



**mineral resources**

Department:  
Mineral Resources  
**REPUBLIC OF SOUTH AFRICA**

**REVISED DRAFT BASIC ASSESSMENT REPORT**  
**And**  
**ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT**

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

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**FILE REFERENCE NUMBER SAMRAD:** NC 30/5/1/3/2/10789 MP

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**FILE REFERENCE NUMBER SAMRAD:** NC 30/5/1/3/2/10789 MP

## I. Acronyms

AEL	Atmospheric Emission License
AQMP	Air Quality Management Plan
BAR	Basic Assessment Report
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
DME	Department of Mineral Resources and Energy
DMR	Department of Mineral Resources
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
MP	Mining Permit
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
NEM:WA	National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)
NFEPA	National Freshwater Ecosystem Priority Areas
NWA	National Water Act, 1998 (Act No. 36 of 1998) [as amended]
NWRS	National Water Resource Strategy
PC	Pollution Control
PCD	Pollution Control Dam
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
PR	Prospecting Right
RQO	Resource Quality Objectives
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

## II. SOME DEFINITIONS

**Catchment** - The area from which any rainfall will drain into the watercourse or watercourses or part of the water course, through surface flow to a common point or common points

**Constitution** – Refers to the Constitution of the Republic of South Africa, 1996 (Act No. 108 of 1996).

**Domestic waste** - Waste, excluding hazardous waste that emanates from premises that are used wholly or mainly for residential, educational, health care, sport or recreation purposes;

**Effective Management of Waste or Spills** - Means the taking of all practicable steps to ensure that waste is managed in a manner that will protect health, property and the environment;

**Environment** – The external circumstances, conditions and objects that affect the existence and development of an individual, organism or group; these circumstances include biophysical, social, economic, historical, cultural and political aspects. Environment means the surroundings within which humans exist and that are made up of-

(i) the land, water and atmosphere of the earth;

(ii) micro-organisms, plant and animal life;

(iii) any part or combination of (i) and (ii) and the interrelationships among and between them; and

(iv) the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being.

**Environmental Impact Assessment** - An environmental Impact Assessment (EIA) refers to the process of identifying, predicting and assessing the potential positive and negative social, economic and biophysical impacts of any proposed project, plan, programme or policy which requires authorisation of permission by law and which may significantly affect the environment. The EIA includes an evaluation of alternatives. As well as recommendations for appropriate mitigation measures for minimising or avoiding negative impacts, measures enhancing the positive aspects of the proposal and environmental management and monitoring measures.

**Existing Lawful use** - An existing lawful use means a water use which has taken place at any time during a period of two years immediately before the date of commencement of the National Water Act 1998, (Act 36 of 1998) or which has been declared an existing lawful water use under section 33 and which was authorised by or under any law which was in force immediately before the date of commencement of the National Water Act.

**Groundwater Recharge** - The inflow of water into a groundwater reservoir from the surface, e.g. infiltration of precipitation and its movement to the water table.

**General waste** - Means waste that does not pose an immediate hazard or threat to health or to the environment, and includes-

(a) domestic waste;

- (b) building and demolition waste;
- (c) business waste; and
- (d) inert waste.

**Hazardous waste** - Means any waste that contains organic or inorganic elements or compounds that may, owing to the inherent physical, chemical or toxicological characteristics of that waste, have a detrimental impact on health and the environment

**Hydrogeological** –The study of distribution and movement of groundwater.

**Hydrological** – The study of movement, distribution and quality of surface water and groundwater.

**Inert waste** - Means waste that-

- (a) does not undergo any significant physical, chemical or biological transformation after disposal;
- (b) does not burn, react physically or chemically biodegrade or otherwise adversely affect any other matter or environment with which it may come into contact; and
- (c) does not impact negatively on the environment, because of its pollutant content and because the toxicity of its leachate is insignificant;

**Monitoring programme** - means a programme for taking regular measurements of the quantity and/or quality of a water resource, waste or wastewater discharge at specified intervals and at specific locations to determine the chemical, physical and biological nature of the water resource, waste or wastewater discharge.

**Public Participation Process** – A process of involving the public in order to identify issues and concerns, and obtain feedback on options and impacts associated with a proposed project, programme or development. Public Participation Process in terms of NEMA refers to: a process in which potential interested and affected parties are given an opportunity to comment on, or raise issues relevant to specific matters.

**Red Data Book (South African)** – An inventory of rare, endangered, threatened or vulnerable species of South African plants and animals.

**Recycle** - Means a process where waste is reclaimed for further use, which process involves the separation of waste from a waste stream for further use and the processing of that separated material as a product or raw material.

**Reserve** - means the quantity and quality of water required –

- (a) to satisfy basic human needs by securing a basic water supply, as prescribed under the Water Services Act, 1997 (Act No. 108 of 1997), 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 resource.

**Re-use** - Means to utilise articles from the waste stream again for a similar or different purpose without changing the form or properties of the articles;

**The Act** - The National Water Act, (NWA) (Act 36 of 1998)

**Tributaries** - A stream or river which flows directly into a larger river or stream.

**Waste** - Means any substance, whether or not that substance can be reduced, re-used, recycled and recovered-

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

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

(c) that must be treated or disposed of; or

(d) that is identified as a waste by the Minister by notice in the Gazette, and includes waste generated by the mining, medical or other sector,

but –

(i) a by-product is not considered waste; and

(ii) Any portion of waste, once re-used, recycled and recovered, ceases to be waste.

Hazardous waste must be classified in terms of SANS 10228 class.

**Class 1:** Explosives

**Class 2:** Gases

**Class 3:** Flammable liquids

**Class 4:** Flammable solids

**Class 5:** Oxidising substances and organic peroxides

**Class 6:** Toxic and infectious substances

**Class 7:** Radioactive substances

**Class 8:** Corrosives

**Class 9:** Other miscellaneous substances

If not listed in SANS 10228 - consult DWS prior to classification.

**Watercourse** means -

(a) a river or spring;

(b) a natural channel in which water flows regularly or intermittently;

(c) a wetland, lake or dam into which, or from which, water flows; and

(d) any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse, and a reference to a watercourse includes, where relevant, its bed and banks.

**Water quality** means the physical, chemical, toxicological, biological (including microbiological) and aesthetic properties of water that determine sustained (1) healthy functioning of aquatic ecosystems and (2) fitness for use (e.g. domestic, recreational, agricultural, and industrial). Water quality is therefore reflected in (a) concentrations or loads of substances (either dissolved or suspended) or micro-organisms, (b) physico-

chemical attributes (e.g. temperature) and (c) certain biological responses to those concentrations, loads or physico-chemical attributes.

**Water Resource** - A water resource includes any watercourse, surface water, estuary or aquifer. Watercourses include rivers, springs, and natural perennial and non-perennial channels. Wetlands, lakes, dams, or any collection identified as such by the Minister in the Government Gazette.

**Water use license** - An authorisation from the Department to a designated water user to use water. The authorisation will provide details on the time-frames and conditions for the designated water use

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### III. MPORTANT 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.

#### **IV. Objective of the basic assessment process**

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

- (a) determine the policy and legislative context within which the proposed activity is located and how the activity complies with and responds to the policy and legislative context;
- (b) identify the alternatives considered, including the activity, location, and technology alternatives;
- (c) describe the need and desirability of the proposed alternatives,
- (d) through the undertaking of an impact and risk assessment process inclusive of cumulative impacts which focused on determining the geographical, physical, biological, social, economic, heritage , and cultural sensitivity of the sites and locations within sites and the risk of impact of the proposed activity and technology alternatives on the these aspects to determine:
  - (i) the nature, significance, consequence, extent, duration, and probability of the impacts occurring to; and
  - (ii) the degree to which these impacts—
    - (aa) can be reversed;
    - (bb) may cause irreplaceable loss of resources; and
    - (cc) can be managed, avoided or mitigated;
- (e) 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.

**V. PART A**  
**SCOPE OF ASSESSMENT AND BASIC ASSESSMENT REPORT**

**a) Contact Person and correspondence address**

**a) Details of -**

**(i) EAP**

Name of The Practitioner: Zandile Dwane

Tel No.: 083 265 7992

Fax No. :

e-mail address: kamvisto@gmail.com

**(ii) Expertise of the EAP.**

**1) *The qualifications of the EAP***  
(with evidence).

M. Sc in Geology  
South African Council for Natural Scientific Professionals  
American Association of Petroleum Geologists  
Attach evidence as ANNEXURE 1

**2) *Summary of the EAP's past experience.***  
(In carrying out the Environmental Impact Assessment Procedure)

Relevant past experiences include, but not limited, to the following: Environmental Impact Assessments, Environmental Management Plans and / or Reports, Rehabilitation progress assessments, Environmental compliance monitoring, Scoping Reports, etc.

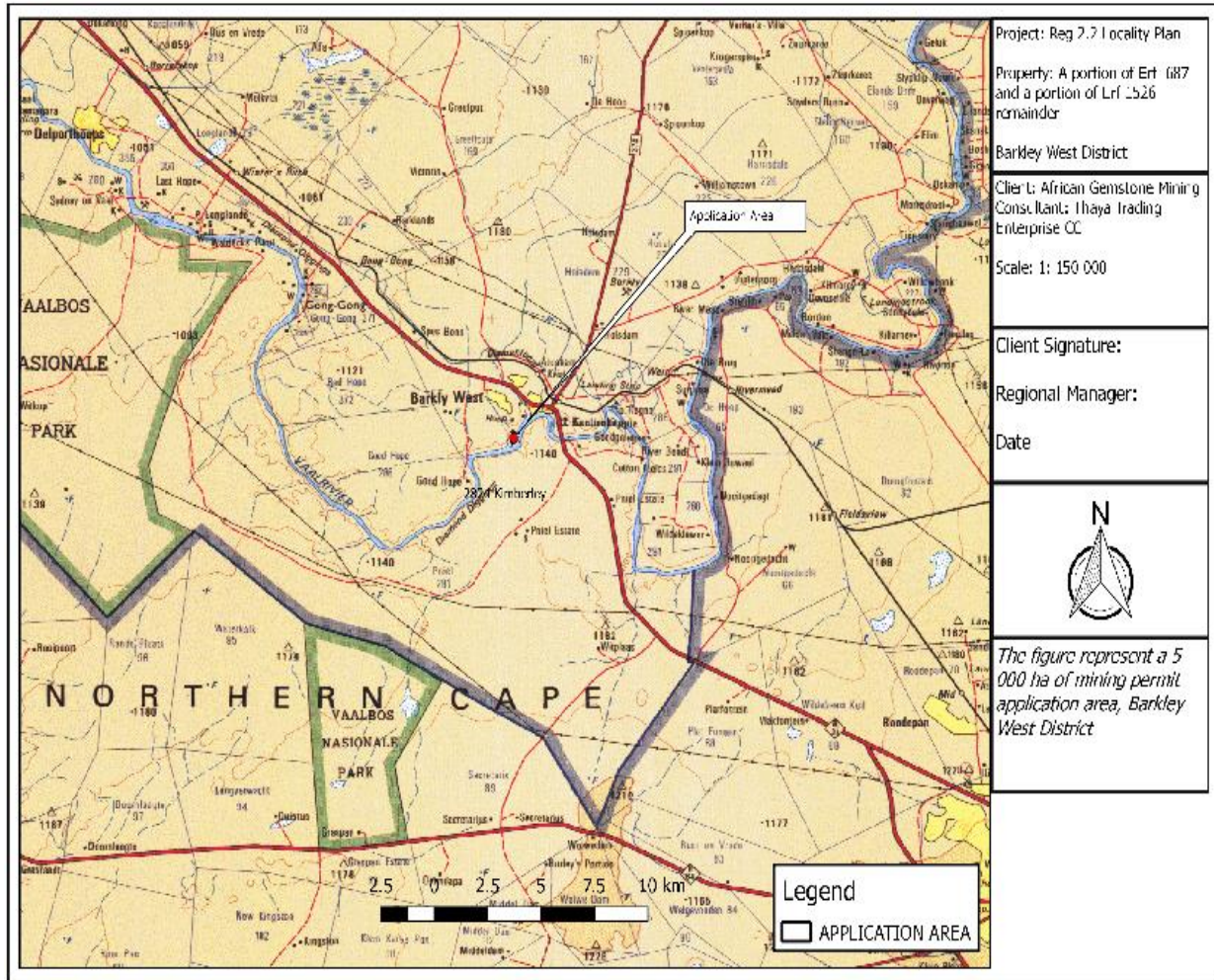
See CV herewith attached  
Attach evidence as Appendix 1

b) Location of the overall Activity.

