



**Prospecting Right & Integrated Environmental Authorisation  
Application Process for the Proposed Prospecting Activities,  
associated Infrastructure and Processes near Postmasburg,  
ZF Mgcawu District Municipality, Northern Cape  
NC 30/5/1/1/2/13449 PR**

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**Scoping Report**

**Prepared for:**

**Yone STEM Frontiers (Pty) Ltd**

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**Prepared by:**  
Abantu Environmental  
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## SCOPING REPORT

**PROSPECTING RIGHT APPLICATION (WITH BULK SAMPLING) IN TERMS OF SECTIONS 16 AND 20 OR THE MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT, 2002 (ACT NO. 28 OF 2002) AS AMENDED BY SECTION 12 OF ACT 49 OF 2008; FOR AGGREGATE, GEMSTONE, DIAMONDS (ALLUVIAL, GENERAL & IN KIMBERLITE), MANGANESE AND IRON ORES AND ASSOCIATED AND / OR RELATED INFRASTRUCTURE, PROCESSES, ACTIVITIES AND EQUIPMENT ON THE FARM COPTHORNE NO. 677 (REMAINING EXTENT, PORTIONS 1 & 2), NEAR POSTMASBURG, ZF MGCAWU DISTRICT, NORTHERN CAPE.**

### FOR COMMENT

SUBMITTED FOR INTEGRATED 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).

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**PREPARED BY:** SIVE MLAMLA (Registered EAP)

**CLIENT APPROVED**

**FILE REFERENCE NUMBER SAMRAD: NC 30/5/1/1/2/13449 PR**

(i) **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 a 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.

**(ii) Acronyms**

AEL	Atmospheric Emission License
AQMP	Air Quality Management Plan
BAR	Basic Assessment Report
B-BBEE	Broad-Based Black Economic Empowerment
BPG	Best Practice Guideline
CA	Competent Authority
CMA	Catchment Management Agency
CMS	Catchment Management Strategy
COMSA	Chamber of Mines South Africa
CPA	Communal Property Association
CRR	Comments and Responses Report
DEFF	Department of Environment, Forestry and Fisheries
DENC	Department of Environment and Nature Conservation
DARDLR	Department of Agriculture, Rural Development and Land Reform
DMRE	Department of Mineral Resources and Energy
DMR	Department of Mineral Resources
DSR	Draft Scoping Report
DWA	Department of Water Affairs
DWS	Department of Water and Sanitation
DWAF	Department of Water Affairs and Forestry
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EC	Electrical Conductivity
ECO	Environmental Control Officer
EI	Ecological Importance
EIA	Environmental Impact Assessment
EIS	Ecological Importance and Sensitivity
EMP	Environmental Management Plan
EMPr	Environmental Management Programme
EMS	Environmental Management System
ES	Ecological Sensitivity
ESMS	Environmental and Social Management System
FIER	Final Environmental Impact Report

FEPA	Freshwater Ecosystem Priority Areas
FSR	Final Scoping Report
GDP	Gross Domestic Product
GN	Government Notice
Ha	Hectares
HDPE	High Density Polyethylene
I&AP's	Interested and Affected Parties
IDP	Integrated Development Plan
IEMPr	Integrated Environmental Management Programme
ISO	International Organisation for Standardisation
IWRM	Integrated Water Resources Management
IWULA	Integrated Water Use License Application
IWWMP	Integrated Water and Waste Management Plan
MAE	Mean Annual Evaporation
MAP	Mean Annual Precipitation
MAR	Mean Annual Runoff
MPRDA	Mineral and Petroleum Resources Development, 2002 (Act No. 28 of 2002)
MR	Mining Right
MSDS	Material Safety Data Sheet
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NEM:AQA	National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004)
NEM:WA	National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)
NFEPA	National Freshwater Ecosystem Priority Areas
NCDAEARDLR	Northern Cape: Department of Agriculture, Environmental Affairs, Rural Development and Land Reform
NHRA	National Heritage Resources Act, 1999 (Act No. 25 of 1999)
NWA	National Water Act, 1998 (Act No. 36 of 1998) [as amended]
NWRS	National Water Resource Strategy
PCO	Pest Control Officer
PES	Present Ecological Status
PM <sub>10</sub>	Particulate matter with an aerodynamic diameter of less than 10 µm
PM <sub>2.5</sub>	Particulate matter with an aerodynamic diameter of less than 2.5 µm
PPP	Public Participation Process
RWD	Return water dam

SABS	South African Bureau of Standards
SACNASP	South African Council for National Scientific Professions
SAHRA	South African Heritage Resources Agency
SANAS	South African National Accreditation System
SANBI	South African National Biodiversity Institute
SANS	South African National Standard
SAWQG	South African Water Quality Guidelines
SDF	Spatial Development Framework
S&EIR	Scoping and Environmental Impact Report
SHE	Safety, Health and Environment
SHEQ	Safety, Health, Environment and Quality
SIA	Social Impact Assessment
SR	Scoping Report
TDS	Total Dissolved Salts
TOPS	Threatened or Protected Areas
ToR	Terms of Reference
TSS	Total Suspended Solids
VOC	Volatile Organic Compound
WARMS	Water Authorisation Registration and Management System
WCDM	Water Conservation and Demand Management
WESSA	Wildlife and Environmental Society of South Africa
WMA	Water Management Area
WMP	Waste Management Plan
WRC	Water Research Commission
WUL	Water Use License

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**(iii) Objective of the scoping process**

The objective of the scoping process is to, through a consultative process—

- (a) Identify the relevant policies and legislation 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 identification of impacts and risks and ranking process of such impacts and risks;
- (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 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, extent, duration and probability of the impacts to inform the location of the development footprint within the preferred site; and
- (g) Identify, through a ranking of the site sensitivities and possible impacts, the activity and technology alternatives will impose on the sites and location identified through the life of the activity to—
  - (i) identify and motivate a preferred site, activity and technology alternative;
  - (ii) identify suitable measures to manage, avoid or mitigate identified impacts; and
  - (iii) identify residual risks that need to be managed and monitored.



(iv) PART A

**SCOPE OF ASSESSMENT AND ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

## **1 Introduction**

Environmental Impact Assessment (EIA) plays a vital role in informing prospecting right applicants of sustainable methods of practising mining at all stages of the process. If properly implemented, Environmental Impact Assessments assist in ensuring optimal use of available resources, productivity increase and sustainability among other things.

It is important to take note that South Africa is a developing country within a global space where environmental impacts may not be ignored any longer. There is a need for sustainable development and the need for sustainable development in a State such as South Africa is accompanied by numerous obligations, which include developing the economy and protecting the environment.

In an attempt to protect the environment through impact management in many ways, the international community has entered into agreements and treaties in order to address matters relating to impacts associated with development among others. Consequently, South Africa is a signatory to numerous international treaties, and among those is the Paris Agreement on Climate Change. In order to meet the objectives of the Paris Agreement, South Africa is currently promoting renewable energy generation and innovative mining practices among other things.

The economy of South Africa relies largely on both mining and agriculture. The Northern Cape Province, which is the province in question in this regard and instance, relies on both mining and agriculture among other things. However, the province is relatively dry with high evaporation rate and this factor results in the reduced availability of surface water resources in the Northern Cape Province. Thus, the assessment will take into consideration all relevant legislation and factors into account.

### **1.1 Background**

Yone STEM Frontiers (Pty) Ltd proposes to prospect for diamonds, iron, and manganese ores, as well as associated / related infrastructure, activities, processes, and equipment, on the property near Postmasburg, ZF Mgqawu District, Northern Cape, South Africa.

In the case of proposed mineral resource development, an Environmental Impact Assessment must be conducted and such study will take into account all relevant factors in order to assess the potential impacts of the proposed development against the triple-bottom-line of social, economic, and environmental consequences, with the view to promote sustainable development.

It is of vitality to take note that sustainable development is a framework for reconciling socio-economic development and environmental protection. The constitutional framework is as follows:

- The Bill of Rights (section 24(b) of the Constitution) acknowledges sustainable development. The government is required by this section to give effect to this right through reasonable legislative and other measures.
- The Constitution also includes a provision for cooperative governance, which makes it easier to implement sustainable development. Environmental policy is formed on the basis of sustainable development.

The legislative framework is as follows:

- Sustainable Development is stated as an overarching goal in the White Paper on Environmental Policy.
- The National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA), as amended, is the environmental framework legislation that contains uniform norms and standards that apply to all environmental legislation. Sustainable Development is one of these standards. The NEMA defines Sustainable Development as "the integration of social, economic and environmental factors into planning, implementation and decision-making to ensure that development serves present and future generations". Many of the NEMA's principles and objectives for environmental management are based on sustainable development. The NEMA also establishes the framework for environmental legislation compliance and enforcement. Sustainable development is addressed in environmental legislation (e.g., the National Water Act, 1998 (Act No. 36 of 1998), the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004), and the Local Government: Municipal Systems Act, 2000 (Act No. 32 of 2000)).

In order to facilitate cooperative environmental governance, the proposed development necessitates the implementation of procedures and mechanisms. Such procedures are covered in Chapter 3 of the NEMA.



The NEMA provides for environmental implementation and management plans in Section 11. Every national department on Schedule 2 is required to develop an environmental management plan. Provinces and departments must go above and beyond to ensure that these environmental implementation or management plans are consistent. These plans' purpose and objectives are as follows:

- to coordinate and harmonise the environmental policies, plans, programmes and decisions of the various listed national departments and of provincial and local spheres of government, which must be done to minimise the duplication of procedures and functions and to promote consistency;
- give effect to the principle of cooperative government in Chapter 3 of the Constitution;
- secure the protection of the environment across the country as a whole;
- prevent unreasonable actions by provinces in respect of the environment, which actions are prejudicial to the economic or health interests of other provinces or the country as a whole; and
- enable the Minister to monitor the achievement, promotion and protection of a sustainable environment.

## 2 Details and Expertise Environmental Impact Assessment Practitioner who prepared the report

The particulars of the EAP(s) involved in this study are presented in Table 1.

**Table 1:** Details of the EAP

Name of Consultancy:	Abantu Environmental Consultants (Pty) Ltd
Name of EAP	Sive Mlamla
Physical Address	533 Masincedane Keiskammahoek 5670
Contact Number:	078 207 8278
E-mail	<a href="mailto:mining@abantuenvironmental.co.za">mining@abantuenvironmental.co.za</a>
Contact Person:	
Title	Prospecting Right and Integrated Environmental Authorisation Application Process for Aggregate, Gemstone, Diamonds (Alluvial, General & in Kimberlite), Manganese and Iron Ores, near Postmasburg, ZF Mgcawu District, Northern Cape, South Africa.
Experience:	<p>More than seven (7)</p> <p>Sive is the Director of Abantu Environmental Consultants. He completed an M. Sc. degree in Geography (Catchment Hydrological Modelling using GIS and Remote Sensing) at Nelson Mandela University. Currently, he is a Ph. D Candidate in Remote Sensing and GIS at Nelson Mandela University.</p> <p>Sive is a registered Environmental Assessment Practitioner with the Environmental Assessment Practitioners Association of South Africa. He is also registered as a Professional Natural Scientist with the South African Council for Natural Scientific Professions. Additionally, Sive is registered with the following bodies:</p> <ul style="list-style-type: none"> <li>• Institute of Waste Management of Southern Africa;</li> <li>• Southern African Wetlands Society;</li> <li>• International Association of Hydrological Sciences; and</li> <li>• Southern African Association of Geomorphologists.</li> </ul> <p>He has been involved in EIAs for more than seven (7) years.</p>

### 3 The location of the activity, including-

#### 3.1 The 21-digit Surveyor General code of each cadastral and land parcel

Information pertaining to the proposed project is presented in Table 2.

**Table 2: Property Information**

<b>Farm Name:</b>	Farm Copthorne No. 677 (Portion 20), within the Administrative District of Postmasburg, ZF Mgcauwu, Northern Cape, South Africa.
<b>Application area (Ha)</b>	Approximately 2 550 Ha
<b>Magisterial district:</b>	Postmasburg, ZF Mgcauwu District, Northern Cape
<b>Distance and direction from nearest town</b>	The application area is situated approximately 27 km Northeast of Posmasburg, approximately 37 km Southeast of Kathu and approximately 34 km of Danielskuil, Northern Cape, South Africa.
<b>21-digit Surveyor General Code for each farm portion</b>	C0410000000067700001 C0410000000067700010 C0410000000067700020

#### 3.2 where available, the physical address and farm name

Please refer to section 3.1. or 3.3.

#### 3.3 where the required information on 3.1 and 3.2 is not available, the coordinates of the boundary of the properties

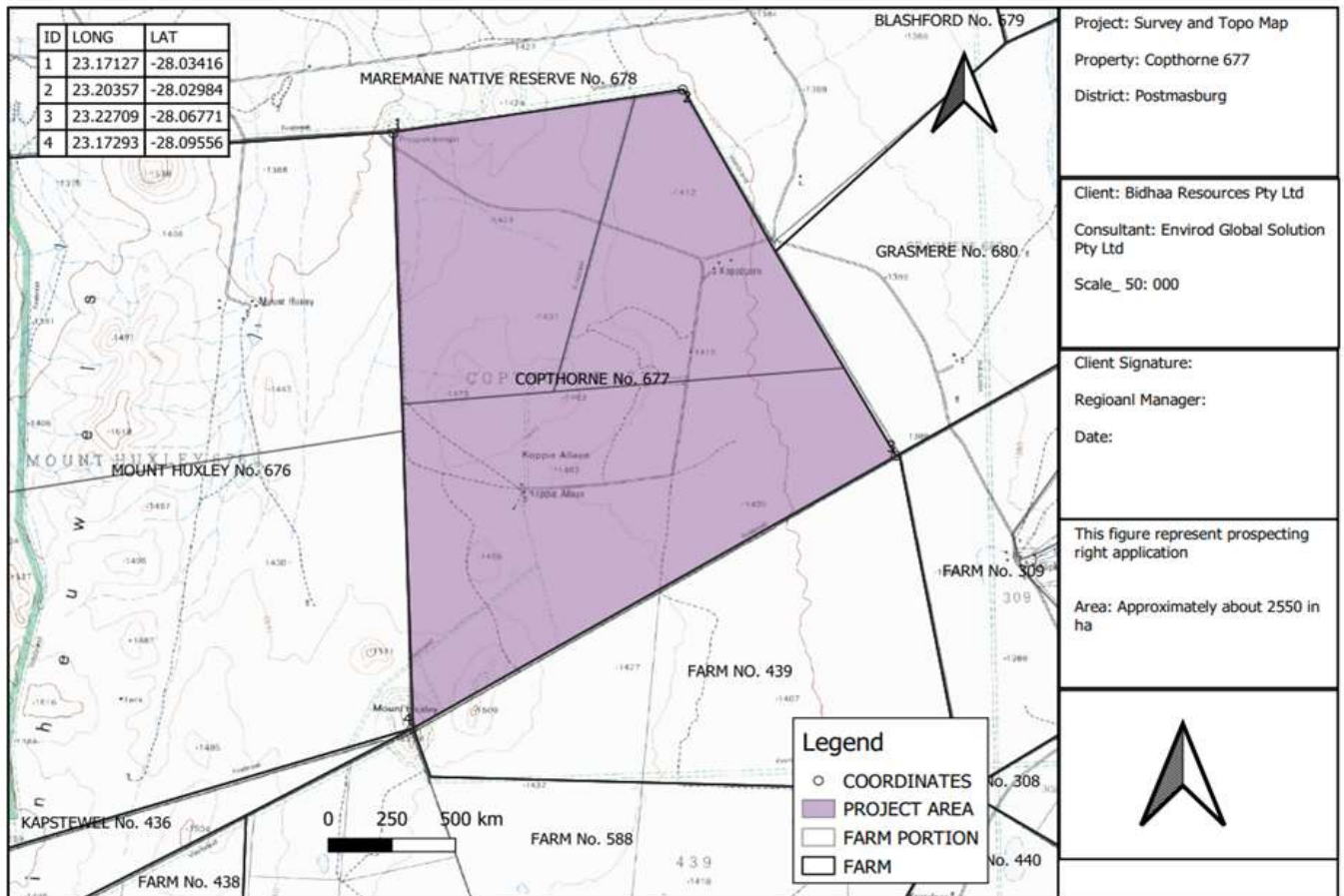
The GPS co-ordinates in relation to the proposed development are presented in Table 3.

**Table 3: GPS Co-ordinates**

Latitude	Longitude
-28.03416	23.17127
-28.02984	23.20357
-28.06771	23.22709
-28.09556	23.17293

**4 a plan which locates the proposed activity or activities applied for at an appropriate scale, or, if it is –**

The proposed Project is located (Figure 1) within an area whose zoning has not been requested for at the moment. The area of application is not located within a protected area and is therefore relatively less threatened. The findings of the proposed Biodiversity Assessment, if any, to be conducted will provide guidance of what trees are protected within the application area



**Figure 1: Project Application Area**

Locality of the proposed development is depicted in Figures 1 and 2.



**Figure 2: Locality Map of ZF Mgcawu District**

**4.1 A linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or**

Activities are going to be undertaken on the Prospecting Right application area Farm Copthorne No. 677 (Remaining Extent, Portions 1 and 2), near Postmasburg, Northern Cape.

**4.2 On land where the property has not been defined, the coordinates within which the activity is to be undertaken**

Please refer to section 3.

## 5 A description of the scope of proposed activity, including –

### 5.1 All listed and specified activities triggered

The listed and specified activities potentially triggered by the proposed prospecting for mineral resources development are indicated in Table 4.

**Table 4: Listed and Specified Activities**

<b>NAME OF ACTIVITY</b>  E.g. for mining,- 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.)	<b>Aerial extent of the Activity</b>  Ha or m <sup>2</sup>	<b>LISTED ACTIVITY</b>  Mark with an X where applicable or affected.	<b>APPLICABLE LISTING NOTICE</b>  (GNR 324, GNR 325 or GNR 326)
The extraction, removal and disposal of minerals that is envisaged in terms of Section 20 of the Minerals and Petroleum Resources Development Act, 2002 (Act 28 of 2002) ("Act"), including affected infrastructure, structures and earthworks, directly related to prospecting of a mineral resource and activities for which an exemption has been issued in terms of Section 106 of the Act. Activity 19 of Listing Notice 2	900 Ha - Only the area where prospecting activities are going to take place will be cleared of indigenous vegetation. Concurrent rehabilitation will be conducted with normal backfilling.	X	GNR 325 Listing Activity 19
All activities, including the operation of a particular activity associated with primary processing of a mineral resource such as extraction, classifying, reduction, concentrating, winning, crushing, screening and washing but excluding the smelting, beneficiation, refining, calcining or gasification of the mineral resource in which case Activity 6 of this Notice applies. Activity 21 of Listing Notice 2	0.96 Ha	X	GNR 325 Listing Activity 21
Clearance of indigenous vegetation	900 Ha - Only the area where prospecting activities are going to take place will be cleared of indigenous vegetation. Concurrent rehabilitation will be conducted with normal backfilling.	X	GNR. 325, Listing Activity 15
Temporary structures (3 x Park Homes)	0.215 ha		GNR 325, Listed 1, Activity 21
Temporary Dump Site	0.19 ha		GNR 325, Listed 1, Activity 21
Residue Dam	0.5 ha		GNR 325, Listed 1, Activity 21
Concrete spillage control at diesel bousers	100 m <sup>2</sup>		Not listed

Oil storage facility	100 m <sup>2</sup>		GNR 325, Listed 1, Activity 21
<b>NAME OF ACTIVITY</b>  E.g. for mining, - 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.)	<b>Aerial extent of the Activity</b>  Ha or m <sup>2</sup>	<b>LISTED ACTIVITY</b>  Mark with an X where applicable or affected.	<b>APPLICABLE LISTING NOTICE</b>  (GNR 324, GNR 325 or GNR 326)
Water pipeline of undetermined length but less than 10 Km	≈2 km		GNR 325, Listed 1, Activity 21
Roads to trenches and processing plant and not wider than 4 m.	+ - 1 km		GNR 325, Listed 1, Activity 21
Stockpiling of topsoil	900 Ha – 6m X 6m X 1 000m pit (100 trenches)  200m X 100m X 200m trench (5 pits)  1 000m drill holes		GNR 325, Listed 1, Activity 21
Handling of General Waste (The waste licensing process for listed activities under Schedule 1 in the National Environment Management Waste Act 2008 is as defined in the environmental impact assessment (EIA) regulations made under section 24(5) of the National Environment Management Act 2008 (NEMA) No. 107 of 1998. This is a Category A Waste License Application for listed activities under Schedule 1 in the National Environment Management Waste Act 2008.)	0.0008 Ha	X	NEM:WA - Government Notice Regulation 921 – 29 November 2013, as amended,
The development of infrastructure exceeding 1 000 metres in length for the bulk transportation of water or storm water— (i) with an internal diameter of 0,36 metres or more; or (ii) with a peak throughput of 120 litres per second or more;	Approx. 2 km	X	Listing Notice GNR 327, Activity 9
The development and related operation of infrastructure exceeding 1 000 metres in length for the bulk transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes – (i) with an internal diameter of 0,36 metres or more; or (ii) with a peak throughput of 120 litres per second or more;	Approx. 2 km	X	Listing Notice GNR 327, Activity 10

<b>NAME OF ACTIVITY</b>  <b>E.g. for mining</b> ,- 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.)	<b>Aerial extent of the Activity</b>  <b>Ha or m<sup>2</sup></b>	<b>LISTED ACTIVITY</b>  <b>Mark with an X where applicable or affected.</b>	<b>APPLICABLE LISTING NOTICE</b>  <b>(GNR 324, GNR 325 or GNR 326)</b>
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.	<500 m <sup>3</sup>	X	Listing Notice GNR 327, Activity 14
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 [including activities for which an exemption has been issued in terms of section 106 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)] (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.	Approx. 6 043.918 Ha	X	Listing Notice GNR 327, Activity 20
The development of a road— (i) [a road] for which an environmental authorisation was obtained for the route determination in terms of activity 5 in Government Notice 387 of 2006 or activity 18 in Government Notice 545 of 2010; or (ii) [a road] 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) [roads] which [are] is identified and included in activity 27 in Listing Notice 2 of 2014; (b) [roads] where the entire road falls within an urban area; or (c) which is 1 kilometre or shorter.	Access roads and internal road network.	X	Listing Notice GNR 327, Activity 24
The decommissioning of any activity requiring - (i) a closure certificate in terms of section 43 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002); or (ii) a prospecting right, mining right, mining permit, production right	Obtain closure certificate after prospecting activities have been completed, if necessary.	X	Listing Notice GNR 327, Activity 22



or exploration right, where the throughput of the activity has reduced by 90% or more over a period of 5 years excluding where the competent authority has in writing agreed that such reduction in throughput does not constitute closure.			
The expansion of infrastructure for the bulk transportation of water or storm water where the existing infrastructure— (i) has an internal diameter of 0,36 metres or more; or (ii) has a peak throughput of 120 litres per second or more; and (a) where the facility or infrastructure is expanded by more than 1 000 metres in length; or (b) where the throughput capacity of the facility or infrastructure will be increased by 10% or more;	≈2 km	X	Listing Notice GNR 327, Activity 45
The expansion of facilities or infrastructure for the transmission and distribution of electricity where the expanded capacity will exceed 275 kilovolts and the development footprint will increase.			Listing Notice GNR 327, Activity 47
<b>NAME OF ACTIVITY</b>  E.g. for mining, - 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.)	<b>Aerial extent of the Activity</b>  Ha or m <sup>2</sup>	<b>LISTED ACTIVITY</b>  Mark with an X where applicable or affected.	<b>APPLICABLE LISTING NOTICE</b>  (GNR 324, GNR 325 or GNR 326)
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.	>300 m <sup>2</sup>	X	Listing Notice GNR 324, Activity 12
<b>NAME OF ACTIVITY</b>  E.g. for mining, - 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.)	<b>Aerial extent of the Activity</b>  Ha or m <sup>2</sup>	<b>LISTED ACTIVITY</b>  Mark with an X where applicable or affected.	<b>APPLICABLE LISTING NOTICE</b>  (GNR 324, GNR 325 or GNR 326)
The storage of general waste in lagoons.		X	Category A(1)
The recovery of waste including the refining, utilisation, or co-processing of waste in excess of 10 tons but less than 100 tons of general waste per day or in excess of 500kg but less than 1 ton of hazardous waste per day, excluding recovery that takes place as an integral part of an internal manufacturing process within the same premises.	<100 tons of general waste.  <1 ton of hazardous waste.	X	Category A(5)
The remediation of contaminated land		X	Category A(8)
The disposal of inert waste to land in excess of 25 tons but not exceeding 25 000 tons, excluding the disposal of such waste for the purposes of levelling	<25 000 tons	X	Category A(9)

and building which has been authorised by or under other legislation.			
The construction of a facility for a waste management activity listed in Category A of this Schedule	<25 000 tons	X	Category A(12)
The establishment or reclamation of a residue stockpile or residue deposit resulting from activities which require a prospecting right or mining permit, in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).		X	Category A(15)
The storage of hazardous waste in lagoons excluding storage of effluent, wastewater or sewage.		X	Category B(1)
The treatment of hazardous waste in lagoons, excluding the treatment of effluent, wastewater or sewage.		X	Category B(5)
The construction of a facility for a waste management activity listed in Category B of this Schedule.		X	Category B(10)

National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) - Government Notice Regulation 921 – 29 November 2013; Category A(1), A(5), A(8), A(9), A(12), A(15); Category B(1), B(5) and B(10).

