microchloa caffra</i> , <i>Monocymbium ceresiiforme</i> , <i>Setaria sphacelata</i> , <i>Sporobolus africanus</i> , <i>S. pectinatus</i> , <i>Themeda triandra</i> , <i>Trachypogon spicatus</i> , <i>Tristachya leucothrix</i> .
Herbaceous Plants	<i>Berkheya setifera</i> (dominant), <i>Haplocarpha scaposa</i> (dominant), <i>Justicia anagalloides</i> (dominant), <i>Pelargonium luridum</i> (dominant), <i>Acalypha angustata</i> , <i>Dicoma anomala</i> , <i>Helichrysum aureonitens</i> , <i>H. callicomum</i> , <i>H. oreophilum</i> , <i>Pentanisia prunelloides</i> , <i>Senecio coronatus</i> , <i>Hilliardiella oligocephala</i> , <i>Wahlenbergia undulata</i> .
Geophytes	<i>Gladiolus crassifolius</i> , <i>Haemanthus humilis</i> subsp. <i>hirsutus</i> , <i>Hypocis rigidula</i> , <i>Ledebouria ovatifolia</i> .
Succulents	<i>Aloe ecklonis</i> .
Low Shrubs	<i>Anthospermum rigidum</i> , <i>Stoebe plumosa</i> .

An azonal national vegetation type that is embedded throughout Eastern Highveld Grassland and is relevant to the study area is Eastern Temperate Freshwater Wetlands (AZf3). This is a widespread vegetation type occurring in Northern Cape, Eastern Cape, Free State, North-West, Gauteng, Mpumalanga and KwaZulu-Natal, and is associated with shallow stagnant or slow-moving waterbodies such as pans, seasonally flooded vleis and sluggish rivers.

8.1.5.2 Centres of Plant Endemism

The study area is not situated within any centres of plant endemism as defined by Van Wyk & Smith (2001).

8.1.5.3 Threatened Ecosystems

Eastern Highveld Grassland is a listed Threatened Ecosystem (Vulnerable) under Notice 1002 of Government Gazette 34809, 9 December 2011.

8.1.5.4 Local Context – Vegetation Assemblages

The Botanical Database of Southern Africa (BODATSA), which is curated by SANBI, lists 401 plant species from 74 families for a 20 km radius of the study area. The dominant plant families in the flora are the Asteraceae (54 spp), Poaceae (45 spp), Fabaceae (29 spp), Cyperaceae (23 spp) and Apocynaceae (20 spp). This is likely to be significantly higher plant species diversity than that which is in the study area as the data search parameters included a larger area with a greater variety of habitats. However, it does give an indication of the dominant families and provides a list of species to expect during summer fieldwork. A full list of plant species confirmed to occur in the study area will be provided subsequent to summer fieldwork.

The description of broad-scale vegetation assemblages below is based primarily on analysis of high-resolution satellite imagery and has not been verified yet by fieldwork data. The updated report will be submitted subsequent to completion of summer fieldwork, which will contain information regarding the dominant and diagnostic species per vegetation assemblage.

Two broad-scale vegetation communities have been identified within the study area as representing Natural Habitat as defined by IFC (2012), namely Untransformed Grassland and Wetlands, while waterbodies such as Endorheic Pans are considered part of the Wetland community.

An overview of all Natural Habitat is given below. Each of these vegetation communities will be described in detail once fieldwork has taken place. Areas that can be classified as Modified Habitat, such as cultivated lands, buildings and tree plantations, cover 1575 ha (47%) of the study area. These areas are not dealt with in the descriptions below.

UNTRANSFORMED GRASSLAND

Approximately 1450 ha of the study area (43%) still comprises Untransformed Grassland that is most likely representative of Eastern Highveld Grassland, although possibly overgrazed and lower in species composition than undisturbed grassland. This is the vegetation assemblage in which most plant species of conservation concern are likely to be found and is the habitat that is most likely to support populations of fauna species of conservation concern.

WETLANDS

At least three wetland types are represented in the study area, namely Endorheic Pans, Valley-bottom Wetlands and Hillslope Seeps, covering approximately 330 ha. Satellite imagery indicates several circular to sub-circular permanent or seasonal pans in the study area, of which Kranspan is the most significant, covering approximately 125 ha. Kranspan and another pan to the north-east are likely to support significant numbers of congregatory waterbirds at certain times of the year. While wetlands typically have lower species diversity than adjacent undisturbed grassland, a high proportion of habitat specialist plants are usually present and likelihood of fauna species of conservation concern being present is moderate to high.

SPECIES OF CONSERVATION CONCERN

Thirteen Species of Conservation Concern (SCC) have been recorded from the two quarter-degree grids that the study area is situated in (2629BB, 2630AA). Sixteen of these are classified as threatened (Critically Endangered, Endangered or Vulnerable), although most of these have a low likelihood of occurrence because of a lack of suitable habitat and / or altitude. Three species have a high likelihood of occurring and are dealt with in more detail below.

Alepidea longeciliata

This small herb is endemic to Highveld Grassland in Mpumalanga, occurring in a small area between Breyten, Lothair, Middelburg and Stoffberg, although the records from Middelburg and Stoffberg are putative and its distribution seems to be centred on the Carolina area (De Castro & McClelland, 2015). *Alepidea longeciliata* occurs in grassland overlaying Karoo sandstone and is specifically associated with seasonally wet soils on hillslope seeps in hygrophilous grassland. It is threatened primarily by habitat loss to agriculture and mining, particularly coal mining, and has been assessed as **Endangered** (von Staden et al., 2009). A population is known from a property adjacent to Kranspan 49-IT (De Castro & McClelland, 2015) and it thus has a high likelihood of being present in the study area.

Khadia carolinensis

This small succulent is also endemic to Mpumalanga, occurring in Highveld grassland between Belfast and south of Carolina. It is associated with exposed rocky outcrops, especially sandstone sheetrock, usually on well-drained, sandy loam soils (Lötter et al., 2007). Much of the global population of this species is located over extensive coal reserves for which mining rights have been applied for, and the primary future threat to this species is open-cast coal mining, resulting in a conservation status of **Vulnerable** (Lötter et al., 2007). A population has been confirmed on a property adjacent to Kranspan 49-IT (De Castro & McClelland, 2015) and it thus has a high likelihood of being present in the study area.

Aspidoglossum xanthosphaerum

This species is a slender herb that is nearly endemic to Mpumalanga, occurring in grassland above 1600 masl. Specific habitat requirements are poorly known, but specimens collected from near Breyten were located in short grassland on gentle hillslopes, habitat that is present in the study area (De Castro, 2006). It is thus considered to have a moderate likelihood of occurring, even though there are no records from adjacent properties. Even though *Aspidoglossum xanthosphaerum* is currently only known from four widely separated areas between Breyten and Wakkerstroom, it is very easily overlooked and is likely to be present on more localities than those currently known. It has been assessed as **Vulnerable** by Nicholas & Victor (2006).

All three of the above species flower from October to November, which would be the optimal time for a survey to confirm the presence or absence of these species in the study area.

ENDEMIC SPECIES

Even though the study area is not situated within any centres of plant endemism as defined by Van Wyk & Smith (2001), eleven range-restricted species that are endemic to Mpumalanga are known to occur in the quarter-degree grids that the study area is situated in. Most of these species have a low likelihood of occurring on Kranskop 49-IT, apart from *Khadia carolinensis*, *Aspidoglossum xanthosphaerum* and *Alepidea longeciliata*.

PROTECTED SPECIES

Thirty-seven plant species occurring in the general vicinity of the study area are protected under Schedule 11 of the Mpumalanga Nature Conservation Act No. 10 (1998). An updated list of protected species confirmed to occur in the study area will be provided once summer fieldwork has been completed.

8.1.5.5 Fauna

MAMMALS

Regional Context

The study area is situated within the Grassland biome, which is confined to the cool, high-lying plateau of eastern South Africa, Swaziland and Lesotho, as described by Mucina & Rutherford (2006). A number of small mammal species are endemic to this biome, of which only two have been confirmed to occur within the general vicinity of the study area (Friedman & Daly, 2004): Hottentot's Golden Mole (*Amblysomus hottentotus*) and Highveld Golden Mole (*A. septentrionalis*).

Species Richness

A list of 33 mammal species have been recorded in the QDSs in which the study area is situated in. A list of confirmed mammal species will be provided once summer fieldwork has been completed.

Species of Conservation Concern

Ten species of conservation concern occur on the Highveld in the general vicinity of the study area, of which eight have been recorded in the QDS grids in which the study area is situated. Five of these have a moderate to high likelihood of occurring in the study area, all of which are classified as NT. Two additional species for which there are no records in the vicinity of the study area, but which have a moderate likelihood of occurring are one VU species (Spotted-necked Otter *Hydrictris maculicollis*) and one NT species (African Clawless Otter *Aonyx capensis*). Dedicated searches for the species covered above will take place during summer fieldwork and will include the use of motion-triggered Bushnell Trailcam cameras.

BIRDS

Regional Context

The study area is situated within the Afrotropical Highlands biome as defined by Fishpool & Evans (2001). This biome is located in fragmented patches throughout the Afromontane belt of Africa and corresponds to the Grassland Biome in South Africa. Twenty-four species occurring in South Africa are listed by Barnes (1998) as being endemic to the biome, i.e. not occurring outside of the biome. Many of these are forest species that will not occur in the study area, and only one biome-restricted endemic (Southern Bald Ibis *Geronticus calvus*) has been confirmed to occur in the same quarter-degree grids in which the study area is situated during the current Southern African Bird Atlas Project (SABAP2).

Kranskop 49-IT is situated along the eastern boundary of the Amersfoort – Bethal – Carolina District Important Bird Area (IBA) and the Chrissie Pans IBA is located to the south-east of the study area (Marnewick *et al.*, 2015).

Species Richness

The quarter-degree grids 2629BB and 2630AA, in which the study area falls, currently have a combined list of 212 bird species recorded during the ongoing second Southern African Bird Atlas Project (SABAP2)³, a total probably approaching true species diversity for the district. SABAP2 data also indicate that 134 bird species have been recorded from the four pentads (mapping units) in which the study area is situated (2610_3000, 2605_3000, 2610_2955, 2605_2955). A pentad is a much smaller mapping unit than a quarter-degree grid, measuring approximately 77 km², and is thus a better indication of which species are likely to occur in the study area. However, none of the pentads listed above have been surveyed more than three times during SABAP2 and are thus significantly under-sampled and likely to support more species than is currently indicated. Summer fieldwork will give a better indication of avian species richness within the study area. It is likely that at least three bird assemblages are present, namely a Grassland assemblage, Open Water assemblage and a Transformed (Cultivated Lands) assemblage. These assemblages will be described in more detail once summer fieldwork has been undertaken.

Species of Conservation Concern

Eight threatened bird species have been recorded in the quarter-degree grids in which the study area is situated, namely one CR species (Wattled Crane *Grus carunculatus*), two EN species (Grey Crowned Crane *Balearica regulorum*, Cape Vulture *Gyps coprotheres*) and five VU species (Southern Bald Ibis, Secretarybird *Sagittarius serpentarius*, White-bellied Korhaan *Eupodotis senegalensis*, Denham's Bustard *Neotis denhami* and African Grass Owl *Tyto capensis*). Five of these species have a moderate likelihood of occurring in the study area and will be searched for during summer fieldwork.

Five NT species have been recorded in the quarter-degree grids in which the study area is situated and have a moderate to high likelihood of being present in the study area. Three of these are only likely to be recorded in open water habitat at Kranspan, namely Maccoa Duck (*Oxyura maccoa*), Lesser Flamingo (*Phoeniconaias minor*) and Greater Flamingo (*Phoenicopterus roseus*), while two species are most likely to occur in untransformed grassland habitat, namely Blue Crane (*Grus paradiseus*) and Blue Korhaan (*Eupodotis caerulea*).

Four additional species for which there are no records in the vicinity of the study area have a moderate likelihood of occurring. One of these is classified as VU (Lanner Falcon *Falco biarmicus*), while the other three are NT (Chestnut-banded Plover *Charadrius pallidus*, Pallid Harrier *Circus macrourus*, Black-winged Pratincole *Glareola nordmanni*). A more thorough field analysis of habitat suitability will be undertaken during the survey and each species will be dealt with in more detail in the updated report.

³ <http://sabap2.adu.org.za/> Accessed 13 November 2018

HERPETOFAUNA (REPTILES AND AMPHIBIANS)

Regional Context

The study area is situated within the Grassland biome, which is confined to the cool, high-lying plateau of eastern South Africa, Swaziland and Lesotho, as described by Mucina & Rutherford (2006). Numerous reptile and amphibian taxa are endemic to this biome, although the study area is situated in an area of moderate to low endemism, with 3 endemic reptile species per QDS (Bates *et al.*, 2014) and 4-6 endemic frog species per QDS (Minter *et al.*, 2004).

Species Richness

Thirty reptile species and 14 amphibian species have been recorded from the two QDSs in which the study area is located, with a mean of 20 reptile species and 12 amphibian species per QDS. Given the relatively small size of the study area and low habitat heterogeneity, it is unlikely that this full list of species will be present in the study area. A more accurate estimate of species richness will be made after summer fieldwork has been completed.

Species of Conservation Concern

No reptile species of conservation concern as assessed by Bates *et al.* (2014) have been observed within the vicinity of the study area, while one species that has been regionally assessed by the MTPA as NT (Spotted Harlequin Snake *Homoroselaps lacteus*) has been recorded in 2629BB. Three additional NT reptiles have been recorded in other QDSs in the general vicinity of the study area (Coppery Grass Lizard *Chamaesaura aenea*, Large-scaled Grass Lizard *C. macrolepis*, Striped Harlequin Snake *Homoroselaps dorsalis*), but these have a low likelihood of being present in the study area.

No amphibian species of conservation concern have been recorded from the vicinity of the study area, although one species has a low likelihood of occurring, namely Giant Bullfrog (*Pyxicephalus adspersus*), which has been classified as NT and is a protected species under NEMBA (2004). This species breeds in shallow temporary pans which are present within the study area and adjacent properties, but is very rare on the eastern Highveld and there are no recent records from the relevant QDSs.

8.1.5.6 Ecological Sensitivity Analysis

A full sensitivity analysis of each of the vegetation communities represented in the study area will be presented once fieldwork has been completed. Conservation Value (CV), which is an important component of the ecological sensitivity (ES) analysis, can only be calculated once field data have been collected and habitat state assessed.

In the interim, the classification of land units in the Mpumalanga Biodiversity Sector Plan (MBSP) (Lötter *et al.*, 2014) has been used as a surrogate for ES (Figure 8-1).