Table 1: Description of property

<b>Farm Name:</b>	A certain piece of land on ERF 687 and a certain piece of land on ERF 1526 Remainder.
<b>Application area (Ha)</b>	Approximately 5 Ha
<b>Magisterial district:</b>	Dikgatlong Local Municipality, Frances Baard District Municipality
<b>Distance and direction from nearest town</b>	The application area is situated on the small piece of ground on ERF 687 and a certain piece of land on ERF 1526 Remainder, approximately 2 Km out of Barkley West town
<b>21 digit Surveyor General Code for each farm portion</b>	
<b>Title</b>	Basic Assessment Report and Environmental Management Programme for the proposed Diamond Mine (small-scale) situated on the small piece of land of ERF 687 and a certain piece of land on ERF 1526 Remainder (approx. 5 Ha), near Barkley West, Northern Cape, South Africa.
<b>Summary of Report Purpose</b>	<p>The purpose of this Basic Assessment Report and Environmental Management Programme is to:</p> <ul style="list-style-type: none"> <li>✓ Present the proposed project and the need for the project;</li> <li>✓ Describe the affected environment at a sufficient level of detail to facilitate informed decision-making;</li> <li>✓ Provide an overview of the Basic Assessment Process being followed, inclusive of public participation process;</li> <li>✓ Assess the potential positive and negative impacts the proposed project, associated infrastructure and activities, its subsequent dismantling and demolition may have on the environment;</li> <li>✓ Provide recommendations to incorporate either the option to avoid, manage or mitigate potential negative impacts and to enhance the potential positive impact of the project;</li> <li>✓ Compile an Environmental Management Programme (EMPr) for the proposed project; and</li> <li>✓ Provide a Borrow Pit Rehabilitation and Closure Plan for the proposed project.</li> </ul> <p>All comments received from Interested and Affected Parties submitted during the review process of this Basic Assessment Report and Environmental Management Programme will be incorporated into the final BAR &amp; EMPr, if applicable and where necessary. This Basic Assessment Report is hereby submitted to the Competent Authority, the Department of Mineral Resources and Energy, Northern Cape.</p>
<b>Name of Applicant</b>	African Gemstone Mining (Pty) Ltd
<b>Name of Consultant</b>	Thaya Trading Enterprise CC 9705 Eerste Laan, Rooisand, Kathu, 8446
<b>Author(s)</b>	Zandile Dwane
<b>Reference Number</b>	NC 30/5/1/3/2/10789 MP
<b>Date</b>	August 2021
<b>Distribution List</b>	

**c) Locality map**  
 (show nearest town, scale not smaller than 1:250000)

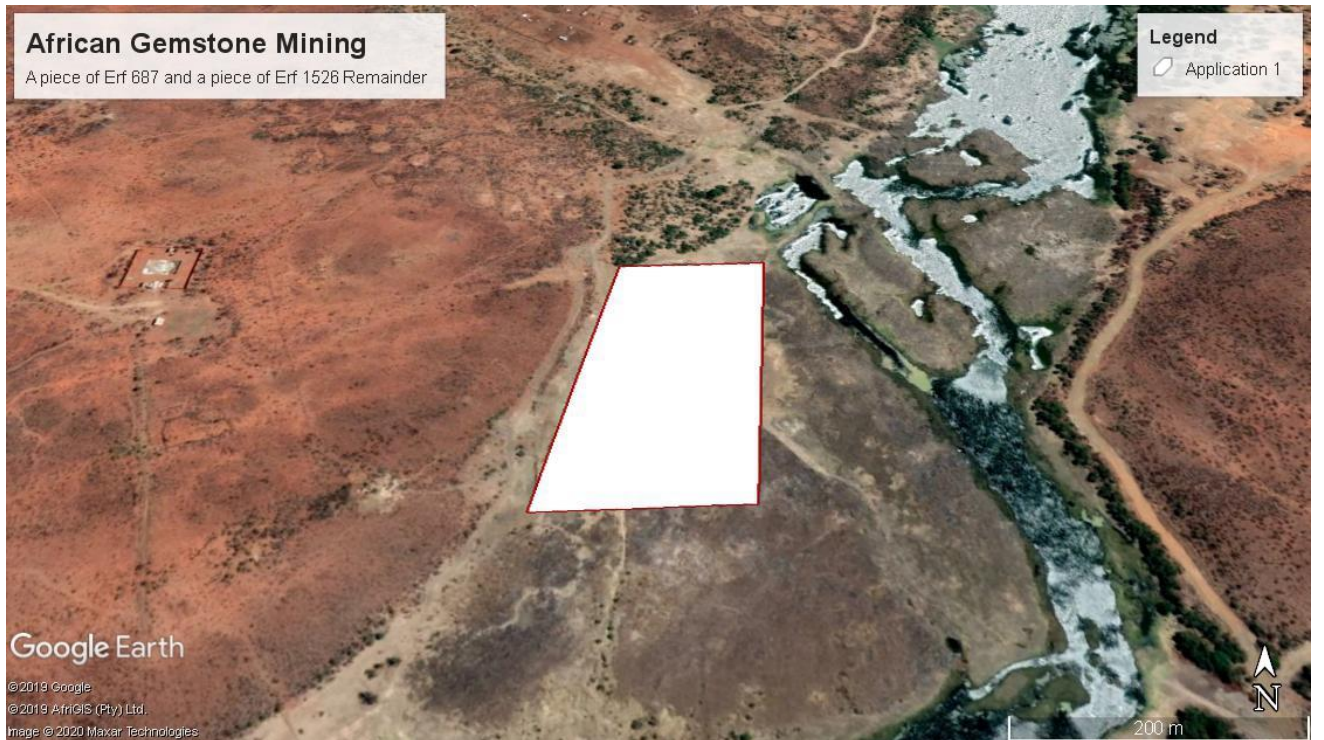
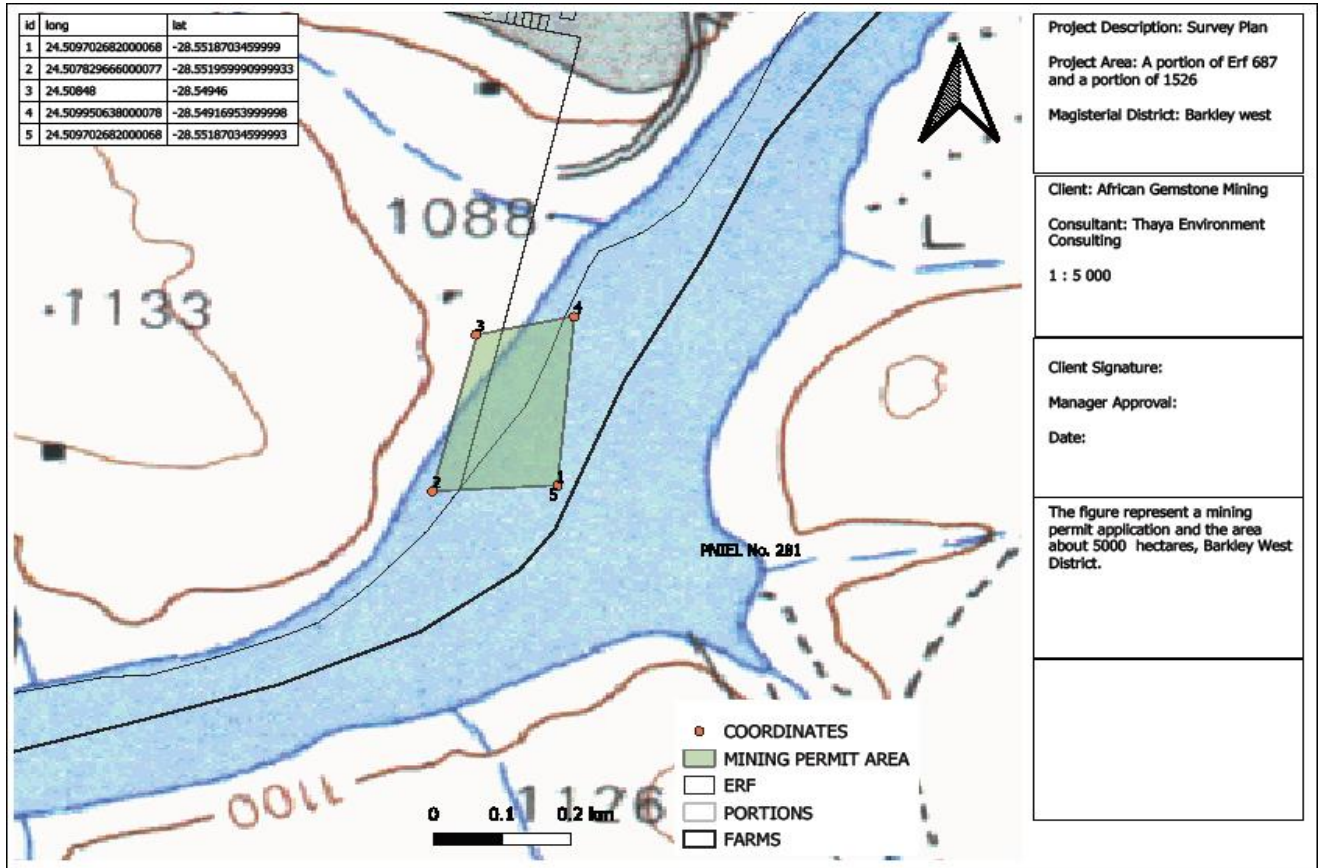


**Figure 1: Locality Map Dikgatlong Municipality**

**d) Description of the scope of the proposed overall activity.**

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

African Gemstone Mining proposes to develop a small-scale diamond mine on a small piece (5 Ha) of ERF 687 and a certain piece of land on ERF 1526 Remainder. The environmental authorisation for the planned development is expected to be granted for a period of 5 years. In executing the planned development, an environmental authorisation application has been applied for and lodged with the competent authority. Accordingly, a Basic Assessment Report is being drafted and will be submitted to the competent authority in compliance with NEMA and associated EIA Regulations. The planned operations will include the excavation of pits using excavator or Truck Load Backhoe and subsequently process material thereof. The excavated material will be transported using Articulated Dump Truck (ADT) that is going to be loaded using Truck Load Backhoe (TLB) or Front End Loader. The material is doing to be processed using 16 Foot Rotary Pan max.



**Figure 2: Map shows the location, and area (hectares) of all the aforesaid main and listed activities**

(i) Listed and specified activities

Table 2: Listed and specified activities

<p><b>NAME OF ACTIVITY</b></p> <p>(E.g. For prospecting – drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route etc...etc...etc</p> <p>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.)</p>	<p><b>Aerial extent of the Activity</b></p> <p>Ha or m<sup>2</sup></p>	<p><b>LISTED ACTIVITY</b></p> <p>Mark with an X where applicable or affected.</p>	<p><b>APPLICABLE LISTING NOTICE</b></p> <p>(GNR 324, 325, GNR 326 or GNR 327)</p>
<p>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.</p> <p>Activity 21 of Listing Notice 2</p>	<p>5 Ha</p>	<p>X</p>	<p>GNR 327 Listing Activity 21</p>
<p>Clearance of indigenous vegetation</p>	<p>5 Ha - Only the area where waste handling, rehabilitation of borrow pits, reclaiming and recovery of diamonds activities are going to take place will be cleared of indigenous vegetation. Concurrent rehabilitation will be conducted with normal backfilling.</p>	<p>X</p>	<p>GNR. 327, Listing Activity 27</p>
<p>Temporary structures</p>	<p>0.095 ha</p>	<p>X</p>	<p>Not listed</p>

Temporary Dump Site	0.04 Ha	X	GNR 327, Listed 1, Activity 21
Stock Pile	0.04	X	GNR 327, Listed 1, Activity 21
Oil storage facility	50 m <sup>2</sup>	X	Not listed
Water pipeline of undetermined length but less than 10 Km	3 Km	X	Not listed
Roads to trenches and processing plant	<2 Km	X	GNR 327, Listed 1, Activity 21
Excavations	3 Ha	X	GNR 327, Listed 1, Activity 21
Diesel Storage	0.0008 ha	X	GNR 327, 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.)	5 ha	X	GNR 921, 29 November 2013
Chemical Storage	0.0025 ha	X	GNR 327, Listed 1, Activity 21
Vehicle Storage	0.0025 ha	X	GNR 327, Listed 1, Activity 21
Access Roads	Less than 4 m in width.		GNR 327, Listed 1, Activity 21
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 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	Obtain closure certificate after operations have ceased, if necessary.	X	Listing Notice GNR 327, Activity 22

**(ii) Description of the activities to be undertaken**

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

African Gemstone Mining plans to develop an open pit mining operation for diamond (general, alluvial and in kimberlite) within a 5 Ha area that is located on a small piece (5 Ha) of ERF 687 and a certain piece of land on ERF 1526 Remainder, Dikgatlong Municipality. Noteworthy, this section on description of the activities to be undertaken may still have to be worked on. The applicant is yet to confirm some information pertaining the machinery utilised and process to be followed.