National Water Act, 1998 (Act No. 36 of 1998) – section 21(a): Taking water from a water resource and section 21(b): Storing water, section 21(c): Impeding or diverting the flow of water in a watercourse, section 21(i): Altering the bed, banks, course or characteristics of a watercourse; section 21(e): engaging in a controlled activity identified as such in section 37(1) or declared under section 38(1); section 21(g): disposing of waste in a manner which may detrimentally 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.

## 5.2 A description of the activities to be undertaken, including associated structures and infrastructure

In accordance with the National Environmental Management Act of 1998 (Act No. 107 of 1998) and the National Environmental Management: Waste Act of 2008, Yone STEM Frontiers (Pty) Ltd submitted applications to the Department of Mineral Resources and Energy for a prospecting right under the Mineral and Petroleum Resources Development Act of 2002 (Act No. 28 of 2002) and an Integrated Environmental Authorization (Act No. 59 of 2008). As a result of the MPRDA application being accepted, the Environmental Impact Assessment (EIA) process has begun. This work (Scoping Report) is compiled and

made available to the public as part of the first phase of the EIA process to look into the potential environmental effects of the proposed development.

In addition, and according to the National Water Act of 1998(Act No. 36 of 1998) an Integrated Water Use License Application must be filed with the Department of Human Settlements, Water Sanitation (DHSWS) in order to support the proposed development and related processes. An on-site water abstraction from the ground is envisaged by the project team.

It is also advised that both the Responsible Authority (DHSWS) and the Competent Authority (DMRE) will be consulted in the event that an alternative arrangement is formed to the one that was originally planned.

### **5.2.1 Description of Planned Non-Invasive Activities**

The application area will be geologically mapped using high resolution satellite imagery. A special focus will be placed on defining and delineating the areas underlain by alluvial gravels or Kimberlites, manganese, and iron ore and contacts between different lithologies will be mapped.

The target areas will undergo a site analysis to identify infrastructure and identify any potential issues that may need to be addressed.

#### Analytical Desktop Study

The project geologist monitors the program, compiles and processes the data, and modifies the program as needed in response to the results. Even when there is no prospecting being done on the ground, this process is ongoing throughout the program.

Following each physical stage of prospecting, desk studies are conducted that involve the interpretation and modelling of all the data gathered. These studies will determine the activity, quantity, resources, expenditure, and duration of the task programmed and all the exploration data will be gathered in a GIS-based database.

### 5.2.2 Description of Planned Invasive Activities

During the initial stages of the planned project, Pitting and Trenching are going to be undertaken.

#### Bulk sampling is a sampling technique

Volumes of the mineral to be tested

The method of sampling known as bulk sampling involves taking volumes of the mineral that will be tested. About five pits will be dug with the dimensions shown in Table 2 to see if there are any commodities of interest underground. Before getting to the ore body, which is expected to contain diamonds, manganese, and iron ores, an average of 3 to 70 meters of overburden—calcrete, dolomite, waste rock, and soil—will need to be removed. The trenches will be 200 meters wide by 100 meters deep. We estimated the volume of gravel on 50 meters, and if all five pits are dug, an average of 1,000,000 m<sup>3</sup> will be tested in each pit.

Why will they be tested?

There will be tests on the iron and manganese ore. An analytical laboratory will be used for the testing. A grade (carats per hundred tonnes) and value (US dollars per carat) for the kimberlitic material and diamondiferous gravels will be determined by testing. To treat the material, the adjacent iron and manganese ore mines as well as the diamond mines might be used. The applicant may also need to use a processing plant that will be built on the property.

Where will they be tested?

Whether done on-site or off-site, all bulk sampling operations. A description of the procedure is provided below: -

The planned bulk sample method is similar to normal South African operations for iron, manganese, and diamond ore and may need to incorporate kimberlite mining. The exploration approach that is envisaged includes strip mining, where large gravel scalping and plant tailings are used as backfill material prior to final rehabilitation. Articulated dump trucks are used to excavate, load, and move the ore and gravel to the neighbouring treatment facility. The screening and processing factories' haul roads will offer access to the numerous trenches.

A haul road from the screening and processing units will give access to the numerous trenches. Using standard open pit mining machinery, including two articulated dump trucks supported by suitable excavators and a front-end loader, the operation will be carried out. In case underground

operations are required at a later stage of this anticipated development, the potential of creating subsurface channels and shafts would be looked into and studied.

Prior to the excavation of the ores and gravel, the vegetated soil overlying the intended trenches is scraped and stockpiled on a designated dump for use in rehabilitation at a later time. With 60-t excavators, gravel and ores are loaded onto ADTs. To the screening plant, the ore is carried. Backfilling shall be a continual operation as part of the bulk sampling procedures. At first, the activity will be carried out using standard open-pit mining equipment, which follow:

QTY/Units	Type of equipment
4	Excavator
4	Front-End Loader
4	Articulated Dump Trucks
1	Doser
2	Water Trucks
1	Bulldozer
1	16ft – Rotary Pan
1	Jig/DMS/Sinter Plant/Rotary Plant
2	Crushers and Screens
2	Power Generators
3	Drill Rigs
2	Screen

QTY/Units	Type of equipment
4	Crushers
5	Utility vehicles and small tools
1 each	Diamond recovery unit with flow sort machines, plants and recovery, crushing and screening equipment.

Ores and kimberlitic material are put onto a vibrating grizzly, and material larger than +85 mm is discarded back into the open pit (approximately a 25% reduction). The remaining -85mm portion is put into a 16-foot, 100 tph treatment-capable rotary pan. Some of the hefty banded iron stones are extracted using a magnetic separator. To make sure the pans are working at the proper density, tracer tests are performed frequently. Every hour, about 2.5 tonnes of concentrate are tapped from the pan and brought in sealed containers to the last recovery facility. A holding bin, sizing screen, sizing bins, and one cutting-edge Flowsort X-ray recovery machine make up the final recovery unit, which recovers diamonds from the +2mm to -32mm size fraction. The X-ray concentration will be manually sorted in the end. Continuous rehabilitation will take undertaken, with just one trench open at any given time.

To whom they will be disposed of:

The kimberlitic material and gravels might provide 8 800 carats at a grade of 2 carats per hundred tonnes. To estimate the average US dollar carat worth of the diamonds, they will be sold at a recognized diamond tender house in Kimberley or other worldwide locales connected to the Kimberly Process. Site preparation is another Prospecting Method component.

Topsoil stripping and vegetation clearing are both parts of site preparation. Topsoil is stockpiled for use in rehabilitation in the future.

#### 5) Earthworks

Following site preparation all topsoil and some waste rock is dozed and stockpiled separately for re-use for rehabilitation activities

### Drilling and blasting

It will be necessary to remove some of the topsoil and overburden. Up until the economic ore body is disclosed, the waste rock is drilled and blasted in benches. High quality, effective, and efficient methods are used to complete this. The method must use the best available industry standards. Similar to how the ore is broken, waste and overburden materials are carefully avoided so as not to contaminate the ore during drill and blast operations.

Only if it is considered essential will blasting take place. If blasting is deemed essential at any time throughout this proposed development, all advised best practices shall be followed.

### Removal of waste rock

Broken waste rock is loaded by excavator and hauled by auxiliary dump trucks to the waste dumps where -/\*-it is tipped.

### Rehabilitation

As prospecting efforts progress, ongoing rehabilitation of the excavated areas utilizing techniques such concurrent backfilling will take place once the open pit and trench achieve a stable condition. In this manner, the pit voids will be filled with waste rock (once there is enough space to dump)

## MINERAL PROCESSING METHOD

### Primary crushing and screening

ROM is transported via auxiliary dump trucks to the primary crushing and screening plant. The first crusher and screening plant is used to reduce the size of the ore to the fractions needed for the subsequent plant processes. Prior to being transported through equipment or conveyor to the secondary crushing and screening plant for additional resizing, ROM that has undergone the main crushing and screening plant is heaped first. At all crushing and screening stations, dust control should be implemented using the proper methods.

## Secondary crushing and screening

The secondary crushing and screening facility is used to size the ore in accordance with the required product standards. The crushed ROM stockpile or one of the product stockpile locations receives the final product from the secondary crushing and screening facility. The processed ore that will be heaped up may range from -6+1 mm to -75 + 6 mm. Separate piles of different individual fractions are possible. The finished product is loaded out of site before being marketed to regional and global markets for further benefit. Product should be loaded out of site using front end loaders or comparable loaders.

Superfine waste material will be re-used as topsoil for rehabilitation and re-vegetation purposes.

## Tertiary crushing and screening (to be sent to nearby mining operations for further processing)

To prepare the ore for sinter plant feed, it will go through the tertiary crushing and screening stage (- 40, +6 mm material). Prior to being transported to the sinter plant, high-grade product will be stacked up in the tertiary product stockpile. Before being delivered to the Dense Medium Separator (DMS) for additional processing, manganese from the secondary crushing and screening plant will be stacked up at a low-grade stockpile. The thickener will be used to dispose of any fines material (-1 mm) that the tertiary crushing and screening plant produces into the tailings dam.

## Sintering (to be sent to nearby mining operations for further processing)

To agglomerate the ore and boost the manganese content, it will be sintered in the sinter plant by applying heat (by burning off the carbonaceous material). Before the manganese ore is aggregated in a rotary drum, raw materials will be combined with it in a rotating mixing pan. A steel belt will transport the aggregated material into the sinter furnace. A multi-compartment oven that uses gas or heavy fuel oil for ignition is a sinter furnace. For sintering, igniting, and drying, the front compartments will be utilized. Cooling will take place in the back compartments. To remove the majority of the particles and contaminants from gas emissions, cascade scrubbers will be used. In the thickening plant, the used scrubber water will be recycled. Bag filters will be used to collect and recycle dust emissions for the sinter feed. Prior to being loaded out of site and sold to third parties, the finished product will be stacked atop the product stockpile.



Dense medium separation (to be sent to nearby mining operations for further processing)

Manganese ore that is below the acceptable grade (- 6 + 1 MM) can be beneficiated via dense medium separation prior to the sintering stage, successfully improving the ore. Using the density difference between the waste and manganese, the material will be delivered to the temporary discard site for waste disposal while the manganese will be sent to the sinter plant's stockpile for sinter feed. While a backup sample is kept on hand, samples will be forwarded to a lab for analysis.

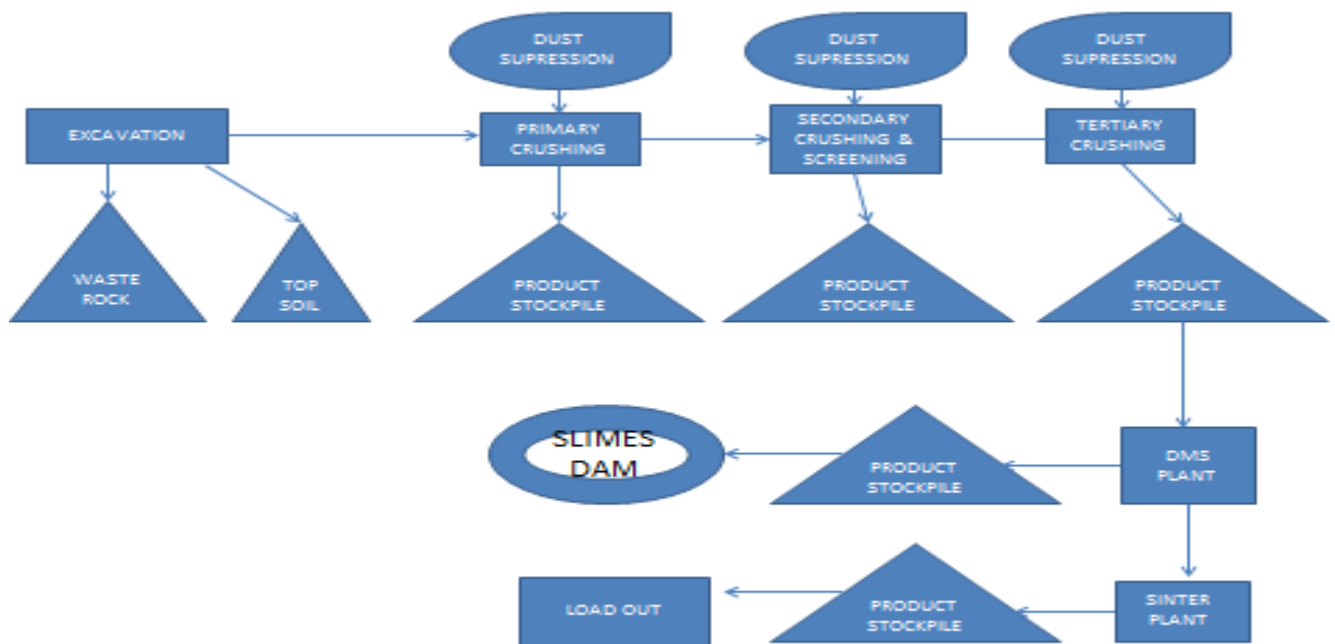
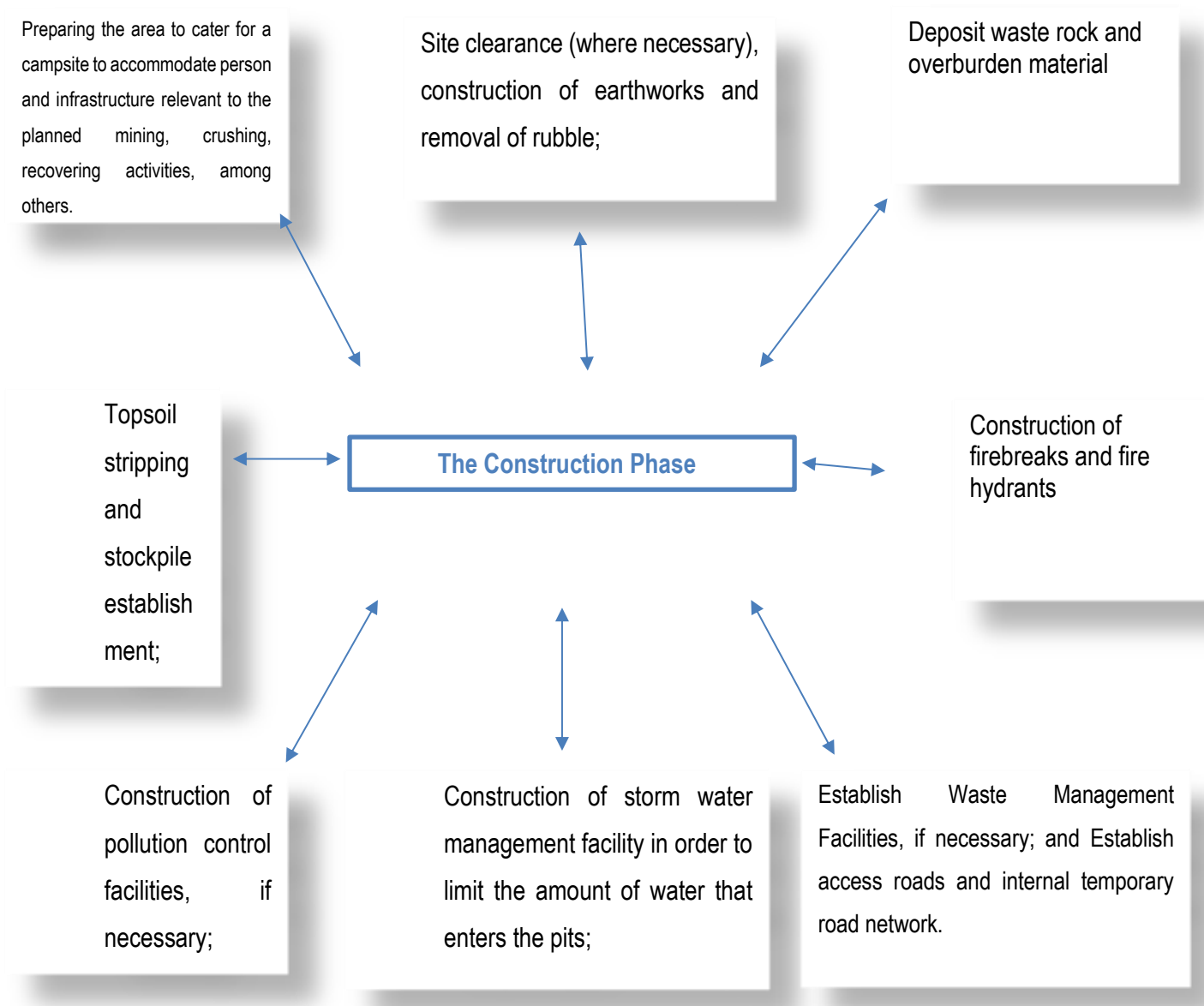


Figure 3: Schematic representation of the planned process flow



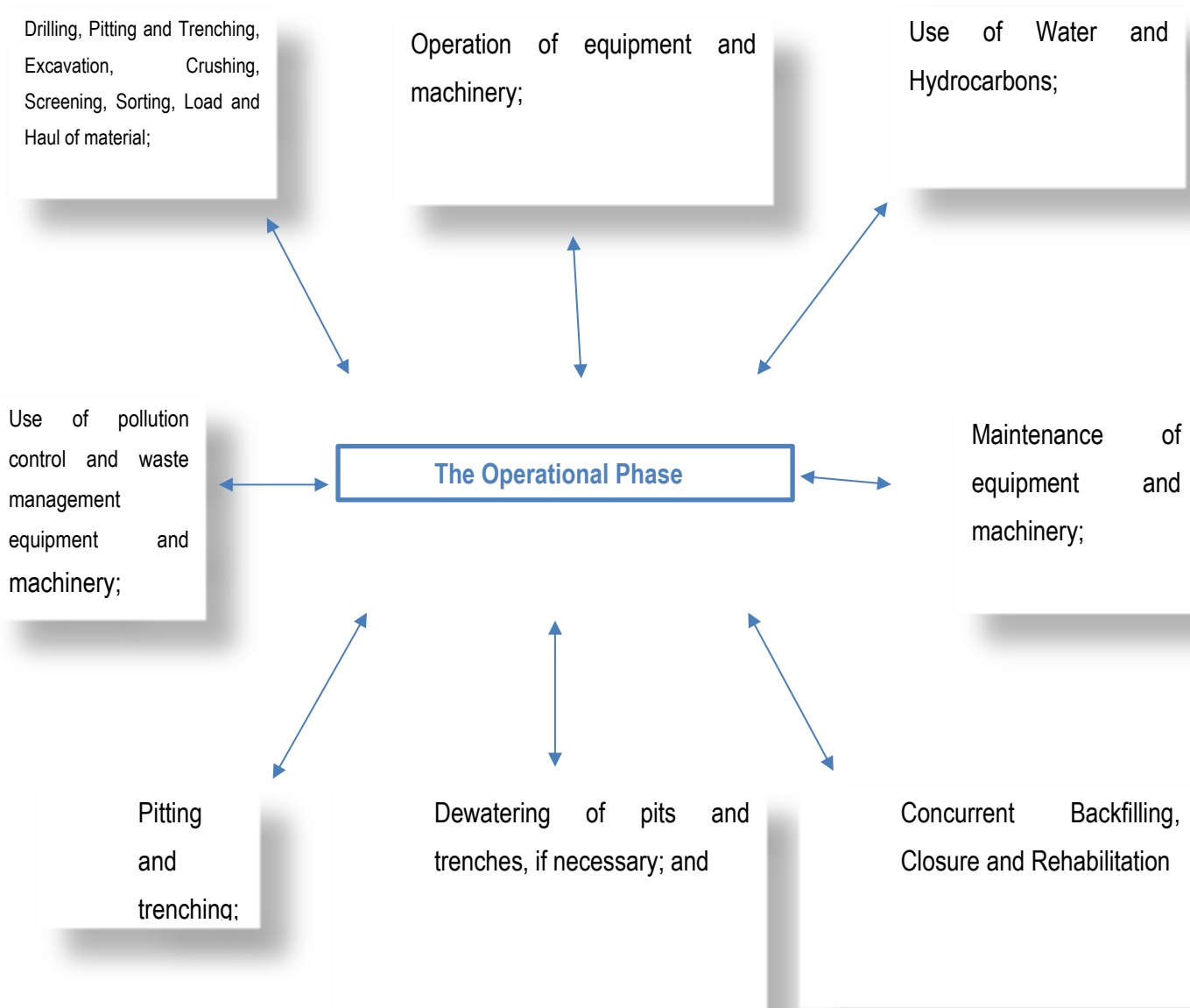
### 5.2.3 Construction Phase

The Construction Phase entails the following:



### 5.2.4 Operational Phase

The Operational Phase entails some of the following:



### 5.2.5 Decommissioning Phase

In these procedures, mobile equipment will be used. When movable infrastructure is deployed, the decommissioning process will be simple because the infrastructure will be moved from the location. It is important to note that the rehabilitation program will be planned to run concurrently with the mining and crushing activities in order to finally provide "pain-free" recovery. Species that have been moved or removed will be replanted or put back in their original habitat.