All of the Natural Habitat (untransformed vegetation) within the study area falls within Critical Biodiversity Areas (CBAs) according to the MBSP (Lötter *et al.*, 2014). Just over half of the untransformed grassland in the study area (736 ha) has been classified as **CBA: Irreplaceable**, while the pans, riparian wetlands and other grassland have been classified as **CBA: Optimal**. These are the most sensitive habitats in the study area and represent the areas where impacts on ecology would be most significant.

All the transformed areas, such as cultivated lands, are classified as either Heavily Modified or Moderately Modified: Old Lands.

Critical Biodiversity Areas are areas that are essential for meeting biodiversity targets for species, ecosystems or ecological processes. The desired management objectives for CBAs are that they be kept in a natural or near-natural state, with no further loss of habitat or species.

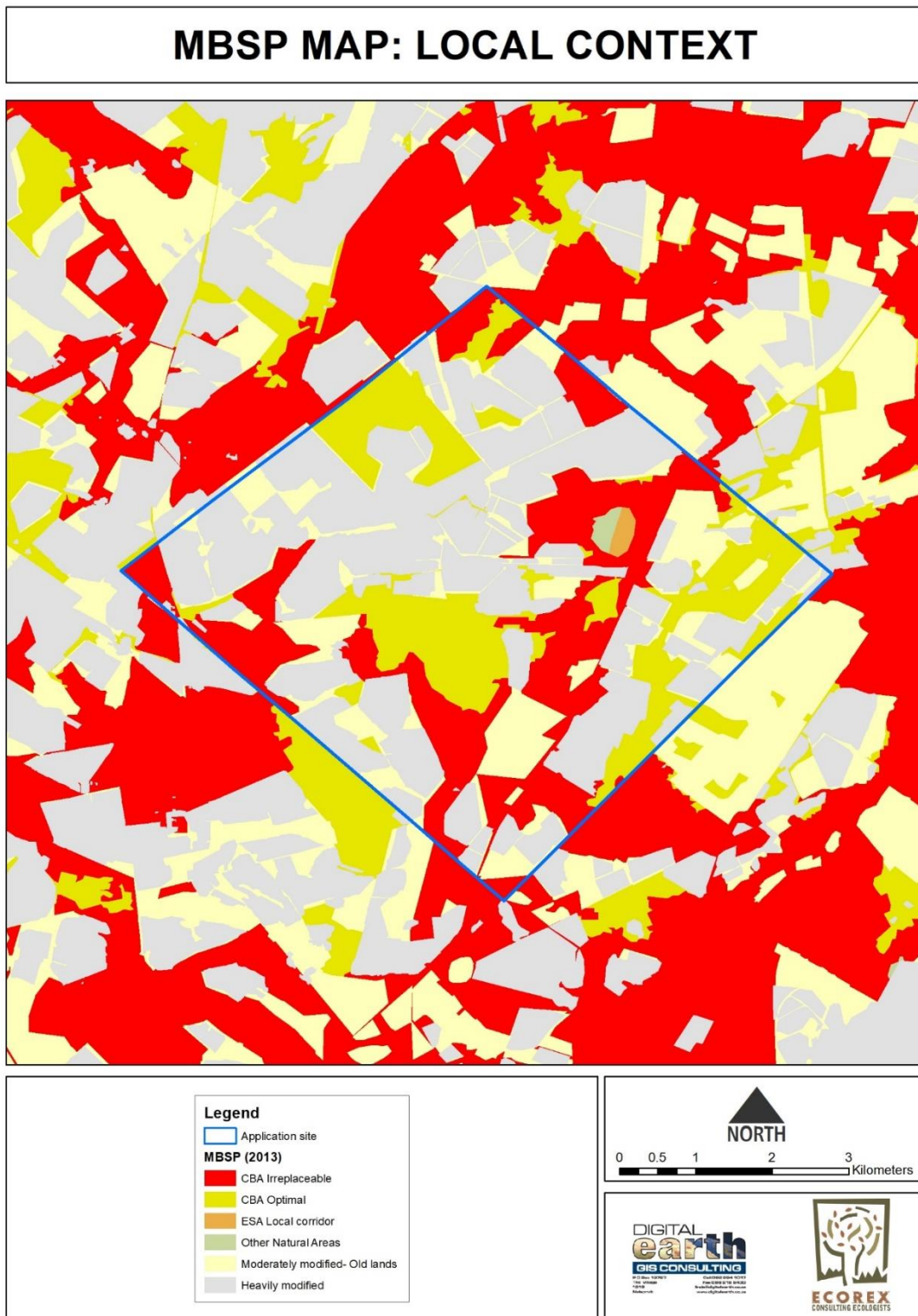


FIGURE 8-1: CLASSIFICATION OF LAND UNITS IN THE MPUMALANGA BIODIVERSITY SECTOR PLAN

8.1.6 SURFACE WATER

The project area is situated within the Inkomati Water Management Area (WMA), located in the Komati sub-catchment (X11A and X11B quaternary catchment). These are shown in Appendix 4 Map 7.

The Komati catchment has relatively high rainfall of 500 to 1600 mm/annum and a mean annual runoff estimate of 1357 million m³/annum.

The Komati River drains a relatively small part on the eastern edge of the Mpumalanga coalfields. Its catchment on the coalfields neighbours on Breyten and Chrissiesmeer in the south, Hendrina town in the west and Belfast and Arnot in the north.

The Inkomati WMA has many commercial farmers as well as the largest number of previously disadvantaged and emerging farmers in the country. Agriculture is the most significant land use in terms of water use accounting for 57% of the average water requirements. Forestry in the Inkomati Water Management Area covers approximately 14 % of the total area and is a significant user of water. There are also significant urban, rural and industrial users in the catchment. Mining is also significant and has the potential to threaten water quality in the area.

There are several surface water features within the proposed mining right area, including at least three wetland types, namely Endorheic Pans, Valley-bottom Wetlands and Hillslope Seeps, covering approximately 330 ha. Satellite imagery indicates several circular to sub-circular permanent or seasonal pans in the study area, of which Kranspan is the most significant, covering approximately 125 ha (ECOREX, 2018).

The location and extent of these features will be determined by the relevant specialist studies and these reports will be included in the Draft EIR.

8.1.7 GROUNDWATER

The geology underlying the water management area is generally not of high-water bearing capacity and, given the relatively good availability of surface water, only limited abstraction of groundwater occurs in the water management area. Of the total available yield from the water resources naturally occurring in the water management area, just over 1% is estimated to be from groundwater. Most of the groundwater use in the region is for rural domestic supplies, as well as for game and livestock watering in the drier parts.

8.1.8 AIR QUALITY

The proposed Kranspan mining right area is situated within the Highveld Priority Area.

In 2007, the Highveld Priority Area was declared in terms of section 18(1) of the National Environmental Management: Air Quality Act 39 of 2004. The declaration incorporated areas of the Mpumalanga and Gauteng Province in which ambient air quality standards were exceeded and specific air quality management actions were required to rectify the situation.

Monitoring stations to determine the ambient air quality within the proposed project area are situated in Ermelo, Hendrina, Middelburg and eMalahleni. Criteria pollutants identified as of major concern in the region include particulates, sulphur dioxide (SO₂) and nitrogen oxides (NO_x). Sources of SO₂ and NO_x that occur in the region include industrial emissions, blasting operations at mines and spontaneous combustion of discard coal dumps, veld burning, vehicle exhaust emissions and household fuel burning.

Selected monitoring data for the period 2008 to 2015 is shown in Figure 8-2 and Figure 8-3.

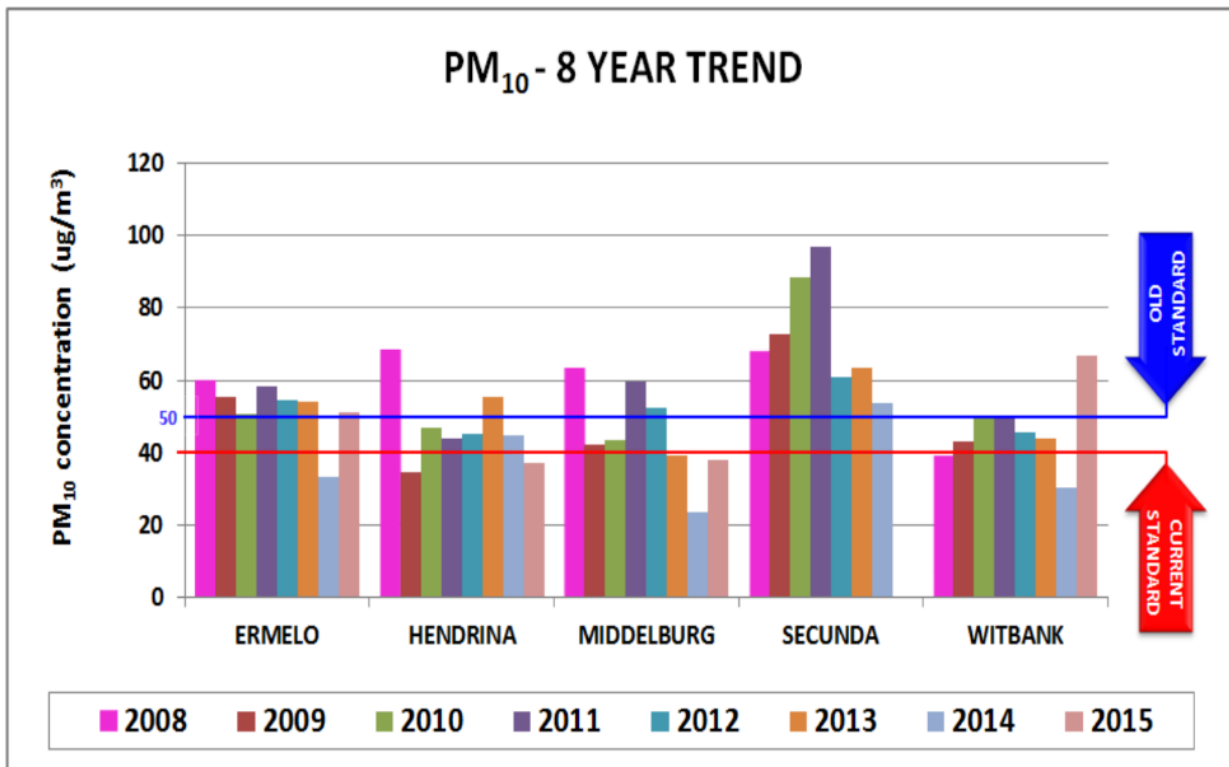


FIGURE 8-2: HIGHVELD PRIORITY AREA PM₁₀ CONCENTRATIONS

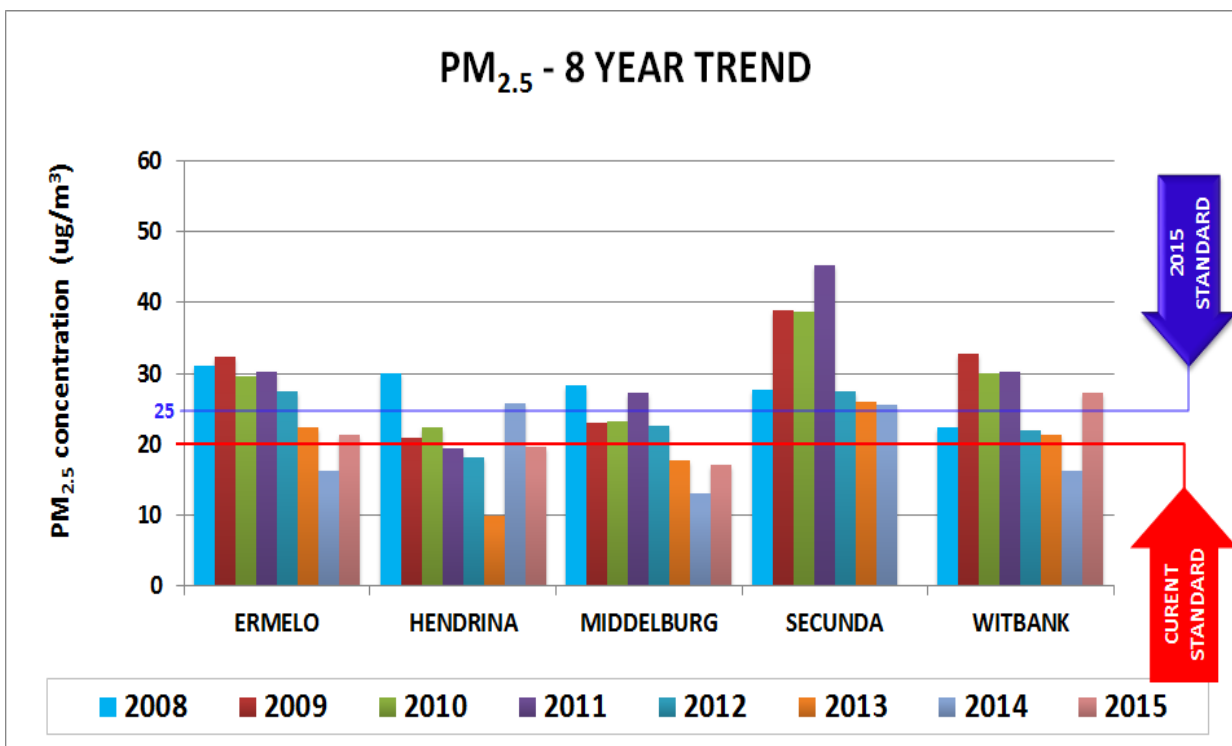


FIGURE 8-3: HIGHVELD PRIORITY AREA PM_{2.5} CONCENTRATIONS

The trends compiled with baseline monitoring data from the monitoring stations indicate that:

- PM10 concentrations are above the current annual NAAQS in two of the five stations in the HPA, namely Ermelo and Witbank; and
- PM2.5 concentrations are above the current annual NAAQS in most of the five stations in the HPA.

8.1.9 ENVIRONMENTAL NOISE

A baseline environmental noise survey will be undertaken as part of the EIA phase and noise impact predictive model results will be included in the Draft EIR.

Noise sensitive receptors generally include places of residence and areas where members of the public may be affected by noise generated by mining, processing, and transport activities. Office workers and employees, and any on-site accommodation structures may also be affected.

It is expected that the following current activities may have an impact the baseline noise:

- Traffic on the main roads in the study area.
- The railway line in close proximity to the study area.
- Traffic on the farm roads in the area (intermittent noise).
- General farming activities (not major source of noise).
- The mines in close proximity to study area.

The project will result in elevated noise levels due to the blasting, excavation, loading, tipping and hauling of material of material on site, as well as the operation of the plant and associated infrastructure. Trucks travelling along the road transporting product and supplies to the site will also result in elevated noise levels. There are however few noise sensitive receptors in nearfield proximity to the study area. These will be surveyed during the Impact Assessment and mitigation measures will be implemented to reduce the impact to sensitive receptors.