The applicant requires a Mining Permit in terms of the Mineral & Petroleum Resource Development Act, 2002 (Act No. 28 of 2002) and the Environmental Authorisation in terms of National Environmental Management Act, 1998 (Act No. 107 of 1998).

Closure of infrastructure, Borrow Pits, Waste Rock Dumps, earthworks, re-shaping of slopes and associated costs and schedule implications among others will be considered in the final plan. Re-vegetation, aftercare maintenance and monitoring of the area of will be considered. In terms of Regulation 5 of GNR 632 of the National Environmental Management: Waste Act, waste rock stockpiles must be classified taking into consideration Regulation 8 of GNR 634 of 2013. Guidelines are provided in the South African Code of Practise for Mine Residue Deposit classification (SANS: 10286: 1998).

**SCOPE OF WORK**

Prepare draft and final Basic Assessment Report (BAR) in terms of Appendix 1 of NEMA EIA regulations.

Prepare draft Environmental Management Programmes (EMPr) in terms of Appendix 4 of NEMA EIA regulation.

Undertake a consolidated Public Participation Process (PPP) in terms of Chapter 6 requirements of the NEMA EIA Regulations.

Mining Permit in terms of the Mineral & Petroleum Resource Development Act, 2002 (Act No. 28 of 2002) and the Environmental Authorisation in terms of National Environmental Management Act, 1998 (Act No. 107 of 1998).

*(i) Description of Planned Non-Invasive Activities*

(These activities do not disturb the land where mining will take place e.g. aerial photography, desktop studies, aeromagnetic surveys, etc.)

**Phase 1**

**Imagery Analysis and Geological Mapping**

High resolution satellite images will be studied and used to geologically map the application area. Contacts between various lithologies will be mapped and specific attention will be given to delineate and define areas underlain by alluvial gravels or Kimberlites. Rock stockpile will be properly examined for the best method to employ in handling the material.

A site investigation of the target areas will be undertaken to identify infrastructure and determine any potential problems that may need to be addressed.

*(ii) Description of Planned Invasive Activities*

(These activities result in land disturbances e.g. drilling, mining, etc.)

**Phase 2**

**Trenches Sampling**

Discussed herein after, Section 3.

*(iii) Description of Pre-feasibility Studies*

(Activities in this section include, but are not limited to, the following: initial, geological modelling, resource determination, possible future funding models, etc.)

The quantification of carats per 100 ton will be determined during handling of diamond-bearing waste rock tailings dumps. No model is going to be at pre-feasibility study phase.

Phase 3

**Analytical Desktop Study**

The project Geologist monitors the programme, consolidates and processes the data and amends the programme depending on the results. This is a continuous process throughout the programme and continues even when no mining is done on the ground.

Each physical phase of processing waste is followed by desktop studies involving interpretation and modelling of all data gathered. These studies will determine the manner in which the work programme is to proceed in terms of activity, quantity, resources, expenditure and duration.

*(iv) Description of Crushing, Screening and Pulsating Jigs Activities*

**Volumes of the mineral to be tested**

It is estimated, at this stage, that 100 tonnes/day of Tailings are going to be processed.

**Why will they be tested?**

The tailings, gravel or kimberlitic material will be tested to determine a grade (carats per hundred tonne) and value (US\$ per carat).

**Where will they be tested?**

All processing activities will take place on site or out of site. Herewith follows a description of the process:-

The planned processing technique is that of a typical South African Screening and Pulsating Jigs operation and may have to include processing of diamond-bearing material or waste rock dumps that are present within the application area. The planned mining and processing method is that of pitting and trenching; then passing of kimberlitic material, gravel, and tailings through the Jig plant/DMS/Rotary Pan and recovering diamonds subsequently use waste material backfill and rehabilitate disturbed land from previous operations if possible or necessary. Tailings are loaded with frontend loader or TLB and transported to the treatment facility on-site or off site using articulated dump trucks. The access to the tailings will be provided by a haul road to the screening and processing plants.

The operation is to be conducted using conventional equipment comprising four articulated dump trucks supported by appropriate TLB's and front-end loaders. The tailings are loaded with a TLB or frontend loader onto ADT Dump Trucks. Ore is hauled to the screening and Jig plant. As an integral part of the waste rock handling processes, backfilling will take place continuously if deemed necessary. A list of equipment and machinery that is going to be on site is presented below:

- Earthmoving and ancillary equipment;
- 4 x Front-end Loader;
- 4 x Articulated Dump Trucks;
- 1 x Sorting Plant;
- 2 x Water Truck;
- 1 x 16ft-Rotary Pan/Jig Plant/DMS Plant;
- Screen;
- 1 x Crusher
- 1 x Generator
- Water piping and storage facility

- Diesel store facility
- TMM maintenance area
- Ablution facilities
- Offices
- Slimes tanks, pollution control tanks, area or Dams
- Storm-water management infrastructure
- Screen
- Utility vehicles and small tools;
- Diamond recovery unit with Flow sort Machines, Plant, and recovery, crushing and screening equipment

Material, kimberlite, ore or gravel are loaded onto a vibrating grizzly and the +85mm oversize material is discarded into open pits on site. The remaining -85mm fraction is loaded into a 16-foot rotary pan with a treatment capacity of 80 tph. A magnetic separator is used to extract some of the heavy banded iron stones. Tracer tests are done regularly to ensure that the pans are operating at the correct density. Approximately 2.5 tonne of concentrate is tapped from the pan every hour and transported in locked containers to the final recovery unit. The final recovery unit consists of a holding bin, sizing screen, sizing bins and one state of the art Flowsort X-ray recovery unit which recover diamonds from the +2mm to -32mm size fraction. Final sorting of the X-ray concentrate will be done manually.

**To whom they will be disposed of:**

An expected grade of 2.5 carats per hundred tonnes, 8 800 carats could be recovered from the gravels, kimberlite or material. Diamonds will be sold at a reputable diamond tender house in South Africa among others to determine an average US\$ carat value for the diamonds. Alternatively, the stones will be sold to international markets that affiliate to the Kimberley process.



**(vi) Operational Phase**

- Pitting and Trenching;
- Excavation, Crushing, Screening, Sorting, Load and Haul of material back-filling;
- Operation of equipment and machinery;
- Use of Water and Hydrocarbons;
- Safety, Health and Environmental Management;
- Monitoring
- Maintenance of equipment and machinery; and,
- Part-Backfilling, Rehabilitation and Closure

**(vii) Decommissioning Phase**

Mobile equipment is going to be used in these operations. If not the case, demolition and dismantling of infrastructure is going to occur. When mobile infrastructure is used, the decommissioning phase is going to be straight forward as the infrastructure would be transported away from site. It is worth mentioning that the schedule of rehabilitation is going to be phased to run in parallel with the crushing and processing of tailings activities to ensure 'pain-free' rehabilitation and closure ultimately. The pollution control measures and associated infrastructure will be removed at closure, then, the polymeric material will be sent away for recycling if possible. The disturbed areas are going to be rehabilitated in such a manner that the environmental condition is of reasonable standard. Inert material may be used to infill the pits and hazardous materials or waste will be transported to an appropriately licenced waste disposal facility. All hydrocarbon-contaminated soil will be treated in-situ or disposed of appropriately. Post-closure activities that are going to be undertaken include monitoring, maintenance and aftercare.

The natural state of the area of application prior to the development of previous mining operations that were conducted on the area was not known at the moment of compiling this report. The consultant, together with the applicant understand that it would have been more beneficial towards compilation of this report to have access to all studies conducted and reports generated relating to the previous mining operations that were conducted on the area of interest. If gaining access to information such as reports pertaining to the previously was possible, it was going to be relatively easy to restore the natural topography and ecology of the area of application to its natural state. Furthermore, it is understood that topsoil has eroded already and therefore cannot be used for rehabilitation of the area of application because the long period of time it took for the area to be rehabilitated and lack of care for top soil that was stripped from the previous mining operations.

During rehabilitation, it is recommended for the elevations and sides of waste rock dumps to be held tight using methods such as netting (use biodegradable material) and matting in order to ensure stability to prevent erosion. Re-vegetation should be conducted without any delays to hold the soil tight and to prevent erosion from taking place.

Re-vegetation is necessary to undertake in order to re-establish vegetation in areas which were previously cleared and disturbed.

The abandoned tailings on-site will be used to backfill the borrow pits. The management of stockpiles and deposits is to be followed in compliance with the Regulations applicable to the Planning and Management of Residue Stockpiles and Residue Deposits (GNR 632 of 2013) published under the NEM:WA, as well as the set Protocols, Best Practices, National Norms and Standards and other applicable Regulations.

In terms of NEM:WA and its regulations, tailings and waste rock stockpiles have to be classified in order to, among other things, give effect to the National Norms and Standards for assessment of waste for landfill disposal (GNR 635 of 2013) and the National Norms and Standards for disposal of waste to landfill (GNR 636 of 2013). The assessment to classify waste rock on the abandoned mine should have been conducted during the operational phase of the previous mining operations. At decommissioning, it is recommended that waste rock is classified to ensure effective and efficient decommissioning. A risk-based approach on a case-by-case basis is the current approach acceptable as per GNR 632 as amended. The amendments to GNR 632 give effect to case-by-case assessment of the necessity for use of applicable pollution control barrier systems instead of a blanket approach that was previously adopted as applicable to waste management license applications for the establishment of residue stockpiles and deposits. This risk-based assessment must be conducted by a competent person.

It is possible to develop a solar plant after the area of interest has been rehabilitated. This approach depends on many factors, such as availability of funds (investment), proximity to sub-station, demand to mention but a few.

**a. Policy and Legislative Context**

**Table 3: Policy and Legislative Context**

<p><b>APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT</b>                      (a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process)</p>	<p><b>REFERENCE WHERE APPLIED</b></p>	<p><b>HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.</b>                       (E.g. In terms of the National Water Act a Water Use License has/ has not been applied for)</p>
<p>Minerals and Petroleum Resources Development Act, 2002 (Act 28 of 2002)</p>	<p>Mining Permit application process</p>	<p>Mining Permit has been applied for and to the Department of Mineral Resources.</p>
<p>Minerals and Petroleum Resources Development Act, 2002 (Act 28 of 2002)</p>	<p>Mining Permit and Environmental Authorisation processes</p>	<p>In progress</p>
<p>National Environmental Management Act, 1998 (Act 107 of 1998)</p>	<p>Section 28 of the National Environmental Management Act, Act 107 of 1998 stipulates an obligation of consideration of care where reasonable measures are taken to prevent pollution or degradation from occurring, continuing or recurring, or, where this is not possible, to minimise and rectify pollution or degradation of the environment. Section 29 provides for the protection of workers who refuse to undertake work that poses a hazard to the environment. Section 30 emphasises on procedures to be followed in the event of an emergency, especially an incident which may impact negatively on the environment. Section 31 covers the aspect of access to environmental information and</p>	<p>In progress</p>

		protection of whistle blowers.	
National Environmental Management Act, 1998 (Act 107 of 1998)	Environmental Impact Assessment Regulations, 2017 (G 40772)	GNR 325: 2017 Regulations promulgated in terms of NEMA, Act 107 of 1998: GNR 324, 325, 326 and 327 Government Gazette No. 40772, Pretoria, in terms of Chapter 5 of the National Environmental Management Act, Act 107 of 1998 (as amended), contain the EIA Regulations, as well as a schedule of activities that may have substantially negative effects on the environment, therefore, require authorisation from the competent environmental authority..	In progress
National Environmental Management Act: Biodiversity Act, 2004 (Act 10 of 2004)		The National Environmental Management: Biodiversity Act, Act 10 of 2004 provides for the MEC/ Minister to list ecosystems that are threatened and in need of protection (Section 52) and to identify any process or activity in such a listed ecosystem as a threatening process (Section 53). A list of threatened and protected species has been published in terms of Section 56(1) GG 29657 GNR 151 and GNR 152, Threatened or Protected Species Regulations. The Act also deals with restricted activities involving alien species; restricted activities involving certain alien species totally prohibited; and duty care to be taken pertaining to listed invasive species.	
National Environmental Management Act: Waste Act, 2008 (Act 59 of 2008)		Regulates waste management in order to protect health and the environment by stipulating reasonable measures to be taken to ensure prevention of pollution and ecological degradation, and for securing ecologically-sustainable-development.	In progress
Waste Classification and Management Regulations (GNR 634 of 23 August 2013) with reference to the National Norms and Standards for the Assessment of Waste for Landfill Disposal (GNR 635 of 23 August 2013) and disposal of waste to landfill (GNR 636 of 2013)		Waste rock stockpiles need to be classified in terms of GNR 632 of the NEM:WA.	
National Water Act, 1998 (Act 36 of 1998)		In terms of the definitions contained in Section 1 of the National Water Act, Act 36 of 1998, a “water resource” includes a watercourse, surface water, estuary, or aquifer. “Aquifer” means a	In progress