**Table 3: Bulk Sampling Activities**

ACTIVITY		DETAILS		
Number of pits/trenches planned		5 pits and 100 trenches		
	Number of pits/trenches	Length	Breath	Depth
	5/100	200 m	100 m	200 m
Locality		See figure 1		
Volume Overburden (Waste)		≤ 1 000 000 m <sup>3</sup>		
Volume Ore		≈ 3 000 000 m <sup>3</sup>		
Density Overburden		To be determined during Prospecting Activities.		
Density Ore		≈ 5.15 g/cc To be determined during Prospecting Activities.		
Phase when bulk sampling will be required		Phase 3		
Timeframe(s)		From time-to-time during months 7 to 30		

## **6 A description of the policy and legislative context within which the development is proposed including and 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**

In order to protect the environment and ensure that this development is undertaken in an environmentally responsible manner, there are a number of significant pieces of legislation that will be consulted for this study. After a brief scoping of applicable legislation these include but may not be limited to the following:

### **6.1 The Constitution of the Republic of South Africa, 1996**

The Constitution of the Republic of South Africa is the Supreme Law of our country and every legislation and law should be consistent with the provisions of the Constitution.

The Constitution makes provision for the environmental rights in the Bill of Rights, Chapter 2. This being found in section 24 in its entirety. In essence this section provides for the protection of the environment through measures that promote conservation and prevent the pollution of the environment to ensure that future generations also enjoy the benefits of the environment.

Section 24 asserts that:

“Everyone has the right-

- (a) To an environment that is not harmful to their health or well-being; and
- (b) To have the environment protected for the benefit of present and future generations, through reasonable legislative and other measures that-
  - (i) prevent pollution and ecological degradation;
  - (ii) promote conservation; and
  - (iii) secure ecologically sustainable development and use of natural resources

While promoting justifiable economic and social development.”

As asserted in and guided by the legislation, the environmental management objectives of the proposed project are to ensure future benefit, the use of natural resources, the promotion and support of socio-economic development and sustainable development.

## 6.2 NEMA and EIA Regulations published on 7 April 2017 (GN R327, GN R326, GN R325 and GN R324)

The EIA Regulations (2017) under the NEMA consist of three (3) categories of activities namely: Listing Notice 1 Activities (GNR. 327 of 2017) which require a Basic Assessment study, Listing Notice 2 Activities (GNR. 325 of 2017) which require both a Scoping and an EIA study for authorisation and Listing Notice 3 Activities (GNR. 324 of 2017) which requires a Basic Assessment study for specific activities in identified sensitive geographical areas. The DMRE is responsible for the authorisation of these activities.

The National Environmental Management Act, 1998 (Act No. 107 of 1998) sets out a number of principles in the first two (2) chapters of the act to give guidance to applicant or proponents, private land owners, members of public and authorities on how to handle environmental matters. Various necessities such as cooperative environmental governance, compliance and non-compliance, enforcement, and regulating government and business impacts on the environment, underpin the NEMA. Section 2(2) of the NEMA urges sensitivity to the welfare of communities regarding their physical psychological, developmental, cultural and social interests. Development must be socially, environmentally and economically sustainable, which requires that the disturbance of landscapes and sites that constitute the nation's cultural heritage is avoided, or where it cannot be altogether avoided, is minimized and remedied.

The NEMA is the national legal framework that regulates environmental issues. The NEMA, as the primary environmental legislation, is complemented by a number of sectoral laws governing mining, waste, air quality, biodiversity, marine living resources, forestry, protected areas, pollution and integrated coastal management. The National Environmental Management Act (NEMA) revolves around the environmental management principles, which provide that 'environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably and development must be socially, environmentally and economically sustainable. The principles include specific reference to environmental justice: s 2(4)(c) provides that 'environmental justice must be pursued so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons.

The national legal framework under which Environmental Impact assessments are undertaken is the National Environmental Management Act, 1998 (Act No. 107 of 1998) NEMA (as amended). The EIA studies under discussion are often complex as a result of many contributing factors. The aim of EIA studies is to uphold environmental and socio-economic justice pertaining to any proposed development among other things. A definition of “environment” is given in section 1 of the NEMA.

### 6.3 The National Heritage Resources Act, 1999 (Act No. 25 of 1999)

This Act introduces a dispensation for the conservation of what was commonly known as “national monuments” and what will now be referred to as “heritage resources”

The “heritage resources” referred to above refers to any place or objects that has cultural significance, the said cultural heritage resources are thus referred to as the “national estate” of South Africa. Section 3 provides that these resources hold such significance and value for both present and future generations that they ought to be considered as part of the national estate and to be regulated by the heritage resources authority.

A three-tier system of heritage resources is contemplated by the Act, this being inclusive of national, provincial and local. Consistently, the national estate will be graded into three grades by the South African Heritage Resources Agency (SAHRA) and provincial MECs. These grades will be categorized as follows:

Grade	Description
I	Heritage resources that comprise of extraordinary qualities that they are of special national significance.
II	Heritage resources that form part of the national estate but are considered to have significant qualities within the province or region.
III	Other heritage resources that are deemed to be and have qualities worthy of conservation

The above tabled (national estate) is inclusive of but not limited to:

- a) buildings, structures and equipment of cultural significance;
- b) places to which oral traditions are attached or which are associated with living heritage;
- c) historical settlements and townscapes;
- d) landscapes and natural features of cultural significance;
- e) geological sites of scientific or cultural importance;
- f) archaeological and palaeontological sites;
- g) graves and burial grounds, including—
  - i) ancestral graves;
  - ii) royal graves and graves of traditional leaders;
  - iii) graves of victims of conflict;
  - iv) graves of individuals designated by the Minister by notice in the Gazette;
  - v) historical graves and cemeteries; and



h) sites of significance relating to the history of slavery in South Africa

In terms of section 38 (subject to the provisions of subsections (7), (8) and (9) of the Act), any proponent who proposes to undertake a development categorised as:

- The construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300 m in length;
- The construction of a bridge or similar structure exceeding 50 m in length;
- Any development or other activity which will change the character of a site: - Exceeding 5 000 m<sup>2</sup> in extent;
  - Involving three or more existing erven or subdivisions thereof; or
  - Involving three or more erven or divisions thereof which have been consolidated within the past five years; or
  - The costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;
- The re-zoning of a site exceeding 10 000 m<sup>2</sup> in extent; or
- Any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

The provincial heritage resources authority protects archaeological and paleontological resources and the said resources are the property of the State. The discovery of archaeological or paleontological objects or a meteorite in the course of development should be reported to the responsible heritage resources authority or to the nearest local offices or museum, of which they also need to notify the relevant heritage authorities of such events with immediate effect. It is for this reason that the provincial and or national offices of the South African Heritage Resource Agency (SAHRA) are going to be provided with all relevant documentation that will enable them to make an informed statutory comment as enshrined in the NHRA. A Heritage Impact Assessment and a Palaeontological Impact Assessment (Desktop Study) are going to be undertaken during the EIA Phase of the proposed Project. These environmental specialist studies will be included in the EIA Reports that is going to be published for review by I&APs during the EIA Phase. In order to comply with the South African Heritage Resources Agency (SAHRA) in terms of Section 38(8) of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA), a desktop Palaeontological Impact Assessment (PIA) is going to be completed for the proposed applications and findings and recommendations of specialist are going to be considered in the EIA.

## 6.4 The National Water Act, 1998 (Act No. 36 of 1998)

The purpose of this Act is to ensure that the nation's water resources are used, developed, conserved, managed and controlled in ways that takes into account factors such as:

- (a) meeting the basic human needs of present and future generations;
- (b) promoting equitable access to water;
- (c) redressing the results of past racial and gender discrimination;
- (d) promoting the efficient, sustainable and beneficial use of water in the public interest;
- (e) facilitating social and economic development;
- (f) providing for growing demand for water use;
- (g) protecting aquatic and associated ecosystems and their biological diversity;
- (h) reducing and preventing pollution and degradation of water resources;
- (i) meeting international obligations;
- (j) promoting dam safety;
- (k) managing floods and draught

All these being asserted by Section 2 of the Act.

The Government is the trustee of the nation's water; thus, it is responsible for ensuring that the use and management of the water resources is such that benefits the community and in such a manner that is equitable and sustainable for both current and future generations and in adherence to the Constitution.

The concept of 'water use' is widely defined by the Act to include not only 'use' of water but also activities that could have an adverse impact on water resources. 'Water use' is defined in s 21 as including:

- (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;
- (e) engaging in a controlled activity;
- (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.'

Section 27 of the NWA specifies that the following factors regarding water use authorisation be taken into consideration:

- The efficient and beneficial use of water in the public interest;
- The socio-economic impact of the decision whether or not to issue a license;
- Alignment with the catchment management strategy;
- The impact of the water uses and possible resource directed measures; and,

A key aspect of the National Water Policy is Integrated Water Resources Management (IWRM). This recognises that water resources can only be successfully managed if the natural, social, economic and political environments in which water occurs and is used are taken into consideration. IWRM aims to strike a balance between the use of water resources for livelihoods and conservation of the resource whilst promoting social equity, environmental sustainability and economic growth and efficiency

As per Chapter 7 of the Act, the country is divided into various water management areas, yet the management will be carried out in by catchment management agencies. The catchment management must be carried out in accordance with the national water resource strategy. This strategy is there to assert the strategies, objectives, plans, guidelines and procedures of the Minister and institutional arrangements relating to the protection, use, development, conservation, management and control of water resources within the framework of existing relevant government policy.

These steps are necessary due to the fact that the nation's water resources are managed nationally thus strategies for the efficient and conservation for future generations is vital. The Act further asserts the requirements of water reserves which stems from the water classification system and is an addition to the strategies. the water planning regime under the National Water Act includes a water resources classification system which involves determining the class of the water resources and the relevant resource quality objectives.

As mentioned, the requirement of water reserves is necessary to mitigate the unfortunate event of water shortages. This being an important thing to factorise into the planning and legislation of water laws due to the fact that the shortage of water would result to a number of people being deprived of water, which in turn is an infringement of basic rights. Thus, the dignity and basic rights of people always have to be considered with utmost scrutiny in decision making. It is for one of these reasons, amongst many others why a reservoir as a reserve is necessary.

Section 1 of the National Water Act asserts this by stating the factors considered in the implementation of reserves, this includes the quantity and quality of water required.

The quality and quantity ought to:

- (a) to satisfy basic human needs by securing a basic water supply, as prescribed under the Water Services Act for people who are now or who will, in the reasonably near future, be—
  - (i) relying upon;
  - (ii) taking water from; or

- (iii) being supplied from, the relevant water resource; and
- (b) to protect aquatic ecosystems in order to secure ecologically sustainable development and use of the relevant water resources.

In addition to the National Water Act, 1998 (Act No. 36 of 1998) and the National Environmental Management Act, 1998 (Act No. 107 of 1998), the following legislation and guidelines/quality standards are applicable to hydrogeological investigations and assessments:

- National Water Act, 1998 (Act No. 36 of 1998);
- National Water Resource Strategy (NWRS, 1st Ed., September 2004);
- Department of Environmental Affairs and Development Planning's (DEA&DP) Guideline for Involving Hydrogeologists in EIA Processes (June 2005) (Snayman, 2005);
- Department of Water Affairs and Forestry's (DWAF) Integrated Water Resource Management: Guidelines for Groundwater Management in Water Management Areas in South Africa (DWAF, 2004).

This EIA study underway is going to be used to support the Water Use Licencing Application Process.

#### **6.4.1 Controlled Activities**

The Minister of Human Settlements, Water and Sanitation is allowed to regulate activities which have a detrimental impact on water resources by declaring them to be controlled activities. The following are considered to be controlled activities:

- Irrigation of any land with waste or water containing waste generated through any industrial activity or by a water work;
- An activity aimed at the modification of atmospheric precipitation;
- A power generation activity which alters the flow regime or a water resource;
- Intentional recharging of an aquifer with any waste or water containing waste; and
- An activity which has been declared as such under Section 38.

No person may undertake a controlled activity unless such person is authorised to do so by or under this Act. The Minister may, by notice in the Gazette, in general or specifically, declare an activity to be a controlled activity. Such notice might be for a specific activity on a specific site.

#### **6.5 National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)**

Government Notice Regulations 921 (of 29 November 2013) promulgated in terms of Section 19(1) of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) determine that no person may commence, undertake or conduct a waste management activity listed in the schedule unless a license is issued in respect of that activity.

The National Environmental Management Waste Act, 2008 (Act No. 59 of 2008) has been developed as part of the law reform process enacted through the White Paper on Integrated Pollution and Waste Management and the National Waste Management Strategy (NWMS). Sustainable development requires that the generation of waste is avoided, or where it cannot be avoided, that it is reduced, re-used, recycled or recovered and only as a last resort treated and safely disposed of. The objects of the Act, set out in s 2, are:

(a) to protect health, well-being and the environment by providing reasonable measures for—

- (i) minimising the consumption of natural resources;
- (ii) avoiding and minimising the generation of waste;
- (iii) reducing, re-using, recycling and recovering waste;
- (iv) treating and safely disposing of waste as a last resort;
- (v) preventing pollution and ecological degradation;
- (vi) securing ecologically sustainable development while promoting justifiable economic and social development;
- (vii) promoting and ensuring the effective delivery of waste services;
- (viii) remediating land where contamination presents, or may present, a significant risk of harm to health or the environment: and
- (ix) achieving integrated waste management reporting and planning;

(b) to ensure that people are aware of the impact of waste on their health, well-being and the environment;

(c) to provide for compliance with the measures set out in paragraph (a); and (d) generally, to give effect to s 24 of the Constitution in order to secure an environment that is not harmful to health and well-being.’ Broadly, the Act deals with the following aspects: national waste management strategy, norms and standards; institutional and planning matters; waste management measures (which contains most of the ‘meat’ of the Act); licensing of waste management measures; waste information; compliance and enforcement; and the technical and administrative matters found in most Acts.

‘Waste’ is defined in s 1 as: ‘any substance, whether or not that substance can be reduced, re-used, recycled and recovered—

(a) that is surplus, unwanted, rejected, discarded, abandoned or disposed of;

(b) which the generator has no further use of for the purposes of production;

(c) that must be treated or disposed of; or (d) that is identified as a waste by the Minister by notice in the Gazette, and includes waste generated by the mining, medical or other sector,

The Waste Management Measures are necessary to mitigate the consequences of waste mismanagement. These Management measures include:

Priority wastes;

- General duty in respect of waste management;
- Reduction, re-use, recycling and recovery of waste;
- (Listed) waste management activities;
- Storage, collection and transportation of waste;
- Treatment, processing and disposal of waste;
- Industry waste management plans;
- Contaminated land; and
- Other measures.

The Minister has the power to declare a waste to be a priority waste if he or she believes on reasonable grounds that the waste poses a threat to health, well-being or the environment because of the quantity or composition of the waste and that specific waste management measures are required to address the threat; or that the imposition of specific waste management measures in respect of the waste may improve reduction, re-use, recycling and recovery rates or reduce health and environmental impacts. Such a notice must specify the waste management measures that must be taken in respect of the priority waste, which may include a prohibition on the generation of such waste and measures for the management of that waste. Declaration as a priority waste will result in that waste being prohibited for import, manufacture, processing, sale or export, unless it complies with specified requirements.

Section 16 imposes duties in respect of waste management: first, a holder of waste (who is defined in s 1 as a person who imports, generates, stores, accumulates, transports, processes, treats, or exports waste or disposes of waste) must take all reasonable measures in terms of s 16(1) to:

- (a) avoid the generation of waste and where such generation cannot be avoided, to minimise the toxicity and amounts of waste that are generated;
- (b) reduce, re-use, recycle and recover waste;
- (c) where waste must be disposed of, ensure that the waste is treated and disposed of in an environmentally sound manner;
- (d) manage the waste in such a manner that it does not endanger health or the environment or cause a nuisance through noise, odour or visual impacts;
- (e) prevent any employee or any person under his or her supervision from contravening this Act; prevent the waste from being used for an unauthorised purpose.

## 6.6 Agricultural Laws Rationalisation Act, 1998 (Act No. 72 of 1998)

The Agricultural Laws Rationalisation Act, 1998 (Act No. 72 of 1998) was enacted in order to provide for the rationalisation of certain laws relating to agricultural affairs that remained in force in various areas of the national territory of the Republic prior to the commencement of the Constitution of the Republic of South Africa; and to provide for matters connected therewith.

The agricultural laws that were promulgated after the enactment of the Agricultural Laws Rationalisation Act have to be consistent with the provisions of the Constitution.

## 6.7 National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004)

The object of the new Act is—

- (a) to protect the environment by providing reasonable measures for—
  - (i) the protection and enhancement of the quality of air in the Republic;
  - (ii) the prevention of air pollution and ecological degradation; and
  - (iii) securing ecologically sustainable development while promoting justifiable economic and social development; and
- (b) generally, to give effect to section 24(b) of the Constitution in order to enhance the quality of ambient air for the sake of securing an environment that is not harmful to the health and well-being of people.

The National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) seeks to safeguard the environment by establishing reasonable safeguards for the preservation and improvement of South Africa's air quality, the prevention of air pollution and ecological degradation, and the promotion of ecologically sustainable development while ensuring justifiable economic and social development. According to Government Notice Regulation 248 (of 31 March 2010), which was issued pursuant to Section 21(1)(a) of the National Environmental Management Act: Air Quality Act, certain listed activities that produce atmospheric emissions that have or may have a negative impact on the environment are required to have an Atmospheric Emission License (AEL). The Regulation also specifies the minimal

emission requirements for the activities specified. An atmospheric emission license is not anticipated to be necessary for the proposed development.

## 6.8 National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)

The National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) (NEM:BA) provides for the management and conservation of South Africa's biodiversity within the framework of the NEMA, the protection of species and ecosystems that warrant national protection, and the use of indigenous biological resources in a sustainable manner, amongst other provisions.

The National Environmental Management: Biodiversity Act (hereafter referred to as the Biodiversity Act) is based on the White Paper on the Conservation and Sustainable Use of South Africa's Biological Diversity. According to the long title of the Act, its objectives are to 'provide for the management and conservation of South Africa's biodiversity within the framework of the National Environmental Act, 1998; the protection of species and ecosystems that warrant national protection; the sustainable use of indigenous biological resources; the fair and equitable sharing of benefits arising from bioprospecting involving indigenous biological resources; the establishment and functions of a South African National Biodiversity Institute; and for matters connected therewith'.

These objectives should be considered in the light of the objectives of the Convention on Biological Diversity (CBD):

- The conservation of biological diversity;
- The sustainable use of the components of biodiversity;
- The fair and equitable sharing of the benefits arising out of the utilisation of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies; and by appropriate funding.

The primary objectives in Section 2(a) are essentially the objectives of the Convention on Biological Diversity, to which this Act is supposed to give domestic effect. Objectives are also stated to include (not mentioned in the long title) giving effect to ratified international agreements relating to biodiversity which bind South Africa and the provision for co-operative governance in biodiversity management and conservation. The other international agreements intended to be implemented by the Biodiversity Act are the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES); the



Convention on Wetlands of International Importance (Ramsar Convention); and the Bonn Convention on Migratory Species of Wild Animals.

In fulfilling the rights contained in section 24 of the Constitution, the state through its organs that implement legislation applicable to biodiversity, must—

(a) manage, conserve and sustain South Africa's biodiversity and its components and genetic resources; and (b) implement this Act to achieve the progressive realisation of those rights.

In the same way that a central aspect of NEMA is integrated environmental planning, biodiversity planning is also placed by the Act at the vanguard of biodiversity conservation. The framework of plans/strategies provided for in Chapter 3 operates at different levels but in a manner co-ordinated with one another and with the environmental management and implementation plans required by NEMA.

## 6.9 National Forests Act, 1998 (Act No. 84 of 1998)

The National Forest Act is there for the protection of particular trees. The protection thereof can be declared by the Minister through his powers in that judicial sense. This said protection insinuates that the removal, cutting, disturbance, damage or destruction of any of the protected trees is not permitted.

According to Section 12 (1) d (read with Sections (5) 1 and 62 (2) (c)) of the National Forest Act (Act 84 of 1998), a licence is required to remove, cut, disturb, damage or destroy any of the listed protected trees.

There is a list of the protected trees for the sake of reference and this list is updated periodically to make provision for endangered species of trees and other protected trees for their respective reasons. The most recent list of protected tree species was published in November 2014. The protected trees that commonly occur in this region are *Acacia erioloba* and *Boscia albitrunca*.

It is important to take note that the impulsive cutting, removal, disturbance, damage or destruction to trees is not permitted unless The Department of Agriculture, Forestry and Fisheries (DAFF) issues a licence for any removal, cutting, disturbance, damage to or destruction of any protected trees.

## 6.10 Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)

The Conservation of Agricultural Resources Act currently addresses alien invader plants. The Conservation of Agricultural Resources Act addresses soil conservation. Its objects are to provide for the conservation of the natural agricultural resources of the Republic by the maintenance of the production potential of land, by the combating and prevention of erosion and weakening or destruction of the water resources, and by the protection of the vegetation and the combating of weeds and invader plants. The Conservation of Agricultural Resources Act also regulates water pollution from farming operations. The Minister is empowered to prescribe control measures in this regard, and officials are empowered to enter upon any land in order, inter alia, to determine whether and to what extent the water sources on that land are polluted on account of farming methods or have become weaker or have ceased to exist. Conservation of Agricultural Resources Act also provides for the declaration of control measures in respect of certain types of land use

The CARA states that no land user shall utilise the vegetation of wetlands (a watercourse or pans) in a manner that will cause its deterioration or damage. This includes cultivation, overgrazing, diverting water run-off and other developments that damage the water resource. The CARA includes regulations on alien invasive plants. According to the amended regulations (GN R280 of March 2001), declared weeds and invader plants are divided into three categories:

Category	Specifications
1	may not be grown and must be eradicated and controlled
2	may only be grown in an area demarcated for commercial cultivation purposes and for which a permit has been issued, and must be controlled
3	plants may no longer be planted and existing plants may remain as long as their spread is prevented, except within the flood line of watercourses and wetlands. It is the legal duty of the land user or land owner to control invasive alien plants occurring on the land under their control.

Please do note that the proposal has considered this legislation and the implications thereof, thus should alien plant species occur within the study area; this will be managed in line with the EMPr. Rehabilitation after disturbance to agricultural land is also managed by CARA. The DAFF reviews and approves applications in terms of these Acts according to their Guidelines for the evaluation and review of applications pertaining to renewable energy on agricultural land, dated September 2011.

### **6.11 Subdivision of Agricultural Land Act, 1970 (Act No. 70 of 1970)**

A change of land use (re-zoning) for the development on agricultural land needs to be approved in terms of the Subdivision of Agricultural Land Act, 1970 (Act No. 70 of 1970) (SALA). This is required for long term lease, even if no subdivision is required.

### **6.12 Development Facilitation Act, 1995 (Act No. 67 of 1995)**

The Development Facilitation Act, 1995 (Act No. 67 of 1995) (DFA) sets out a number of key planning principles which have a bearing on assessing proposed developments in light of the national planning requirements. In the context of land reform, the prime purpose of land development policy is to establish a framework and procedures to facilitate the speedy release of land for urban and rural development programmes which will benefit those who were marginalised by previous apartheid policies. The basic aim of the Act is to introduce extraordinary measures to facilitate and speed up the implementation of reconstruction and development programmes and projects in relation to land and in doing so lay down general principles governing land development throughout the Republic.

Numerous rural residential developments, primarily on formerly agricultural land, have been approved by means of the DFA approval process. The planning principles most applicable to the study area include:

- Promoting the integration of the social, economic, institutional and physical aspects of land development;
- Promoting integrated land development in rural and urban areas in support of each other;
- Promoting the availability of residential and employment opportunities in close proximity to or integrated with each other;
- Optimising the use of existing resources including such resources relating to agriculture, land, minerals, bulk infrastructure, roads, transportation and social facilities;

- Contributing to the correction of the historically distorted spatial patterns of settlement in the Republic and to the optimum use of existing infrastructure in excess of current needs;
- Promoting the establishment of viable communities; and
- Promoting sustained protection of the environment.