8.1.10 HERITAGE

A heritage scoping study report was undertaken by HCAC (2018). A summary of the report is provided below and the complete report is provided in Appendix 8.

8.1.10.1 Early Stone Age

The Early Stone Age in southern Africa is defined by the Oldowan complex, primarily found at the sites Sterkfontein, Swartkrans and Kromdraai, situated within the Cradle of Humankind, just outside Johannesburg (Kuman, 1998). Within this complex, tools are more casual and expediently made, and tools consist of rough cobble cores and simple flakes. The flakes were used for such activities as skinning and cutting meat from scavenged animals. This industry is unlikely to occur in the study area.

The second complex is that of the more common Acheulean, defined by large handaxes and cleavers produced by hominids at about 1.4 million years ago (Deacon & Deacon, 1999). No Acheulian sites are on record near the project area, but isolated finds are possible. However, isolated finds have little value.

8.1.10.2 Middle Stone Age

During the Middle Stone Age, significant changes start to occur in the evolution of the human species. These changes manifest themselves in the complexity of the stone tools created, as seen in the diversity of tools, the standardisation of these tools over a widespread area, the introduction of blade technology, and the development of ornaments and art.

The repeated use of caves indicates that MSA people had developed the concept of a home base and that they could make fire. These were two important steps in cultural evolution (Deacon & Deacon, 1999).

Accordingly, if there are caves in the study area, they may be sites of archaeological significance. MSA artefacts are common throughout southern Africa, but unless they occur in undisturbed deposits, they have little significance.

8.1.10.3 Later Stone Age

The Later phases of the Stone Age began at around 20 000 years BP (Before Present). This period was marked by numerous technological innovations and social transformations within these early hunter-gatherer societies. Hunting tools now included the bow and arrow.

These people may be regarded as the first modern inhabitants of Mpumalanga, known as the San or Bushmen. They were a nomadic people who lived together in small family groups and relied on hunting and gathering of food for survival. Evidence of their existence is to be found in numerous rock shelters throughout the Eastern Mpumalanga where some of their rock paintings are still visible.

Three late Stone Age sites are on record in the greater area. The sites are Welgelegen Skuiling close to Ermelo, Chrissiesmeer (also known for rock art) and lastly Groenvlei close to Carolina; this area is also known for rock art (Bergh 1999).

8.1.10.4 Iron Age

The Iron Age as a whole represents the spread of Bantu speaking people and includes both the pre-Historic and Historic periods. It can be divided into three distinct periods:

- The Early Iron Age: Most of the first millennium AD.
- The Middle Iron Age: 10th to 13th centuries AD
- The Late Iron Age: 14th century to the colonial period.

The Iron Age is characterised by the ability of these early people to manipulate and work iron ore into implements that assisted them in creating a favourable environment to make a better living.

8.1.10.5 Early and Middle Iron Age

No sites dating to this period are on record close to the study area.

8.1.10.6 Late Iron Age

Stonewalled settlements are well known around the Watervalboven and Machadodorp area to the north of the study area, in fact, these settlements are found all along the Mpumalanga escarpment, from Ohrigstad in the north, all the way to Carolina in the south (Maggs 2007). These settlements consist of roughly circular homesteads linked by walled roads or cattle tracks associated with agricultural terraces.

8.1.10.7 Palaeontology

Based on the SAHRA paleontological sensitivity map the area is of very high sensitivity and will require a palaeontological study prior to development



Colour	Sensitivity	Required Action
RED	VERY HIGH	Field assessment and protocol for finds is required
ORANGE/YELLOW	HIGH	Desktop study is required and based on the outcome of the desktop study, a field assessment is likely
GREEN	MODERATE	Desktop study is required
BLUE	LOW	No palaeontological studies are required however a protocol for finds is required
GREY	INSIGNIFICANT/ZERO	No palaeontological studies are required
WHITE/CLEAR	UNKNOWN	These areas will require a minimum of a desktop study. As more information comes to light, SAHRA will continue to populate the map.

FIGURE 8-4: SAHRA PALEONTOLOGICAL SENSITIVITY MAP

8.1.10.8 Probability of occurrence of sites

Based on the above information, it is possible to determine the probability of finding archaeological and cultural heritage sites within the study area to a certain degree. For the purposes of this section of the report the following terms are used – low, medium and high probability.

Low probability indicates that no known occurrences of sites have been found previously in the general study area. Medium probability indicates some known occurrences in the general study area are documented and can, therefore, be expected in the study area. A high probability indicates that occurrences have been documented close to or in the study area and that the environment of the study area has a high degree of probability for the occurrence of sites.

Archaeological remains dating to the following periods can be expected within the study areas:

- ➔ Stone Age finds

- ESA: Low Probability
- MSA: Low Probability
- LSA: High Probability
- LSA –Herder: Low Probability
- ➔ Iron Age finds
 - EIA: Low Probability
 - MIA: Low Probability
 - LIA: Medium - High Probability
- ➔ Historical finds
 - Historical period: Medium Probability
 - Historical dumps: Medium Probability
 - Structural remains: Medium to high Probability
- ➔ Living Heritage
 - For example, rainmaking sites: Low Probability
- ➔ Burial/Cemeteries
 - Burials over 100 years: High Probability
 - Burials younger than 60 years: High Probability

Subsurface excavations including ground levelling, landscaping, and foundation preparation can expose any number of these resources.

8.1.11 SOCIO-ECONOMIC ENVIRONMENT⁴

8.1.11.1 Chief Albert Luthuli Local Municipality

The proposed mining right area is located within the Gert Sibande District, within the Mpumalanga Province.

Gert Sibande District comprises of seven local municipalities, being Chief Albert Luthuli, Dipaleseng, Govan Mbeki, Lekwa, Mkhondo, Muskaligwa, and Pixley KaSeme (Figure 8-5).

⁴ There is a general lack of recent published demographic and other socio-economic data for the area. Except where noted, the information in this section has been summarised from Statistics South Africa Census Data (2011)

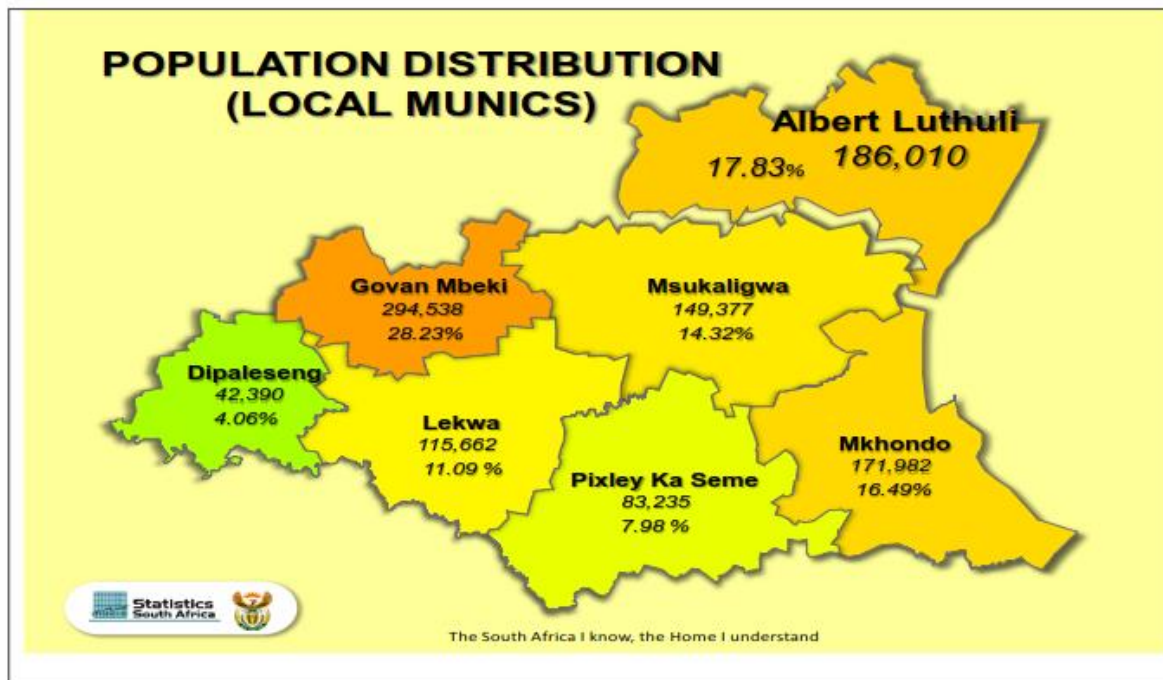


FIGURE 8-5: LOCAL MUNICIPALITIES

Chief Albert Luthuli is rated a Medium Capacity Municipality, which comprises of 5 formally declared towns, namely Carolina, Emanzana, Elukwatini, Empuluzi/Mayflower and Eklulindeni. The administrative head office of the municipality is situated in Carolina, with a satellite office at each of the other towns.

The Municipality has 47 750 households, and 186 010 citizens. Located on the eastern escarpment of the Mpumalanga Province, the surface area is approximately 5 560 km². A summary of the key statistics of the municipality is provided in Table 8-2.

8.1.11.2 Population

There are approximately 187 630 people residing in the municipality (StatsSA 2016 Community Survey). The major forces that drive population growth in the area are fertility, mortality, migration, HIV prevalence and access to Anti Retro Virals.

The most dominant population group in the Municipality are Black African individuals, who represent more than 97.6% of the total population in the municipal area. White and Indian/Asian population groups comprise around 1.6% and 0.4% of the population respectively. The dominant languages in Chief Albert Luthuli Local Municipality are Siswati and isiZulu. Siswati is the most widely spoken language (56.6%).

TABLE 8-2: KEY STATISTICS OF CHIEF ALBERT LUTHULI MUNICIPALITY

KEY STATISTICS	NUMERICAL VALUE
Total population	187 630
Young (0-14)	36.5%
Working age (15 - 64)	58.2%
Elderly (65+)	5.3%
Dependency Ratio	71.7%
Gender Ratio	88.2.3%
Growth Rate	-0.09% (2001 - 2011)
Population density	33 person/km ²
Unemployment rate	35.4%
Youth unemployment rate	45.1%
No schooling aged 20+	19.9%
Higher education aged 20+	6.3%
Matric aged 20+	27%
Number of Households	47.705%
Number of Agricultural Households	19.113
Average Household size (person)	3.8
Female headed households	49.3%
Formal dwellings	76.5%
Housing owned/paying off	56.3%
Flush toilet connected to sewerage	18.9%
Weekly refuse removal	19.3%
Piped water inside dwelling	22.6%
Electricity for lighting	87.5%

Source: Statistics South Africa (2011)

8.1.11.3 Educational Facilities and Education

A total of 111 schools can be found in Chief Albert Luthuli Municipality, 48 of which are Secondary institutes.

19.9% of the municipal population has not attended any type of a schooling system, while 95.5% have primary school education. A little over 1901 individuals (0.11%) have graduated from a University / Technikon.

In Chief Albert Luthuli Municipality, around 27 % of adults have a matric certificate compared to 29 % in the Mpumalanga Province. The percentage of the population with a tertiary education in Chief Albert Luthuli (6.3%) is also lower than that for the Mpumalanga Province (9.6%).

The nearest school to the site is situated immediately west of the western boundary of the proposed MRA. The land on which the school is built is owned by Ilima.

8.1.11.4 Access to Water, Sewage and Solid Waste Services

Piped water is accessed by about 68.7% of the Municipalities population and about 18.9% of the municipal population have access to flush toilets. About 19.3% of the population have access to a weekly refuse collection service⁵.

8.1.11.5 Housing

Within the Chief Albert Luthuli Local Municipality, 76% of households live in formal units, while 18% are found in informal housing units.

A variety of residential components are available within the municipal boundaries. More than 15.3% of household dwellings found in the Municipality can be classified as Urban. Some 77.5% of local dwellings can be described as Tribal/Traditional.

The average household size in Chief Albert Luthuli Local Municipality is about 3.8, female headed households is about 49%, formal dwellings at 86% and the housing owned is at 52%.

8.1.11.6 Public Safety and Security

The Municipality has one fully-fledged fire station in Carolina, and a satellite fire station in Elukwatini; as well as an operational fire engine and three rescue vehicles.

8.1.11.7 Community Health and Health Facilities

Health services are provided by clinics and hospitals in both urban and rural areas. There are a total of twenty one (21) clinics in the Chief Albert Luthuli Municipal area; grouped into two clusters; the Northern Cluster from Diepdale to Carolina (10), and Southern Cluster from Hartebeeskop to Badplaas (11).

In addition, there are two Level 1 Hospitals (Carolina Hospital and Embhuleni Hospital), which receive patients referred from the clinics and provides outpatient services as well.

Mpumalanga is one of the three (3) Provinces with the highest infection rates of HIV / AID"s. Latest statistics for the Province reveal an increase in the District infection rate. HIV prevalence rate of pregnant women was 43.2% in 2011 - increasing between 2001 & 2011. HIV prevalence rate excluding pregnant women was 21.6% (2011) - decreasing trend.

The municipality is responsible for the provision of graves to the communities for burials and maintenance of 6 municipal cemeteries. They are at Emanzana, Carolina, Ekulindeni, Elukwatini, Mayflower and Silobela. Other areas are falling within the tribal authority and are using the tribal cemeteries, which are spread throughout the villages at times.

8.1.11.8 Electricity and Energy

Around 87.5% of household dwellings found in Chief Albert Luthuli Local Municipality have access to electricity. The Municipality is licensed to distribute electricity in Carolina, Silobela and part of Emanzana only. Eskom is licensed for the bulk supply and reticulation in the former Ekulindeni, Elukwatini and Empuluzi TLC areas. Electrification of households in the rural areas, the informal settlements and parts of Silobela Township is a compelling necessity.

Households with connection to electricity 51 383 in 2016 – the share of households connected to electricity improved to a level of more than 96% in 2016 – 1 902 households however are not connected to electricity at all (none).

⁵ CALLM DIDP (2017/ 22 Part 1)

As shown in Figure 8-6, the majority of the population have access to electricity, which is used primarily for cooking, heating and lighting. The proportion of households within the municipality that use electricity for lighting has increased from 50.9% in 2001 to approximately 87.5% in 2011.

Although relatively expensive, paraffin and gas are used for cooking and heating in some places. Households using electricity as a source of energy for cooking in 2011 is 50.8%.