	<p>geological formation which has structures or textures that hold water or permit appreciable water movement through them. "Watercourse" means a river or spring; a natural channel in which water flows regularly or intermittently; a wetland, lake or dam into which, or from which, water flows; and any collection of water which the Minister may, by notice in the Gazette declare to be a watercourse, and a reference to a watercourse includes, where relevant, its bed and banks.</p> <p>In addition, in terms of the definitions contained in Section 1 of the National Water Act, waste "includes any solid material or material that is suspended, dissolved or transported in water (including sediment) and which is spilled or deposited on land or into a water course in such volume, composition or manner as to cause, or to be reasonably likely to cause, the water resource to be polluted". The Minister of Water and Environmental Affairs is allowed to regulate activities which have a detrimental impact on water resources by declaring them to be controlled activities. No person may undertake a controlled activity unless such person is authorised to do so by or under the Act. Duty of Care to prevent and remedy the effects of pollution to water resources is addressed in Section 19. Section 20 addresses the procedures to be followed, as well as control of emergency incidents which may impact on a water resource.</p> <p>Recognised water uses are addressed in terms of Section 21 and the requirements for registration of water uses are stipulated in Section 26 and Section 34.</p>	
<p>Environmental Conservation Act, 1989 (Act 73 of 1989)</p>	<p>Section 25 of the Environment Conservation Act, Act No. 73 of 1989, as well as the National Noise Control Regulations GNR 154 dated 10 January 1992, regarding noise, vibration and shock, is applicable.</p>	
<p>In terms of the National Heritage</p>	<p>In terms of the National Heritage Resources Act, Act No. 25 of 1999, any</p>	

<p>Resources Act, 1999 (Act No. 25 of 1999)</p>	<p>person who intends to undertake “any development or other activity which change the character of a site – exceeding 5 000m<sup>2</sup> in extent” and “the construction of a .... Linear development or barrier exceeding 300m in length” must at the very earliest stages of initiating the development notify the responsible heritage resources authority, viz. the Northern Cape Provincial Heritage Resources Agency (NCPHRA) and/or the South African Heritage Resources Agency (SAHRA), as well as the Northern Cape Department of Sports, Arts and Culture.</p>	
<p>Conservation of Agricultural Resources Act, Act No 43 of 1983</p>	<p>Section 5 of the Conservation of Agricultural Resources Act, Act No. 43 of 1983, prohibits the spreading of weeds and Section 6 and Regulation 15 and 15E of GNR 1048 address the implementation of control measures for alien and invasive plant species. This aspect has been addressed in the Environmental Management Programme. This Act also make provision for the conservation of agricultural land.</p>	
<p>National Forests Act, 1998 (Act No. 84 of 1998)</p>	<p>National Forests Act, Act No. 84 of 1998 and Regulations, Section 7: No person may cut, disturb, damage or destroy any indigenous, living tree in a natural forest, except in terms of a licence issued under Section 7(4) or Section 23; or an exemption from the provisions of this subsection published by the Minister in the Gazette. Sections 12 – 16 deal with protected trees, with the Minister having the power to declare a particular tree, a group of trees, a particular woodland, or trees belonging to a certain species, to be a protected tree, group of trees, woodland or species. In terms of Section 15, no person may cut, disturb, damage, destroy or remove any protected tree; or collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree, except under a licence granted by the Minister.</p>	
<p>Subdivision of Agricultural Land Act, Act 70 of 1970</p>	<p>Control the subdivision, and in connection therewith, the use of agricultural land. It also controls long</p>	

	terms leases over portions of agricultural land. The applicant needs to apply for consent from Department of Agriculture for these leases.	
Section 17 of the Fencing Act, Act No 31 of 1963	States that any person erecting a boundary fence may clean any bush along the line of the fence up to 1.5m on each side therefore and remove any tree standing in the immediate line of the fence. However, this provision must be read in conjunction with the environmental legal provisions relevant to protection of flora.	
Section 8 of the Atmospheric Pollution Prevention Act, Act No. 45 of 1965	Section 8 of the atmospheric Pollution Prevention Act, Act No. 45 of 1965, regulating controlled areas, as well as Section 27, with regard to dust control, is still applicable.	
The Occupational Health and Safety Act, Act No. 85 of 1993 GN R 2281 of 1987 – 10-16.	Environmental Regulations for Workplaces are applicable.	
The Northern Cape Nature Conservation Act, Act No. 9 of 2009 addresses protected species in the Northern Cape and the permit application processes related thereto.	Addresses protected species in the Northern Cape and the permit application processes related thereto.	
The South African Civil Aviation Regulation Act, Act 13 of 2009.	Controls markings of structures that may influence aviation through the Civil Aviation Technical Standard, SA-CATSAH 139.01.33 Obstacle Limitations and Markings outside Aerodrome or Heliports. It states that any structure exceeding 45m above ground level, or structures where the top of the structure exceeds 150m above the MEAN ground level, like on top of a hill, the mean ground level considered to be the lowest point in a 3km radius around such structure. Structures lower than 45m, which are considered as a danger or a potential danger to aviation, shall be marked as such when specified. Overhead wires, cables, etc., crossing a river, valley or major roads shall be marked and in addition, their supporting towers marked and lighted if an aeronautical study indicates that it could constitute a	

	<p>hazard to aircraft. The highest structures that would be constructed at the proposed development would be the lighting conductors, which would have a height of 25m.</p>	
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**b. Need and desirability of the proposed activities.**

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

For years, mining has been the driving force behind South Africa's economy and continues to make a valuable contribution to the country's GDP. The economy of South Africa is built mostly on gold and diamond-mining, with gold-mining contributing over a third of the country's exports. Whereas, South African diamond-mining industry was listed as one of the largest mining countries in the world in the year 2009. It is predicted that mining will still play an important role to the economy, most notably through foreign exchange earnings and employment provision. It is also one of the primary sectors that provide employment opportunities for unskilled and semi-skilled people. The South African mining industry has its origin in small-scale to medium-scale mining activities, with these operations offering much needed employment opportunities and entrepreneurship, as well as contributing to the mineral sector and local economy. Small-scale mining and medium-scale mining's impact on employment is especially observed in the rural areas and province such as the Northern Cape where there are limited opportunities; providing significant livelihood for rural communities and a means of alleviating poverty.

In year 2017, the Department of Environmental Affairs published an updated guideline on the need and desirability that is yet to be gazetted. This published guideline seeks to ensure development takes place in an ecologically sustainable, socially justifiable and economically justifiable manner. When considering factors that may influence decision-making pertaining to the approval of a proposed development in order to give effect or promote justifiable economic and social development, the relevant spatial plans must be considered, including inputs from Interested and Affected Parties, Municipal Integrated Development Plans (IDP), Spatial Development Frameworks (SDF) and Environmental Management Frameworks (EMF).

The proposed development of the Mine is aimed at supporting the economy of South Africa by producing a commodity that has a potential to leverage the economy of the country. The primary beneficiaries of this project include, among others, the employees, members of surrounding communities and the country. Secondary beneficiaries include the suppliers of goods and services, and the local businesses through the buying power of employees. This is in line with the National Development Plan (NDP). The Social Labour Plan of the Proposed development is aimed at ensuring local economic development through implementation of the various projects.

The applicant estimates that these small pieces of land could, if mining permit is granted, prove to be bearing commodities of high economic value. Only a small piece (5 Ha) of ERF 687 and a certain piece of land on ERF 1526 Remainder is targeted will be temporarily disturbed. The remainder of the farm portions will proceed as normal according to this particular application.

### **c. Motivation for the overall preferred site, activities and technology alternative**

Diamond mining activity dominated regions include the Northern Cape and North West in South Africa. These regions or provinces are known to bear alluvial diamond deposits. Barkly West is known bear dolerite, alluvial diamond deposits and some kimberlite pipes. As a consequence, a number of individuals who reside in Barkley West, Longlands and Delportshoop have indicated that they intend to apply for prospecting rights and mining permits. However, affordability is the limiting factor.

As discussed in section (f), the proposed development of the Mine will get only a small piece of the property disturbed in relation to this particular application.

The mining activities will be conducted following dolerite, alluvial and target the kimberlite with anticipation that the identified area on the farm could be efficiently mined to produce commodity of high grade and quality of economic value.

#### **Mining Site Location**

A Mining Permit application was lodged with the Department of Mineral Resources and Energy.

#### **Water Usage**

In an event the mining activities go as planned, a rotary diamond plant which uses a 16 feet rotary pan will be used. On estimation, a 16 feet rotary pan may use 17 000 litres of water per hour. In an event operations run for 8 hours during daytime only, water usage is estimated at 720 000 liters per week. A 16 feet rotary pan can work of approximately 65 tons per hour which, in essence, constitutes approximately 17 000 litres per hour. However, the mining activities will be conducted over a period as stipulated in the mining permit that is in place which reduces water usage over the mining period. Mining activities have a potential to change the subsurface flow of surface water resources through the dewatering activities. However, in this case, loss of run-off contribution to the Vaal River is not anticipated.

## Mine Residue Dam

A slimes dam design will be established in order to maximise the capacity of the dam and to minimise the risks in terms of general safety and Department of Human Settlements, Water and Sanitation regulations.

The locality of the mine residue dam will be identified with the following factors in consideration:

- No structures, environmental threats can be identified downstream;
- Accessibility and proximity to the road;
- Enable easy rehabilitation during the closing down of the mine;
- Absence of underlying ore body;

## Fuel Storage

Mobile fuel bousers will be utilised in order to cut cost and minimise carbon emissions. As time progresses and the profit margins increase, fuel tanks on a concrete bund wall may be installed. Accessibility, proximity and general safety are some of the factor that will be consider when selecting the location of fuel tanks.

### **d. Full description of the process followed to reach the proposed preferred alternatives within the site.**

NB!! – This section is about the determination of the specific site layout and the location of infrastructure and activities on site, having taken into consideration the issues raised by interested and affected parties, and the consideration of alternatives to the initially proposed site layout.

Thaya Trading Enterprise CC was appointed by African Gemstone Mining (Pty) Ltd to provide professional service to undertake a Basic Assessment, Environmental Authorisation Application (Mining Permit) process pertaining to the proposed project on a certain piece of land on ERF 687 and on a certain piece of land on ERF 1526 Remainder, near Barkly West, Northern Cape.

The applicant must submit to the Competent Authority a Mining Permit application in terms of the Mineral & Petroleum Resource Development Act, 2002 (Act No. 28 of 2002) and the Environmental Authorisation application in terms of National Environmental Management Act, 1998 (Act No. 107 of 1998).

The rehabilitation and closure plan was compiled in order to meet applicable legal and corporate requirements, conditions and commitments made. Some objectives of Rehabilitation and Closure Plan are to restore disturbed surface condition to its natural state as reasonably practicable; achieve sustainable land use among others.

Closure of infrastructure, Borrow Pits, Waste Rock Dumps, earthworks, re-shaping of slopes and associated costs and schedule implications among others will be considered in the final plan. Re-vegetation, aftercare

maintenance and monitoring of the area of will be considered. In terms of Regulation 5 of GNR 632 of the National Environmental Management: Waste Act, waste rock stockpiles must be classified taking into consideration Regulation 8 of GNR 634 of 2013. Guidelines are provided in the South African Code of Practise for Mine Residue Deposit classification (SANS: 10286: 1998).

## SCOPE OF WORK

Prepare draft and final Basic Assessment Report (BAR) in terms of Appendix 1 of NEMA EIA regulations.

Prepare draft Environmental Management Programmes (EMPr) in terms of Appendix 4 of NEMA EIA regulations.

Undertake a consolidated Public Participation Process (PPP) in terms of Chapter 6 requirements of the NEMA EIA Regulations.