### **6.13 Spatial Planning and Land Use Management Act, 2013 (Act No. 16 of 2013)**

The Spatial Planning and Land Use Management Act, 2013 (Act No. 16 of 2013) was promulgated in order to enhance planning and land use management efficiently and effectively. The SPLUMA enable urban areas to drive spatial transformation.

This Act provides for the efficient and safe way of land use. It is there to combat inconveniences that may affect both land users, endangered or protected plants, minerals and resources, the said inconveniences resulting from lack of planning and land management for the benefit of everyone affected.

This Act ensures that the land disturbed for the proposed project is well managed and located taking into consideration other land aspects, buildings, residential areas, economic uses and buildings.

### **6.14 Other Relevant Pieces of Legislation**

- Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002);
- National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003);
- Agricultural Laws Rationalisation Act, 1998 (Act No. 72 of 1998);
- Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983);
- National Heritage Resources Act, 1999 (Act No. 25 of 1999);
- Fencing Act, 1963 (Act No. 31 of 1963);
- Electricity Act, 1987 (Act No. 41 of 1987);
- Electricity Regulations Amendments (August 2009);
- Biodiversity Act, 2004 (Act No. 10 of 2004);
- Hazardous Substance Act, 1973 (Act No. 15 of 1973);
- Agricultural Product Standards Act, 1993 (Act No. 129 of 1993);
- Occupational Health and Safety Act, 1993 (Act No. 85 of 1993) and Regulations;
- Mine Health and Safety Act, 1996 (Act No. 29 of 1996);

- Road Transportation Act, 1977 (Act No. 74 of 1977);
- Civil Aviation Authority Act, 1998 (Act No. 40 of 1998); and
- Civil Aviation Act, 2009 (Act No. 13 of 2009) and Civil Aviation Regulations (CAR) of 1997;

#### 6.14.1 Provincial Legislation

##### i. Northern Cape Nature Conservation, 2009 (Act No. 09 of 2009)

The Northern Cape Nature Conservation Act 09 of 2009 promotes the protection of the listed species. It also promotes and provides for the use of natural resources, and in the same breath, promotes the protection and conservation of the said natural resources. This being done to maintain a balance in in the use thereof.

The Northern Cape Nature Conservation has a list of protected flora. It is mandatory that a Biodiversity Assessment should be conducted and should any of the listed species be identified on the proposed project area, then the relevant procedure of removal should be adhered to, this being that the relevant permits should be obtained by the proponent prior to their relocation or removal. As part of the EMP, a detailed plant search and rescue operation should be conducted before the final design process this being done before the commencement of surface disturbances, if applicable. In addition, the Northern Cape Department of Agriculture, Environmental Affairs, Rural Development and Land Reform must be consulted before the planned clearance of indigenous vegetation on site takes place.

The Act includes six schedules tabled as follows:

Schedule	Species
1	Specially Protected species
2	Protected species
3	Common indigenous species
4	Damage causing animal species
5	Pet species
6	Invasive Species

ii. **The Provincial Spatial Development Framework for the Northern Cape (Office of the Premier of the Northern Cape, 2012)**

The Provincial Spatial Development Framework (PSDF) provides for developmental planning to in consistence with the provincial legislation. In the province of the Northern Cape where agriculture and mining are predominant, solar and wind renewable energy are now emerging as some of the province's major activities.

The spatial vision for the province outlines a well-structured system of sustainable land-use zones that support the Northern Cape's economy vested in the primary economic sectors, in particular, mining, agriculture, tourism, and the energy industry.

## **7 A motivation for the need and desirability for the proposed development including the need and desirability of the activity in the context of the preferred location**

### **7.1 Prospecting for Mineral Resources Development**

One of the most important elements to think about when prospecting for the development of mineral resources is sustainability because it is crucial to the successful and efficient application of industry best practices. More than ever, developing nations like South Africa must make sure that prospecting for natural resources is supported, maintained, and closely watched as the world grapples with climate change, which among other things threatens the ecosystem's balance. One of the most significant industries in the South African economy is mining. Not only does this sector help to raise the GDP of the nation, but it also helps to reduce poverty, create jobs, and in some cases, utilise land and space more effectively. In order to ensure sustainability for both the present and future generations, these elements or features of the mining sector must be taken into account while formulating policies. Land use is governed in South Africa. Zoning is a simple concept to grasp and put into practice when changing how space and land are used. Numerous factors, including population expansion, the creation of new households, and economic development, have an impact on them.

Technology that can be used in projects related to mining has been developing to suit present and future demands. Both new and seasoned mining companies may make better and more sustainable use of the limited water supplies by utilizing mining technologies. It is important to understand the proper water usage rates and amounts for

mining-related projects. The Department of Human Settlements, Water and Sanitation is currently the Responsible Authority for the use of water resources in South Africa. As a result, an Integrated Water Use License for the proposed development will be filed with the Responsible Authority.

Employees, members of surrounding communities, and the country are among the primary beneficiaries of this project. Secondary beneficiaries include suppliers of goods and services, as well as local businesses that benefit from employee purchasing power. This is consistent with the National Development Plan (NDP). The proposed development's Social Labour Plan aims to ensure local economic development through the implementation of various projects.

If prospecting rights are granted, the applicant believes that these small plots of land could yield commodities of high economic value. Only a small portion of the farms targeted will be temporarily disrupted. The rest of the farm will continue as usual.

## 7.2 National Development Plan 2030

The National Development Plan envisions a South Africa where “everyone feels free yet bounded to others”; where everyone embraces their full potential, a country where “opportunity is determined not by birth, but by ability, education and hard work”. A South Africa where “we participate fully in efforts to liberate ourselves from the conditions that hinder the flowering of our talents” as articulated in the Vision 2030.

- The NDP aims to achieve the following objectives by year 2030: Uniting South Africans of all races and classes around a common programme to eliminate poverty and reduce inequality;
- Encourage citizens to be active in their own development, in strengthening democracy and in holding their government accountable;
- Raising economic growth, promoting exports and making the economy more labour absorbing;
- Focusing on key capabilities of both people and the country;

- Capabilities include skills, infrastructure, social security, strong institutions and partnerships both within the country and with key international partners;
- Building a capable and developmental state; and
- Strong leadership throughout society that work together to solve our problems

At the core of the Nation Development Plan is the aim to ensure the achievement of a “decent standard of living” for all South Africans by 2030. A “decent standard of living” entails the following core elements as enshrined in the Bill of Rights:

- Housing, water, electricity and sanitation;
- Safe and reliable public transport;
- Quality education and skills development;
- Safety and security;
- Quality health care;
- Social protection;
- Employment;
- Recreation and leisure;
- Clean environment; and
- Adequate nutrition

South Africa’s National Development Plan (NDP) 2030 was adopted by Government in year 2012.



## **8 A full description of the process followed to reach the proposed preferred activity, site and location within the site, including –**

### **8.1 Details of the Alternatives Considered**

In terms of the EIA Regulations (2017), Section 21(3) - Appendix 2 (h) a full description of the process followed to reach the proposed preferred activity, site and location of the development footprint within the site is required. In addition, the obligation that alternatives are investigated is also a required in terms of Section 24(7) of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) (as amended). An alternative in relation to a proposed activity refers to the different means of meeting the general purpose and requirements of the activity (as defined in Government Notice R326 of the EIA Regulations, 2017), which may include alternatives to:

- (a) The property on which or location where it is proposed to undertake the activity;
- (b) The type of activity to be undertaken;
- (c) The design or layout of the activity;
- (d) The technology to be used in the activity; and
- (e) The operational aspects of the activity.

Sections 24(4)(b)(i) and 24(4A) of the NEMA make provision for an EIA to encompass investigation and assessment of impacts that are associated with alternatives in relation to a proposed project. Furthermore, Section 24O(1)(b)(iv) provides for the Competent Authority, in its evaluation of Environmental Authorisation, takes into account “where appropriate, any feasible and reasonable alternatives to the activity which is the subject of the application and any feasible and reasonable modifications or changes to the activity that may minimise harm to the environment”.

It is common practise for assessment of alternatives to include the following:

- The consideration of the no-go alternative as a baseline scenario;
- A comparison of the reasonable and feasible alternatives; and
- Providing a methodology for the elimination of an alternative.

### 8.1.1 Site Alternatives

In order to determine a relatively suitable site / property for a proposed development, various factors should be considered. However, only the application area relevant to this piece of work was considered for application that was lodged with the DMRE. Alternative sites / properties are not applicable.

### 8.1.2 “No-go” Alternatives

The “No-go” alternative is, in essence, based on repercussions associated with the option of not going ahead with a proposed Project.

An opportunity to prospect for mineral resources in order to boost the economy, revenue collection by the State and contribution towards job creation will be lost if the proposed development plan does not become implemented.

### 8.1.3 Site Layout Alternatives

The site layout alternatives are going to be considered during the Environmental Impact Assessment that is going to be conducted. Alternative site layout alternatives are expected to be influenced significantly by the findings and recommendations of the detailed specialist studies that are going to be conducted during the second phase of this piece of work. In order to determine a relatively suitable site for the proposed development, various factors were considered. These factors include the following:

- Accessibility of location;
- Availability of infrastructure;
- Available Literature;
- The availability of ore body of economic value underground and water;
- Avoidance measures in terms of sterilising mineral resources; and
- General environmental and socio-economic justice that is possible to achieve pertaining to the proposed development.

### 8.1.4 Prospecting Activity Alternatives

Currently, the proposed site is the only one applied for in respect of this piece of work. Consideration is going to be made of the information as presented in section 2 to ensure relevant, effective and efficient alternatives are utilised.

A recommendation on the prospecting method of choice is going to be made at EIA phase pertaining to these proposed mineral resources development.

### 8.1.5 Some Technology Alternatives

Technology alternatives that are applicable to the proposed development are discussed in section 2.

#### 8.1.5.1 Ore-processing Methods

There are numerous basic ore processing that are available to prospective miners, all of which could be modified and coupled to form multiple hybrid ore-processing methods.

##### 8.1.5.1.1 Some Primary / Secondary Crushing

##### Jaw crusher

The working principle of jaw crushers is based on the reciprocating movement of the movable jaw with its maximum movement at the top of the crushing chamber and a minimum movement at the discharge point that compresses and crushes the ore between itself and the fixed jaw, as the material enters the zone between the jaws.

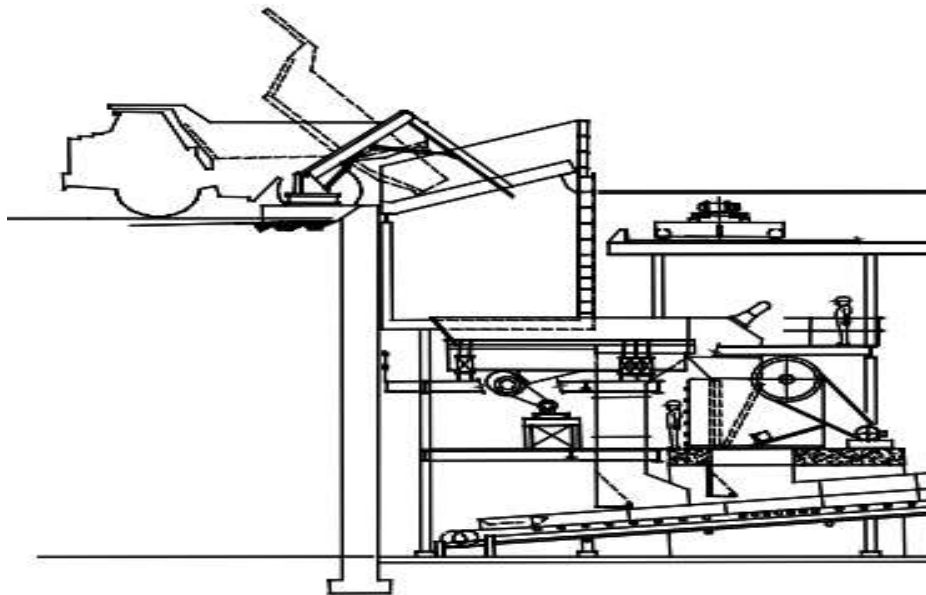
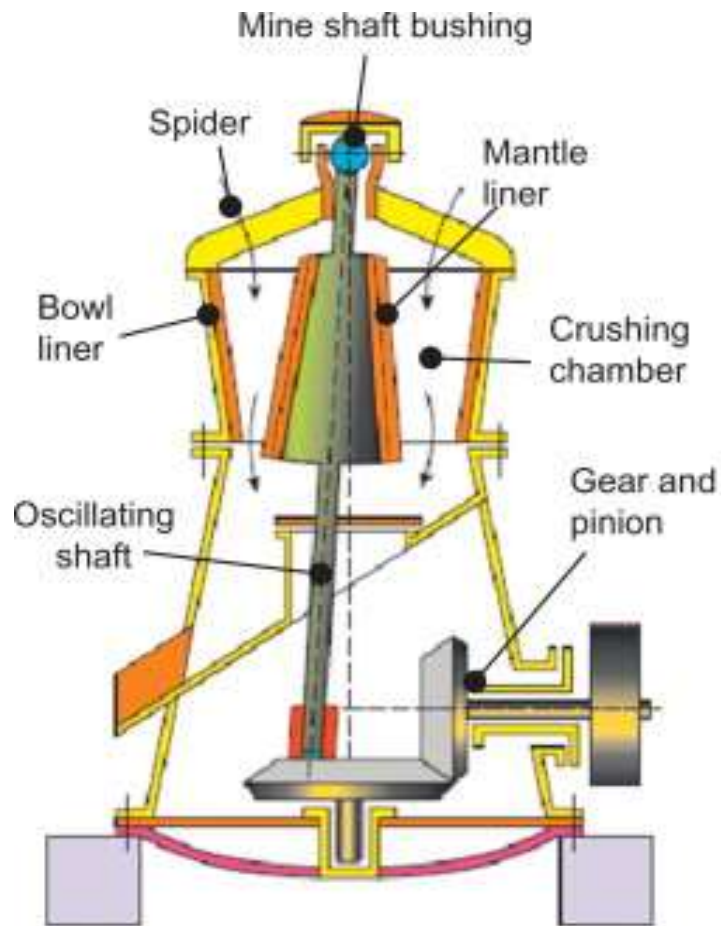


Figure 5: Section of a typical Jaw Crusher

## Gyratory

Gyratory crushers work on a similar principle to jaw crushers but have a circular gap. Rock is compressed between a static conical bowl and a concave mantle which oscillates about the central axis.



**Figure 6: Schematic diagram of Gyratory Crusher**

### Cone Crusher

Cone crusher is a modified gyratory crusher. Cone crushers are used at secondary crushing stage for intermediate and fine crushing. Cone crushers are relatively more versatile than other crushers as they may be utilised at primary, secondary or tertiary crushing stage of the process.

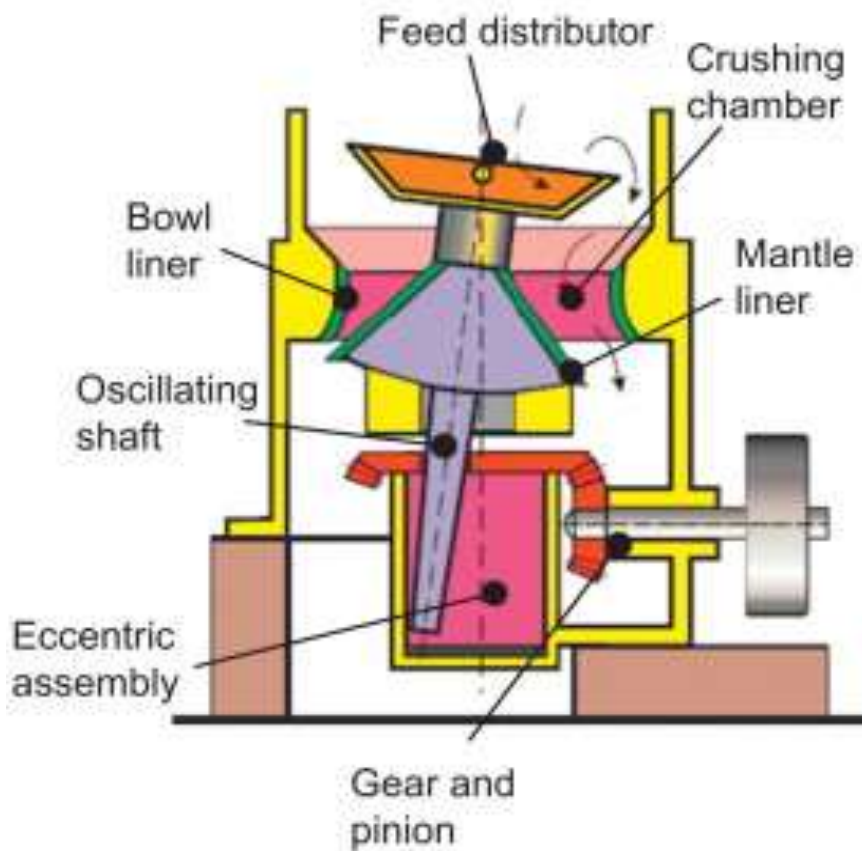


Figure 7: Schematic diagram of Cone Crusher

### 8.1.5.2 Some Process Plants

Dense Media Separation Plant is relatively more expensive to operate than Jig Plant. As the name suggests, DMS plant is more dependent on density as a parameter to control during operation. Efficient separation depends on bottom size, near density material, optimum yield and recovery, but can give lower tailings grades. Figure 7 shows a picture of Dense Medium Separation.



**Figure 8: Dense Medium Separation**

Jig Plant is relatively cheaper to operate than DMS Plant. The main parameters to monitor during operation are both size and density for improved efficiency. Jig plant yields relatively less efficient separation as a result of narrow size fractions, recovery losses, but can give higher tailings grade. Schematic diagram of Jig Plant is presented in Figure 8.

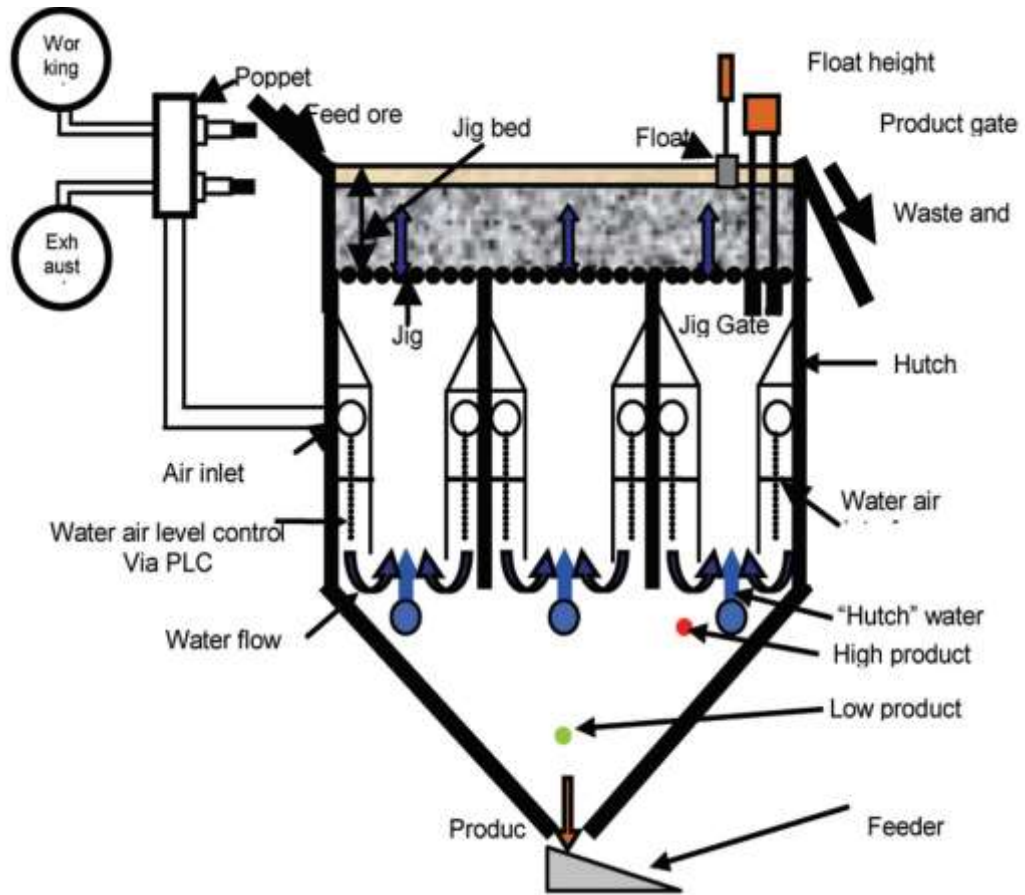


Figure 9: Schematic representation of Jig Plant

### 8.1.5.3 Beneficiation

Generally, ores are classified according to their size and the processing method as presented in Table 4.

**Table 5: Classes of Ores**

Class	Process Description	Diameter (mm)
Ore Lump	Are charged without further processing into a blast furnace or into a direct reduction furnace.	10 – 40
Ore Fine	Are agglomerated by a sintering plant before being charged into a blast furnace.	0.15 - 10
Pellet feed	Are agglomerated by a pelletizing plant before being charged into a blast furnace or into a direct reduction furnace.	<0.15
Concentrate	Concentrate is ore upgraded by a beneficiation process.	
Sintered ore	Sintered ore is ore agglomerated by a sintering plant.	
Pellet	Pellet is ore agglomerated by a pelletizing plant.	

Typical flow of sintering plant is presented in Figure 9 and typical flow of KOBELCO pelletizing system is presented in Figure 10.