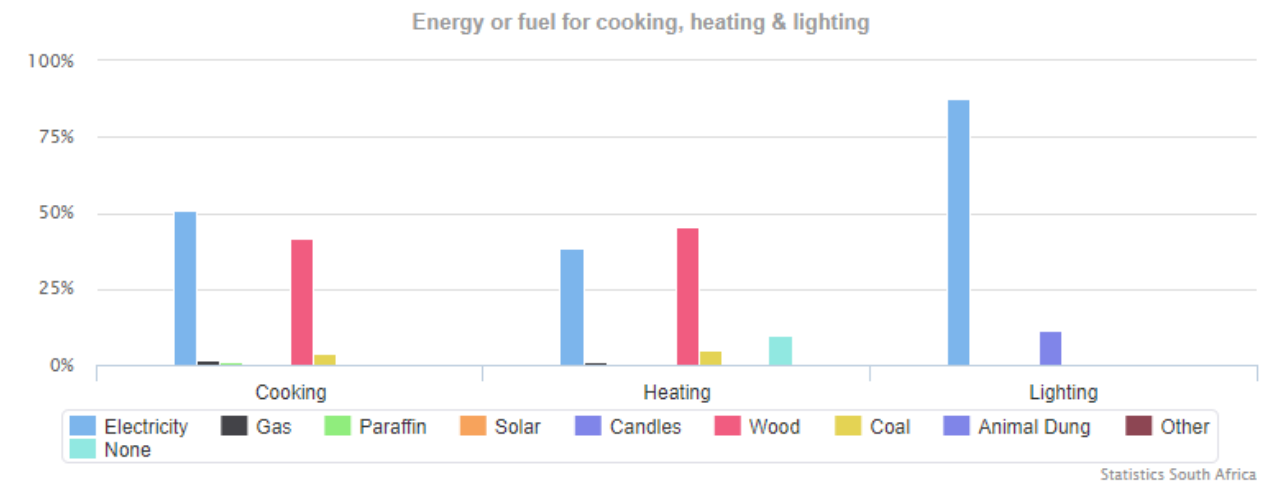


FIGURE 8-6: SUMMARY OF ENERGY OR FUEL FOR COOKING, HEATING & LIGHTING

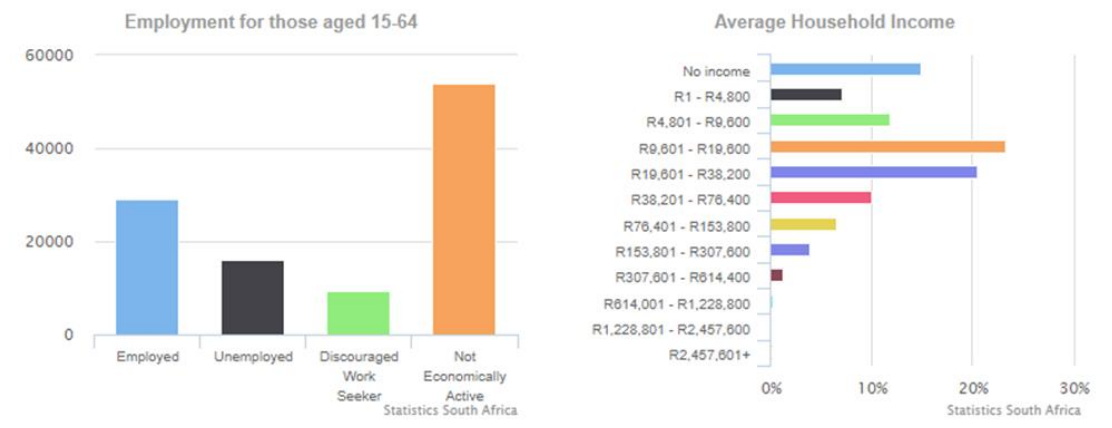
8.1.11.9 Employment⁶

Between 2001 and 2011, there has been a decrease in the number of people unemployed and a concomitant increase in the number of employed people across the Chief Albert Luthuli Local Municipality.

35,4% of the 45 116 economically active individuals (i.e. those who are employed or unemployed but looking for work) are unemployed. Of the 24 506 economically active youth (15–35 years) in the municipality. 35.8% of youth remain unemployed in 2011.

The average household income is approximately R 9 601 – R 19 600. Obtaining any form of income generating employment within the municipality has become increasingly difficult in recent years. This is attributed to the lack of education, resulting in the uneducated experiencing the high incidences of poverty.

⁶ Statistics South Africa (2011)



Source: Statistics South Africa (2011)

FIGURE 8-7: SUMMARY OF EMPLOYMENT AND INCOME

8.1.11.10 Economy

The Spatial Economy and Development Rationale, part of the Draft Integrated Development Plan, noted the following:

- The overall economic outlook for the municipality is good, however there are few concerns worth noting
- High Prevalence of HIV means that 44% of the population require treatment for HIV and the food to support the use of the treatment;
- High unemployment rate among people in the 14 – 64 age group (Persons most economically productive years);
- The unemployment rate in the Municipality is 35,4% (2011); females 42% and males 28% - and the unemployment rate for young people is alarmingly high at 45%, which is mainly influenced by the lack of economic opportunities in the municipal area. The highest number of unemployed (54%) is in Ward 12 (Ekulindeni area) and the lowest number (20%) is in Ward 21 (Carolina area);
- Employment in the Municipality increased with 8 600 jobs between 2001 and 2011, and the number of employed individuals is 29 141 (0,12%). The percentage of employment in formal sector was 65,6%, and in the informal sector 21,9% (StatsSA 2011); and
- The main economic drivers in the Municipality sector; and the construction sector.

The mining sector is identified within the Chief Albert Luthuli Local Municipality Draft Integrated Development Plan (2017/ 22 Part 2) as a sector with development potential.

8.2 DESCRIPTION OF THE CURRENT LAND USES

8.2.1 EXISTING SURFACE LAND USES

Existing land uses include the following:

- Cultivated fields, comprising of predominantly maize;
- Farm roads and agricultural infrastructure including boreholes;
- Cattle farming; and
- Farm steads.

There are no registered land claims applicable to the properties under consideration. (Appendix 5).

8.2.2 SURROUNDING LAND USES

Surrounding land uses include the following:

- R36 Main Road to Carolina / Breyten;
- Unnamed gravel road on the western boundary of the proposed mining rights area;
- Msobo Coal Mine;
- School;
- Northern Coal Mine;
- Rail tracks;
- Agriculture; and
- Farm steads.

8.3 DESCRIPTION OF SPECIFIC ENVIRONMENTAL FEATURES AND INFRASTRUCTURE ON THE SITE

8.3.1 SURFACE WATER FEATURES

There are several wetlands present within the Mining Rights Application Surface Area. Most of the wetlands are in areas which will be unaffected by the mining activities. The location of all the watercourses and the applicable buffers, namely 100 m for watercourses and 500 m for wetlands (pans), have been included in the environmental sensitivity plan. The placement of the required surface infrastructure has largely avoided these areas. However, the planned site layout shows that infrastructure may be placed within the 500 m buffer for several of the wetlands on the proposed project area.

The potential impact of the proposed colliery on the wetlands will be assessed in the EIA.

8.3.2 PROTECTED AREAS

The most significant protected area in proximity to the site is the Chrissiesmeer Panveld, situated approximately 10 km to the west of the proposed mining right area. The Chrissiesmeer Panveld comprises of over 320 pans on private land and includes the largest inland freshwater lake in South Africa.

It is not anticipated that the proposed mining development will have an impact on the Chrissiesmeer Panveld.

Appendix 4 Map 10 shows the proposed mining right area in relation to protected areas within a 5 km and 10 km radius of the boundary of the area.

8.3.3 CRITICAL BIODIVERSITY AREA AND ECOLOGICAL SUPPORT AREA

Appendix 4 Map 9 shows the Critical Biodiversity Areas (CBA) and Ecological Support Areas in relation to the proposed mining right area. These areas will be investigated in the terrestrial ecology and surface water ecosystem studies to be undertaken in the impact assessment phase.

8.4 ENVIRONMENTAL AND CURRENT LAND USE MAP

The following dominant current land use categories are recognised:

- Agriculture – grazing;
- Residential;
- Historical mining and related infrastructure; and

- Power infrastructure.

Appendix 4 Map 11 shows the current land uses associated with the site and surrounding areas.

9 IMPACTS IDENTIFIED

9.1 METHODOLOGY USED IN DETERMINING THE SIGNIFICANCE OF ENVIRONMENTAL IMPACTS

The first phase of impact assessment is the identification of the various project activities which may impact upon the identified environmental categories.

The identification of significant project activities is supported by the identification of the various receiving environmental receptors and resources. These receptors and resources allow for an understanding of the impact pathways and assessment of the sensitivity of the receiving environment to change.

The significance of the impact is then assessed by rating each variable numerically, according to defined criteria as provided in Table 9-1. The purpose of the significance rating of the identified impacts is to develop a clear understanding of the influences and processes associated with each impact.

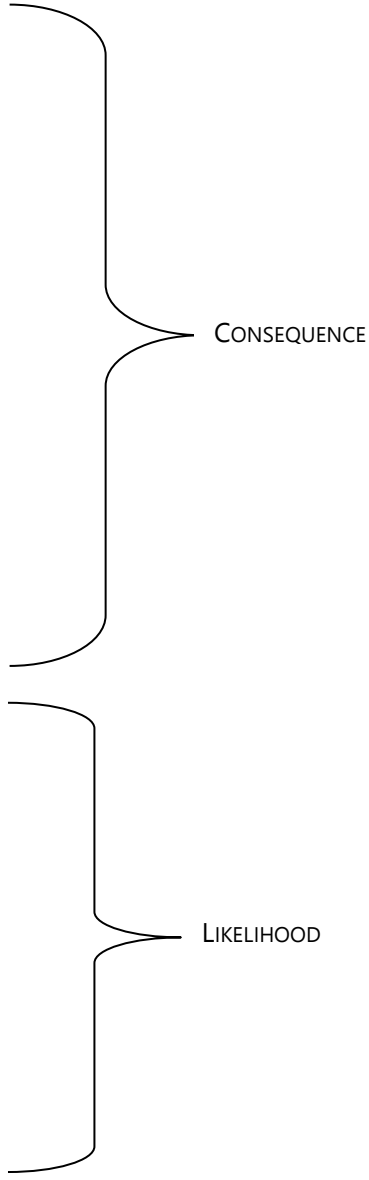
The severity, spatial scope and duration of the impact together comprise the consequence of the impact; and when summed can obtain a maximum value of 15. The frequency of the activity and the frequency of the impact together comprise the likelihood of the impact, and can obtain a maximum value of 10.

The values for likelihood and consequence of the impact are then read from a significance rating matrix as shown in Table 9-1 and Table 9-2.

The model outcome of the impacts is then assessed in terms of impact certainty and consideration of available information. The Precautionary Principle is applied in instances of uncertainty or lack of information by increasing assigned ratings or adjusting final model outcomes. In certain instances, where a variable or outcome requires rational adjustment due to model limitations the model outcomes are adjusted. Arguments and descriptions for such adjustments, as well as arguments for each specific impact assessments are presented in the text and encapsulated in the assessment summary table linked to each impact discussion.

TABLE 9-1: CRITERIA FOR ASSESSING THE SIGNIFICANCE OF IMPACTS

SEVERITY OF IMPACT	RATING
Insignificant / non-harmful	1
Small / potentially harmful	2
Significant / slightly harmful	3
Great / harmful	4
Disastrous / extremely harmful	5
SPATIAL SCOPE OF IMPACT	RATING
Activity specific	1
Area specific	2
Whole project site / local area	3
Regional	4
National/International	5
DURATION OF IMPACT	RATING
One day to one month	1
One month to one year	2
One year to ten years	3
Life of operation	4
Post closure / permanent	5
FREQUENCY OF ACTIVITY / DURATION OF ASPECT	RATING
Annually or less / low	1
6 monthly / temporary	2
Monthly / infrequent	3
Weekly / life of operation / regularly / likely	4
Daily / permanent / high	5
FREQUENCY OF IMPACT	RATING
Almost never / almost impossible	1
Very seldom / highly unlikely	2
Infrequent / unlikely / seldom	3
Often / regularly / likely / possible	4
Daily / highly likely / definitely	5



Activity: a distinct process or task undertaken by an organisation for which a responsibility can be assigned.

Environmental aspect: an element of an organisation’s activities, products or services which can interact with the environment.

Environmental impacts: consequences of these aspects on environmental resources or receptors.

Receptors: comprise, but are not limited to people or man-made structures.

Resources: include components of the biophysical environment.

Frequency of activity: refers to how often the proposed activity will take place.

Frequency of impact: refers to the frequency with which a stressor will impact on the receptor.

Severity: refers to the degree of change to the receptor status in terms of the reversibility of the impact; sensitivity of receptor to stressor; duration of impact (increasing or decreasing with time); controversy potential and precedent setting; threat to environmental and health standards.

Spatial scope: refers to the geographical scale of the impact.

Duration: refers to the length of time over which the stressor will cause a change in the resource or receptor.