Acquire Mining Permit application in terms of the Mineral & Petroleum Resource Development Act, 2002 (Act No. 28 of 2002) and the Environmental Authorisation application in terms of National Environmental Management Act, 1998 (Act No. 107 of 1998).

### **1) Description of Planned Non-Invasive Activities**

(These activities do not disturb the land where mining will take place e.g. aerial photography, desktop studies, aeromagnetic surveys, etc.)

#### ***Phase 1***

##### **Imagery Analysis and Geological Mapping**

A site investigation of the target areas will be undertaken to identify infrastructure and determine any potential problems that may need to be addressed.

### **2) Description of Planned Invasive Activities**

(These activities result in land disturbances e.g. drilling, mining, etc.)

#### ***Phase 2***

##### **Trenches Sampling**

Discussed herein after, Section 3.

### **3) Description of Pre-feasibility Studies**

(Activities in this section include, but are not limited to, the following: initial, geological modelling, resource determination, possible future funding models, etc.)

The quantification of carats per 100 ton will be determined during handling of diamond-bearing waste rock tailings dumps. No model is going to be at pre-feasibility study phase.

Phase 3

#### **Analytical Desktop Study**

The project Geologist monitors the programme, consolidates and processes the data and amends the programme depending on the results. This is a continuous process throughout the programme and continues even when no mining is done on the ground.

Each physical phase of processing waste is followed by desktop studies involving interpretation and modelling of all data gathered. These studies will determine the manner in which the work programme is to proceed in terms of activity, quantity, resources, expenditure and duration.

### **4) Description of Crushing, Screening and Pulsating Jigs Activities**

#### **Volumes of the mineral to be tested**

It is estimated, at this stage, that 100 tonnes/day of Tailings are going to be processed.

#### **Why will they be tested?**

The tailings, gravel or kimberlitic material will be tested to determine a grade (carats per hundred tonne) and value (US\$ per carat).

#### **Where will they be tested?**

All waste processing activities will take place on site or out of site. Herewith follows a description of the process:-

The planned processing technique is that of a typical South African Screening and Pulsating Jigs operation and may have to include processing of diamond-bearing waste rock dumps that are present within the application area. The planned processing method is that of passing tailings through the Jig plant/DMS/Rotary Pan and recovering diamonds subsequently use waste material backfill and rehabilitate disturbed land from previous operations if possible or necessary. Tailings are loaded with frontend loader or TLB and transported to the

treatment facility on-site using articulated dump trucks. The access to the tailings will be provided by a haul road to the screening and processing plants.

The operation is to be conducted using conventional equipment comprising four articulated dump trucks supported by appropriate TLB's and front-end loaders. The tailings are loaded with a TLB or frontend loader onto ADT Dump Trucks. Ore is hauled to the screening and Jig plant. As an integral part of the waste rock handling processes, backfilling will take place continuously if deemed necessary. A list of equipment and machinery that is going to be on site is presented below:

- Earthmoving and ancillary equipment;
- 4 x Front-end Loader;
- 4 x Articulated Dump Trucks;
- 1 x Sorting Plant;
- 2 x Water Truck;
- 1 x 16ft-Rotary Pan/Jig Plant/DMS Plant;
- Screen;
- 1 x Crusher
- 1 x Generator
- Water piping and storage facility
- Diesel store facility
- TMM maintenance area
- Ablution facilities
- Offices
- Slimes tanks or Dams
- Screen
- Utility vehicles and small tools;

- Diamond recovery unit with Flow sort Machines, Plant, and recovery, crushing and screening equipment

Tailings are loaded onto a vibrating grizzly and the +85mm oversize material is discarded into open pits on site. The remaining -85mm fraction is loaded into a 16-foot rotary pan with a treatment capacity of 80 tph. A magnetic separator is used to extract some of the heavy banded iron stones. Tracer tests are done regularly to ensure that the pans are operating at the correct density. Approximately 2.5 tonne of concentrate is tapped from the pan every hour and transported in locked containers to the final recovery unit. The final recovery unit consists of a holding bin, sizing screen, sizing bins and one state of the art Flowsort X-ray recovery unit which recover diamonds from the +2mm to -32mm size fraction. Final sorting of the X-ray concentrate will be done manually.

#### **To whom they will be disposed of:**

An expected grade of 2.5 carats per hundred tonnes, 8 800 carats could be recovered from the tailings. Diamonds will be sold at a reputable diamond tender house in South Africa among others to determine an average US\$ carat value for the diamonds. Alternatively, the stones will be sold to international markets that affiliate to the Kimberley process.

#### **7) Decommissioning Phase**

Mobile equipment is going to be used in these operations. If not the case, demolition and dismantling of infrastructure is going to occur. When mobile infrastructure is used, the decommissioning phase is going to be straight forward as the infrastructure would be transported away from site. It is worth mentioning that the schedule of rehabilitation is going to be phased to run in parallel with the crushing and processing of tailings activities to ensure 'pain-free' rehabilitation and closure ultimately. The pollution control measures and associated infrastructure will be removed at closure, then, the polymeric material will be sent away for recycling if possible. The disturbed areas are going to be rehabilitated in such a manner that the environmental condition is of reasonable standard. Inert material may be used to infill the pits and hazardous materials or waste will be transported to an appropriately licenced waste disposal facility. All hydrocarbon-contaminated soil will be treated in-situ or disposed of appropriately. Post-closure activities that are going to be undertaken include monitoring, maintenance and aftercare.

The natural state of the area of application prior to the development of previous mining operations that were conducted on the area was not known at the moment of compiling this report. The consultant, together with the applicant understand that it would have been more beneficial towards compilation of this report to have access to all studies conducted and reports generated relating to the previous mining operations that were conducted on the area of interest. If gaining access to information such as reports pertaining to the previously was possible, it was going to be relatively easy to restore the natural topography and ecology of the area of

application to its natural state. Furthermore, it is understood that topsoil has eroded already and therefore cannot be used for rehabilitation of the area of application because the long period of time it took for the area to be rehabilitated and lack of care for top soil that was stripped from the previous mining operations.

During rehabilitation, it is recommended for the elevations and sides of waste rock dumps to be held tight using methods such as netting (use biodegradable material) and matting in order to ensure stability to prevent erosion. Re-vegetation should be conducted without any delays to hold the soil tight and to prevent erosion from taking place.

Re-vegetation is necessary to undertake in order to re-establish vegetation in areas which were previously cleared and disturbed.

The abandoned tailings on-site will be used to backfill the borrow pits. The management of stockpiles and deposits is to be followed in compliance with the Regulations applicable to the Planning and Management of Residue Stockpiles and Residue Deposits (GNR 632 of 2013) published under the NEM:WA, as well as the set Protocols, Best Practices, National Norms and Standards and other applicable Regulations.

In terms of NEM:WA and its regulations, tailings and waste rock stockpiles have to be classified in order to, among other things, give effect to the National Norms and Standards for assessment of waste for landfill disposal (GNR 635 of 2013) and the National Norms and Standards for disposal of waste to landfill (GNR 636 of 2013). The assessment to classify waste rock on the abandoned mine should have been conducted during the operational phase of the previous mining operations. At decommissioning, it is recommended that waste rock is classified to ensure effective and efficient decommissioning. A risk-based approach on a case-by-case basis is the current approach acceptable as per GNR 632 as amended. The amendments to GNR 632 give effect to case-by-case assessment of the necessity for use of applicable pollution control barrier systems instead of a blanket approach that was previously adopted as applicable to waste management license applications for the establishment of residue stockpiles and deposits. This risk-based assessment must be conducted by a competent person.

It is possible to develop a holiday or recreational resort and solar plant after the area of interest has been rehabilitated. This approach depends on many factors, such as availability of funds (investment), proximity to sub-station, demand to mention but a few.

**(i) Details of the development footprint alternatives considered.**

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

- (a) the property on which or location where it is proposed to undertake the activity;
- (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;
- (e) the operational aspects of the activity; and
- (f) the option of not implementing the activity.

The Basic Assessment process identifies, among others, critical components of alternatives to be considered whilst ensuring that the desired outcome pertaining the proposed project is realised. In the process of identifying and assessing the feasible options, factors such as the National Development Plan and sustainable development to mention just a few are considered. The assessment process may include the environmental friendliness, economic viability and reasonable practicability. As a consequence, alternatives for the locality of Mining Permit, Borrow Pit Rehabilitation and Closure, Waste License, Processing of Tailings, Reclaiming and Recovery of Diamonds are not discussed in this piece of work because the position and location of the operations are influenced to an unlimited extent by the availability of the commodity at a particular location. Additionally, no other location or properties have been applied for by the applicant, African Gemstone Mining (Pty) Ltd.

#### Land use

There are specialist comparative study that are in place for the proposed small-scale mining area. The process that is going to be employed from beginning to end of mining operations is going to be step-wise; the initial step is going to be to establish whether or not there commodities of economic value that could be mined in the area of interest before any development can take place. Some parts of the area of interest have been mined for diamonds previously; as such there is existing disturbance on them. If need arises, during mining phase, the infrastructure used will be mobile only.

The rehabilitation process and the mining phase are going to be conducted simultaneously in order to ensure that the pits that get opened during the mining phase are backfilled. All the material taken out of the pits that does not bare the commodity of interest will be deposited back into the pits. The rehabilitation process will be performed with the aim to enable normal land-use activities to be undertaken after the mining has been deemed economically not viable.

#### Consultation of I&APs

Results obtained from the consultation process followed are going to be discussed later in this report.

## Mining Method

To the best of our knowledge, the most economically viable method to be applied in open pit mining operations is 'backfilling'. The method of backfilling is going to be used in this proposed development as well.

## Biodiversity and Ecology

The proposed development is going to have an impact on biodiversity because some indigenous vegetation is going to be removed. Additionally, there is going to be some destruction of habitats. However, none of this destruction would have been possible if this proposed development was not going to go on.

Species of conservation concern could be found in the mining area include *Hoodia gordonii*, *Aloe claviflora*, *A. hereroensis*, *Gymnosporia buxifolia*, *Olea europaea subsp. africana*, *Boscia albitrunca*, *Ruschia griquensis*, *Jamesbrittenia tysonii*, *Ornithogalum flexuosum* and *Pachypodium succulentum*. Similarly, the mining operation will result in the small-scale clearance of indigenous vegetation. Approximately a half of the area of application falls within Critical Biodiversity Area 1.

Similarly, if any of the *Boscia albitrunca* trees are to be affected, a licence application regarding protected trees should be lodged with Department of Agriculture, Land Reform and Rural Development, since merged with the Department of Environment and Nature Conservation in Northern Cape Province.

## 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. An exemption will be applied for with the SAHRA in order to waiver the regulatory 100 m Buffer zone. A Conservation Management plan will be developed in respect of the cemetery in the vicinity of the application area. 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. The proposed Chance Find Protocol is going to be followed should any fossils be encountered at any phase of this development.

## Hydrology

The proposed African Gemstone Mining Area is located in the Vaal River basin, quaternary catchment C91E. The prospecting area is situated directly on the bank of the Orange River. The quaternary catchment C91E has a net mean annual runoff (MAR) of 0.9 million cubic meters (mcm), and is based on the WR2005 study.

The slope of a catchment is a very important characteristic in the determination of flood peaks. Steep slopes cause water to run faster and to shorten the critical duration of flood inducing storms, thus leading to the use of higher rainfall intensities in the runoff formulae. On steep slopes the vegetation is generally less dense, soil layers are shallower, and there are fewer depressions, all of which cause water to run off more rapidly. The result is that infiltration is reduced and flood peaks are consequently even higher.

## Socio-Economy

The proposed project will, if proven to be economically viable, definitely contribute to the economy of the local communities, and to that of the country at large. On mining phase of the proposed development alone, there are some people who are going to benefit as employees of the company.

African Gemstone Mining is in a position to employ people from all walks of life; however, preference is going to be given to locals. Furthermore, African Gemstone Mining is committed to Development and Sustainability of the Local Economy and Infrastructure Development.

## Technology to be used during Activities

In terms of the technologies proposed, these have been chosen based on the long term success of their mining history. The mining activities proposed herein is dependent on the preceding phase as previously discussed, therefore no alternatives are indicated, but rather a phased approach of trusted mining techniques.

The preferred technology for the proposed mining activity will be to remove the diamond bearing gravel with an excavator, depositing it in the 10 – 18 feet rotary pan(s) to be washed and sorted. However, if it happens, kimberlite deposits are identified on this site, the Dense Media Separation (DMS) plant may become a technique of choice.

## Operational Aspect of the Activity

Due to the nature of the mining activities, no permanent services in terms of water supply, electricity, or sewerage services are required.