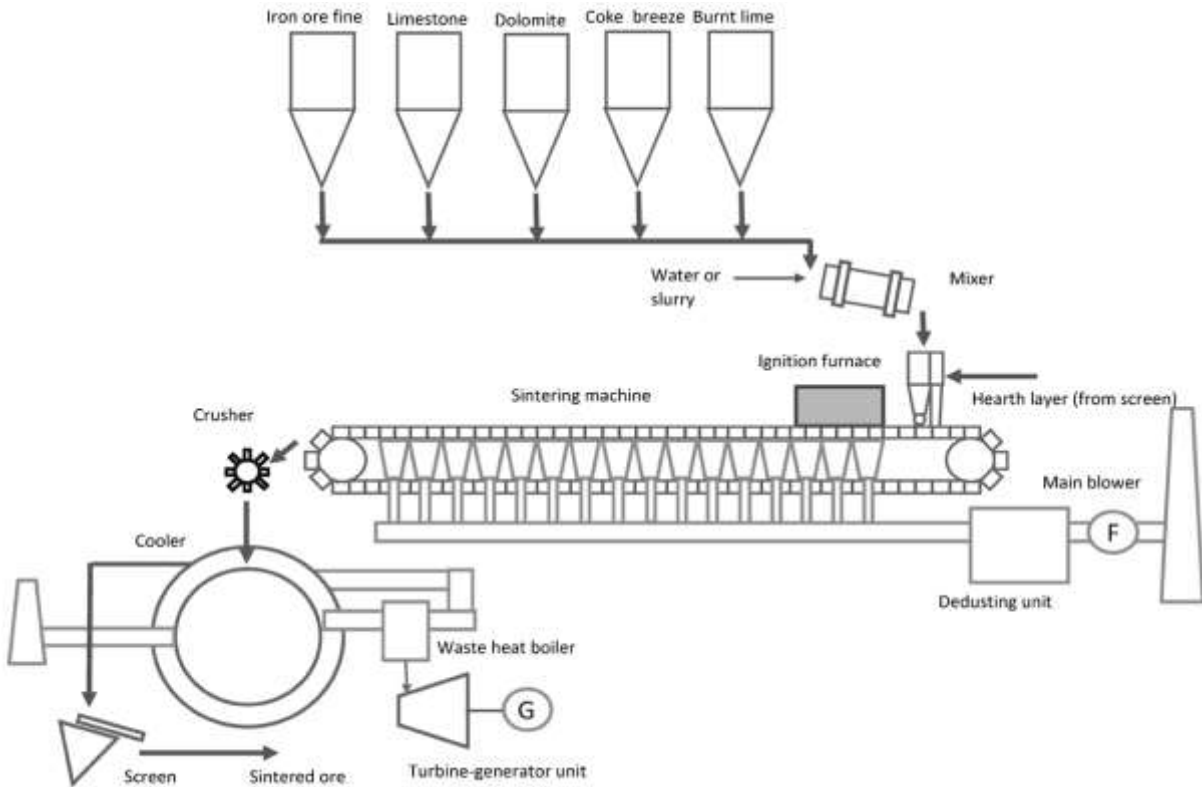


Figure 10: Schematic diagram of typical flow of sintering plant

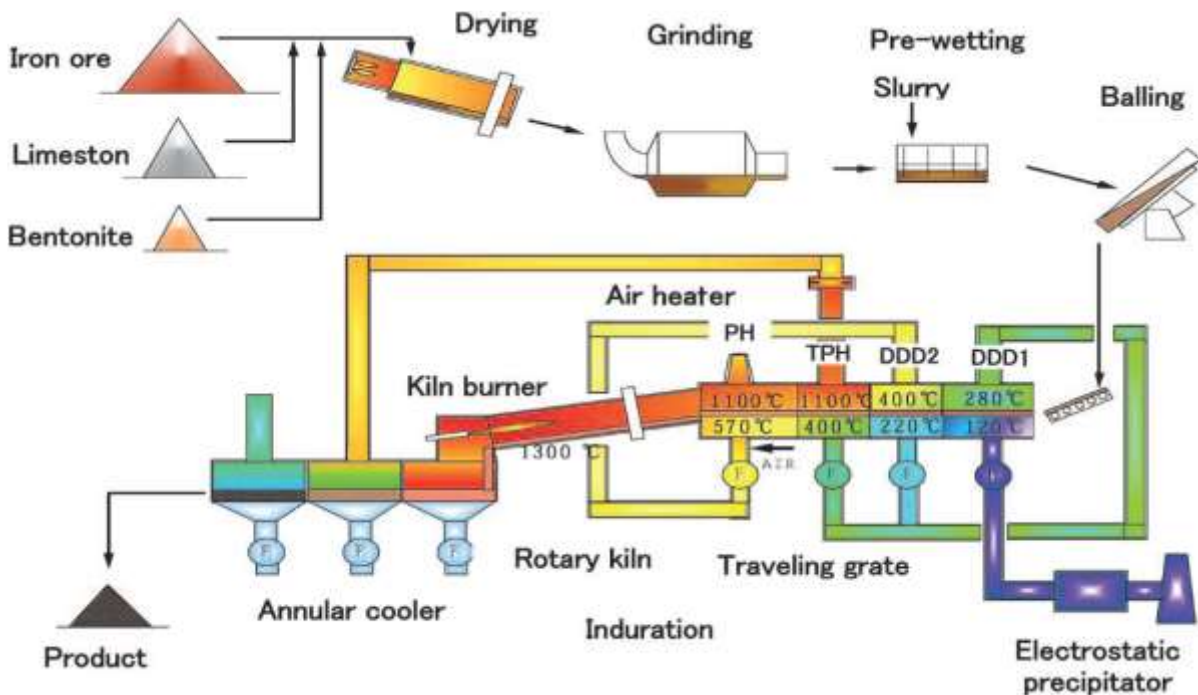


Figure 11: Typical flow diagram of KOBELCO pelletizing system.

#### **8.1.5.4 Water Supply Infrastructure**

A key aspect of the National Water Policy is Integrated Water Resources Management (IWRM). This recognises that water resources can only be successfully managed if the natural, social, economic and political environments in which water occurs and is used are taken into consideration. IWRM aims to strike a balance between the use of water resources for livelihoods and conservation of the resource whilst promoting social equity, environmental sustainability and economic growth and efficiency.

In a province such as the Northern Cape, more specifically in the ZF Mgcawu and John Taolo Gaetsewe Districts where surface water resource is scarce, the abstraction of water from groundwater resources becomes the preferred alternative. Comprehensive investigations pertaining to water supply are going to be conducted during the EIA phase.

#### **8.1.5.5 Waste Storage, Management and Transportation**

Waste is expected to be generated as a result of the proposed development and associated activities. It is proposed that waste that is generated on site should be separated at source. Waste Separation at Source pertains to setting aside post-consumer dry recyclable waste and household generated garden waste for the purpose of re-use, recycling, composting, or further processing of these materials.

Enormous value in waste separation at source emanates from, among others, procurement, recycling materials that are well sorted and uncontaminated. A basic requirement to achieve this value is that as much as possible, and efficiently as possible, waste or materials are separated early in the recycling process. This is separating waste at source essentially.

In South Africa, waste management is governed by the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) which came into effect on 1 July 2009. Following the enactment of the NEM:WA, the Minister of Environmental Affairs established the National Waste Management Strategy (NWMS) to ensure the achievement the objectives of the NEM:WA. The NWMS was approved for implementation by the Cabinet in November 2011. The Waste Act supports the waste management hierarchy in its approach to waste management, by promoting cleaner production, waste minimisation, reuse, recycling and waste treatment with disposal seen as a last resort in the management of waste. There are a number of types of waste to be transported. Before any waste is transported, the person responsible for transporting such waste needs to assess the nature as well as the requirements for a specific load if waste to be transported.

Understandably the preparations for transporting building rubble for instance, would be different to that of medical waste.

## **8.2 Details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;**

An application was lodged with the Department of Mineral Resources and Energy. Another pre-application consultation meeting is going to be conducted with the Department of Human Settlements, Water and Sanitation, Kimberley, Northern Cape. The Public Participation Process pertaining to Integrated Environmental Authorisation and Integrated Water Use License Applications were conducted jointly.

Interested and Affected Parties (I&AP's) were notified of the proposed Project Application via e-mail, notices in public spaces, newspaper adverts or facsimiles and / or virtual conferencing platforms. Site notices were placed around the application area. In addition, newspaper advertisements (in English) will be placed in a newspaper which is widely distributed in the area. The Public Participation Process will be undertaken in accordance with the NWA and the NEMA process and the 2017 EIA Regulations (as amended). I&AP's will be provided an initial notification and call to register period of 30 days. The draft Scoping and Environmental Impact Assessment Report was made available for public review and comment for a minimum period of 30 days each. During this period, an Open Day will be scheduled to present the findings of the draft Environmental Impact Assessment Report to the public. All correspondence submitted by I&AP's will be utilised during the impact assessment and all correspondence received from I&AP's will be included in the final Environmental Impact Assessment Report.

The Environmental Impact Assessment Report and Environmental Management Programme (EMPr) for comment will be made available to all Registered Interested and Affected Parties (I&AP's). In order to take part in the process and to submit comments on these documents, I&AP's are invited to register by completing the registration form and sending it back to the consultant.

Information on the environment, the impacts of the proposed Project and recommended mitigation and management measures; as well as more information on the application itself, will be described in these documents.

The public participation process will be conducted strictly in accordance with applicable regulations. The following categories of variables will take into account when deciding the required level of public participation:

- The scale of anticipated impact; and
- The sensitivity of the affected environment.

Consultation is required in terms of Chapter 6 of the EIA Regulations, 2017. Landowners, neighbours and other Interested and Affected Parties (I&AP's) are entitled to participate in and be consulted in respect of new proposed agricultural development applications. The proposed PPP for this application will include a number of steps, as listed below:

- Newspaper advertisement in local newspaper;
- Site notices;
- Notification of surrounding land owners, land occupiers and current right owners around;
- Specialist studies will be conducted including the use of available environmental reports; and
- Public Meeting with stakeholders involved e.g., community.

### **8.2.1 Overview of the Public Participation Process Undertaken during the Scoping Phase**

The primary aims and objectives of conducting public participation process during the Scoping Study are as follows:

- To notify Interested and Affected Parties (I&APs) of the proposed Project;
- To document and consider issues, comments and concerns as raised by I&APs;
- To promote transparency, increase participation and raise awareness on the proposed development and associated consequences;
- To provide platform for liaison and communication with I&APs; and
- To identify potential environmental, socio-economic impacts associated with the proposed development.

### **8.2.2 Identification of Key Stakeholders**

The first step in the Public Participation Process (PPP) is to identify key stakeholders, including:

- National and Provincial Government Representatives:
  - Department of Agriculture, Environmental Affairs, Rural Development and Land Reform (DAEARDLR);
  - Department of Human Settlement, Water & Sanitation (DHSWS);
  - Department of Public Enterprises;
  - Department of Trade and Industry (DTI);
  - Department of Mineral Resources and Energy (DMRE);
  - National Environmental Standards and Regulations Enforcement Agency (NESRA); and
  - South African Heritage Resources Agency (SAHRA).
- Relevant Local and District Municipalities;
  - ZF Mgcawu District Municipality;
  - Gamagara Local Municipality; and
  - Tsantsabane Local Municipality.
- State-owned Entities:
  - Transnet;
  - SANDF;
  - SACAA;
  - SANRAL; and
  - Eskom.
- Landowner and neighbours (including Kathu Solar Park).

All I&AP information, together with record of dates and details of consultations and a record of all issues raised is recorded within a comprehensive project database. This database will be updated on an on-going basis throughout the project, and will act as a record of the communication/public involvement process.

### **8.2.3 Availing of Background Information**

Copies of Scoping Report were made accessible for review at the Kathu Library and / or Tsantsabane Local Municipality Offices and those of Environmental Impact Assessment Report will be made available for review in the same manner.

A briefing paper for the project has been compiled in English. The aim of this document is to provide a brief outline of the proposed project, provide preliminary details regarding the EIA Process, and explain how I&APs could become involved in the project. The briefing paper, together with a comment sheet and relevant map, was distributed to identified stakeholders and I&APs via e-mail, inviting them to register for participation the proposed development and submit details of any issues and concerns that they may have.

Furthermore, the briefing paper informed I&APs and Stakeholders of the prospective registration of the Project and invited to comment on the project throughout the process. An introductory letter was sent to all I&APs and Stakeholders together with the briefing paper, questionnaire and comments sheet.

#### **8.2.4 Advertising**

In compliance with the EIA Regulations (2017), notification of the commencement of the SR process for the project was advertised in a local newspaper, the project was advertised in the Kathu Gazette local newspaper in March 2023 in English. Only an advertisement in the Kathu Gazette newspaper was required as only the Postmasburg town will be located within the Kathu Gazette distribution area.

The advertisement provided an abstract on key aspects of the Project (project description, location and contact details of the Environmental Assessment Practitioner). Furthermore, the advertisement requested I&APs to register, and to become involved in the project by submitting comments and highlighting issues of concern to Abantu Environmental Consultants (Pty) Ltd. The primary aim of the newspaper advert is to ensure that the widest possible group of I&APs were informed of the project.

#### **8.2.5 Sharing of Draft Scoping Report with Interested and Affected Parties who requested for a copy**

A database of records of all communication between I&APs and Abantu Environmental Consultants (Pty) Ltd pertaining to the proposed development was created and managed.

#### **8.2.6 Site Notices**

Site notices were prepared according to the specifications set out in the EIA Regulations. The site notices included basic information regarding the proposed Project, the details of the public participation period, the listed activities applicable to the project and the contact details of the Environmental Assessment Practitioner. Site notices were placed at public venues.

- Main Entrance gate of the property, near Loatla, near Postmasburg, ZF Mgcawu District, Northern Cape, South Africa;
- At Tsantsabane Local Municipality Notice Board;

### **8.2.7 Review of Environmental Scoping Report**

The Environmental Scoping Report was taken on a public participation process. Members of the public, Interested and Affected Parties were given a minimum of 30 days to review and comment on the draft Environmental Scoping Report. Comments received are going to be considered in the final Scoping Report and are going to be shared with the Competent Authority.

### **8.2.8 Authority Review of Draft Environmental Scoping Report**

The Consultation Environmental Scoping Report was made available for review and comments for a period of 43-days, to the following authorities:

- Department of Mineral Resources and Energy;
- Department of Human Settlement, Water and Sanitation; and
- Northern Cape: Department of Agriculture, Environmental Affairs, Rural Development and Land Reform

### **8.2.9 Public Review of Draft Environmental Scoping Report**

The draft Environmental Scoping Report was made available for public review at the following public locations in close proximity to the study areas, which were identified as readily accessible to I&APs:

- Kathu Library;
- Kgatelopele Library;
- Postdene Library; and
- Boichoko Library.

The availability of this draft report was advertised in the Kathu Gazette newspaper. A minimum of 30-day period is going to be allowed for this review process from 10 March 2023 to 14 April 2023 Stakeholders and I&APs on the project database were notified of the availability of this report by letter (e-mail) as sent out in March 2023.

### **8.2.10 Final Environmental Scoping Report**

The compilation of the Consultation Environmental Scoping Report entails the consideration and inclusion of all relevant comments received from the public during the review of the draft Scoping Report. The final document will be submitted to Department of Mineral Resources and Energy for authority review and decision-making and/or comments.



**8.3 A summary of the issues raised by I&AP, and an indication of the manner in which the issues were incorporated, or the reasons for not including them**

A summary of issues raised in presented in Table 7.

**Table 6: Summary of issues raised by I&APs (Please see Annexure C)**

Interested and Affected Parties		Date	Issues raised	EAPs response to issues as	Section and paragraph
List the names of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted.		Comments Received		mandated by the applicant	reference in this report where the issues and or response were incorporated.
<b>AFFECTED PARTIES</b>					
Landowner/s	X				
Postmasburg, ZF Mgcawu	X				
Tsantsabane Local Municipality	X				
<b>Lawful occupier/s of the land</b>					
Landowners or lawful occupiers on adjacent properties	X				
Municipal councillor	X				

<b>Municipality</b>	X				
<b>Organs of state (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWA e</b>					<b>Annexure D</b>
<b>Communities</b>					
<b>Dept. Land Affairs</b>	X				
<b>Traditional Leaders</b>					
<b>Dept. Environmental Affairs</b>					
<b>Other Competent Authorities affected</b>					
<b>SANRAL</b>	X				
<b>Transnet</b>	X				
<b><u>OTHER AFFECTED PARTIES</u></b>					
<b>SAHRA</b>					<b>Annexure D</b>

<b>INTERESTED PARTIES</b>				
Agri Kuruman and / or Agri Northern Cape				

## **8.4 The environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects**

The purpose of this section is to provide baseline description of the area of application. The ZF Mgcawu District dominated by both agricultural and mining activities. It is a semi-arid area with relatively high radiation in the Northern Cape, South Africa.

### **8.4.1 Geology**

Rocks of the area are composed of pink white and grey fined-grained porphyritic granitic types which are the oldest rocks of the Swazian Erathem in the area.

The Schmidtsdrif Subgroup forms the lower part of the Ghaap Group and is divided into two formations (Boomplaas and Clearwater Formations) of approximately 100 m thick. In the middle of the formation shale becomes more predominant and ferruginised shale grey with siltstone and interbanded thin dolomite. Chert and chert conglomerate are present at the base. The upper formation consists of calcretic dolomite with few stromatolites and thin banded shale and siltstones (Beukes, 1987). The Ghaap Plateau Formation can be distinguished from the underlying formation only where the quartzite is present on the latter. Elsewhere the rocks consist of dark blue finegrained dolomite. A few stromatolite-bearing zones, small lenses of black chert locally developed in thin shale and siltstone are present. Brown ferruginous jasper layers up to 12 m thick, separate the lower part of the formation from the overlying grey coursegrained dolomite. A Breccia of black chert and a few stromatolites occur in the dolomite.

A third zone can be distinguished in the upper part of the formation. It contains lenses of limestone and a prominent layer of chert forms the top of the succession. The layer of chert occurs sporadically on the Maremane anticline where it is brecciated in places to form the silica breccia (Moen et al., 1977). Asbestos Hills Subgroup is the sole representative of the Ghaap Group in this area and follows conformably on the underlying rocks. The formation is divided into the Kuruman 41 and Danielskuil Formations. The uppermost chert of the Ghaap Group grades into banded iron formation of the Kuruman Formation which varies in thickness from 180 m to 240 m. It consists of a succession of thin alternating layers of light-coloured chert and jasper and dark coloured ferruginous jaspilite. The jaspilite contains mainly magnetite, haematite and limonite. A few thin layers of riebeckite-amphibolite and shale occur in places. The rock has well developed bedding plane cleavage and contains several crocidolite bearing zones. The basal layer of the banded iron formation lies on the dolomite of the Ghaap Plateau Formation in the Maremane anticline, is brecciated and ferruginised in places and constitutes the Blinkklip Breccia (Moen et al., 1977).

The “Main Marker” with a thickness of approximately 10m, lies conformably on the banded iron formation (BIF) and forms the base of the overlying jaspilite. It is characterized by an undulating structure and consists of brown jaspilite with thin magnetite layer and chert nodules. The overlying jaspilite attains a thickness of 150 m and contains several marker layers. Several “speckled markers” are present in the lower 40 m of the succession, of which only the upper one is indicated on the map. In the south a layer of eolithic chert with the appearance of quartzite is associated with the upper speckled marker. The two together are known as the quartzite marker. The intermediate quartzite maker occurs between lower speckled markers (Moen, 1977). The Gamagara Formation was deposited on the Maremane anticline and rests unconformably on dolomite and the BIF of the underlying strata Ghaap Plateau Formation. The succession consists of a basal conglomerate with pebbles of jasper and banded iron formation, shale and white to brown quartzite. The Makganyene Formation lies unconformably on the Gamagara Formation and has a maximum thickness of less than 480 m. Tillite occurs at the base of formation and contains fragments of black, white and red chert in a reddish-brown sandy ground mass. Higher up in the succession, alternating layers of grit, tillite, and silicified mudstone and feldspathic quartzite occur. Dolomite or limestone occur interbanded in mudstone (Moen et al., 1977).

The Ongeluk Formation forms the lower part of the Olifantshoek Group. The formation consists of greyish-green andesitic lava with amygdaloids and lenses of red jasper. The Voëlwater Formation overlies the Ongeluk Formation and has a thickness of 450 m. The lower beds are banded iron stone and banded red jaspilite with chert, dolomite and lava. The upper portion of the succession consists predominantly of dolomite with chert, banded jasper and lava (Moen et al., 1977). The Lucknow Formation occurs east of the Olifantshoek Group in the Korannaberg where the strata are disturbed by a number of faults Figure 13. It lies unconformably on the Voëlwater Formation and is absent in places in the north. The formation has a maximum thickness of 1 500m. The lower portion consists mainly of shale with subordinate layers of quartzite and lava and an upper portion of whitish quartzite with lenses of flagstone and dolomitic limestone. The Hartley Formation, the upper part of Olifantshoek Group, follows conformably on the Lucknow Formation with a basal conglomerate containing pebbles of quartzite, jaspilite and lava. It is overlain by andesitic lava which contains amygdaloids, tuff, breccia and pebbles of quartzite (Moen et al., 1977). The Matsap Subgroup lie conformably on the Hartley Formation but in places is found unconformably on the Voëlwater Formation in the Korannaberg. Three members were recognized. They

consist predominantly of sub-greywacke and purple, grey and brown quartzite with thin pebble beds and a layer of conglomerate in which quartz, banded iron formation and red jasper pebbles are abundant. The Brulsand Formation consists mainly of quartzite with subordinate shale and subgreywacke. Together with the Matsap Subgroup they form the Volop Group with a thickness of 500m (Moen et al., 1977).

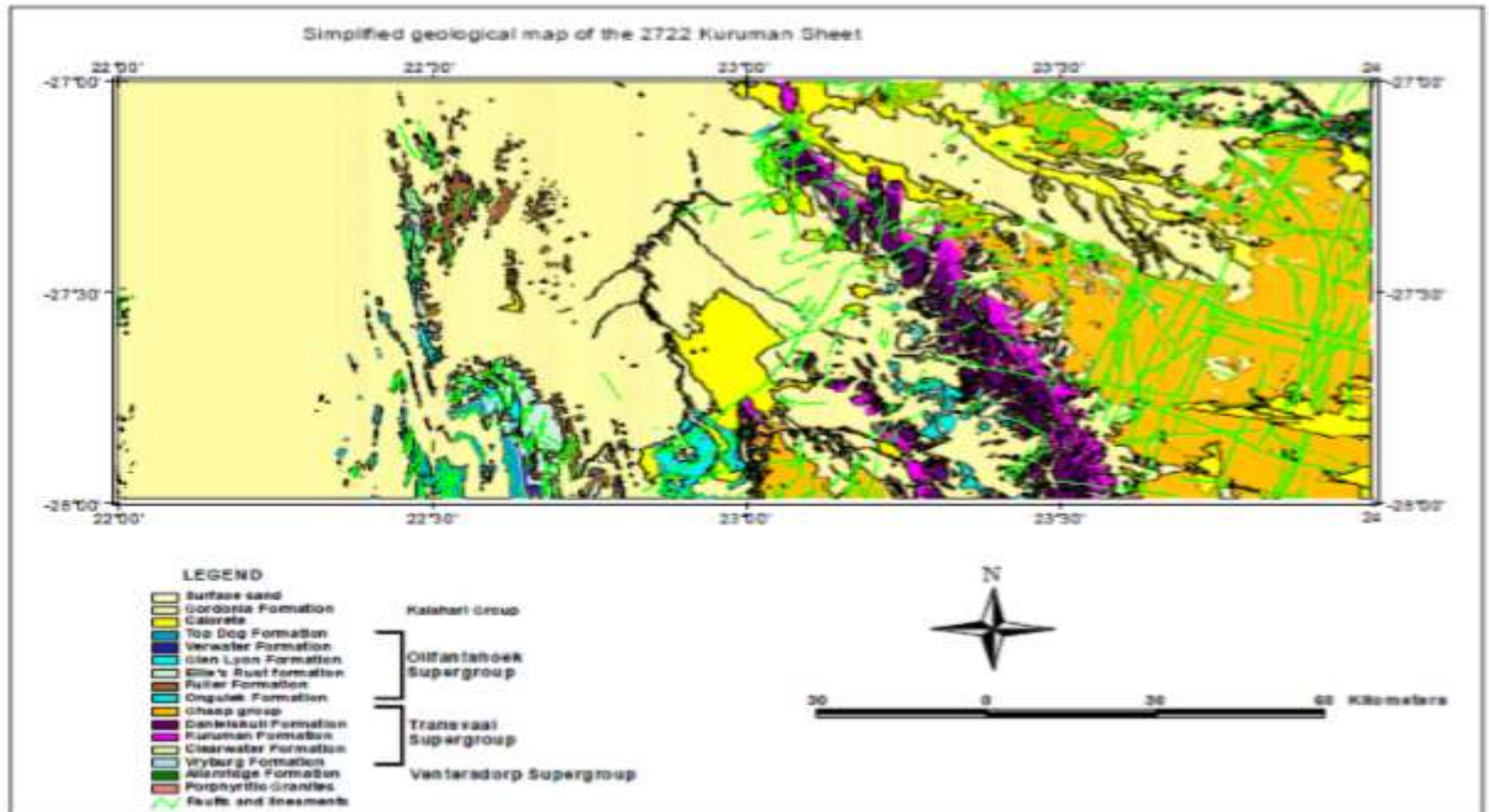


Figure 12: A simplified geological area of Kuruman (Moen, 1979)

Table 7: Lithostratigraphic column of the Kuruman Area

STRATIGRAPHY			DESCRIPTION	MAGNETIC EVENT
			Red to flesh-coloured wind-blown sand	
			Rubble	
			River-sand and gravel	
			Surface limestone	
OLIFANTSHOEK SUPERGROUP (±2 223-2 216 MA)	BRULPAN GROUP		Groblershoop Fm	Dolerite dykes
	VOLOP GROUP	Brulsand SBGRP	Top dog Fm	
			Verwater Fm	
		Matsap SBGRP	Glen Lyon Fm	
	Ellie's Rust Fm			
	Fuller Fm			
	Hartley Fm		Andesitic lava with interbedded tuff, agglomerate, quartzite and conglomerate	
Lucknow Fm		Quartzite, dolomitic limestone; shale and lava		
POST MASBURG	Voëlwater SBGRP		Red jasper, dolomite, chert and lava	Basic lava
	Ongeluk Fm		Amygdaloidal andesitic lava with interbedded tuff, agglomerate, chert, red jasper	
	Makganyene Fm		Diamicite, banded jasper, siltstone, mudstone, sandstone grit and dolomite	
TRANVAAL SUPERGROUP (±2 224-2 219 MA)	GHAAP GROUP	Campbell Rand SBGRP	Monteville Fm	
		Asbestos Hills SBGRP	Danielskuil Fm	
			Kuruman Fm	
		Schmidtsdrif SBGRP	Clearwater Fm	
	Boomplaas Fm			
Vryburg Fm		Quartzite, grit, conglomerate, shale amygdaloidal lava		



**Yone STEM Frontiers (Pty) Ltd**

The Proposed Prospecting Right and associated Equipment, Machinery, Processes and Infrastructure and related Activities Project: Scoping Report, near Postmasburg, Northern Cape

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<b>VENTERSDORP SUPERGROUP (±2 714 MA)</b>	Allanrigde Fm	Andesitic lava, amygdales and agglomerate	Andesitic lava
Porphyritic granite (basement)			

### 8.4.2 Climate

The area of interest is situated approximately 10 Km North West of Kathu town. The climate is predominantly semi-arid with low rainfall and high evaporation. The mean annual precipitation of the application area is approximately 374 mm/a. Climate plays a vital role in determining the availability of water resources, the nature of the natural landscape and vegetation types. Temperatures are high during the summer and low during the winter. The coldest months are experienced from June to August while the hottest months range from September to March. The average daily temperatures range from 19°C in June, to 26.7°C in January. The mean maximum average temperature during the summer months is approximately 33°C, while during the winter months the mean average minimum temperature of approximately 3,1°C. The area also experiences extreme events on a regular basis, including frost, hail, drought, and high-speed winds. Prevailing winds are north-westerly and south easterly winds with an average speed of approximately 5 m/s, between the driest and wettest months; the difference in precipitation is 73 mm. During the year, the average temperatures vary by 15.3 °C.