TABLE 9-2: SIGNIFICANCE RATING MATRIX

		CONSEQUENCE (SEVERITY + SPATIAL SCOPE + DURATION)													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14
LIKELIHOOD (FREQUENCY OF ACTIVITY + FREQUENCY OF IMPACT)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30
	3	6	9	12	15	18	21	24	27	30	33	36	39	42	45
	4	8	12	16	20	24	28	32	36	40	44	48	52	56	60
	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75
	6	12	18	24	30	36	42	48	54	60	66	72	78	84	90
	7	14	21	28	35	42	49	56	63	70	77	84	91	98	105
	8	16	24	32	40	48	56	64	72	80	88	96	104	112	120
	9	18	27	36	45	54	63	72	81	90	99	108	117	126	135
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150

TABLE 9-3: POSITIVE/NEGATIVE MITIGATION RATINGS

COLOUR CODE	SIGNIFICANCE RATING	VALUE	NEGATIVE IMPACT MANAGEMENT RECOMMENDATION	POSITIVE IMPACT MANAGEMENT RECOMMENDATION
	Very High	126-150	Improve current management	Maintain current management
	High	101-125	Improve current management	Maintain current management
	Medium-High	76-100	Improve current management	Maintain current management
	Low-Medium	51-75	Maintain current management	Improve current management
	Low	26-50	Maintain current management	Improve current management
	Very Low	1-25	Maintain current management	Improve current management

9.2 THE POSITIVE AND NEGATIVE IMPACTS THAT THE PROPOSED ACTIVITY AND ALTERNATIVES WILL HAVE ON THE ENVIRONMENT AND THE COMMUNITY THAT MAY BE AFFECTED

At this stage in the S&EIR Process, the potential impacts of project activities are still being identified. A summary of the most significant aspects and impacts identified to date is as follows:

- **Socio-economic:** The project is likely to have a number of significant positive impacts on the local and regional socio-economic environment. These impacts include the procurement of local goods and services, employment opportunities for local communities as well as other South African citizens, income generation, skills development and education opportunities, local economic development, GDP improvement and wealth creation and the distribution of revenue and wealth. With the expected influx of people seeking employment, the project also has the potential to adversely affect existing community structures and place greater demand on public services like police stations and clinics. Mitigation measures will be required to ensure that the negative impacts are avoided or minimised, while the positive impacts are maximised.
- **Groundwater:** Dewatering of the open pits and underground mine workings may result in several direct and indirect impacts to the groundwater environment. In addition, the proposed in-pit disposal of discard or surface discard stockpile, use of explosives as well as solvents, lubricant and fuels on site are likely to have an impact on the local ground water quality, if not mitigated. The potential groundwater impact, in general, is expected to be of high significance, predominantly due to the potential for acid mine drainage conditions to develop. Mitigation will significantly reduce the impact significance.
- **Air quality:** The site activities will result in elevated dust levels, including elevated PM10, PM2,5 and total dust levels in the immediate vicinity of the project. This will be associated with blasting, excavation, material handling, windblown dust and dust entrainment from vehicles. Unmitigated, this impact is considered to be of moderate significance.
- **Surface water:** Runoff from the material stockpiles, mine services areas and workshops are likely to contain elevated levels of contaminants and can therefore contaminate surface and ground water resources. The impact can be of moderate significance if not managed and mitigated properly. Inadequate design of dirty water systems can also result in the release of contaminated water into the environment.
- **Terrestrial ecology:** The development will require the removal of undisturbed vegetation from areas earmarked for infrastructure placement. The impact is expected to be of a moderate significance and limited to the project site. With careful infrastructure planning and continuous rehabilitation, the impact significance will be reduced.
- **Noise:** The project will result in elevated noise levels due to the blasting, excavation, loading, tipping and hauling of material of material on site, as well as the operation of the plant and associated infrastructure. Trucks travelling along the road transporting product and supplies to the site will also result in elevated noise levels. The impact may be significant if no mitigation measures are implemented.
- **Blast overpressure, vibration and fly rock:** Waste rock and ore will be drilled and blasted as part of the mining operations. The blast area and number of drill holes will determine the amount of dust emissions emanating from these activities. The deeper the pit becomes, the lower the dust fallout rate and particulate emissions become. High air blast sound pressure is associated with mining operations where blasting is required. This is likely to be experienced by residents in the immediate proximity of the site. The impact is typically of short duration. Vibration levels experienced at surface are expected to be well below the levels at which structural damage could occur. Blasting can be controlled to some extent by using different blasting techniques that minimises the dispersion of dust.

9.3 THE POSSIBLE MITIGATION MEASURES THAT COULD BE APPLIED AND THE LEVEL OF RISK

The mitigation hierarchy is being applied throughout the S&EIR Process.

The mitigation hierarchy is an approach to mitigation planning and can be summarised into the following steps:

- Avoidance;
- Minimisation;
- Restoration; and
- Offsets.

At this stage in the S&EIR Process, mitigation measures are predominantly focussed on avoidance and minimisation. This is being done through activities such as the site layout selection process and implementation of the environmental design criteria including the environmental sensitivity plan, by the engineering team.

In the Impact Assessment Phase, the findings and recommendations of the specialist studies will be used to develop the environmental and operational controls which will be more focused on impact minimisation and restoration (as part of mine rehabilitation and closure).

Although mitigation measures are still being developed, the project activities proposed are typical of mining projects and there is substantial local and international experience in the development and implementation of controls to avoid and minimise the range and type of potentially harmful impacts which may be associated with the project. Therefore, at this stage in the S&EIR Process, the risk associated with the mitigation measures is generally considered to be low.

9.3.1 THE OUTCOME OF THE SITE SELECTION MATRIX AND FINAL SITE LAYOUT PLAN

The project site has been selected based on the presence of a mineable resource. The project plan and site layout has been based on limiting the project area footprint, avoiding sterilisation of the coal seam and avoiding sensitive areas, where possible, from an environmental and social perspective, while still considering engineering feasibility and financial considerations.

9.3.2 MOTIVATION WHERE NO ALTERNATIVE SITES WERE CONSIDERED

Alternative site locations for various surface infrastructure, including the wash plant have been identified and are under consideration.

10 PLAN OF STUDY FOR THE ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

10.1 DESCRIPTION OF ALTERNATIVES TO BE CONSIDERED INCLUDING THE OPTION OF NOT GOING AHEAD WITH THE ACTIVITY

In addition to the no-go option, the EIR will include a description and assessment of the site layout alternatives for the wash plant. The alternatives for final disposal of discard material from the washing process, namely in-pit disposal and surface discard stockpile will also be assessed in the EIR.

10.2 DESCRIPTION OF THE ASPECTS TO BE ASSESSED AS PART OF THE ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

All project activities identified in Section 3 of this report will be assessed as part of the EIA Process.

10.3 DESCRIPTION OF ASPECTS TO BE ASSESSED BY SPECIALISTS

Specialist studies will be undertaken for the following:

- Terrestrial ecology (Fauna and Flora);
- Surface water;
- Groundwater;
- Geochemical characterisation and waste classification;
- Social and socio-economic impacts;
- Heritage and cultural resources;
- Soils and land capability;
- Air quality;
- Noise;
- Blasting; and
- Mine rehabilitation and closure.

10.4 PROPOSED METHOD OF ASSESSING THE ENVIRONMENTAL ASPECTS INCLUDING THE PROPOSED METHOD OF ASSESSING ALTERNATIVES

The environmental aspects will generally be assessed by specialists. These studies will typically involve the following:

- Collation and review of available information;
- Field surveys specifically involving baseline surveys and monitoring, where required;
- Responding to comments received from stakeholders on the Scoping Report and draft EIA Report;
- Impact assessment and reporting;
- Input into the monitoring plans; and
- Incorporation of review comments.

Specialist study reports will be made available for public comment at the same time as the release of the Draft EIR for comment. The structure and content of each specialist study report will be based on the requirements of Appendix 6 of Government Notice R.982 promulgated in terms of sections 22(5) and 44 of NEMA.

The broad scope of work for each specialist study is provided hereunder.

10.4.1 TERRESTRIAL ECOLOGY

The scope of work is broadly as follows:

- Describe regional biodiversity setting through review of available information;
- Compile lists of potentially occurring conservation-important flora and fauna, namely Red Data species, range-restricted endemics and protected species;
- Prepare a preliminary vegetation and land-use map using available aerial imagery;
- Description of types and condition of terrestrial habitats present within the study area;
- Compilation of species lists for each terrestrial habitat type, with focus on species of conservation importance, namely Red List plants, range-restricted endemics, medicinal species and protected species;
- Description of vegetation communities in terms of dominant species, cover abundance and overall species composition; also focusing on location of sensitive habitats;
- Dedicated field survey of mammals, birds, reptiles and amphibians, including compilation of species lists per vegetation community (focusing on location of species of conservation significance);
- Description of vegetation communities in terms of dominant species, cover abundance and overall species composition; data to be captured and analysed in statistically defensible and scientifically repeatable manner; assessment of conservation importance of vegetation communities based on data collected;
- Vegetation Map;
- Description of terrestrial fauna assemblages, with a focus on key habitats for conservation-important (including Red Data) species; data to be captured and analysed in statistically defensible and scientifically repeatable manner;
- Sensitivity Map, highlighting key areas of conservation importance;
- Identification of potential impacts to biodiversity; significance of impacts will be assessed according to standard methodology; and
- Mitigation measures will be given to apply to a No Net Loss of Biodiversity approach in the EMP.

10.4.2 SURFACE WATER

The scope of work for the surface water study is as follows:

- Flood estimations will be based on various deterministic and empirical methods generally applied. Flood peak estimates and volumes will be determined for the 1:20, 1:50, 1:100 and RMF flood events.
- The surface water quantity changes as a result of the proposed mining activities will be evaluated.
- A report will be produced which contains information with regard to the portion of the catchment relevant to the proposed mining area. The information would include:
 - Mean Annual Runoff (MAR);
 - Normal dry weather flow;
 - Drainage density;
 - The occurrence of wetlands and their extent in consultation with a soil expert;
 - Details of flood peaks and volumes which can be expected.
- Floodline delineation for the three major pans / wetlands which will be based on the 1:100 year 24 hours flood volume added to the normal water level which will be taken as the extent of the wetland area.

10.4.3 SURFACE WATER ECOSYSTEMS

The scope of work for the surface water ecosystem study comprises of the following:

- The desktop study from catchment information and historical data will be obtained, together with information from DWS, SANBI, available aerial imagery and GIS databases;
- Wetland delineation assessment;
- Applicable conservation buffer zones according to current legislature will be designated to the outer edge of the wetland unit, which needs to be incorporated and considered during the planning and construction of a development;
- The Present Ecological State (PES) of the wetland areas will be evaluated by largely following the protocols laid out by WETLAND-IHI and WET-Ecoservices, which takes into consideration the health aspects of the wetland habitat unit such as Hydrology, Geomorphology and Vegetation structure, together with the ecological importance and sensitivity of the wetlands;
- Wetland-specific mitigation measures to abate the negative ecological impacts will be proposed; and
- A sensitivity map will be developed for the proposed development site that will identify areas considered to be invaluable to species conservation, are identified as areas supporting a rich biodiversity or are found to be important to supporting RDL species.

10.4.4 GROUNDWATER

The scope of work for the groundwater study comprises of the following:

- Hydrocensus;
- Geophysical investigations;
- Borehole drilling, (deep and shallow) to investigate aquifer conditions and for future monitoring;
- Pumping tests;
- Conceptual geohydrological model and gap analysis; and
- Groundwater modelling as part of the IWULA.

The following will be undertaken to address the above scope:

- A site visit will be undertaken to inspect and evaluate all components of the project.;
- A desktop study will be undertaken on all available information related to the study, including publically accessible groundwater databases and maps, geohydrological studies undertaken in the vicinity of the project area, integrated water management plans for the catchment, rainfall data, etc;
- Complete a hydrocensus within a 3 km radius around the project area;
- Undertake a ground geophysical investigation within the proposed project area. The purpose of this is to determine whether the geological structures, such as the dolerite intrusion, identified could act as preferential groundwater flow paths. If such features are present, they will be considered as target areas for monitoring borehole drilling. Magnetic and electromagnetic (EM34) survey methods will be used.;
- Drilling supervision of groundwater monitoring boreholes. It is proposed that eight sets of shallow and deep monitoring boreholes are drilled to target shallow and deeper aquifers that may be present. Shallow boreholes must be drilled to the depth of weathering (10 – 15 m) and deep boreholes to the depth of mining (40 m);
- Aquifer testing of the monitoring boreholes will be undertaken in order to characterise the aquifer parameters and confirm the sustainable yield of the boreholes;

- The boreholes will be sampled at the end of the aquifer tests and samples will be submitted to a SANAS accredited laboratory for chemical analysis;
- A regional numerical groundwater model will be required to complete the impact assessment and meet the requirements of the scope of the geohydrological study. It is proposed to construct the model using MODFLOW, which is a widely used and industry-wide accepted software package. The contaminant transport model will be constructed using MT3D, published by the United States Geological Survey. MODFLOW and MT3D use three-dimensional finite difference discretization and flow codes to solve the governing equations;
- A geohydrological impact assessment report will be completed to meet the requirements of the WULA and EIA processes. The following aspects will be specifically addressed in the reports, as per the information presented in the report:
 - Groundwater inflow potential and variance with depth;
 - Groundwater flow direction and approximate gradient;
 - Blow yields recorded during drilling of boreholes;
 - Estimated groundwater recharge from the average annual rainfall;
 - Updated hydrocensus to describe groundwater use in the region;
 - Water use license impact assessment for mine dewatering, disposal and storage of contaminated water, mine residue deposits and washing of coal; and
 - Long-term impacts associated with mining and mine residue deposits.

10.4.5 GEOCHEMICAL CHARACTERISATION AND WASTE CLASSIFICATION

Samples of overburden / waste rock, carbonaceous overburden, and coal will be obtained from exploration holes within the proposed mining right area.

Composite samples will be carefully selected to ensure that they are representative of the potential surface stockpiles. These will be subjected to Acid Base Accounting (ABA) analysis, static and kinetic testing.

Based on the static leach test results, kinetic leach test columns will be established to determine the long-term leaching characteristics of the material.

The results of the analyses will confirm whether Acid Mine Drainage (AMD) conditions will develop from the active and rehabilitated mining areas. Results from the leach testing will indicate which elements can be expected to be present in high concentrations in the post mining environment. The test results will be included in the impact assessment and used to inform the waste classification and engineering design.

10.4.6 SOCIAL IMPACT ASSESSMENT

The scope of work is broadly as follows:

- Identify and review the social aspects of the mining development. These aspects will indicate the potential positive and negative social benefits of the development for the surrounding affected communities and provide the basis for identifying the potential changes in the social status of the communities;
- Characterise the social status using secondary data from 2017-2018 Integrated Development Plans (IDP) and Census 2011. Secondary data will be complimented with primary data obtained from:
 - Comments and responses reports from the EIAs conducted for previous phases;
 - Interested and Affected (I&APs) through the public participation process;

- Key informant interviews with community representatives and government partners, where there are information gaps in the secondary data sources; and
- Environmental changes brought about by the planned development can also lead to social impacts.

10.4.7 HERITAGE AND CULTURAL RESOURCES

The scope of work will comprise of the following:

- Consult with the Provincial Heritage Resources Authority;
- Undertake site survey;
- Obtain a good understanding of the overall archaeological and cultural heritage conditions of the area through a brief desktop study;
- Undertake a paleontological impact assessment;
- Locate, identify, record, photograph and describe sites of archaeological and cultural importance;
- Should any sites be identified, propose a study method forward;
- Ensure that all requirements of the local South African Heritage Resources Agency (SAHRA) are met; and
- Report on the results of the archaeological and cultural heritage survey adhering to minimum standards as prescribed by the SAHRA and approved by the Association for Southern African Professional Archaeologist (ASAPA).

10.4.8 SOILS AND LAND CAPABILITY ASSESSMENT

The soils and land capability study will encompass the following:

- Site visit to the project study area and selected sampling of soils;
- Soil sampling, characterisation and classification of the soils of the study area;
- Assess the impacts that the proposed development (mining and its related infrastructure) will have on the soils, and
- Give recommendations on possible management and mitigation measures that should be used to minimise the impacts, including input to the Closure Plan.