The activities commenced with a site investigation and desktop studies, which comprised of non-invasive techniques. This manner of survey will ensure that the applicant can clearly delineate areas which are suitable for further investigation and no unnecessary surface disturbance will be undertaken.

Based on the outcome of the desktop studies and site investigation, pits will be dug by an excavator for the purpose of soil sampling. If gravel is found, the applicant will determine the composition and quality of the gravel.

The applicant will proceed with this way of mining by means of the open cast/trenching method, simultaneously or after pitting depending on the information obtained from the earlier work done. The trenches will be dug to remove and wash the kimberlitic material and diamondiferous gravel. It will be washed by a washing pan to determine diamond proceeds per 100 tons of gravel and kimberlitic ore.

All data will be consolidated and processed to determine the diamond bearing resources on the property. This will be a continuous process throughout the mining operations.

No feasible alternatives to the pitting and trenching method currently exist as far as we are aware. Impacts associated with the mining operations will be managed through the implementation of a management plan, developed as part of the application for authorisation.

**a) The “No-go” Alternative**

This process includes comparison of all site alternatives in order to determine whether or not the project may proceed. It is noteworthy that, on one hand, the proposed development has a potential to possess some economic benefits. On the other hand, the proposed development poses some negative impacts on the environment.

This process includes comparison of all site alternatives in order to determine whether or not the project may proceed. It is noteworthy that, on one hand, the proposed development has a potential to possess some economic benefits. On the other hand, the proposed development poses some negative impacts on the environment. The assessment of No-Go alternative is presented in Table 6.

**No-Go Alternative**

**Identified Impact:** Negative: Loss of opportunity to develop an Agricultural Development Project.

The proposed development has a potential to possess some economic benefits. If the proposed development does not go ahead, all the benefits associated with it will be lost.

Agricultural Development Project Operational Phase and associated infrastructure and / or associated activities

Construction			Operational	Decommissioning		
Vegetation	Clearance;	Soil	Vegetation Clearance; Soil preparation;	Vegetation	Clearance;	Ploughing;

preparation; Use of infrastructure and associated activities; Waste Management; Pitting and Trenching; Revenue collection; Poverty Alleviation; Water use and management	Use of infrastructure and associated activities; Waste Management; Pitting and Trenching; Revenue collection; Poverty Alleviation; Water use and management	Use of infrastructure and associated activities; Waste Management; Pitting and Trenching; Revenue collection; Poverty Alleviation; Water use and management; Final land forms
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Severity/Magnitude

An assessment of not going ahead with the proposed development and associated activities would have impact on socio-economic benefits. Severity is high before proposed mitigation measures are implemented effectively. Post effective implementation of proposed mitigation measures, severity is high.

Extent/Spatial

The spatial scale or extent is a relative term that links the identified impact to the spatial scale or extent of the project area and the world as a whole. The extent is local before proposed mitigation measures are implemented effectively. Post effective implementation of proposed mitigation measures, the extent is National.

Duration

The economic opportunities will be available during the operations of the proposed mining development project. This is going to happen throughout life of operation. Post effective implementation of proposed mitigation measures, duration, becomes residual.

Consequence

The consequence is low before proposed mitigation measures are implemented effectively. Post effective implementation of proposed mitigation measures, consequence is high.

Probability

Probability (synergy /summation) of impact frequency and activity frequency is definite throughout life of operation before proposed mitigation measures are implemented effectively. Post effective implementation of proposed mitigation measures, such as, among other, going ahead with the project, probability is definite throughout life of operation.

Significance

The significance is low to medium before proposed mitigation measures are implemented effectively. Post effective implementation of proposed mitigation measures, significance is high.

### Cumulative Impact

The cumulative impact rating considers the predicted effects, residual effects, effects of other projects and activities in the form of potential synergistic, interactive system components, pattern, augmentative, consecutive impacts and mitigation measures, within the context of proposed project. The cumulative impact is low before proposed mitigation measures are implemented effectively. Post effective implementation of proposed mitigation measures, cumulative impact is Medium.

**Table 4: No-Go Alternative**

Impact Identified		Footprint Alternative				
Los of opportunity to develop an agricultural development project		No-Go Alternative				
Impact Rating						
Parameter/Attribute	Severity/Magnitude		Extent/Spatial		Duration	
	Pre-mitigation	Post-mitigation	Pre-mitigation	Post-mitigation	Pre-mitigation	Post-mitigation
	High (3)	High (3)	Local (2)	National (4)	Immediate (0)	Residual (4)
Parameter/Attribute	Nature		Frequency of Impact		Frequency of Activity	
	Pre-mitigation	Post-mitigation	Pre-mitigation	Post-mitigation	Pre-mitigation	Post-mitigation
	-1	+1	1	5	1	5
Significance Rating (Pre-mitigation)		Proposed Mitigation Measures				
-10		Authorise the proposed Mining Project In the interim, it is the opinion of the EAP for the Environmental Authorisation to be granted if specialist reports commissioned do not suggest the contrary.				
Significance Rating (Post-mitigation)						
+110						
Impact Prioritisation						
Cumulative Impact	Public Response	Reversibility	Irreplaceable loss of resources		Priority	
0	2	1	1		4	

**(ii) Details of the Public Participation Process Followed**

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

Letters were sent out by registered mail to interested and affected parties (land owners, neighbouring farmers, certain government departments and parastatals). A notice was published on DFA newspaper on 17 February 2020 for public viewing and comments. Another notice was published on the DFA newspaper on 18 August 2021.

Notices for a public participation meeting that was supposed to sit on 17 March 2020 at 12 were displayed at Local Public Libraries and Dikgatlong Local Municipality offices. However, no person turned up at the venue on the set day. The only people who were spotted on site were busy fishing from the Vaal River.

The process as described by NEMA for Environmental Authorisation will be followed. Letters were sent by registered mail to all Interested and Affected Parties in Table 5. Another public Participation Process ensued from July 2021 to 30 September 2021, in which process participation was satisfactory.

(iii) Summary of issues raised by I&AP's  
 (Complete the table summarising comments and issues raised, and reaction to those responses)

Table 5: Summary of issues raised by I&APs

Interested and Affected Parties		Date	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
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			
<b>AFFECTED PARTIES</b>					
Landowner/s	X				
Dikgatlong Local Municipality	X				
Lawful occupier/s of the land		09/03/2020	Objection Letter citing concerns relating to Health and Safety of Human Beings when visiting Rekaofela Resort. Please see Annexure C	Response letter citing Sustainable Development, Environmental Authorisations that were granted previously on the same small piece of land.	Section v) Table 6.
Landowners or lawful occupiers on adjacent properties					
Municipal councillor					
Municipality	X				
Dept. of Water Sanitation	X				

<b>Communities</b>					
<b>Dept. Land Affairs</b>	X				
<b>Dept. of Agriculture</b>	X				
<b>Dept. Environmental Affairs</b>	X				
<b>Other Competent Authorities affected</b>					
ESKOM	X				
SAHRA	X				
<b><u>OTHER AFFECTED PARTIES</u></b>					
CPA					
<b><u>INTERESTED PARTIES</u></b>					
None					

(iv) **The Environmental attributes associated with the alternatives.(The environmental attributed described must include socio-economic, social, heritage, cultural, geographical, physical and biological aspects)**

**1) Baseline Environment**

(i) *Type of environment affected by the proposed activity*

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

Geology of the Area

Local Geology

The geology of the area of interest was described by McCandless (1991) who highlighted the presence of alluvial diamondiferous gravel, grey aeolian sand dunes deposits, andesite in places amygdaloidal and/or porphyritic with quartzite and conglomerate lenses near the bottom and shale. The earliest clusters of these deposits are known as Kuruman and Cullinan. These clusters intruded into South Africa during the Proterozoic era. However, the main kimberlitic (both diamondiferous and barren) intrusive event took place during the late Mesozoic. The Kalahari craton, which includes the Kaapvaal and Zimbabwe craton comprises of all the kimberlites that host economic deposits while those occurring in the surrounding Proterozoic basement are non-diamondiferous. The remnants of the Kalahari sands which are known as Hutton Sands are found in many places along the Middle Orange. The Karoo Supergroup is covered by the early Quaternary sediments particularly the Dwyka Group and the Ecca Group. The Dwyka Group is situated on the glaciated Precambrian bedrock surfaces along the northern basin margin and is overlain by the Cape Supergroup in the south. This group consists of massive diamictite, stratified diamictite, massive carbonate-rich diamictite, mudrock with stones and mudrock facies. The bedrock of the Orange River valley is cut by faults and dolerite dykes, which are rarely exposed. The Ecca Group consists of up to 16 formations which mirrors the lateral facies changes that characterizes the Ecca Group Formation. These formations comprises of mainly: sandstone, siltstone, mudrock, limestone and coal seams depending on the geographical areas (Johnson et al., 2006).

Land Use

The land use and land cover of the area can be classified into four classes. These are: grazing land, **forest**, public recreational amenity (Rekaofela Resort), artisanal mining and **bushveld** land. Most of the area is bare land, with thin soil layer between fractures and also covered by thin vegetation which was used for grazing by the farmers. The grazing land is on the flat land, which covers the whole area of the project area. Only small area is covered by forest which is found on the far North-Eastern part of the study area.

### Soil Type and Land Capability

The Vaal River in the area meanders through various geological structures which give rise to a variety of soil types and textures. Based on the soil textural classification method, the soil that is found in the study area is grouped into different soil classes. **Namely: sandy loam, clayey sand and sandy clay loam.** Loam is a soil composed of a relatively even a mixture of three mineral particle size groups: sand, silt and clay. Loams are plastic when moist, and retain water easily. The proportions of sand sized particles are also prominent in sandy clay loam and sandy loam soil types. Sand loam, clayey sand and sandy clay loam has 12.5%, 8.3%, 7.7% aerial coverage, respectively.

### Climate

The project site is approximately 2 Km away from Barkly West. The Barkly west climate is predominantly semi-arid with low rainfall and high evaporation. 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 18°C in June, to 35°C in January. The mean maximum average temperature during the summer months range from 26 to 34°C, while during the winter months the mean average minimum temperature range from between 5 and 7°C. The average rainfall is 427 mm. The area also experiences extreme events on a regular basis, including frost, hail, drought, and high speed winds. Prevailing winds are north-westerly with an average speed of 15km/h, between the driest and wettest months; the difference in precipitation is 73 mm. During the year, the average temperatures vary by 16 °C.

### Topography

The area is characterised by a flat topography. The elevation is approximately 1113.65 m. The terrain morphological class of the area can be described as plains with high relief, either moderately or strongly undulating. The area lies at an altitude of 1145 meters above sea level, with the highest elevations occurring in the east. Harts river flows eastward between the Project

### Ecology

The information below was obtained from Mucina & Rutherford, 2006.

Here, special care must be taken with mining and agricultural practises so as to avoid water pollution and over extraction. These should be maintained to limit the potential impact of development on the water resources.

## Flora

The region is dominated by the Savanna Biome. This biome is species rich and contains many threatened flora and fauna. The project area is situated within the North Eastern shrubveld grass which is characterised by bushveld. The regional vegetation of the area is, however, used for grazing, mainly by cattle. A major factor delimiting the biome is the lack of sufficient rainfall which prevents the upper layer from dominating, coupled with fires and grazing, which keep the grass layer dominant. This ensures a sustained supply of low quality water into the rivers. The area was used for cattle-farming, it can thus be considered as effectively preserved.

The most distinctive trees in the area are the Camel Thorn (*Acacia erioloba*) and the Camphor Bush (*Tarchonanthus camphorates*). Other prominent trees are the Portly Baobab (*Adansonia digitata*) and the Candelabra tree (*Euphorbia ingens*).

Weeds and invasive species are controlled in terms of the National Environmental Management: Biodiversity (NEMBA) Act 10 of 2004, the Conservation of Agricultural Resources (CARA) Act 43 of 1993, as well as the NCNCA (Schedule 6). These are species that do not naturally occur in a given area and exhibit tendencies to invade that area, and others; at the cost of locally indigenous species. To govern the control of such species, NEMBA and CARA have divided weeds and invader species into categories.

The SANBI Red List provides information on the national conservation status of South Africa's indigenous plants, while the National Forests Act (No. 84 of 1998) (NFA) and the Northern Cape Nature Conservation Act (Act No. 9 of 2009) (NCNCA) restricts activities regarding sensitive plant species. Section 15 of the NFA prevents any person to cut, disturb, damage, destroy or remove any protected tree; or collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree, except under a licence granted by the Minister. Section 49 (1) and 50 (1) of the NCNCA states that no person may, without a permit pick, transport, possess, or trade in a specimen of a specially protected (Schedule 1) or protected (Schedule 2) plants. Furthermore, Section 51(2) states that no person may, without a permit, pick an indigenous plant (Schedule 3) in such manner that it constitutes large-scale harvesting.