Climate can influence the potential for environmental impacts and related mine design. Specific issues include:

- rainfall could influence erosion, evaporation, vegetation growth, rehabilitation planning, dust suppression, and surface water management planning;
- temperature could influence air dispersion through impacts on atmospheric stability and mixing layers, vegetation growth, and evaporation which could influence rehabilitation planning; and
- wind could influence erosion, the dispersion of potential atmospheric pollutants, and rehabilitation planning.

### 8.4.3 Agricultural Potential

Agricultural potential is expected to be low due to shallow sandy soils and climatic constraints. Specific limitations applicable to the area include shallow soils, unfavourable climate, low water-holding capacity, stony soils and rock outcrops and erosion hazards.

Currently, predominant land uses are mining and agriculture in the Gamagara area. However, generation of energy from renewable power source is becoming common in recent times. The single most influential factor to the development of the Gamagara area is Sishen Iron Ore mining development. The Gamagara area became known to the general South African community as a result of enormous number of jobs that

are created by Sishen Iron Ore Mine. Not only does the mine provide jobs to thousands of job-seekers, it is also the single contributing factor to the planning and development of Kathu town.

#### **8.4.4 Surface Water**

There are neither perennial nor non-perennial rivers that traverse the area of application. The Gamagara River traverses South West of the area of application. The area of application is located within the Lower Vaal Water Management Area (WMA), in the D41J Quaternary Catchment drained by the endorheic Gamagara River. The regional drainage pattern of the area is primarily to the northwest in the direction of the endorheic Gamagara River, but most of the drainage lines in the mining area have historically been impacted on by mining activities. No wetlands, drainage patterns or rivers occur within the area of application.

#### **8.4.5 Groundwater**

Groundwater resource is valuable. Groundwater is defined as water that is located beneath the surface in soil, rock pore spaces and in the fractures of lithological formations. Groundwater resource is impacted by a number of activities such as domestic, agricultural and mining operations. Agriculture and mining may require dewatering services in order to operate effectively and efficiently whilst promoting environmental protection and for purposes of water supply.

The Gamagara area is groundwater resource is limited. The local mining operations require significant quantities of groundwater to support operations. The nearest mining operations to the proposed Prospecting for Mineral Resources Project that also use groundwater to support their operations are Assmang (Beeshoek Operations), Sedibeng, Kapstewel, Glosam, Kolomela and Sishen Mines.

#### **8.4.6 Topography**

The area of application is characterised by a flat topography with gentle slope. The elevation ranges from approximately 1 390 m and 1 500 m. The terrain morphological class of the area can be described as plains with high relief, either isolated moderately or strongly undulating. The area lies at an altitude of 1 445 meters above sea level, with the highest elevations occurring in the Southeast corners. The application area is located within an army base. The application area remains relatively undisturbed.

#### **8.4.7 Biodiversity**

The area of application lies within the Savanna biome that is characterised by grassy ground layer and woody plants. The Savanna biome is the largest biome in the Southern African region.

The application area is approximately 200 hectares in size and it comprises of wooded tree, shrub species and protected tree species.

A comprehensive Biodiversity Assessment in relation to the proposed development is going to be conducted. Any area that has high population of protected plant species is going to be managed as per the provisions of applicable legislation.

#### **8.4.8 Wetlands**

A wetland as defined by the National Water Act refers to land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water and which under normal circumstances supports or would support vegetation typically adapted to life in water saturated soil. However, there are no wetlands (ephemeral pans) expected but some wetlands exist in the region surrounding the project area.

#### **8.4.9 Waste**

Waste is expected to be generated as a result of the proposed development and associated activities. It is proposed that waste that is generated on site should be separated at source. Waste Separation at Source pertains to setting aside post-consumer dry recyclable waste and household generated garden waste for the purpose of re-use, recycling, composting, or further processing of these materials.

Enormous value in waste separation at source emanates from, among others, procurement, recycling materials that are well sorted and uncontaminated. A basic requirement to achieve this value is that as much as possible, and efficiently as possible, waste or materials are separated early in the recycling process. This is separating waste at source essentially.

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the Minister of Environmental Affairs established the National Waste Management Strategy (NWMS) to ensure the achievement the objectives of the NEM:WA. The NWMS was approved for implementation by the Cabinet in November 2011. The Waste Act supports the waste management hierarchy in its approach to waste management, by promoting cleaner production, waste minimisation, reuse, recycling and waste treatment with disposal seen as a last resort in the management of waste. There are a number of types of waste to be transported. Before any waste is transported, the person responsible for transporting such waste needs to assess the nature as well as the requirements for a specific load if waste to be transported. Understandably the preparations for transporting building rubble for instance, would be different to that of medical waste.

#### **8.4.10 Heritage and Cultural Resources**

The existing heritage resources, if any, are going to be protected through demarcation of the NO-GO zone(s). All encountered graves, if any, are going to be preserved. Buffer zones may be built, at least 100 m away from the preserved heritage resource. Specialists and relevant authorities will be notified and called in should any Heritage Resources of significant importance be encountered. Alternatively, a procedure/protocol that is recommended by specialists may have to be followed.

A Heritage Impact Assessment (HIA) including a Palaeontological Impact Assessment (Desktop Study) is going to be conducted in respect of the proposed Prospecting for Mineral Resources Project.

#### **8.4.11 Socio-economic**

The proposed Prospecting for Mineral Resources Project is located near the Tsantsabane Local Municipality within the ZF Mgcawu District Municipality which includes other four local municipalities additionally to Tsantsabane; these are Dawid Kruiper, Kai !Garib, !Kheis and Kgatelopele. Sishen Mine has played a significant role in the establishment and development of the town of Kathu and surrounds since 1953. The district is largely reliant on mining with mining contributing 55.5% to the district and 77.5% to the local municipal economy (Demacon, 2016). The mining sector is also the largest employer in the local economy. According to Demacon (2016) there are approximately 50 000 people living in the Gamagara municipal area of which 65% are economically active.

#### **8.4.12 Land Uses**

To achieve sustainable irrigation of soils, the appropriate soils need to be identified, to prevent water logging and salinization. During irrigation, considerable amounts of salts are applied with the water. When water is absorbed by plant roots through transpiration, the salts are precipitated in the soil and a long-term result is the increased concentration of salts called salinization. Salinization in the soil can hamper crop growth and in extreme cases salinization will render the soil non-vegetative. These effects can be negated with proper management on soils with specific properties. For this reason, the Department of Agriculture; Northern Cape, has provided guidelines to which soil properties must adhere before a ploughing license can be granted. A ploughing license is one of the requirements, which must be fulfilled before the Department of Water, and Sanitation will grant water rights for irrigation. An irrigation potential soil survey will investigate the morphological, physical and chemical properties of soils related to drainage, salinization and sodicity, and indicate the areas where the soils are suitable for irrigation.

#### **8.4.13 Visual Amenity**

Activities and associated infrastructure possess potential to impact negatively on the visual aspect of the environment. Dust that is going to be generated from the proposed development he landscapes character, scenic quality among others.

There are approximately 26 Solar developments with either an approved Environmental Authorisation or applications under consideration within 30 Km radius of the proposed development. Additionally, the project area is within 8 Km of other civil aviation aerodrome.

Visual, scenic and cultural components of the environment can be seen as a resource, much like any other resource, which has a value to individuals, to society and to the economy of the region (Oberholzer, 2005). A Visual Impact Assessment (VIA) is a specialist study performed to identify the visual impacts of a proposed project on the surrounding environment. The proposed Project will be investigated in terms of the visual characteristics of the receiving environment.

The large size, strong regular geometry of solar facilities, and the use of mirrors or glass panels with metal supporting structures, may result in high visual contrast being created that is visible for long distances in many instances. In favourable viewing conditions, large facilities can be visible from a distance of 16km or greater; it should be noted however that viewed from such long distances, the facilities may not be recognisable as solar facilities. Built structures associated with solar power facilities would introduce

complex, rectilinear geometric forms and lines and artificial looking textures and colours into the landscape; these would typically contrast markedly with natural appearing landscapes.

#### **8.4.14 Traffic**

The proposed development may increase traffic volumes in the locality. This is going to pose some risks to humans and animals. An increase in traffic volumes results in increase in air and noise pollution and possibility of accidents to occur.

#### **8.4.15 Noise and Vibration**

There are activities that are conducted in the locality which cause noise pollution. Some of them cause some vibration of the ground. They include mining activities among others. All these aspects may cause a disturbance to receptors that are in the locality.

#### **8.4.16 Air Quality**

The air quality of the pre-mining period is expected to have been of a better quality; however, the existing mines in the surrounding areas also contribute to the air quality degradation. The main concern in this regard would however be dust from the proposed diamond mining settling on surrounding areas. However, a dust control plan will be implemented for the proposed project in order to control any possible nuisance dust that might give rise from the surrounding. The main contaminants associated with the project includes: inhalable particulate matter less than 10 microns in size (PM<sub>10</sub>), larger total suspended particulates (TSP) that relate to dust fallout, VOC, SO<sub>2</sub>, NO<sub>2</sub> and gaseous emissions mainly from vehicles and generators. A change in ambient air quality can have health and/or nuisance impacts. Related mitigation measures focus on pollution prevention and monitoring.

#### **8.4.17 Site Sensitivity**

Site sensitivity of the area of application is crucial to establish. This is possible achieve after specialist studies have to be conducted. The online Screening Tool suggests that the area is highly sensitive in relation with Aquatic Biodiversity only.

### 8.5 The impacts and risks identified for each alternative, including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to these impacts

Examples of the manner in which impacts and risks identified for each alternative at EIA phase are presented in this section.

**Residual impact** – the proposed development is likely to develop local economy. Local suppliers will have gained experience and exposure to meeting standards of quality and scale that could be transferrable to business opportunities.

Impact	Multiplier impacts on the local economy				
Phase(s)	Planning, Construction, Operational and Decommissioning				
Environmental Risk					
Attribute	Pre-mitigation	Post-mitigation	Attribute	Pre-mitigation	Post-mitigation
Nature	+1	+1	Severity	2	2
Spatial Scope	2	2	Duration	2	4
Probability	4	4	Reversibility	2	2
Environmental Risk (pre-mitigation)					+8
Proposed Mitigation					
<ul style="list-style-type: none"> <li>• Development of a register of local SMMEs;</li> <li>• Linkages with skills development/ Small, Medium and Micro Enterprises (SMME) development institutions and other mining operations;</li> <li>• SMME skills development as part of mine SLP/LED commitments;</li> <li>• Create synergies with other mining/electricity enterprises LED/CSR projects;</li> <li>• Preference should be given to capable subcontractors who based within the local municipal area;</li> <li>• Align skills development to build capacity of SMMEs;</li> <li>• Monitoring of sub-contractors procurement;</li> <li>• Development of a register of local SMME;</li> <li>• Local procurement targets should be formalised in Semba Isinyithi North procurement policy;</li> <li>• Preference should be given to capable subcontractors who based within the local municipal area;</li> </ul> and <ul style="list-style-type: none"> <li>• Measures recommended to maximise benefits from local employment, skills and economic development.</li> </ul>					
Environmental Risk (post-mitigation)					+10
Public Response					2
Cumulative Impacts					1
Degree of Potential Irreplaceable loss of resources					2
Prioritisation Factor					1.33
Degree of confidence in impact prediction					Medium
<b>Significance Rating</b>					<b>+13.3</b>

**Residual Impact** – Improved economic development; Increased capacity to develop and maintain livelihood strategies.

Impact	Community development and Social Upliftment through LED projects
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Phase(s)	Planning, Construction, Operational and Decommissioning				
Environmental Risk					
Attribute	Pre-mitigation	Post-mitigation	Attribute	Pre-mitigation	Post-mitigation
Nature	+1	+1	Severity	1	3
Spatial Scope	2	2	Duration	2	4
Probability	2	4	Reversibility	1	3
Environmental Risk (pre-mitigation)					+3
Proposed Mitigation					
<ul style="list-style-type: none"> <li>• Ensure that there is stakeholder buy-in;</li> <li>• Aligning LED projects with those of other development role-players;</li> <li>• Liaison with beneficiaries to ensure needs are met;</li> <li>• Collaboration with other developmental role players (e.g. local and district municipalities, neighbouring mines and NGOs) during implementation of envisaged projects, and where possible aligning envisaged development projects with existing ones; <ul style="list-style-type: none"> <li>• Expanding its skills development and capacity building programmes for non-employees;</li> <li>• Monitoring system to regulate Historically Disadvantaged South African procurement;</li> <li>• Where feasible, training should be NQF Accredited;</li> <li>• A record of training courses completed per individual should be kept; and</li> <li>• Maximise benefits from local employment, skills and economic development.</li> </ul> </li> </ul>					
Environmental Risk (post-mitigation)					+12
Public Response					2
Cumulative Impacts					2
Degree of Potential Irreplaceable loss of resources					3
Prioritisation Factor					1.50
Degree of confidence in impact prediction					Medium
<b>Significance Rating</b>					<b>+18</b>

**Residual Impacts** - Increase in injuries and possible loss of lives.

Impact	Health and Safety				
Phase(s)	Planning, Construction, Operational and Decommissioning				
Environmental Risk					
Attribute	Pre-mitigation	Post-mitigation	Attribute	Pre-mitigation	Post-mitigation
Nature	-1	-1	Severity	3	2
Spatial Scope	2	2	Duration	4	3
Probability	4	4	Reversibility	3	3
Environmental Risk (pre-mitigation)					-12
Proposed Mitigation					
<ul style="list-style-type: none"> <li>• Access control to all project elements, including fencing;</li> <li>• Personal Protective Equipment for mine workers;</li> <li>• Notification of blasting schedules;</li> <li>• Blasting and storage of hazardous materials to adhere to prescribed regulation;</li> <li>• Measures suggested minimising the impact of flyrock on surrounding roads and structure;</li> <li>• Measures suggested in the Health Impact Assessment to minimize traffic related accidents;</li> <li>• Traffic calming measures to prevent speeding (e.g. speed humps);</li> <li>• Road maintenance;</li> <li>• Provide safe road crossing points and fencing of the main road and the mine site;</li> <li>• Community education to sensitize community members to potential traffic and blasting safety risks;</li> <li>• Traffic:</li> </ul>					

- Unauthorised access: Unauthorised access to the mine site should be prevented through appropriate fencing and security;
- Veld fires:
  - Prohibit open or naked fires on site;
  - Any work or hot work that is capable of starting a fire must be undertaken in an enclosed area and be monitored or supervised;
  - Compatibility tables must be used to store materials in order to avoid incidents such as explosions, fires, illnesses to mentions just a fe;
  - It is recommended that the making of fires by construction workers is restricted to areas where tight control can be exerted, or that the making of fires be prohibited;
  - Establish Fire Breaks that are up to standard, of no less than six (6) metres in width;
  - Ensure that the area where work is undertaken is surrounded by Firebreaks and that there are functioning and well-maintained fire hydrants in the vicinity to extinguish veld fires;
  - Establish and maintain relationship with Local Fire Prevention Associations;
  - Construct fire hydrants and associated infrastructure;
  - Formulate emergency preparedness and response procedures that employees have to be trained on;
- Community education:
  - It is recommended that a community awareness campaign be implemented in the surrounding communities to sensitise community members to traffic safety risks and the need to prevent children and animals from wandering into the mine site;
  - Increase awareness of the mine's complaints and grievance procedures;
  - Activities undertaken as part of awareness campaigns and mine communication programme should be recorded and reflected in a formal progress report compiled on a quarterly basis;
  - Mechanisms must be established to ensure that problems are dealt with promptly. In this regard, it is proposed that a community liaison officer be the primary resource; and
  - Regular feedback sessions should be arranged with community forums to assess the impact of this programme in terms of knowledge, attitudes and behaviour.

Environmental Risk (post-mitigation)	-10
Public Response	1
Cumulative Impacts	2
Degree of Potential Irreplaceable loss of resources	3
Prioritisation Factor	1.50
Degree of confidence in impact prediction	Medium
<b>Significance Rating</b>	<b>-15</b>

**Residual Impacts** - Strain on the existing infrastructure which is already inadequate.

Impact	Increase pressure on the existing infrastructure				
Phase(s)	Planning, Construction, Operational and Decommissioning				
Environmental Risk					
Attribute	Pre-mitigation	Post-mitigation	Attribute	Pre-mitigation	Post-mitigation
Nature	-1	-1	Severity	3	2
Spatial Scope	2	2	Duration	4	4
Probability	4	4	Reversibility	4	3
Environmental Risk (pre-mitigation)					-13
Proposed Mitigation					
<ul style="list-style-type: none"> <li>• To limit, as far as reasonably possible, additional pressure on existing infrastructure and services;</li> <li>• To work in partnership with government, industry, and relevant organisations to enhance the existing infrastructure and services;</li> </ul>					

<ul style="list-style-type: none"> <li>To liaise openly and frequently with affected stakeholders to ensure they have information about the proposed Semba Isinyithi North Prospecting Project;</li> <li>Liaison with district and local municipalities well in advance to ensure needs are met;</li> <li>Ensure that municipalities take into account expected population influx;</li> <li>Promotion of prospecting methods to allow for surface development;</li> <li>Influx management to make available, maintain and effectively implement a grievance/complaint register that is easily accessible to all neighbours and affected stakeholders;</li> <li>To limit, as far as reasonably possible, additional pressure on existing infrastructure and services;</li> <li>To work in partnership with government, industry, and relevant organisations to enhance the existing infrastructure and services;</li> <li>To liaise openly and frequently with affected stakeholders to ensure they have information about the proposed Semba Isinyithi North Prospecting Project; and</li> <li>To make available, maintain and effectively implement a grievance/complaint register that is easily accessible to all neighbours and affected stakeholders.</li> </ul>	
Environmental Risk (post-mitigation)	-11
Public Response	1
Cumulative Impacts	2
Degree of Potential Irreplaceable loss of resources	2
Prioritisation Factor	1.33
Degree of confidence in impact prediction	Medium
<b>Significance Rating</b>	<b>-14.63</b>

**Residual Impacts - Loss of grazing land.**

Impact	Loss of agricultural land capability and infrastructure				
Phase(s)	Planning, Construction, Operational and Decommissioning				
Environmental Risk					
Attribute	Pre-mitigation	Post-mitigation	Attribute	Pre-mitigation	Post-mitigation
Nature	-1	-1	Severity	2	2
Spatial Scope	1	1	Duration	3	2
Probability	4	4	Reversibility	3	3
Environmental Risk (pre-mitigation)					-9
Proposed Mitigation					
<ul style="list-style-type: none"> <li>Ensure that the project design and associated layout seeks to minimise the project footprint, thus minimising the loss of agricultural land; engage with each directly affected landowner with the intention to acquire only the required servitude area;</li> <li>Should subsequent, possibly, Semba Isinyithi North Prospecting Project acquire the full farm and the project footprint only affects a portion of the land, the surrounding usable land should be utilised for agricultural purposes – potentially as part of a lease agreement;</li> <li>Where damage is incurred, suitable compensation must be negotiated with the affected farmer;</li> <li>Prepare a site Rehabilitation Plan that will be implemented as part of the decommissioning phase; and</li> <li>Where damage is incurred, suitable compensation must be negotiated with the affected farmer.</li> </ul>					
Environmental Risk (post-mitigation)					-8
Public Response					1
Cumulative Impacts					2
Degree of Potential Irreplaceable loss of resources					3
Prioritisation Factor					1.50

Degree of confidence in impact prediction	Medium
<b>Significance Rating</b>	<b>-12</b>

**Residual impacts** – the impact may be reversible over time as workers and job-seekers leave the area, consequences such as COVID-19 spread, HIV/AIDS and unwanted pregnancies will be permanent.