10.4.9 AIR QUALITY IMPACT ASSESSMENT

The air quality study will encompass the following:

- A facility visit and a review of available project information;
- A review of all legal requirements pertaining to atmospheric emissions and ambient air quality;
- A study of the receiving atmospheric environment, including;
 - An analysis of regional climate and site-specific atmospheric dispersion;
 - The identification of air quality sensitive receptors; and
 - The analysis and assessment of available ambient air quality data.
- The compilation of an atmospheric emissions inventory.
- An analysis of emissions' impact on human health, odour and nuisance dust according to the regulations promulgated in terms of the NEMAQA;

- The potential for impacts as a result of project related emissions on human health and the environment will be determined through atmospheric dispersion modelling, depending on the amount of project information available and extent of emissions. The regulatory US EPA AERMOD model will be used – AERMOD is a Gaussian plume steady state model. Dispersion simulation results will be screened against National Ambient Air Quality Standards and international health criteria identified during the legal review. Specific attention will be paid to the potential for odour impacts. The air quality impacts will be ranked according to significance;
- The identification of suitable air quality management measures including best practice considerations, mitigation and monitoring and
- The development of an air quality monitoring programme for the mine.

The above will be compiled into an Atmospheric Impact Report (AIR) which meets the regulated format and content requirements. The complete AIR will be attached as an appendix to the Draft EIA Report.

10.4.10 NOISE IMPACT ASSESSMENT

The noise impact study will comprise of the following:

- A short-term baseline noise survey consisting of:
 - Attended 30 min samples at 3 to 5 sites once during the day and once during the night.
 - Surveys of ground characteristics and other site-specific features that influence the propagation of noise.
 - The identification of all existing sources of environmental noise such as communities, industries and public roads.;
- A study of the receiving environment by referring to:
 - Survey results;
 - Noise sensitive receptors (occupational and environmental); and
 - Details on the physical environment i.e. meteorology, land use and topography.
- A review of all noise related legislation with specific reference to:
 - International Finance Corporation (IFC) General Environmental, Health and Safety (EHS) Guidelines of 2007; and
 - South African National Standards (SANS) 10103 (2008) 'the Measurement and Rating of Noise and Speech Communication'.
- Noise emissions from the project's operational phases will be estimated using the Concawe method'.
- Data representative of conditions in the study area and obtained from the air quality study will be applied in the calculations.
- Noise impacts will be calculated both in terms of total ambient noise levels as a result of the project as well as the effective change in ambient noise levels. Impacts will be calculated and assessed according to guidelines provided by the International Finance Corporation (IFC).
- The findings of the above components informed recommendations of noise management measures, including mitigation and monitoring (if necessary).
- The identification of air noise management and mitigation measures based on the findings of the noise impact assessment.

The above will be compiled into a Noise Impact Report which meets the regulated format and content requirements. The complete Noise Impact Report will be attached as an appendix to the Draft EIA Report.

10.4.11 MINE REHABILITATION AND CLOSURE

A conceptual Closure Plan will be prepared for the Development. The structure and content of the Closure Plan will be based on the requirements of Appendix 5 of Government Notice R.982 promulgated in terms of sections 22(5) and 44 of NEMA. In general, the Closure Plan will comprise of the following:

- A statement detailing the company's policy on rehabilitation and closure which would specify the completion criteria for the rehabilitation and closure process, the standards to be achieved, and the parameters against which success would be evaluated;
- The compilation of a summary description of the mine and related infrastructure, based upon the project description as presented in the EIA;
- A summary of the expected environmental and social impacts associated with the project, both during and after operations, with the emphasis on potential residual impacts;
- A summary of the environmental and social management commitments arising from the EIA and public participation processes;
- The formulation, at a conceptual level, of descriptions of the rehabilitation and closure works to be applied to the achievement and monitoring of the closure objectives;
- The compilation of schedules of quantities describing the closure process, based upon which the works can be priced;
- The compilation of a life of mine financial model of the rehabilitation and closure process, with the objective of determining the financial provisions required to ensure the successful implementation of the closure process; and
- The compilation of a report describing the closure plan and associated financial provisions.

10.4.12 BLASTING IMPACT STUDY

Undertake an impact evaluation and complete a risk assessment caused by ground vibration, air blast, fly rock and blast fumes from blasting activities.

The study will focus on the surface blasting which includes the strip mining.

10.5 THE STAGES AT WHICH THE COMPETENT AUTHORITIES WILL BE CONSULTED

TABLE 10-1: STAGES AT WHICH THE COMPETENT AUTHORITIES WILL BE CONSULTED

TASK NAME	DATE
Distribute Draft Scoping Report for Public Review	November 2018
Submit MR, EA, WML and IWUL Applications	November 2018
Submit Final Scoping Report	February 2019
DMR Accepts Final Scoping Report (within 43 days of receipt of Scoping Report)	April 2019
Distribute Draft EIR/EMPr for Public Review	June 2019
Submit Final EIR/EMPr (within 106 days of acceptance of Final Scoping Report by DMR)	July 2019
Authority Decisions on Applications	November 2019

10.6 PARTICULARS OF THE PUBLIC PARTICIPATION PROCESS WITH REGARD TO THE IMPACT ASSESSMENT PROCESS THAT WILL BE CONDUCTED

Public participation during this phase will be at a lower intensity than during Scoping. All registered I&APs will be kept informed about progress and the key upcoming dates when members of the public can input into the Impact Assessment Process and outcomes.

10.6.1.1 Public Review of the Draft EIA Report

Public participation during the Impact Assessment Process will focus on:

- A review of the findings of the EIA, presented in the draft EIR, EMPr and its accompanying suite of specialist reports; and
- Distribution of relevant reports to the public for review and comment.

During the latter part of the Impact Assessment, a personalised letter and media advertisement will be prepared to inform stakeholders and the public of the availability of the draft EIR. Meetings will be held with I&APs as and when required to discuss the Draft EIR findings and to record comments.

The reports will be made available for review at public places, the same ones used for the DSR review.

10.6.1.2 Final EIA Report

Similar to the FSR, all registered I&APs will be notified of the submission of the Final EIR to the competent authority. This letter will inform I&APs of where substantive changes have been made to the EIA Report and associated specialist study reports.

10.6.1.3 Notification of Decision on Applications

Stakeholders will be advised via personalised letters and through media advertisements of the competent authority decisions on the application for EA. Stakeholders will also be advised of the appeal process.

10.6.2 DESCRIPTION OF THE INFORMATION TO BE PROVIDED TO INTERESTED AND AFFECTED PARTIES

All registered I&APs will be provided with access to the Draft and Final versions of the Scoping Report, EIR, EMPr, IWWMP and the individual specialist studies compiled.

10.7 DESCRIPTION OF THE TASKS THAT WILL BE UNDERTAKEN DURING THE ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

10.7.1 SPECIALIST STUDIES

The specialist studies required to inform the EIR and EMPr will be undertaken as per the Plan of Study for EIA described in Section 11.4.

10.7.2 DRAFT ENVIRONMENTAL IMPACT REPORT (EIR)

The specialist studies will form the basis of the compilation of the Draft EIR. The structure and content of the Draft EIR will address the requirements of the Environmental Impact Assessment Regulations, 2014 and be prepared in the DMR template.

The IWWMP will meet the requirements of the Water Use Licence and Appeal Regulations, 2017 (Government Notice R.267 of 24 March 2017, promulgated in terms of the National Water Act 36 of 1998).

Copies of the Draft EIR will be distributed and made available at accessible venues within the project area for comment by registered I&APs.

10.7.3 DRAFT INTEGRATED WATER AND WASTEWATER MANAGEMENT PLAN (IWWMP)

The Draft EIR and specialist studies will form the basis of the compilation of the IWWMP. The IWWMP will meet the requirements of the Water Use Licence and Appeal Regulations, 2017 (Government Notice R.267 of 24 March 2017, promulgated in terms of the National Water Act 36 of 1998).

Copies of the Draft IWWMP will be distributed and made available at accessible venues within the project area for comment by registered I&APs.

10.7.4 DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr)

The key objectives of an EMPr are to set out the management and monitoring measures required to both minimise any potentially adverse environmental impacts and enhance the environmental benefits of the Project, and to ensure that responsibilities and appropriate resources are efficiently allocated to implement the plan.

Management and monitoring measures will be developed from the recommendations and mitigation measures listed in the EIR.

10.7.5 CLOSURE PLAN

A conceptual Closure Plan will be prepared for the Development. The structure and content of the Closure Plan will be based on the requirements of Appendix 5 of Government Notice R.982 promulgated in terms of sections 22(5) and 44 of NEMA.

The Closure Plan will distinguish between the site components covered by the closure certificate issued in 1995, for which no new closure provision is to be provided by the applicant and the new site components associated with the proposed mine development and for which the applicant has a closure responsibility.

10.7.6 FINAL EIR, EMPr AND IWWMP

The Draft EIR, EMPr and IWWMP will be updated based on the comments received from registered I&APs. The reports will be submitted to the DMR and DWS respectively. Registered I&APs will be notified of the availability of the Final EIR, EMPr and IWWMP. Additional comments received from registered I&APs through the public comment period and at feedback meetings will be included in the Issues Response Report. This report will be included as an appendix to the Final EIR to allow registered I&APs to confirm how their comments and concerns have been addressed.

Regulation 24(1) of Government Notice R.982 provides that the DMR must review the Final EIR and EMPr and issue a decision on the EA and WML application within 107 days of submission of the document. The competent authority for the IWULA is required to issue a decision on the application within 144 days of the submission of the technical report.

10.7.7 NOTIFICATION OF DECISION

Upon receipt of the decision on the EA, WML, and IWULA, the EIA Project Team will assist the applicant in making the application decisions available to all registered I&APs and notifying them of the appeal procedure to be followed in terms of the National Appeal Regulations [Government Notice No. R.993 promulgated in terms of section 44(1a) and 43(4) of NEMA].

10.8 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.

The preliminary identification of impacts and associated mitigation measures are presented in Table 11-2. These will be further investigated during the impact assessment phase.

TABLE 10-2: THE POSSIBLE MITIGATION MEASURES THAT COULD BE APPLIED AND THE LEVEL OF RISK

ACTIVITY whether listed or not listed. (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.)	POTENTIAL IMPACT (e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc....etc...)	MITIGATION TYPE (modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc) E.g. Modify through alternative method. Control through noise control Control through management and monitoring through rehabilitation	POTENTIAL FOR RESIDUAL RISK
Vegetation Removal	<ul style="list-style-type: none"> ➤ Disturbance of ecology ➤ Loss of habitat and disruption to ecosystem services 	<ul style="list-style-type: none"> ➤ High biodiversity areas and/or undisturbed areas avoided wherever practicable. An environmental sensitivity plan has been compiled and the initial placement of surface infrastructure has been based on this plan ➤ Disturbance limited to areas earmarked for infrastructure establishment ➤ Restrict the vegetation removal to strictly necessary areas and in a progressive manner according to the timetable of exploration ➤ No removal of plants by mine staff /contractors will be allowed ➤ No hunting of animals by mine staff /contractors will be allowed ➤ Access control to the site must be enforced by security personnel ➤ Vehicle movement must be restricted to roads earmarked for use ➤ All equipment, including vehicles must respect the legal requirements on emissions and noise, to minimize the effects of their presence 	Sensitive biodiversity areas will be identified in the EMP. If these sites remain undisturbed or are relocated as per the biological assessment recommendations, the residual risk is expected to be low

		<ul style="list-style-type: none"> ➤ Pollution prevention facilities must be inspected on an on-going basis to assess their condition ➤ Invasive plant species must be managed on an on-going basis to control the spread of these species ➤ Transport and place the rejected materials as quickly as possible, avoiding the persistence and accumulation of these in unsuitable locations ➤ Procedures requiring fire ignition must be conducted under appropriated control and safety conditions 	
Topsoil Removal and Stockpiling	<ul style="list-style-type: none"> ➤ Loss of seedbank, soil microorganisms and disruption to ecosystem services 	<ul style="list-style-type: none"> ➤ Disturbance limited to areas earmarked for infrastructure establishment ➤ Precise definition of soil stripping and stockpiling location, and establishment of routes between temporary and final deposit areas 	Low residual risk with all management controls properly implemented.
Dewatering Mining Effluent and wastewater Ore Stockpiles Coal Preparation Plant (Wash Plant) Material Handling Discard Disposal	<ul style="list-style-type: none"> ➤ Degradation of water quality ➤ Flooding of land and roads due to changes in the local topography and drainage systems within the project area ➤ Impacts to surface water quality could result from increased erosion and sedimentation; exposure of ore, waste rock and tailings to 	<ul style="list-style-type: none"> ➤ An integrated water and waste water management plan will be established as part of the application for relevant water use licenses ➤ The transport, storage, use and disposal of chemicals and hydrocarbons must be carefully controlled ➤ Secondary containment facilities and pollution control structures to be provided ➤ Mine operational effluent must be monitored ➤ If discharge becomes necessary, only water which meets the relevant discharge standard for the protection of the environment, may be discharged ➤ Appropriately designed discard stockpile (if selected as the preferred option for discard disposal) ➤ Groundwater monitoring programme to detect changes in groundwater quality and yield 	Moderate residual risk due to the hazardous substances involved and the long-term duration of potential impacts associated with the discard material.