## Fauna

The wildlife on site and in the surrounding area is typical of disturbed Highveld region where all but the small animals such as hares, duikers, rodents, birds and insects have been eradicated. Rine Rabbit (*Bunolagus monticularis*) is found in limited habitats in the southern Karoo). It is regarded as one of the world's rarest mammals with an estimated adult population of less than 250. In August 2003, the Riverine Rabbit Program (EWT-RRP) was established to co-ordinate all conservation efforts of this species and its habitat The Northern Cape, especially the Kalahari, is a primary bird habitat. Raptors that occur include Black Eagle (*Aquila verreauxii*), Tawny Eagle (*Aquila rapax*), Black-breasted Snake Eagle (*Circaetus pectoralis*), Jackal Buzzard

(*Buteo rufofuscus*), Pale Chnating Goshawk (*Melierax canorus*), Rock Kestrel (*Falco tinnunculus*) and Pygmy Falcon (*Polihierax semitorquantus*), etc.

Fish species expected to occur in the active channel of the Vaal River, along with their IUCN status and sensitivity to physico-chemical and no-flow conditions. The Largemouth Yellowfish is endemic to the Orange-Senqu and Vaal River systems in the Orange-Senqu River Basin. It is also listed as Near Threatened (IUCN 2019) due to the continuous decline in water quality in most rivers and streams in its geographic range, the destruction of suitable spawning beds due to erosion, as well as their slow growth rate, late maturing and low fecundity.

Invertebrates dominate inland habitats and play a significant role in the overall function of the ecosystem (Kremen et al. 1993; Weisser and Siemann 2004).

### 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.

### Heritage and Palaeontology

In terms of Section 38 of the National Heritage Resources Act (Act No. 25 of 1999), guidelines and conditions under which heritage impact assessments must be conducted are set out pertaining to a proposed development. Thaya Trading Enterprise is expected to provide for on-going heritage monitoring on the identified resources of significant importance in the Heritage Impact Assessment report. The environmental management plan presented herein provides guidance on steps to follow when any major heritage feature is encountered during and at any phase of development or actual mining and associated operations. In the event of finding any resources of significant heritage importance, reporting by the developer to relevant heritage authority should be immediate.

Contact: SAHRA Ms N. Higgitt 021-4624502 or NC Heritage, or Resources Authority Mr Andrew Timothy 053 831 2537/ 807 4700.

Additionally, officials from relevant heritage authorities (National and Provincial) are going to be permitted to inspect the operation at any time in relation to the heritage resources and the EMP presented in this piece of work.

In the event that fossil remains are discovered during any phase of construction, either on the surface or exposed by fresh excavations the **Chance Find Protocol** must be implemented by the ECO in charge of these developments. These discoveries ought to be secured (preferably *in situ*) and the ECO ought to alert SAHRA so that appropriate mitigation (e.g. documented and collection) can be undertaken by a professional palaeontologist.

The specialist would need a collection permit from SAHRA. Fossil material must be curated in an approved collection (museum or university) and all fieldwork and reports should meet the minimum standards for Palaeontological impact studies developed by SAHRA. All what is presented in this section will be followed provided it is consistent with the recommendation presented in the specialist reports to be conducted. If there are any inconsistencies, the recommendations of the applicable reports will be considered as recommended.

### 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 in the region surrounding the project area.

The proposed Project area is in a low rainfall area and Sandstone and conglomerate are a prominent feature of the geology and result in considerable linkage between surface and ground water systems.

### Hydrogeology

According to the Hydrogeological Map of the Republic of South Africa (Sheets 2722 – Kimberly 1:500 000) the main water bearing strata in the area is an intergranular and fractured aquifer made up of sandstone and conglomerate rocks.

According to the map, groundwater resources are generally limited, with sustainable borehole yields ranging from 0.6 – 1.7 l/s. The groundwater quality is thought to be good, with total dissolved solids (TDS) of less than 300mg/l. In intergranular and fractured aquifers, the water occurs in both the upper weathered rock zone and the fractured but fresh rock formation below. These zones are in hydraulic contact. The regional aquifer system is defined as a Minor Aquifer System (Parsons, 2005) with low to moderate vulnerability to contamination. Minor Aquifer Systems can be fractured or potentially fractured rocks, which do not have a high primary permeability, or other formations of variable permeability. The aquifer extent may be limited and water quality may be variable. Although these aquifers seldom produce large quantities of water, they are important both for local supplies and in supplying base flow to rivers.

Local Hydrogeology - Two types of aquifer systems have been recognized in the Project area, represented by:

- Weathered Aquifer - The Ecca sediments are weathered to depths between 5 – 15 metres below surface throughout the area. The upper aquifer, typically perched, is associated with this weathered zone and water is often found within a few metres of the surface (Hodgson, 2001). This aquifer is recharged by rainfall which infiltrates into the weathered rock and soon reaches an impermeable layer of shale, underneath the weathered zone. The movement of groundwater on top of this layer is lateral and in the direction of the surface slope (Hodgson, 2001).
- Fractured Aquifer - The pores within the Ecca sediments are too well cemented to allow any significant permeation of water. All groundwater movement is therefore along secondary structures, such as fractures, cracks and joints. These structures are better developed in competent rocks such as sandstone, hence the better water-yielding properties of the latter rock type (Hodgson, 2001). It should, however, be emphasised that not all of the secondary structures are water-bearing. Many of these structures are closed due to compressional forces and the chances of intersecting a water-bearing fracture by drilling therefore decreases rapidly with depth. Water-bearing fractures with significant yields have been observed at depths of approximately 30m; these boreholes would, however, have insufficient yields for organised irrigation (Hodgson, 2001).

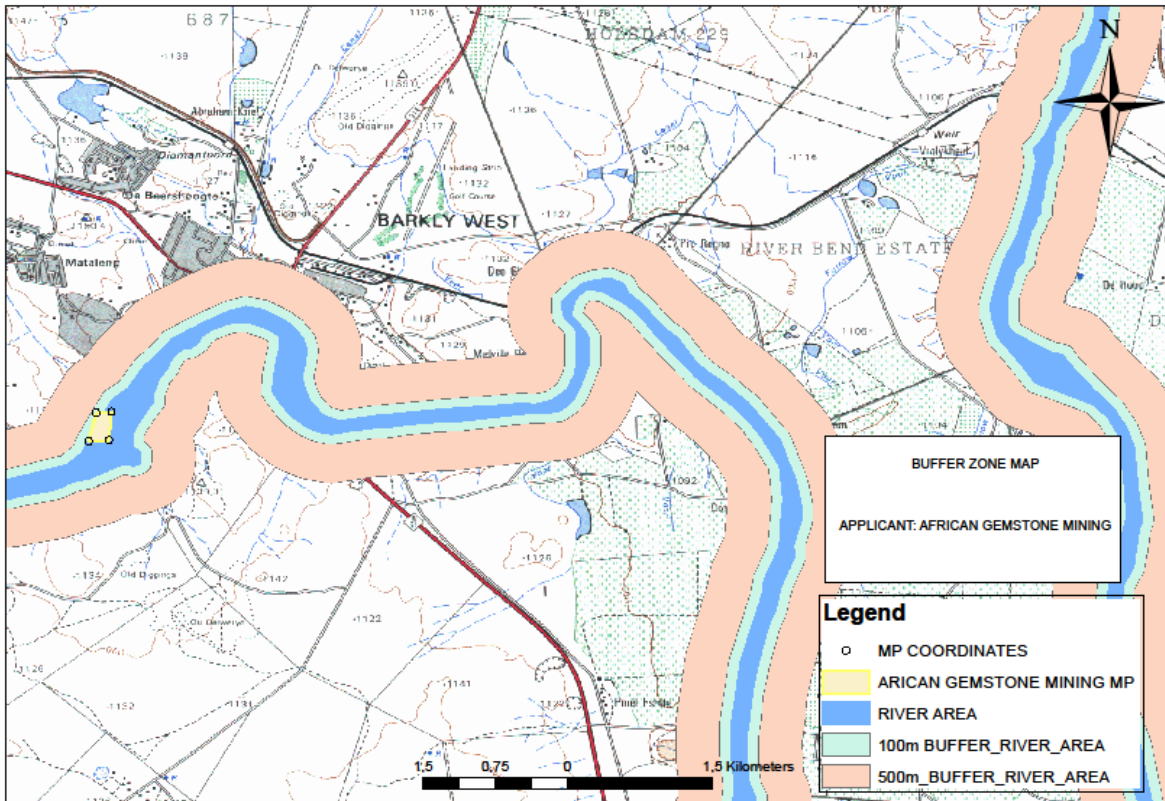
Groundwater Levels and Flow Direction – Groundwater depths range from 0 to 30 mbgl. In general, groundwater follows the topographical setting of the area.

The regional groundwater flow direction appears to be to the south-west towards the Vaal River. However, locally and on a small scale, flow directions can vary largely depending on topographic features.

### Hydrology

The proposed Diamond Mine (Small-scale) Project area is located in the Vaal River basin, quaternary catchment C91E. The mining area is situated directly on the eastern bank of the Vaal River which drains in a westerly direction directly to confluence with the Orange River at catchment C92C.

The slope of a catchment is a very important characteristic in the determination of flood peaks. Steep slopes cause water to run faster and to shorten the critical duration of flood inducing storms, thus leading to the use of higher rainfall intensities in the runoff formulae. On steep slopes the vegetation is generally less dense, soil layers are shallower, and there are fewer depressions, all of which cause water to run off more rapidly. The result is that infiltration is reduced and flood peaks are consequently even higher. Slopes are gentle around the application area. However, it is located in the Vaal River and on the River Bank (Figure 4).



**Figure 4: Location of application are in relation to the Vaal River.**

### Visual Aspects

Mining 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 prospecting activities is going to affect vision. Other visual impacts will be on the landscape character, scenic quality among others.

There are approximately 10 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.

### 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.

### Socio-economic

The proposed development possess some potential to impact both positively and negatively to the socio-economic conditions of personnel in the locality and countrywide. The applicant is advised to adopt a recruitment policy. This policy must be implemented effectively in order to recruit suitable candidates in each role. The unemployment rate is going to be reduced in the area. The national revenue collector is going to benefit thereby strengthening the economy.

There is going to be an influx of labour into the area, which is a factor that may increase health and safety risks on local community members and to the proposed development. Also, job losses will lead to loss of income upon closure of the operations.

### 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.

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

*(ii) Description of the current land uses*

The proposed area consists of non-perennial rivers, Slimes dam, Mine Shaft, Historic mining, furrow, farms, and communities. Where applicable a Water Use License Application will be launched for conducting the proposed operations.

*(iii) Description of specific environmental features and infrastructure on the site*

The proposed area consists of non-perennial rivers, along the banks of Vaal River, Slimes dam, Mine Shaft, Historic mining, furrow, farms, recreational amenity (Rekaofela Resort) and communities. Where applicable a Water Use License Application will be lodged for conducting mining operations and relevant exemptions will be applied for with the Department of Human Settlements, Water and Sanitation.

Also refer to the description above (section (iv)(1)(a)).

*(iv) Environmental and current land use map.*

(Show all environmental and current land use features)

Currently, major land uses in the region include activities related to mining and agriculture. The land capability for the study site is non-arable with low potential grazing land.

Apart from the current mining permit application, a portion in the south eastern part of the Erf 687 was also subject to small-scale diamond mining in the past. Currently, a piece of the Erf 1526 Remainder is used for recreational purposes (Rekaofela Resort) and is utilised as natural pastures for cattle, sheep, goats and a few horses, as well as for barley-maize rotational pivot irrigation in the east, along the river (See Figure 4). Additionally, there is artisanal mining going on in the area of interest.