Impact	Increased social pathologies linked to influx of workers and job seekers				
Phase(s)	Planning, Construction, Operational and Decommissioning				
Environmental Risk					
Attribute	Pre-mitigation	Post-mitigation	Attribute	Pre-mitigation	Post-mitigation
Nature	-1	-1	Severity	2	2
Spatial Scope	2	2	Duration	4	4
Probability	3	3	Reversibility	3	3
Environmental Risk (pre-mitigation)					<b>-8.25</b>
Proposed Mitigation					
<ul style="list-style-type: none"> <li>• Limit, as far as reasonably possible, social ills caused by influx of workers and job-seekers;</li> <li>• Liaise openly and frequently with affected stakeholders to ensure they have information about the Project;</li> <li>• Extensive COVID-19, HIV/AIDS awareness and general health campaign. It should be noted that Semba Isinyithi North Prospecting Project managers have no control over activities related to workers' behaviour, however It is recommended that COVID-19 and HIV/AIDS campaigns are conducted within the affected area;</li> <li>• Discourage influx of job-seekers by prioritising employment of unemployed members of local communities;</li> <li>• Liaise with Joe Morolong Local Municipality, and Traditional Authority to ensure that expected population influx is taken into account in infrastructure development and spatial development planning;</li> <li>• Create synergies with local government IDP and other companies' SLP/CSR projects, at Mining Phase, to promote infrastructure development;</li> <li>• Clear identification of workers – prevention of loitering;</li> <li>• Liaison with police or establish/ support community policing forum;</li> <li>• During mining phase, if feasible, promote projects providing housing, especially low-cost housing, to link with the proposed Semba Isinyithi North Prospecting Project;</li> <li>• Community education;</li> <li>• Compensate affected parties reasonably, if applicable and necessary;</li> <li>• Implement measures to address potential conflict between locals and non-locals; and</li> <li>• Develop, avail, maintain and effectively implement a grievance/complaint register that is easily accessible to all neighbours and affected stakeholders.</li> </ul>					
Environmental Risk (post-mitigation)					<b>-8.25</b>
Public Response					1
Cumulative Impacts					2
Degree of Potential Irreplaceable loss of resources					3
Prioritisation Factor					1.50
Degree of confidence in impact prediction					Medium
<b>Significance Rating</b>					<b>-12.38</b>

**Residual impact** – increase in nuisance.

Impact	Nuisance
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Phase(s)	Planning, Construction, Operational, Decommissioning and Post-Closure				
Environmental Risk					
Attribute	Pre-mitigation	Post-mitigation	Attribute	Pre-mitigation	Post-mitigation
Nature	-1	-1	Severity	2	2
Spatial Scope	2	2	Duration	2	2
Probability	3	2	Reversibility	2	2
Environmental Risk (pre-mitigation)					-6
Proposed Mitigation					
<ul style="list-style-type: none"> <li>• Perform dust suppression regularly on stockpiles, road networks and at material handling points, including crushing and screening;</li> <li>• Topsoil stockpiles and Waste rock dumps must be covered;</li> <li>• The footprint must be limited as far as reasonably practicable.</li> </ul>					
Environmental Risk (post-mitigation)					-4
Public Response					2
Cumulative Impacts					1
Degree of Potential Irreplaceable loss of resources					2
Prioritisation Factor					1.33
Degree of confidence in impact prediction					Medium
<b>Significance Rating</b>					<b>-5.32</b>

## 8.6 The methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives

### 8.6.1 Rating of Impact

The process for determining impact significance serves at least two purposes: first, it aids in highlighting the important impacts that must be taken into account during the management and approval process; second, it displays the primary impact characteristics that are used to determine impact significance.

When determining the significance of identified impacts, the following factors must be taken into account:

#### Severity

Indicates if an impact is harmful or not. A limited impact on the sterilization of any mineral resources would be shown by a study of the location of surface infrastructure and related operations. Prior to the effective implementation of suggested mitigation measures, severity will be assessed. The severity will be assessed after the planned mitigation measures have been implemented successfully.

#### Spatial Scope

The term "Extent of Influence" refers to the region that the impact will be felt. Bracketing ranges are frequently needed since an impact's severity and significance typically have separate scales. This is frequently helpful for further defining the determined significance or intensity of an impact during the project's detailed assessment phase. For instance, a value that is high locally but low regionally.

A relative word known as "spatial scale or extent" connects the determined impact to the geographical scale or extent of the projected development and the entire planet. Before planned mitigating measures are successfully executed, the extent is on-site. The extent is on-site following the successful deployment of the suggested mitigation measures.

### Duration

specifies the impact's expected lifetime;

Because infrastructure will be used in most cases throughout construction and operation of the proposed development, the sterilisation of resources will be kept to a minimum. Following the successful execution of the suggested mitigation measures, the duration lasts the entire operational life.

### Consequence

Prior to the effective implementation of suggested mitigating measures, the consequence is minimal. The impact is minimal following the successful implementation of the suggested mitigating measures.

### Probability

describes the probability that an impact will actually occur; before suggested mitigation measures are effectively applied, the probability (synergy/summation) of impact frequency and activity frequency will be determined. Following the successful execution of the suggested mitigation strategies, such as, for example, choosing a site for the infrastructure and related operations in a way that will support preventative (avoid), minimization (reduce), control, and corrective actions (remedy).

### Significance

Prior to the effective implementation of suggested mitigation measures, the significance will be calculated. The relevance will also be considered when the planned mitigation measures have been successfully implemented.

### Cumulative Impact

When referring to an action, the term "impact" refers to the outcome of a particular undertaking that, while not necessarily significant in and of itself, may take on significance when combined with other comparable or unrelated activities taking place nearby.

In the context of a proposed development, the cumulative impact rating takes into account the anticipated effects, lingering effects, effects of other projects and activities in the form of potential synergistic, interactive system components, pattern, augmentative, consecutive impacts, and mitigation measures. Before specified mitigating measures are successfully executed, the overall impact is minimal.

The National Environmental Management Act of 1998 (Act No. 107 of 1998), as modified, and the Environmental Impact Assessment Regulations of 2017 are both in compliance with the technique of rating impact importance described here. Impact significance evaluation is a complex, step-by-step process. Several elements are taken into account when determining the impact importance rating. The actions that will be taken in this case involve identifying the Consequence (*C*) of each discovered potential impact while taking into account variables including the impact's nature, spatial scope, duration, severity, and reversibility. The probability of an impact occurring is the following stage. Environmental Risk of a specific impact is calculated as the sum of likelihood of occurrence and consequence. In addition, other elements including public concern, cumulative effects, and the possibility of irreparable resource loss are taken into account when determining Priority. Prioritization Factor (*PF*), which is derived from Priority, is used to calculate the Significance Rating (*SR*) of Impact. Authorities and stakeholders can use priority as a guide to help them decide on the development strategy in an educated manner. All identified alternatives will be subject to the impact assessment.

#### **8.6.1.1 Impact Assessment, Rating and Mitigation**

Below is a discussion of the criteria that were used to determine how significant the consequences were. The tables below display the parameters that were used to determine the importance of the impacts. The criteria for likelihood, intensity/severity, and relevance are based on experience and generalizations. We looked at both natural and already-existing mitigation strategies. The data offered in this piece of work and the conclusions drawn therefrom are relative and not statistical; this also holds true for the terminology. Natural circumstances, circumstances incorporated into the project's design, and already-in-place management practices were all considered to be natural mitigating strategies. Mathematically, the following formula was used to determine the impacts' consequences:

$$C = \frac{\pm N \times (SS+D+S+R)}{4} \dots\dots\dots \text{Equation 1}$$

Where:

C = Consequence

R = Reversibility

N = Nature of impact

S = Severity

SS = Spatial Scope

D = Duration

Mathematically, Environmental Risk of impacts was calculated by using the following formula:

$$ER = C \times P \dots\dots\dots \text{Equation 2}$$

Where:

ER = Environmental Risk

P = Probability

C = Consequence

Further description of factors that are considered to determine Consequence using Equation 1 is presented in Table 7.

**Table 8: Criteria for determination of ratings**



Parameter	Points	Description
Nature	-1	Likely to result in a negative/ detrimental impact
	+1	Likely to result in a positive/ beneficial impact
Spatial Scope	1	Site (i.e. within the development property boundary)
	2	Local (i.e. within the local area or district)
	3	Provincial (i.e. within the entire province)
	4	National (i.e. within the country boundary)
Probability	1	Improbable (the possibility of the impact materialising is very low; <25%)
	2	Probable (there is a possibility that the impact will occur; >25% and <50%)
	3	High probability (the impact may occur; >50% and <100%)
	4	Definite (the impact will occur)
Duration	1	Immediate (<1 year)
	2	Short term (1-5 years)
	3	Medium term (6-15 years)
	4	Long term (the impact will cease after the operational life span of the project)
Severity	1	Low (affects the quality, use and integrity of the system/component in a way that is barely perceptible)
	2	Medium (where the affected environment is altered but natural, cultural and social functions and processes continue albeit in a modified way)
	3	High (where natural, cultural or social functions or processes are altered to the extent that it will temporarily cease)
	4	Very High (where natural, cultural or social functions or processes are altered to the extent that it will permanently cease)
Reversibility	1	Completely reversible (Impact is reversible without any effort, minimal mitigation, time and cost)
	2	Partly reversible (Impact is reversible without incurring significant time and cost with moderate effort and mitigation)
	3	Barely reversible (Impact is reversible only by incurring prohibitively high time and cost, involving intense mitigation)
	4	Irreversible (Impact is irreversible and no mitigation measures exist)
Parameter	Points	Description
Irreplaceable loss of resources	1	No loss of resource (Impact will not result in the loss of any resources)
	2	Marginal loss of resource (impact may result in the irreplaceable loss (cannot be replaced or substituted) of resources but the value (services and/or functions) of these resources is limited)
	3	Significant loss of resource (impact may result in the irreplaceable loss (cannot be replaced or substituted) of resources of high value (services and/or functions))
	4	Complete loss of resource (Impact is going to result in a complete loss of all resources)
Cumulative impact	1	Low cumulative impact (Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, impact would result in no to negligible cumulative change)

	2	Moderate cumulative impact (Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is less likely that the impact will result in visual, spatial and temporal cumulative change)
	3	Medium cumulative impact (Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is probable that the impact will result in visual, spatial and temporal cumulative change)
	4	High cumulative impact (Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is highly probable/ definite that the impact will result in spatial and temporal cumulative change)
Public Response	1	Low public response as the issue is not raised.
	2	Medium public response as the issue was raised meaningfully and justifiably.
	3	High public response as the issue was emphasised repeatedly
<b>Formula used to determine Environmental Risk: (Consequence x Probability)</b>		
<b>Parameter</b>	<b>Points</b>	<b>Description</b>
Environmental Risk	1 – 4	Positive low impact
	1 – 4	Negative low impact
	5 – 8	Positive medium impact
	5 – 8	Negative medium impact
	9 – 12	Positive high impact
	9 – 12	Negative high impact
	13 – 16	Positive very high impact
	13 – 16	Negative very high impact

Results for determination of Environmental Risk using Equation 2 are presented differently in Table 8.

**Table 9: Determination of Environmental Risk**

Environmental Risk										
-16	-12	-8	-4	-4	Consequence	4	4	8	12	16
-12	-9	-6	-3	-3		3	3	6	9	12
-8	-6	-4	-2	-2		2	2	4	6	8
-4	-3	-2	-1	-1		1	1	2	3	4
4	3	2	1			1	2	3	4	
Probability										

IMPACT PRIORITISATION

Further to the assessment criteria presented in the section above, it is necessary to assess each potentially significant impact in terms of:

- Public Response;
- Cumulative impacts; and
- The degree to which the identified impact may cause irreplaceable loss of resources.

The triple bottom line (environment, social, and economic aspects) should be taken into account when making decisions, and this includes the public's reaction to a proposed development and any potential resultant effects as well as changes to the environment brought on by past, present, and future human activities as well as natural processes. It is suggested that in an effort to quantify even more factors during impact assessment, a factor like the Prioritization Factor be taken into account.

Mathematically, Prioritisation may be determined as presented in Equation 3.

$$Priority = PR + CI + LR \dots \dots \dots Equation 3$$

The priority ratings range from 3 to 11 and are presented in Table 9 and Significance Rating of Impacts in presented in Table 10.

**Table 10: Determination of Prioritisation Factor**

Priority	Rating	Prioritisation Factor
3	Low	1.00
4	Low	1.17
5	Medium	1.33
6	Medium	1.50
7	Medium	1.67
8	High	1.83
9	High	2.00
10	Very High	2.17
11	Very High	2.33

If all of the priority qualities are high, we raise priority by a factor of 0.5 in an effort to boost the post-mitigation environmental risk assessment (i.e. if environmental risk is high after the conventional impact rating, but there is

high Public Response for example, then the net result would be to possibly upscale the impact to a very high significance rating). The product of Prioritisation Factor and Environmental Rating is results in relative quantity of Significance Rating of identified impact (Please see Equation 4).

$$SR = PF \times ER \dots \dots \dots \text{Equation 4}$$

**Table 11: Significance Rating**

Significance Rating	
Limits	Description
≤-30	Very High Negative (impacts that can be classified as fatal flaws and which are of such significance that it cannot be successfully mitigated).
>-30 & ≤-20	High Negative (impacts must influence a decision in respect of whether or not the proposed development may go ahead).
>-20 & ≤-10	Medium Negative (impacts could influence a decision in respect of the proposed project).
>-10 & <0	Low Negative (impacts have minimal influence on a decision in respect of the proposed project).
0	No impact
> 0 & < 10	Low Positive (impacts have minimal influence on a decision in respect of the proposed project).
≥ 10 & < 20	Medium Positive (impacts could influence a decision in respect of the proposed project).
≥ 20 & < 30	High Positive (impacts must influence a decision in respect of whether or not the proposed development may go ahead).
≥ 30	Very High Positive (impacts that can be classified as inventive best practices and which are of such significance that it contributes new knowledge).

The impact assessment criteria presented herein is going to be considered in conducting the study underway.

**8.7 positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects**

**8.7.1 Planning and Construction Phase**

These are impacts on the environment and socio-economic aspects that are expected to occur during the construction phase of the proposed Prospecting for Mineral Resources Project. It is intrinsic that such impacts are temporary in duration, but may have longer lasting effects e.g., pollution of a sensitive area



during construction, could have effects that may last long after construction is over. Construction phase impacts could potentially include:

- Cost Budget, Sustainable Development Planning;
- Vegetation Clearance and Site Preparation;
- Destruction or loss of biodiversity;
- Loss of medicinal flora;
- Proliferation of invasive and alien plant species;
- Reduction in Woody Alien Species;
- Climate Change;
- Visual Amenity;
- Faunal Mortality and Displacement (including CI species);
- Increase in dust and erosion degrading habitat integrity;
- Veldfires;
- Destruction of Heritage and Cultural Resources;
- Social Impacts;
- Topography;
- Climate Change;
- Agricultural Impacts;
- Impact on heritage and cultural resources;
- Emissions from construction vehicles and generation of dust; and
- Pollution caused by spillage or discharge of construction waste water

Pollution of the groundwater and soil as a result of use of hydrocarbons and generation of infrastructural building rubble:

- Employment creation and skills development opportunities (Positive);
- Visual intrusion of construction/demolition activities;
- Noise impact from the use of construction;
- Health injuries to construction personnel as a result of construction work;
- Traffic, congestion and potential for collisions;
- Impacts on groundwater resources;

- Impact on agricultural potential and soils;
- Disturbance of flora and fauna;
- Increase in traffic volumes in the vicinity of the construction site;
- Windblown dust;
- Veldfires;
- Climate Change;
- Social Impacts;
- Agricultural Impacts;
- Impact on heritage and cultural resources;
- Noise pollution; and
- Pollution of the environment with waste.

Based on the temporary duration of the construction phase and the fact that negative impacts of construction can be readily predicted and mitigated, generally speaking, more attention will be given to the operational phase impacts of the proposed Project than to the construction phase impacts. However, wherever relevant, specialist studies would consider construction phase impacts, and in certain cases, would be focused on construction phase impacts e.g., impacts on biodiversity are mainly construction phase-related impacts.

### **8.7.2 Operational Phase**

The EIA phase is going to assess impacts associated with the operating the proposed project. Given the long-term effect of these impacts at operational phase, the EIA study is going to be comprehensive. The suggested specialist studies are expected to identify and assess the significance of these impacts and propose mitigation measures accordingly.

### **8.7.3 Decommissioning and Closure**

There is expected loss of job opportunities associated with decommissioning and closure of the proposed development. It is expected that there are going to be economic repercussions. Monitoring should continue for at least one-year post-closure.

## 8.8 The possible mitigation measures that could be applied and level of residual risk

Please refer to section 8.5 for an indication on the manner in which effective mitigation measures, if implemented effectively are presented.

## 8.9 The outcome of the site selection matrix

Due to the nature of the proposed development, the location of the facility is largely dependent on technical and environmental factors such as irrigation suitability, climatic conditions, solar irradiation and geology. The solar irradiation to which the Northern Cape Province is exposed indicates is indicative of potential for the solar power generation.

The receptiveness of the site to development includes the suitability of the area for the proposed Prospecting for Mineral Resources Project. The property, near Postmasburg, ZF Mgcau District, Northern Cape, South Africa where the project is proposed to be located is considered favourable and suitable from a technical perspective due to the following characteristics:

- Climatic conditions: Climatic conditions are a factor to consider in determining whether or not the project will be viable from a socio-economic and environmental perspective as Prospecting for Mineral Resources Project, powered using solar energy is directly dependent on the annual direct solar irradiation values of ZF Mgcau District;
- Topographic conditions and geology: The area of application for the proposed Prospecting for Mineral Resources Project. The topographical landscape of the area within which the proposed development is going to be built relatively of low slope ensuring safety and low risk of loose rocks rolling down;
- Land accessibility and availability: The piece of land of the remainder of property, near Postmasburg, ZF Mgcau District, Northern Cape, South Africa is available for purposes of the proposed project. The main entrance gate of the farms face R385; and
- Environmental sensitivity: Environmentally, the proposed project location is regarded as relatively limited ecological sensitivity in respect of receiving environment.

### **8.10 If no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such**

The property(ies) for which applied are identified and specified in this report. The identification process is influenced by factors such as the following:

- Potential for availability of mineral deposits for which applied; and
- Other environmental aspects as presented in this Scoping Report.

### **8.11 A concluding statement indicating the preferred alternatives, including preferred location of the activity**

Based on the criteria set above, the property, near Postmasburg, ZF Mgcawu District, Northern Cape, South Africa is the preferred location thus far because an application was lodged with the DMRE in respect of the properties.



## 9 A plan of study for undertaking the environmental impact assessment process to be undertaken, including—

### 9.1 A Description of the Environmental Impacts and Risks Identified During the Environmental Assessment Process

This section describes potential impacts on environmental and socioeconomic pertaining to each of the fundamental project actions / activities, processes that will be followed and associated infrastructure that will be used in the proposed development (Please see Table 11).

**Table 12: Environmental Impacts and Risks Identified throughout all phases of development**

Activity/process or part thereof	Impacts (Pre-mitigation)
<ul style="list-style-type: none"> <li>• Vegetation Clearance, Ground Levelling and Sterilisation of Mineral Resources</li> <li>• Infrastructure, posing safety risks to personnel and animals</li> <li>• Water use and management; Waste Management</li> <li>• Drilling, Pitting and Trenching, Stockpiling and associated activities (including services)</li> <li>• Climate Change-related occurrences and monitoring</li> <li>• Transport system</li> <li>• Concurrent Backfilling (Rehabilitation)</li> <li>• Use of facilities and services</li> <li>• Restoration of destructed biodiversity</li> </ul>	<ul style="list-style-type: none"> <li>Sterilisation of mineral resources</li> <li>Infrastructure, posing safety risks to personnel and animals</li> <li>Loss of soil and land capability affected through physical disturbance</li> <li>Physical destruction of biodiversity</li> <li>General disturbance of biodiversity</li> <li>Proliferation of Invasive and Alien Plant species</li> <li>Change in visual amenity</li> <li>Use of fertiliser</li> <li>Lowering of groundwater level</li> <li>Destruction of Aquifers</li> <li>Air pollution, greenhouse gas emissions, global warming &amp; Climate Change</li> <li>Loss of heritage/cultural and palaeontological resources</li> <li>Influx of labour</li> <li>Wetlands</li> <li>Health and Safety</li> <li>Traffic</li> <li>Waste</li> <li>Agriculture</li> <li>Socio-economic impact</li> <li>Influx of labour</li> <li>Interference with existing land uses</li> </ul>
<ul style="list-style-type: none"> <li>• Closure, post-closure alternative land uses</li> </ul>	<ul style="list-style-type: none"> <li>Loss of job opportunities</li> <li>Economic impact</li> <li>Proliferation of Invasive and Alien Plant species</li> </ul>

In an event the proposed development does not go ahead, an opportunity to acquire information about mineral resources underground. There are also socio-economic benefits that will be lost such as Tax collection by the South African Revenue Services, Employment, SMME development and Social and labour Plan projects if the proposed project reaches the issuing of Mining Right level, if applicable. A more comprehensive environmental risks and impacts is going to be identified at EIA phase.

## **9.2 Conduct Impact Assessment**

The Draft Scoping Report presented herein is open for public review at his stage. A revised and final copy of this report is going to be submitted to the Competent Authority for approval after comments have been received from the proponent, the public community, government departments and the Competent Authority.

# **10 A plan of study for undertaking the environmental impact assessment process to be undertaken, including**

## **10.1 Introduction**

This section gives a brief outline of the Plan of Study for EIA (PoSEIA) and the tasks that will be undertaken and the anticipated process to meet the objectives for the EIA phase. The approach to the EIA is to focus on those key issues identified for the preferred alternative. This will ensure that the EIA focuses on the most significant impacts and in the process save time and resources.

## **10.2 Process Phases**

### **10.2.1 Scoping Phase**

The Scoping Report presented herein is in respect of the proposed Project. Literature review, comments from Interested and Affected Parties and findings of specialists are going to inform the findings of the full Environmental Impact Assessment that is underway. There were no identified environmental fatal flaws in relation to the proposed development at the time of publishing this draft Scoping Report.

The EIA is going to be undertaken in order to present an assessment of these potential impacts and make recommendations on proposed mitigation measures. The EIA, as informed by literature review, comments

received from interested and affected parties and findings and recommendations of specialists are also going to be used to collate all this information into a single coherent piece of work.

### **10.2.2 Environmental Impact Assessment**

All potentially significant socio-economic and environmental impacts that are associated with the proposed development have been identified in the Scoping Study presented herein. However, these impacts are going to be revised before the submission of final Scoping Report copy to the Competent Authority. All the impacts are going to be investigated further during the EIA phase. The proposed mitigation measures are going to be presented accordingly.

### **10.2.3 Anticipated Outcomes of the Impact Assessment Phase**

The purpose of the EIA phase is going to assess issues identified in the scoping phase and will include an environmental management programme (EMPr). The EMPr will provide information on the proposed activity and the manner in which potential impacts will be minimized or mitigated. The EIA report will comply with *Appendix 3* of EIR Regulation of 2017 and will:

- Determine the policy and legislative context within which the activity is located and document how the proposed activity complies with and responds to the policy and legislative context;
- Describe the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the preferred location;
- Identify the location of the development footprint within the preferred site based on an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects of the environment;
- Determine the—
  - (i) nature, significance, consequence, extent, duration and probability of the impacts occurring to inform identified preferred alternatives; and
  - (ii) degree to which these impacts-
    - (aa) can be reversed;
    - (bb) may cause irreplaceable loss of resources, and

(cc) can be avoided, managed or mitigated;

- Identify the most ideal location for the activity within the preferred site based on the lowest level of environmental sensitivity identified during the assessment;
- Identify, assess, and rank the impacts the activity will impose on the preferred location through the life of the activity;
- Identify suitable measures to avoid, manage or mitigate identified impacts; and
- Identify residual risks that need to be managed and monitored.

### 10.3 A description of the alternatives to be considered and assessed within the preferred site, including the option of not proceeding with the activity

An application for Prospecting Right was lodged with the Department of Mineral Resources and Energy in respect of one property. Therefore, an assessment within the preferred site is going to be undertaken as no other property was chosen for this purpose.