	<p>oxidation and leaching; accidental spills of chemicals and hydrocarbons; and discharge of operational mine water</p> <p>⇒ Impacts to groundwater quality</p>		
Blasting	<p>⇒ Injury or damage to property due to fly rock</p>	<ul style="list-style-type: none"> ⇒ Conducting pre-blast surveys to minimise false claims and facilitate rapid resolution of situations ⇒ Good public relations by ensuring both production personnel and the local community understand the nature of air blast and ground vibration ⇒ Monitor the first blasts taken to determine the site constants for the various blasting domains, to enable accurate vibration prediction ⇒ Good blast design that minimises the generation of high amplitude, low frequency air and ground waves ⇒ Correct use and placement of equipment to monitor and measure disturbance, with impartial analysis and archiving of records 	<p>Low potential for any residual risk given the nature of the impact, receiving environment and confidence in the mitigation measures</p>
Blasting Mining Coal Preparation Plant (Wash Plant) Transport of Man and Machinery	<p>⇒ Increased noise levels associated with mining activities, vehicles and equipment and the impact of this on sensitive noise receptors</p>	<ul style="list-style-type: none"> ⇒ All diesel-powered construction equipment and facility vehicles must be kept at a high level of maintenance. ⇒ Ensure optimised equipment design noise levels for compressors, pumps, air conditioning units etc. ⇒ Implement a mechanism to monitor noise levels, record and respond to complaints and mitigate impacts. 	<p>Low residual risk given the proximity of the mine and mining activities to noise sensitive receptors</p>

		<ul style="list-style-type: none"> ➤ As far as possible, noise generating activities to be limited to day-time hours (considered to be between 06:00 and 22:00) ➤ Although some mining activities will be continuous, other tasks such as construction, maintenance etc. could be limited to day-time hours ➤ Implement controls related to vehicles including speed reduction, use of certain roads for certain types of vehicles etc. 	
<p>Blasting Materials Handling Transport of Man and Machinery</p>	<ul style="list-style-type: none"> ➤ Elevated particulate emissions (PM10, PM2,5) and the impact of these on human health ➤ Elevated dustfall and the impact of this on surrounding land users 	<ul style="list-style-type: none"> ➤ Minimising the area of surface disturbance to that which is necessary for infrastructure ➤ Siting of potential sources of particulate and dust emissions in areas where there will be less impact to sensitive receptors ➤ Engineering design controls implemented at material transfer points ➤ Compile detailed dust mitigation and monitoring plan ➤ Any unpaved road sections receive additional dust suppression during periods of expected traffic peaks in the morning and afternoon ➤ Minimising dust from the site entrance or exit will help prevent fugitive emissions being spread outside the site boundary by site vehicles ➤ The control of vehicle tailpipe emissions may be achieved by ensuring that vehicles are in good working condition and to minimize idling of equipment when not in use ➤ The potential for fugitive dust impacts due to these sources could be rendered negligible through comprehensive rehabilitation prior to closure ➤ Surfacing of unpaved roads and other exposed areas, where this is practicable 	<p>There is a high potential for increased particulate emissions and dustfall because of the proposed mining activities. Implementing standard particulate and dust control mitigation measures will greatly assist in reducing the impact. To achieve a low residual risk may require additional controls to be implemented. This will be determined through the predictive modelling to be undertaken in the EIA</p>

Mining and all activities required in support thereof	<ul style="list-style-type: none"> ➤ Local employment ➤ Procurement of goods and services ➤ Local economic development 	<ul style="list-style-type: none"> ➤ Employment of people within the area will have a positive impact on the local economy ➤ Prioritising local procurement of goods and services, where practicable, to maximise local economic impact of the mine 	Positive impact with no residual risk
Mining and all activities required in support thereof	<ul style="list-style-type: none"> ➤ Influx of people seeking employment and related increased demand for housing and access to public services ➤ Pressure on local inflation 	<ul style="list-style-type: none"> ➤ Influx management plan developed in consultation with local government 	With mitigation implemented, a moderate to low residual risk is expected
Materials Handling Transport of Man and Machinery	<ul style="list-style-type: none"> ➤ Mine and community health and safety impacts including injuries and fatalities from mining and ancillary activities 	<ul style="list-style-type: none"> ➤ Implementation of comprehensive health and safety programme covering mine and community health and safety ➤ Design of main mine access road and internal roads so that only mine personnel and service providers can gain access to the site, particularly to high risk areas ➤ The site speed limit should be set at a maximum of 40 kph for all vehicles ➤ Use of appropriate signage and physical traffic calming structures ➤ Regular maintenance of vehicles ➤ Control of materials being transported ➤ Notification of relevant stakeholders when large loads are required, or road closures are to occur 	If controls properly implemented as part of a comprehensive health and safety programme, residual risk will be moderate to low

10.9 OTHER INFORMATION REQUIRED BY THE COMPETENT AUTHORITY

In 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) Impact on the socio-economic conditions of any directly affected person.

A desktop review of the socio-economic conditions of the study area has been presented in the Scoping Report. A socio-economic impact assessment is planned to be undertaken as part of the EIA Phase and a copy of the report will be provided in the EIR.

(2) Impact on any national estate referred to in section 3(2) of the National Heritage Resources Act.

A desktop specialist study indicated that the general area under investigation may contain heritage sites. The specialist study concluded that from a heritage viewpoint, the proposed project is considered to be viable. This will, however, be confirmed through the Heritage Impact Assessment to be undertaken in the EIA Phase.

(3) Other matters required in terms of sections 24(4) (a) and (b) of the Act.

Reasonable and feasible alternatives in terms of site layout, location, public participation, potential impacts and mitigation have been addressed throughout this report. Any investigative detail not addressed in this report will form part of the Impact Assessment phase of this project and will be documented in the Draft EIR.

11 REFERENCES

Department of Energy, 2018. South African Coal Sector Report

Department of Environmental Affairs, 2018. South African Air Quality Information System, viewed 20 November 2018 < <http://www.saaqis.org.za> >

Delius, P. & Hay, M. 2009. Mpumalanga: an illustrated history. Johannesburg: The Highveld Press.
Engineering, G. M. (2013). Pre-Economic Assessment

Ecorex, 2018. Terrestrial Ecology Screening – Ilima Coal Mine

HCAC, 2018. Heritage Scoping Report

Ilima, 2018. Kranspan Mining Works Programme

Jeffrey, L. (2005). Characterization of the coal resources. The Journal of The South African Institute of Mining and Metallurgy.

Mucina, L. and Rutherford, M.C., Eds. (2006) The Vegetation of South Africa, Lesotho and Swaziland. Strelitzia 19, South African National Biodiversity Institute, Pretoria

SA Chamber of Mines, 2018. National Coal Strategy for South Africa

SANBI. (2006). Savanna Biome. South African National Biodiversity Institute

World Wildlife Fund, (2018). Highveld grasslands, viewed 17 October 2018 <<https://www.worldwildlife.org/ecoregions/at1009>>

Delius, P. & Hay, M. 2009. Mpumalanga: an illustrated history. Johannesburg: The Highveld Press

UNDERTAKING OF CORRECTNESS OF INFORMATION

I Paul Furniss herewith undertake that the information provided in the foregoing report is correct, and that the comments and inputs from stakeholder and interested and affected parties has been correctly recorded in the report.

Signature of the EAP

Date:

UNDERTAKING REGARDING LEVEL OF AGREEMENT

I Paul Furniss 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:

APPENDIX 1: EAP CV

CURRICULUM VITAE

PAUL FURNISS

ENVIRONMENTAL ADVISOR / ENVIRONMENTAL ASSESSMENT PRACTITIONER

BACKGROUND

Paul is a Director of ABS Africa. He has 16 years environmental assessment and management experience in the energy, water, mining and infrastructure sectors. His project experience includes conducting environmental assessment studies in South Africa, Guinea, Lesotho, Democratic Republic of Congo, Sudan, Namibia, Botswana, Zimbabwe, and Mozambique.

In the role of environmental manager, he has been responsible for the setup and auditing of environmental construction management procedures for a range of developments. Having led various environmental due diligence assessments for mining clients and project financiers, he has a good understanding of international environmental governance requirements including Equator Principles and IFC Performance Standards.

FIELDS OF COMPETENCE

- Environmental and Social Impact Assessments for the energy, water, mining, and infrastructure sectors
- Integration of environmental management principles into EPCM activities throughout the project lifecycle
- Environmental risk and screening assessments
- Environmental permitting
- Environmental auditing
- Environmental due diligence studies
- Strategic environmental assessment
- Integrated waste management

ACADEMIC QUALIFICATIONS

- Bachelor of Agricultural Science in Animal Science: University of Pretoria, 1998
- Bachelor of Science (Honours) in Wildlife Management: University of Pretoria, 1999
- Master of Science in Environmental Science (Water Resource Management): University of Pretoria, 2000

PROFESSIONAL REGISTRATION

Pr.Sci.Nat. Professional Natural Scientist (Environmental Science): The South African Council for Natural Scientific Professions, 2007

Certified Environmental Assessment Practitioner: Environmental Assessment Practitioners Association of South Africa

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT STUDIES

PRIESKA ZINC COPPER PROJECT – SOUTH AFRICA (2017-2018)

Environmental Assessment Practitioner for an environmental authorisation, waste management license and integrated water use licence for the proposed re-establishment of the Prieska Copper Mine, near Copperton in the Northern Cape Province.

TRI-K GOLD PROJECT – GUINEA (2017-2018)

Environmental Assessment Practitioner for an IFC-compliant ESIA for a greenfields gold mining project in the Mandiana Prefecture of Guinea.

LENASIA SOUTH HOSPITAL PROJECT – SOUTH AFRICA (2016)

Environmental Assessment Practitioner for an environmental authorisation, waste management license and atmospheric emission license for the conversion of a community health centre into a Level 1 District Hospital.

SEDIBENG WATER HARTSWATER REGIONAL OFFICE PROJECT – SOUTH AFRICA (2016-2017)

Environmental Assessment Practitioner for a rapid environmental screening assessment and compilation of an Environmental Management Plan for the new Sedibeng Water Regional Office in Hartswater.

SPRINGS FRESH PRODUCE MARKET EXPANSION PROJECT – SOUTH AFRICA (2016-2017)

Environmental Assessment Practitioner for an environmental authorisation for the expansion of the Springs Fresh Produce Market.

MORUPULE B UNITS 5 & 6 – BOTSWANA (2015-2016)

Specialist consultant for a JBIC and IFC compliant ESIA for a 300 MW thermal coal power plant.

EDF PROJECT TIZERT – MOROCCO (2015-2016)

Technical advisory services for an IFC-compliant ESIA for a copper mine and associated facilities in the Taroudant Province.

PUMPI COPPER AND COBALT PROJECT – DEMOCRATIC REPUBLIC OF CONGO (2014 – 2016)

Project Environmental Manager responsible for a comprehensive update of the Environmental Impact Study for an open-cast copper and cobalt mine, process plant and associated infrastructure.

HASSAI VMS PROJECT – SUDAN (2014 – 2015)

Lead consultant responsible for the legal register, review and gap analysis of environmental and social aspects for a gold mining and processing prefeasibility study at the Hassai Mine.

THUSANANG HOUSING PROJECT – SOUTH AFRICA (2013)

Project Environmental Manager for the EIA and EMP for a 4000 unit residential 1 housing development for Anglo American Platinum, Rustenburg Local Municipality and the Department of Human Settlements.

MANGANESE PROJECT – BURKINA FASO AND CÔTE D’IVOIRE (2013)

Environmental coordinator for a prefeasibility study for a proposed mine, port and rail project for the export of Manganese from Burkina Faso to the Port of Abidjan.

MINERAL SANDS PROJECT – MOZAMBIQUE (2012)

Environmental programme manager responsible for establishing and coordinating all social and environmental studies for a pre-feasibility study for a large mineral sands project in Mozambique.

CONFIDENTIAL PROJECT – MOZAMBIQUE (2012)

Project Environmental Manager responsible for the preparation of environmental and social design criteria and high-level comparison of different rail alignment and port location options for a coal export project.

LANDAU LIFEX PROJECT - SOUTH AFRICA (2012)

Project Environmental Manager responsible for the compilation of non-mineral waste management plan and hazardous substances plan as part of a pre-feasibility study for Anglo American Thermal Coal.

CONFIDENTIAL PROJECT – SOUTH AFRICA (2011-2012)

Project Environmental Manager for a pre-feasibility study for the development of a new iron and steel plant in South Africa including all associated infrastructure. Inputs included a multi-criteria site selection analysis and coordination of all environmental and social assessment inputs to the study.

NATIONAL INTEGRATED RESOURCE PLAN – NAMIBIA (2011)

Environmental advisor responsible for the assessment and description of the environmental and social issues associated with primary and secondary generation options.

150 MW WIND FARM PROJECT – LESOTHO (2011)

Project Environmental Manager responsible for the management and coordination of all environmental studies and environmental approval processes required for a 150 MW wind farm development in the Lesotho Highlands.

TRANSNET CAPITAL EXPANSION PROGRAMME – SOUTH AFRICA (2008-2011)

Mobilised as a full-time Environmental Manager for the Richards Bay region for the HMG-Joint Venture. The latter was established as the EPCM agent for the Transnet Capital Projects operating division of Transnet Limited. The role involved management and coordination of numerous environmental studies throughout the project lifecycle process including an environmental resource economic study for the Port of Richards Bay, environmental authorisation processes and fatal flaw assessments.

NUCLEAR 1 PROJECT – SOUTH AFRICA (2008)

Senior Project Scientist for the EIA and EMP for the proposed construction of a conventional nuclear power station and associated infrastructure in the Western Cape.

PEBBLE-BED MODULAR REACTOR DEMONSTRATION POWER PLANT PROJECT – SOUTH AFRICA (2007-2008)

Project Manager and Senior Project Scientist for the Impact Assessment Phase of the EIA and EMP for the proposed Pebble Bed Modular Reactor Demonstration Power Plant in the Western Cape.

600 MW MORUPULE B POWER STATION PROJECT – BOTSWANA (2008)

Team Leader for the 600 MW Morupule B coal-fired power station in Botswana. Compilation of the ESIA in a manner that complied with Botswana legislation and World Bank Group requirements.

INGULA PUMPED STORAGE SCHEME – SOUTH AFRICA (2007)

Project Manager for seven mining permit applications for borrowpits in the Free State and KwaZulu-Natal Provinces for the Ingula (previously Braamhoek) Pumped Storage Scheme Project.

GABORONE WASTEWATER RECLAMATION PROJECT– BOTSWANA (2007)

Senior Project Scientist for the Gaborone Wastewater Reclamation EIA. This project was aimed at determining the feasibility of reclaiming wastewater for direct potable reuse in Gaborone and its satellite villages.

SELEBI-PHIKWE WATER MASTER PLAN – BOTSWANA (2006)

Senior Project Scientist for the EIA, EMP and Public Consultation Process for the Selebi-Phikwe Water Master Plan.

HYDRA-PERSEUS 765kV POWER LINE EIA – SOUTH AFRICA (2007)

Senior Project Scientist for the EIA for the 260 km 765 kV transmission power line from the Hydra to Perseus Substations.

ENVIRONMENTAL MANAGEMENT, COMPLIANCE MONITORING AND REGULATION

DINGLETON RESETTLEMENT PROJECT – SOUTH AFRICA (2014)

Project Environmental Control Officer responsible for compilation of an Environmental Execution Plan for the Feasibility Study and the setup and implementation of the environmental compliance monitoring requirements for the project implementation phase.

DEA COMPLIANCE MONITORING PROJECT - SOUTH AFRICA (2007)

Task Team Leader for the Department of Environmental Affairs (DEA) Compliance Monitoring Project. The project involved the development of guidelines, systems and programmes for the Compliance Monitoring Directorate of DEA including compilation of a guideline for Emergency Incident reporting in terms of section 30 of the National Environmental Management Act, 1998 (Act 107 of 1998) and a compliance monitoring protocol for environmental authorisations.

JOHANNESBURG CITY PARKS GENERIC EMP - SOUTH AFRICA (2006)

Project Manager and Senior Project Scientist for the Generic EMP for Johannesburg City Parks (JCP). The Generic EMP was developed as a tool for managing the activities of all contractors employed to undertake construction work in the Public Open Spaces within the jurisdiction of the JCP.