### 10.4 A description of the aspects to be assessed as part of the environmental impact assessment process

Table 13: Environmental Impacts and Risks Identified throughout all phases of development

Activity/process or part thereof	Impacts (Pre-mitigation)
<ul style="list-style-type: none"> <li>• Vegetation Clearance, Ground Levelling and Sterilisation of Mineral Resources</li> <li>• Infrastructure, posing safety risks to personnel and animals</li> <li>• Water use and management; Waste Management</li> <li>• Drilling, Pitting and Trenching, Stockpiling and associated activities (including services)</li> </ul>	<ul style="list-style-type: none"> <li>Sterilisation of mineral resources</li> <li>Infrastructure, posing safety risks to personnel and animals</li> <li>Loss of soil and land capability affected through physical disturbance</li> <li>Physical destruction of biodiversity</li> <li>General disturbance of biodiversity</li> <li>Proliferation of Invasive and Alien Plant species</li> <li>Change in visual amenity</li> <li>Use of fertiliser</li> <li>Lowering of groundwater level</li> <li>Destruction of Aquifers</li> <li>Air pollution, greenhouse gas emissions, global warming &amp; Climate Change</li> <li>Loss of heritage/cultural and palaeontological resources</li> <li>Influx of labour</li> <li>Wetlands</li> <li>Health and Safety</li> </ul>

<ul style="list-style-type: none"> <li>• Climate Change-related occurrences and monitoring</li> <li>• Transport system</li> <li>• Concurrent Backfilling (Rehabilitation)</li> <li>• Use of facilities and services</li> <li>• Restoration of destructed biodiversity</li> </ul>	<p>Traffic Waste Agriculture Socio-economic impact Influx of labour Interference with existing land uses</p>
<ul style="list-style-type: none"> <li>• Closure, post-closure alternative land uses</li> </ul>	<p>Loss of job opportunities Economic impact Proliferation of Invasive and Alien Plant species</p>

## 10.5 Aspects to be assessed by specialists

### 10.5.1 Heritage Impact Assessment (Field Survey), inclusive of Palaeontological Impact Assessment (Desktop Study)

A Palaeontological Impact Assessment (Desktop) will be conducted for the proposed Prospecting for Mineral Resources Project, which is located near Postmasburg, ZF Mgcawu District, Northern Cape Province. In order to comply with the South African Heritage Resources Agency (SAHRA) in terms of Section 38(8) of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA), a desktop Palaeontological Impact Assessment (PIA) will be completed for the proposed project. The palaeontological sensitivity of the area under consideration will be presented. As part of the palaeontological context, information on fossils, among others, will be presented.

A Heritage Impact Assessment (Field Survey) will be undertaken in terms of Section 38 of the National Heritage Resources Act (Act No. 25 of 1999). The heritage sensitivity of the property will be assessed in terms of Stone Age, the Iron Age, Historical structures and Burial grounds among others.

### 10.5.2 Biodiversity Assessment Study

The Biodiversity Assessment study is required in order to identify sensitive biodiversity areas and protected fauna and flora on the site. A comprehensive investigation will be undertaken to identify potential floral species of special concern, this includes all IUCN listed species, TOPS listed species and species listed in schedule 1 and 2 of the NCNCA among others. The study may propose protection of certain

sensitive areas such as wetlands and pans (among other) on site. The report and survey must comply with the NEMA Appendix 6 requirements.

### **10.5.3 Social Impact Assessment**

It is proposed that a Social Impact Assessment is undertaken as part of the specialist studies for the proposed Project. The SIA will identify and assess the negative and positive social impacts (including cumulative impacts and social risks) associated with the proposed Project and develop feasible measures to avoid, mitigate and / or enhance these impacts. The findings of the SIA will be incorporated into the Environmental Impact Assessment / Basic Assessment Report and Environmental Management Programme for the proposed Project.

National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) as amended requires the identification, prediction and evaluation of the impact of specified projects on the environment, socio-economic conditions and cultural heritage of a local area through all project cycles (including construction, operations and closure) with a view to minimising negative impacts and maximise project benefits. The 'polluter pays principle' also applies namely that the costs of remedying pollution, environmental degradation and consequent health effects must be paid for by culprits.

In the 2002 Johannesburg Declaration on Sustainable Development, the on-going threats facing our planet were detailed, which include among others, loss of biodiversity, desertification of fertile land and water pollution. The alarming statistics on increasing environmental degradation is a result of numerous contributing factors such as disharmony in the relationship between humanity and the earth, the cumulative impact of many minor human acts, and the emphasis on specialisation, thereby ignoring other contributing factors to the total challenge or problem. In the National Environmental Management Act, 1998 (Act No. 107 of 1998), the concept of "sustainable development" is defined in section 1 to mean "...the integration of social, economic and environmental factors into planning, implementation and decision-making so as to ensure that development serves present and future generations".

## **10.6 A description of the proposed method of assessing the environmental aspects, including a description of the proposed method of assessing the environmental aspects including aspects to be assessed by specialists**

Specialists are going to be given an opportunity to utilise any preferred method of assessing environmental aspects. However, the preferred method of assessing the environmental aspects in respect of the proposed environmental impact assessment is presented in section 8.6.

## **10.7 A description of the proposed method of assessing duration and significance**

The proposed method of assessing the duration and significance in respect of the proposed environmental impact assessment is presented in section 8.6.

## **10.8 An indication of the stages at which the competent authority will be consulted**

The competent authority will be consulted for pre-application meeting, if necessary. Applications for Integrated Environmental Authorisation and Prospecting Right will be lodged with the competent authority. After the acceptance of Prospecting Right Application, a draft Scoping Report is going to be submitted to the Competent Authority for comment. After 43 days and after all the comments obtained from the Public Participation Process have been considered, the final Scoping Report is going to be submitted to the competent authority for consideration. If the final Scoping Report has been accepted, Environmental Impact Assessment (EIA) is going to be undertaken. A draft EIA is going to be submitted to the competent authority for comment. After all the comments obtained from the Public Participation Process, a final EIA is going to be submitted to the competent authority for consideration.

### **10.8.1 Review of Environmental Scoping Report**

#### **10.8.1.1 Authority Review of Draft Environmental Scoping Report**

The Consultation Environmental Scoping Report was made available for review and comments for a period of 43-days, to the following authorities:

- Department of Mineral Resources and Energy;
- Department of Human Settlement, Water and Sanitation; and
- Northern Cape: Department of Agriculture, Environmental Affairs, Rural Development and Land Reform

### **10.8.1.2 Public Review of Draft Environmental Scoping Report**

The draft Environmental Scoping Report was made available for public review at the following public locations in close proximity to the study areas, which were identified as readily accessible to I&APs:

- Kathu Library;
- Kgatelopele Library;
- Postdene Library; and
- Boichoko Library.

The availability of this draft report was advertised in the Kathu Gazette newspaper. A 30-day period was allowed for this review process from 10 March 2023 to 14 April 2023 Stakeholders and I&APs on the project database were notified of the availability of this report by letter (e-mail) as sent out in March 2023.

### **10.8.1.3 Final Environmental Scoping Report**

The compilation of the Consultation Environmental Scoping Report entails the consideration and inclusion of all relevant comments received from the public during the review of the draft Scoping Report. The final document will be submitted to Department of Mineral Resources and Energy for authority review and decision-making and/or comments.

## **10.9 Particulars of the public participation process that will be conducted during the Environmental Impact Assessment process**

An application was lodged with the Department of Mineral Resources and Energy. Another pre-application consultation meeting is going to be conducted with the Department of Human Settlements, Water and Sanitation, Kimberley, Northern Cape. The Public Participation Process pertaining to Integrated Environmental Authorisation and Integrated Water Use License Applications were conducted jointly.

Interested and Affected Parties (I&AP's) were notified of the proposed Project Application via e-mail, notices in public spaces, newspaper adverts or facsimiles and / or virtual conferencing platforms. Site notices were placed around the application area. In addition, newspaper advertisements (in English) will be placed in a newspaper which is widely distributed in the area. The Public Participation Process will be undertaken in accordance with the NWA and the NEMA process and the 2017 EIA Regulations (as



amended). I&AP's will be provided an initial notification and call to register period of 30 days. The draft Scoping and Environmental Impact Assessment Report was made available for public review and comment for a minimum period of 30 days each. During this period, an Open Day will be scheduled to present the findings of the draft Environmental Impact Assessment Report to the public. All correspondence submitted by I&AP's will be utilised during the impact assessment and all correspondence received from I&AP's will be included in the final Environmental Impact Assessment Report.

The Environmental Impact Assessment Report and Environmental Management Programme (EMPr) for comment will be made available to all Registered Interested and Affected Parties (I&AP's). In order to take part in the process and to submit comments on these documents, I&AP's are invited to register by completing the registration form and sending it back to the consultant.

Information on the environment, the impacts of the proposed Project and recommended mitigation and management measures; as well as more information on the application itself, will be described in these documents.

The public participation process will be conducted strictly in accordance with applicable regulations. The following categories of variables will take into account when deciding the required level of public participation:

- The scale of anticipated impact; and
- The sensitivity of the affected environment.

Consultation is required in terms of Chapter 6 of the EIA Regulations, 2017. Landowners, neighbours and other Interested and Affected Parties (I&AP's) are entitled to participate in and be consulted in respect of new proposed agricultural development applications. The proposed PPP for this application will include a number of steps, as listed below:

- Newspaper advertisement in local newspaper;
- Site notices;
- Notification of surrounding land owners, land occupiers and current right owners around;
- Specialist studies will be conducted including the use of available environmental reports; and
- Public Meeting with stakeholders involved e.g., community.

### 10.9.1 Overview of the Public Participation Process Undertaken during the EIA Phase

The primary aims and objectives of conducting public participation process during the EIA Study are as follows:

- To notify Interested and Affected Parties (I&APs) of the proposed Project;
- To document and consider issues, comments and concerns as raised by I&APs;
- To promote transparency, increase participation and raise awareness on the proposed development and associated consequences;
- To provide platform for liaison and communication with I&APs; and
- To identify potential environmental, socio-economic impacts associated with the proposed development.

### 10.9.2 Identification of Key Stakeholders

The first step in the Public Participation Process (PPP) is to identify key stakeholders, including:

- National and Provincial Government Representatives:
  - Department of Agriculture, Environmental Affairs, Rural Development and Land Reform (DAEARDLR);
  - Department of Human Settlement, Water & Sanitation (DHSWS);
  - Department of Public Enterprises;
  - Department of Trade and Industry (DTI);
  - Department of Mineral Resources and Energy (DMRE);
  - National Environmental Standards and Regulations Enforcement Agency (NESRA); and
  - South African Heritage Resources Agency (SAHRA).
- Relevant Local and District Municipalities;
  - ZF Mgcawu District Municipality;
  - Gamagara Local Municipality; and
  - Tsantsabane Local Municipality.
- State-owned Entities:
  - Transnet;
  - SANDF;

- SACAA;
  - SANRAL; and
  - Eskom.
- 
- Landowner and neighbours (including Kathu Solar Park).

All I&AP information, together with record of dates and details of consultations and a record of all issues raised is recorded within a comprehensive project database. This database will be updated on an on-going basis throughout the project, and will act as a record of the communication/public involvement process.

### **10.9.3 Availing of Background Information**

Copies of Environmental Impact Assessment Report were made accessible for review at the Kathu Library and / or Tsantsabane Local Municipality Offices.

A briefing paper for the project has been compiled in English. The aim of this document is to provide a brief outline of the proposed project, provide preliminary details regarding the EIA Process, and explain how I&APs could become involved in the project. The briefing paper, together with a comment sheet and relevant map, was distributed to identified stakeholders and I&APs via e-mail, inviting them to register for participation the proposed development and submit details of any issues and concerns that they may have.

Furthermore, the briefing paper informed I&APs and Stakeholders of the prospective registration of the Project and invited to comment on the project throughout the process. An introductory letter was sent to all I&APs and Stakeholders together with the briefing paper, questionnaire and comments sheet.

### **10.9.4 Advertising**

The advertisement provided an abstract on key aspects of the Project (project description, location and contact details of the Environmental Assessment Practitioner). Furthermore, the advertisement requested I&APs to register, and to become involved in the project by submitting comments and highlighting issues of concern to Abantu Environmental Consultants (Pty) Ltd. The primary aim of the newspaper advert is to ensure that the widest possible group of I&APs were informed of the project.

### **10.9.5 Sharing of Draft EIA Report with Interested and Affected Parties who requested for a copy**

A database of records of all communication between I&APs and Abantu Environmental Consultants (Pty) Ltd pertaining to the proposed development was created and managed.

### **10.9.6 Site Notices**

Site notices were prepared according to the specifications set out in the EIA Regulations. The site notices included basic information regarding the proposed Project, the details of the public participation period, the listed activities applicable to the project and the contact details of the Environmental Assessment Practitioner. Site notices were placed at public venues.

- Main Entrance gate of the property, near Loatla, near Postmasburg, ZF Mgawu District, Northern Cape, South Africa;
- At Tsantsabane Municipality Notice Board;

### **10.9.7 Review of Environmental Impact Assessment Report**

The Environmental Impact Assessment Report is going to be taken on a public participation process. Members of the public, Interested and Affected Parties are going to be given a minimum of 30 days to review and comment on the draft Environmental Impact Assessment Report. Comments received are going to be considered in the final Environmental Impact Assessment Report and are going to be shared with the Competent Authority.

### **10.9.8 Authority Review of Draft Environmental Scoping Report**

The Consultation Environmental Impact Assessment Report was made available for review and comments for a period of 44-days, to the following authorities:

- Department of Mineral Resources and Energy;
- Department of Human Settlement, Water and Sanitation; and
- Northern Cape: Department of Agriculture, Environmental Affairs, Rural Development and Land Reform

### **10.9.9 Public Review of Draft Environmental Scoping Report**

The draft Environmental Impact Assessment Report is going to be made available for public review at the following public locations in close proximity to the study areas, which were identified as readily accessible to I&APs:

- Kathu Library;
- Kgatelopele Library;
- Postdene Library; and
- Boichoko Library.

The availability of this draft report was advertised in the Kathu Gazette newspaper. A minimum of 30-day period is going to be allowed for this review process from 10 March 2023 to 14 April 2023 Stakeholders and I&APs on the project database were notified of the availability of this report by letter (e-mail) as sent out in March 2023.

### **10.9.10 Final Environmental Impact Assessment Report**

The compilation of the Consultation Environmental Impact Assessment Report entails the consideration and inclusion of all relevant comments received from the public during the review of the draft EIA Report. The final document will be submitted to Department of Mineral Resources and Energy for authority review and decision-making and/or comments.

The decision of the Competent Authority is going to be shared as notice to all Interested and Affected Parties for comment and appeal. The outcome of the appeal period will be shared with the Competent Authority.

## **10.10 A description of the tasks that will be undertaken as part of the environmental impact assessment process; and**

The Constitution of the Republic is the supreme law of the land (South Africa). The Constitution provides the legal framework for legislation regulating any matters or conduct in South Africa, including environmental management in general. This regulating of matters has to be interpreted in accordance with the purport for the Bill of Rights. In order to give effect to section 24 of the Constitution, a nation framework (NEMA) for regulating environmental management was enacted. The NEMA sets out a number of principles (Chapter 1, Section 2) to give guidance to developers, private land owners, members of public and authorities.

The Environmental Impact Assessment phase is going to be undertaken in order to aim to achieve the following:

- To give effect to the proposed Scoping Phase approach, inclusive of considered inputs from Interested and Affected Parties;
- To investigate overall potential impacts;
- To provide an overall assessment of the social-economic and environmental impacts pertaining to the area of application;
- To undertake a detailed assessment of the preferred site/s in terms of environmental criteria including the rating of significant impacts;
- To identify and recommend appropriate mitigation measures (to be included in the Environmental Management Programme) for potentially significant environmental impacts; and

To undertake a wide public participation process that is transparent and inclusive to ensure that I&AP issues and concerns are duly considered in the EIA process that is underway.

Section 24(1) of the National Environmental Management Act, 1998 (Act No. 107 of 1998) states:

- *"In order to give effect to the general objectives of integrated environmental management laid down in this Chapter, the potential impact on the environment of listed activities must*

*be considered investigated, assessed and reported to the competent authority charged by this Act with granting the relevant environmental authorization."*

Reference is made to "listed activities" in Section 24 of the NEMA. Listed activities relate to the regulations as promulgated in GN R327, R326, R325 and R324 in Government Gazette 40772, dated 7 April 2017. Currently, the Government Notice Regulations published by the Minister in terms of the NEMA relate to the NEMA EIA Regulations in order to specify listed activities that require either a Basic Assessment process, or Scoping and Environmental Impact Assessment (that is a "full EIA"). It is important to note that the proposed development requires a full EIA, as it particularly includes, *inter alia*, the inclusion of Listed Activity Number 15 in GN R325:

- *"The clearance of an area of 20 hectares or more of indigenous vegetation, excluding where such clearance of indigenous vegetation is required for—  
(i) the undertaking of a linear activity; or  
(ii) maintenance purposes undertaken in accordance with a maintenance management plan."*

All the listed and specified activities which are triggered by this proposed development are going to be submitted to the Competent Authority before the Integrated Environmental Authorisation process underway completes. A copy of this Scoping Report is also going to be submitted to the Department of Mineral Resources and Energy for review. The Reference Number relating to the proposed agricultural development was pending at the time of submitting the first draft. A copy of the Application Form that was to be submitted to the Competent Authority at application stage, together with the anticipated acknowledgement letter (if applicable) from the Competent Authority will be included as an appendix to the Final Scoping Report that will be submitted to the Department of Mineral Resources and Energy for decision-making (in accordance with Regulation 21 (1) of the 2017 EIA Regulations).

Specialist Impact Assessments are going to be commissioned as per the plan of the proposed study. Noteworthy, comments and input from Interested and Affected Parties are going to be considered. Their comments may influence the list of specialist assessments to be undertaken.

All commissioned specialist assessments are going to be considered in the Environmental Impact Assessment Report.

Environmental Impact Assessment reports are going to be undertaken in accordance to the minimum requirements as present in *Appendix 3* of the Environmental Impact Assessment Regulation 326 of 2017. The Environmental Management Programme is going to be undertaken in compliance with the minimum requirements as presented in *Appendix 4* of the Environmental Impact Assessment Regulation 326 of 2017. Financial Quantum is going to be determined in compliance with Financial Provisioning Regulations of 2015.

#### **10.11 Identify suitable measures to avoid, reverse, mitigate or manage identified impacts and to determine the extent of the residual risks that need to be monitored**

The requirements of this section are going to be covered comprehensively during the EIA phase. All avoidance, reduction, minimisation and rehabilitation measures are going to be considered.



## **11 Undertaking Regarding Correctness of Information and inclusion**

I, Sive Mlamla, hereby undertake that the information provided in the foregoing report is correct to the best of my knowledge and that the comments and inputs from stakeholder and Interested and Affected Parties have been correctly recorded in the report.

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

Date:

## **12 Undertaking Regarding Level of Agreement**

I, Sive Mlamla, hereby undertake that the information provided in the foregoing report is correct to the best of my knowledge and the level of agreement with stakeholder and Interested and Affected Parties have been correctly recorded and reported herein.

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

Date:

## 13 Structure of this Scoping Report

The piece of work that is presented herein is written in accordance to the Guidelines as provided in Government Notice Regulation 326 of the EIA Regulations, 2017 as summarised in Table 3. This Scoping Report is compiled in accordance with *Appendix 2* of Government Notice Regulation of the EIA Regulations, 2017.

**Table 14:** Structure of Scoping Report

SR Requirements according to Section 21(3) of GNR 326	Section of this Report
(a) details of (i) the EAP who prepared the report; and (ii) the expertise of the EAP to carry out scoping procedures	Section 2
(b) the location of the activity, including – (i) the 21-digit Surveyor General code of each cadastral and land parcel; (ii) where available, the physical address and farm name; (iii) where the required information on (i) and (ii) is not available, the coordinates of the boundary of the properties	Section 3
(c) a plan which locates the proposed activity or activities applied for at an appropriate scale, or, if it is – (i) a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or (ii) on land where the property has not been defined, the coordinates within which the activity is to be undertaken	Section 4
(d) a description of the scope of proposed activity, including – (i) all listed and specified activities triggered; (ii) a description of the activities to be undertaken, including associated structures and infrastructure	Section 5
(e) a description of the policy and legislative context within which the development is proposed including and 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	Section 6
(f) a motivation for the need and desirability for the proposed development including the need and desirability of the activity in the context of the preferred location	Section 7
(g) a full description of the process followed to reach the proposed preferred activity, site and location within the site, including –	Section 8

<ul style="list-style-type: none"> <li>(i) details of the alternatives considered;</li> <li>(ii) details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;</li> <li>(iii) a summary of the issues raised by I&amp;AP, and an indication of the manner in which the issues were incorporated, or the reasons for not including them;</li> <li>(iv) the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;</li> <li>(v) the impacts and risks identified for each alternative, including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to these impacts –             <ul style="list-style-type: none"> <li>(aa) can be reversed;</li> <li>(ab) may cause irreplaceable loss of resources; and</li> <li>(ac) can be avoided, managed or mitigated;</li> </ul> </li> <li>(vi) the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives;</li> <li>(vii) positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;</li> <li>(viii) the possible mitigation measures that could be applied and level of residual risk;</li> <li>(ix) the outcome of the site selection matrix;</li> <li>(x) if no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such; and</li> <li>(xi) a concluding statement indicating the preferred alternatives, including preferred location of the activity</li> </ul>	
<b>SR Requirements according to Section 21(3) of GNR 326</b>	<b>Section of this Report</b>
<ul style="list-style-type: none"> <li>(h) a plan of study for undertaking the environmental impact assessment process to be undertaken, including –             <ul style="list-style-type: none"> <li>(i) a description of the alternatives to be considered and assessed within the preferred site, including the option of not proceeding with the activity;</li> <li>(ii) a description of the aspects to be assessed as part of the environmental impact assessment process;</li> <li>(iii) aspects to be assessed by specialists;</li> </ul> </li> </ul>	<p>Section 10</p>

<p>(iv) a description of the proposed method of assessing the environmental aspects, including a description of the proposed method of assessing the environmental aspects including aspects to be assessed by specialists;</p> <p>(v) a description of the proposed method of assessing duration and significance;</p> <p>(vi) an indication of the stages at which the competent authority will be consulted</p> <p>(vii) particulars of the public participation process that will be conducted during the environmental impact assessment process;</p> <p>(viii) a description of the tasks that will be undertaken as part of the environmental impact assessment process; and</p> <p>(ix) identify suitable measures to avoid, reverse, mitigate or manage identified impacts and to determine the extent of the residual risks that need to be monitored.</p>	
<p>(i) An undertaking under oath or affirmation by the EAP in relation to –</p> <p>(i) The correctness of the information provided in the report;</p> <p>(ii) The inclusion of comments and inputs from stakeholders and I&amp;APs; and</p> <p>(iii) Any information provided by the EAP to I&amp;APs and any responses by the EAP to comments or inputs made by I&amp;APs</p>	
<p>(j) An undertaking under oath or affirmation by the EAP in relation to the level of agreement between the EAP and I&amp;APs on the plan of study for undertaking the environmental impact assessment</p>	
<p>(k) Where applicable, any specific information required by the competent authority; and</p>	
<p>(l) Any other matter required in terms of section 24 (4)(a) and (b) of the Act</p>	