ENVIRONMENTAL AUDITS AND DUE DILIGENCE

CONFIDENTIAL PROJECT – SOUTH AFRICA (2017)

Technical due diligence of environmental risks and closure liabilities associated with several operating gold and coal mine assets in South Africa.

CHROME ASSET ACQUISITION – SOUTH AFRICA (2016)

Technical due diligence review of an existing chrome washing facility. The due diligence required identification of environmental and social risks, a review of all existing environmental licenses and consideration of rehabilitation and closure liabilities.

CONFIDENTIAL PROJECT – GUINEA (2012)

Environmental specialist responsible for advising on environmental risks associated with a potential project acquisition of an iron ore resource in West Africa.

SOLAR ENERGY FACILITY – SOUTH AFRICA (2012)

Environmental specialist for a lender's technical due diligence review against local regulations, International Finance Corporation performance standards and Equator Principles for a proposed 30 MW solar energy facility in the Western Cape Province.

WIND ENERGY FACILITY – SOUTH AFRICA (2012)

Environmental specialist for a technical due diligence review against local regulations, International Finance Corporation performance standards and Equator Principles for a proposed new wind energy facility in the Western Cape Province.

SUSTAINABILITY REPORTING

SASOL LIMITED SUSTAINABILITY ASSURANCE PROJECT – SOUTH AFRICA (2009)

Project Manager for the 2009 sustainability reporting assurance engagement for Sasol Limited. The engagement consisted of assuring sustainable performance data from health and safety, environmental and social indicators. Site audits were undertaken at numerous operational sites representative of Sasol's different business units.

ANGLO AMERICAN PLC SUSTAINABILITY ASSURANCE PROJECT – VARIOUS COUNTRIES (2009)

Project Manager for the 2009 sustainability reporting assurance engagement for Anglo American plc. This assurance engagement comprised of site audits at representative operations within Anglo Platinum, Kumba Iron Ore, Scaw, Anglo Coal and Tarmac. The site audits were undertaken in South Africa, Brazil, Chile, Australia and the United Kingdom with twenty sustainability indicators in key performance areas of human capital, natural capital and social capital.

STRATEGIC ENVIRONMENTAL ASSESSMENTS

SEA FOR THE PORT HARCOURT MASTERPLAN – NIGERIA (2008)

Project Manager and Senior Project Scientist for the Strategic Environmental Assessment of the Masterplan for the city of Port Harcourt. The Masterplan was to provide for the development of a new city, appropriately designed for the current and future population of the existing Port Harcourt.

SEA FOR ELECTRICITY DISTRIBUTION INFRASTRUCTURE FOR THE MAGALIESBERG AND SURROUNDING AREAS - SOUTH AFRICA (2007)

Project Manager and Senior Project Scientist for the Strategic Environmental Assessment of the Magaliesberg and Surrounding Areas for Eskom Distribution. The SEA considered the environmental attributes of the study area and provided an environmental planning framework specific to the needs of Eskom Distribution.

SEA FOR HERITAGE PARK - SOUTH AFRICA (2006)

Senior Project Scientist for the Strategic Environmental Assessment of the one million ha Heritage Park. This ecologically sensitive and socio-economically complex Park encompasses Pilansberg and Madikwe Nature Reserve and crosses the border between South Africa and Botswana.

APPENDIX 2: EAP COMPANY EXPERIENCE



Company Profile

www.abs-africa.com

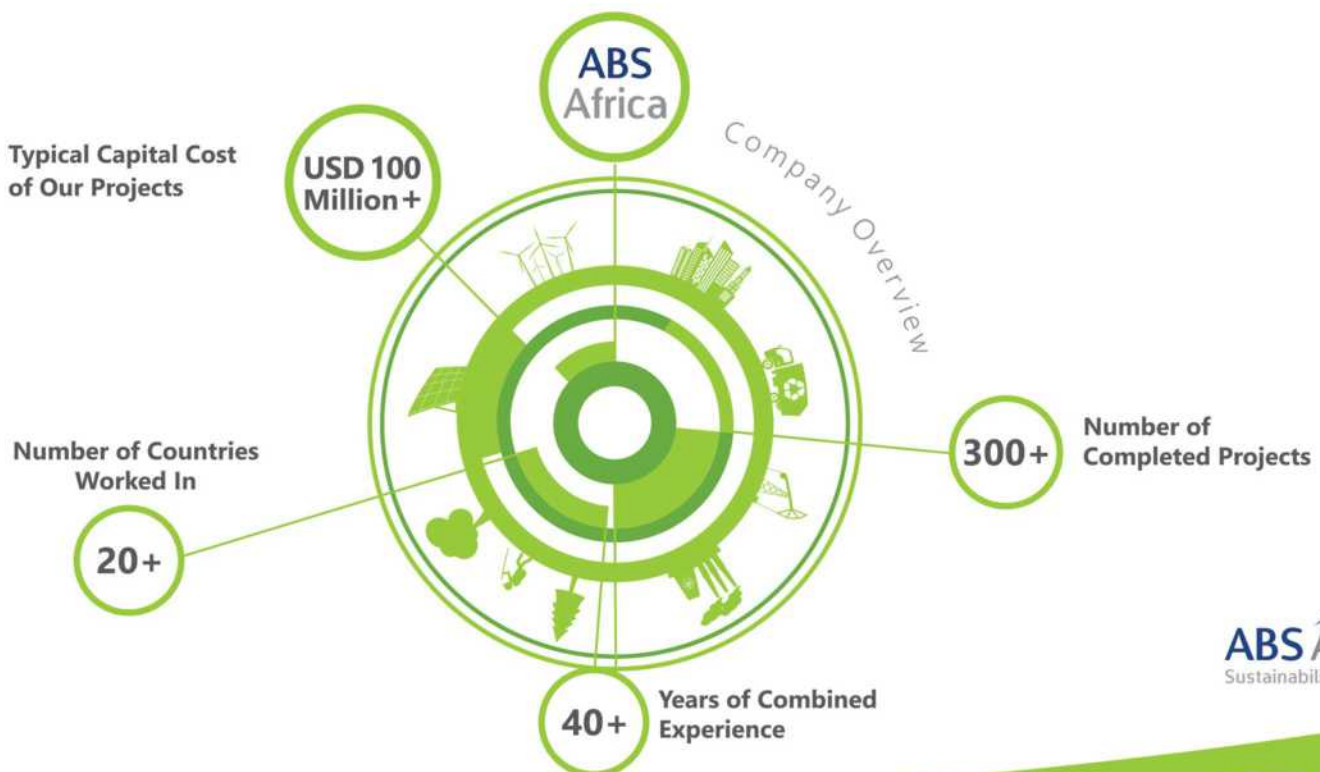
Company overview



Advisory on Business and Sustainability Africa (Pty) Ltd. (ABS Africa) provides advisory and consulting services focussed on sustainable development. The company was established in recognition of the need for business-specific and flexible professional advisory services on sustainability planning and implementation.

With more than 40 years collective experience in the mining, energy, and infrastructure sectors, our capabilities include prefeasibility and feasibility environmental assessments, independent competent persons reporting, environmental licensing, sustainability reporting, due diligence audits, compliance monitoring, resettlement planning, mine closure planning and spatial analysis.

The foundation of our service offering is our value system. We are committed to being unconditionally honest, excellent in the services we offer and available to our clients for as long as they think we can add value to their business.



ABS Africa

ABS Africa offers a complete range of sustainability services to clients in the mining, infrastructure and energy sectors.

We understand the complexity of environmental and social systems and the significant role these play in the long-term sustainability of a business.

From complex Environmental and Social Impact Assessments (ESIAs) to specialist advisory services in water, biodiversity, air quality, soils, and waste, our team of social and environmental professionals have been privileged to work for public and private sector institutions across the African continent.

We have established a network of selected specialist expertise and in-country sustainability professionals across Africa to complement our team. Through this network, we are able to ensure that our service, quality and value proposition remains consistent, regardless of where we work.

Developed from our success in the resources sector, we have gained considerable experience in the application of best practice standards and guidelines including the IFC Performance Standards and Equator Principles.



Our Core Services are as Follows:

- 🌱 Sustainable Development Advisory Services
- 🌱 Due Diligence Investigations and Review
- 🌱 Environmental Assessment
- 🌱 Environmental Audits and Compliance Monitoring
- 🌱 Environmental Management Programmes
- 🌱 GIS, Spatial Analysis and Spatial Planning
- 🌱 Mine Closure and Rehabilitation Planning
- 🌱 Permitting and Licensing



Sustainable Development Advisory Services

From early sustainable development interventions in the mid-1990s to the more recent commitments reached at COP21 and the UN Post-2015 Development Agenda, the ABS Africa team of professionals are privileged to be involved in advising clients on a range of sustainability aspects. We provide advisory services across the sustainable development continuum including sustainability business risk and opportunity assessments, carbon, GHG and climate change planning, and sustainability reporting. ABS Africa is a member of the Green Building Council of South Africa (GBCSA).



Due Diligence Investigations and Review

As trusted advisors to financial institutions, private investors, project owner's and some of the largest project engineering companies in the world, we have applied our expertise in advising clients on the potential risks and mitigation measures associated with acquisitions, third party reviews, recommissioning and other related activities.



Environmental Assessment

Our team of social and environmental professionals have completed numerous Environmental and Social Impact Assessments (ESIAs) in the mining, energy and infrastructure sectors. We have experience in applying our environmental assessment expertise throughout the project development process, from screening studies in concept stage to the successful completion of complex ESIAs compliant with international standards. With a project footprint encompassing most regions in Africa, we are familiar with the need to ensure that the assessment process addresses both in-country legal requirements and the IFC Performance Standards and Equator Principles.



Environmental Audits and Compliance Monitoring

From rapid gap analysis audits to comprehensive facility audits of complex industrial sites, we have experience in conducting audits against license conditions, company management systems and international best practice. We have assisted in the development of a guideline on compliance monitoring for a regulatory agency and provided compliance monitoring services during the construction phase of various developments including residential, port, rail and petroleum storage.

Capabilities



Environmental Management Programmes

Having been responsible for the setup and implementation of environmental management controls for the construction phase of a variety of large infrastructure projects, we are familiar with the challenges of constructing a development within the ambit of overly restrictive or inflexible management measures. From basic construction environmental management plans for small infrastructure developments to IFC-compliant Environmental Management Programmes with Action Plans, we have experience in compiling management plans and programmes which are risk-based, flexible and pragmatic.



GIS, Spatial Analysis and Spatial Planning

Our GIS capability includes a range of services including basic mapping for environmental assessments, environmental monitoring, floodline analysis and environmental permit applications. Spatial analysis, 3D analysis, geodatabases and the classification and interpretation of remotely sensed data is also undertaken. With access to a range of spatial data through our preferred partners, we also advise clients on the selection of the most appropriate spatial data for a particular project application.



Mine Closure Planning and Implementation

Working with selected specialists, ABS Africa has experience in the quantification of closure liabilities, the development and compilation of closure plans, specifications and the more practical aspects of setting up and managing rehabilitation and closure contracts.



Permitting and Licensing

Supported by our selected network of specialists and in-country environmental professionals, ABS Africa has considerable experience in obtaining the various environmental permits that may be required for a development. These include waste management licences, atmospheric emission licences, heritage permits, water use licences and permits for the relocation and/or removal of fauna and flora.





CONTACT US

Johannesburg



info@abs-africa.com



+27 11 805 0061



PO Box 14003, Vorna Valley, 1686, South Africa



Building 2, Country Club Estate, Woodlands Drive,
Woodmead, 2052

Cape Town



info@abs-africa.com



+27 21 403 6570



Convention Towers, 1st Floor, Cnr Heerengracht &
Walter Sisulu Street, Foreshore, Cape Town, 8001



www.abs-africa.com



Company Profile

APPENDIX 3: SUMMARY LIST OF KEY POLICY AND LEGISLATIVE INSTRUMENTS

Access to Land, Land Use and Development Planning

- Upgrading of Land Tenure Rights Act 112 of 1991
- Less Formal Township Establishment Act 113 of 1991
- Restitution of Land Rights Act 22 of 1994
- Land Reform (Labour Tenants) Act 3 of 1996
- Communal Property Associations Act 28 of 1996
- Interim Protection of Informal Land Rights Act 31 of 1996
- Extension of Security of Tenure Act 62 of 1997
- Fencing Act 31 of 1963
- Prevention of Illegal Eviction from and Unlawful Occupation of Land Act 19 of 1998
- Communal Land Rights Act 11 of 2004
- The Development Facilitation Act 67 of 1995
- Local Government Transition Act 209 of 1993
- Local Government: Municipal Structures Act 117 of 1998
- Local Government: Municipal Systems Act 32 of 2000
- National Building Regulations and Building Standards Act 103 of 1977
- Spatial Planning and Land Use Management Act 16 of 2013

Mining and Mineral Rights

- Minerals and Petroleum Resources Development Act 28 of 2002 (MPRDA)
- Minerals and Petroleum Resources Development Amendment Act 49 of 2008
- Mine Health and Safety Act 29 of 1996
- Nuclear Energy Act 46 of 1999
- National Nuclear Regulator Act 47 of 1999

Environmental Assessment

- National Environmental Management Act 107 of 1998 (NEMA)
- National Environmental Management Amendment Act 62 of 2008 (NEMA)
- National Environmental Management Laws Second Amendment Act 30 of 2013 (NEMA)
- National Environmental Management Laws Amendment Act 14 of 2013 (NEMA)
- National Environmental Management Laws Amendment Act 25 of 2014 (NEMA)

Protected Areas

- National Environmental Management: Protected Areas Act 57 of 2003 (NEMPAA)
- National Environmental Management: Protected Areas Amendment Act 21 of 2014
- National Forests Act 84 of 1998

Agricultural Resources

- Conservation of Agricultural Resources Act 43 of 1983
- Subdivision of Agricultural Land Act 70 of 1970

Biodiversity

- National Environmental Management: Biodiversity Act 10 of 2004 (NEMBA)
- Game Theft Act 105 of 1991
- Animals Protection Act 71 of 1962
- National Veld and Forest Fire Act 101 of 1998
- Nature Conservation Ordinance 19 of 1974
- Mpumalanga Nature Conservation Act No. 10 of 1998

Water

- National Water Act 36 of 1998
- National Water Amendment Act 27 of 2014
- Water Services Act 108 of 1997

Roads and Traffic

- National Land Transport Act 5 of 1998
- Road Traffic Act 29 of 1989

Pollution

- Health Act 63 of 1977
- Hazardous Substances Act 115 of 1973
- National Environmental Management: Waste Act 59 of 2008
- National Environmental Management: Air Quality Act 39 of 2004 (NEMAQA)
- National Environmental Management: Waste Amendment Act 26 of 2014

Heritage Resources

- National Heritage Resources Act 25 of 1999
- World Heritage Convention Act 49 of 1999