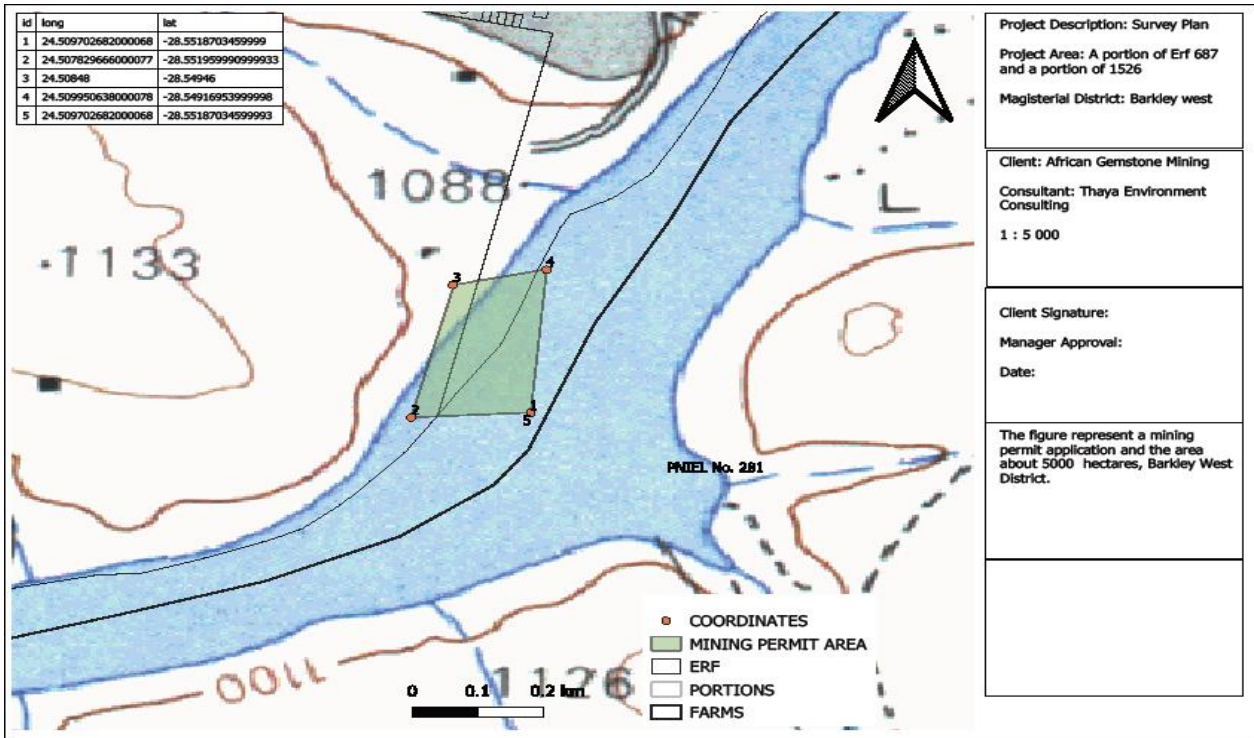


Figure 5: Current land use Map

**(v) Impacts and risks identified including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts**

(Provide a list of the potential impacts identified of the activities described in the initial site layout that will be undertaken, as informed by both the typical known impacts of such activities, and as informed by the consultations with affected parties together with the significance, probability, and duration of the impacts. Please indicate the extent to which they can be reversed, the extent to which they may cause irreplaceable loss of resources, and can be avoided, managed or mitigated).

**Table 6: Potential impacts identified**

Environmental Factor	Nature of impact	Significance	Probability	Duration	Consequence	Management
Geology and mineral resource	Sterilisation of mineral resources.	Low	Highly unlikely	Decommissioning	Insignificant	Ensure that optimal use is made of the available mineral resource.
Topography	Changes to surface topography due to topsoil removal, excavations and placement of infrastructure and development of mine residue deposits.	Low to Medium	Certain	Post-closure	Moderate	Backfill all excavations continuously and employ effective rehabilitation strategies to restore surface topography of excavations and plant site, and to stabilise the mine residue deposit.
Soils	Soil erosion by water and wind on disturbed and exposed soils; potential for dust production and soil microbial degradation; potential contamination of soils due to spillages.	Low	Possible	Life of operation	Minimal	Employ appropriate management strategies to preserve soil resources.
Land capability	Loss of land capability through topsoil removal, disturbances and loss of soil fertility.	Very low	Possible	Short term	Minimal	Employ appropriate rehabilitation strategies to restore land capability.
Land use	Loss of land use due to poor placement of Surface infrastructure and ineffective Rehabilitation	Very low	Possible	Short term	Minimal	Carefully plan the placement of infrastructure and employ rehabilitation strategies to restore land capability.
Groundwater	Pollution of underground water sources.	Medium to High	Possible	Decommissioning	Minimal	Construction of measures to prevent seepage into the groundwater by biological and engineering means. Implementation of the necessary management programs to ensure the integrity of ground water resources.
Surface water	Deterioration in water quality through spillages	High	Certain	Decommissioning	Critical	Frequent monitoring of surface water resources (Standing water). Prevention of overspill of mine associated activities into the surrounding drainage channels streams. Implementation of the necessary management programs to ensure the integrity of surface water (Standing water) resources.
Indigenous flora	The clearance of vegetation; potential loss of floral species with conservation value; potential loss of ecosystem function.	Medium to High	Certain	Life of operation	Major	Prevention of overspill of mine associated activities onto the surrounding ecological environment. Employ proper protection and rehabilitation strategies.
Alien invasive plants	Proliferation of alien invasive plants species.	Low to Medium	Certain	Decommissioning	High	Eradicate, and control the spread, of alien invasive species.
Fauna	Displacement of fauna	Low	Possible	Life of operation	Minimal	Prevention of overspill of activities onto the surrounding ecological environment. Employ proper protection

						strategies.
Habitat	The loss, damage and fragmentation of floral and faunal habitats; potential loss of ecosystem function.	Low to Medium	Certain	Residual	Critical	Prevention of overspill of mine associated activities onto the surrounding ecological environment. Employ proper protection and rehabilitation strategies.
Air quality	Sources of atmospheric emission associated with the prospecting operation are likely to include greenhouse gas emissions from vehicles, TMM's, fugitive dust from materials handling operations, wind erosion of stockpiles, and vehicle entrainment of road dust.	Low to Medium	Certain	Life of operation	Minimal	Effective soil management; identification of the required control efficiencies in order to maintain greenhouse gas emissions, dust generation within acceptable levels.
Noise and vibration	Increase in continuous noise levels; the disruption of current ambient noise levels; and the disruption of sensitive receptors by means of increased noise and vibration.	Low	Certain	Decommissioning	Minimal	Minimise the generation of excessive noise and vibration; Ensure all vehicles and equipment is in a good working order; proper communication.
Visual impacts	Visual impact of the mine infrastructure excavations, mine residue deposits, and waste rock stockpile; visibility of dust.	Low	Possible	Decommissioning	Minimal	Effective planning of the location of Infrastructure and operations to minimise visual impact.
Traffic	Potential negative impacts on traffic safety And deterioration of the existing road networks	Low	Low	Decommissioning	Minimal	Utilise existing access roads, where applicable; implement measures that ensure adherence to traffic rules.
Heritage resources	The deterioration of sites of cultural and Heritage importance.	Medium to High	Certain	Residual	Major	Preservation and protection of heritage and Cultural resources identified within a no go zone; further resources uncovered during prospecting activities need to be reported to a suitably qualified Archaeologist and/or Palaeontologist.
Socio-economic	Negative: Loss of agricultural potential; influx of workers to the area increases health risks and loitering (resulting in lack of security and safety); negative impact of employment loss during mine closure.	Low to medium	Certain	Short-term and Closure	High and Major	Application of commitments made in the Social and Labour Plan; implementation of Community development programmes.
Interested and affected parties	Loss of income.	Low to medium	Possible	All phases of the project	High	Ensure continuous and transparent communication with IAP's.
Interested and affected parties	Health and Safety	Low to medium	Possible	All phases of the project	High	Control Access into the property; Fence may be erected around pits; Implement and monitor EMPr presented herein. Rekaofela Resort is barely visible to the proposed small-scale mining site.
Waste	Pollution of the environmental.	High	Certain	All phases of the project	Critical	Ensure effective Integrated Waste and Water Management Plan and environmentally friendly remediation of hydrocarbon-contaminated sites.
Disturbance of wildlife due to increased human presence and possible use of machinery and/or vehicles.	Potential negative impacts on wildlife	Medium to High	Possible	All phases of the project	High	Enter into amicable agreements that will promote wellbeing and protection of wildlife. Should there be necessity to relocate wild animals, that should be done in sustainable, environmentally friendly and safe manner.
Impacts on Agricultural Activities	Potential negative impacts on agricultural activities	High	Certain	All phases of the project	High	Enter into amicable agreements that will promote wellbeing and protection of on-going agricultural activities. Should there be necessity to relocate wild animals, that should be done in sustainable, environmentally friendly and safe manner.

**(vi) Methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks;**

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

The assessment methodology enables the assessment of environmental issues in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks including: cumulative impacts, the severity of impacts (including the nature of impacts and the degree to which impacts may cause irreplaceable loss of resources), the extent of the impacts, the duration and reversibility of impacts, the probability of the impact occurring, and the degree to which the impacts can be mitigated. This assessment method was used to assess impacts associated with all project alternatives.

The criteria used to assess the significance of the impacts are shown in Tables 7 – 11. The limits were defined in relation to mining characteristics. Those for probability, intensity/severity and significance are subjective, based on rule-of-thumb and experience. Natural and existing mitigation measures were considered.

These natural mitigation measures were defined as natural conditions, conditions inherent in the project design and existing management measures, which alleviate impacts. The significance rating of the impacts was calculated by using the following formula:

The Significance Rating (*SR*) of an impact is determined by applying Consequence (*C*) of the particular impact and the Probability (*P*) of the impact occurring. Consequence is determined through the consideration of the Nature (*N*), Spatial Scope/Extent (*E*), Duration (*D*), and Severity (*S*) applicable to the specific impact.

For the purpose of this methodology the consequence of the impact is represented by:

$$C = (E+D+S) \times N$$

Each individual aspect in the determination of the consequence is represented by a rating scale as defined in Tables 7 to 11.

The different project activities and associated infrastructure were identified and considered in order to identify and analyse the various possible impacts. The limits were defined in relation to project characteristics. Those for severity, extent, duration and probability are subjective, based on rule-of-thumb and experience. Natural and existing mitigation measures were considered. These natural mitigation measures were defined as natural conditions, conditions inherent in the project design and

existing management measures, which alleviate impacts. The Consequence value of the impacts was calculated by using the following formula:

$$\begin{array}{ccc} \text{CONSEQUENCE} & \times & \text{PROBABILITY} \\ N \times (\text{Severity} + \text{Spatial Scope} + \text{Duration}) & & (\text{Frequency of activity} + \text{Frequency of impact}) \end{array}$$

For the impact assessment, the different project activities and associated infrastructure were identified and considered in order to identify and analyse the various possible impacts. These include roads and hauling, excavations, temporary waste dumping, topsoil storage, mine residue deposit dam, plant and processing area, temporary office, workshops and ablution facilities, water tanks, diesel tanks, pipeline, other temporary buildings, etc.

Significance of impacts is described as follows:

**Very Low** – Impact would be negligible. Almost no mitigation and/or remedial activity would be needed, and any minor steps which might be needed would be easy, cheap and simple.

**Low** – Impact would have little real effect. Mitigation and/or remedial activity would be either easily achieved or little would be required or both.

**Low – Medium:** Impact would be real but not substantial within the bounds of those which could occur. Mitigation and/or remedial activity would be both feasible and fairly easily possible.

**Medium – High:** Impact would be real and rather substantial within the bounds of those which could occur. Mitigation and/or remedial activity would be feasible, but not necessarily possible without difficulty.

**High** – Impacts of substantial order. Mitigation and/or remedial activity would be feasible but difficult, expensive, time consuming or some combination of these factors.

**Very High** – Of the highest order possible within the bounds of impacts which could occur. There would be no possible mitigation and/or remedial activity to offset the impact at the spatial or time scale for which was predicted.

Table 7: Some Consequence Parameters

Weight	Severity	Spatial Scope/Extent	Duration
0	Insignificant/non-harmful	Activity specific/No effect/Controlled	Immediate (0 – 6 months)
1	Minimal / potentially Harmful	Slight permanent deviation / on-site	Short term / construction (6 months- 1 yr)
2	Medium / slightly Harmful	Immediate surroundings / local / outside mine area	Life of operation
3	High / Critical / Serious	Regional effect	Decommissioning
4	Catastrophic / major	National/ Severe environmental damage	Residual
5	Disastrous	Trans boundary effects	Permanent

Table 8: Probability Parameters

Weight	1	2	3	4	5	
Frequency						
Probability	Frequency of Impact	Highly unlikely	Rare	Low likelihood	Probable/ possible	Certain
		Practically impossible	Conceivable but very unlikely	Only remotely possible	Unusual but possible	Definite
	Frequency of Activity	Annually or less	6 monthly/temporarily	Infrequent	Half-life of operation	Life of operation

Table 9: Significance Rating (It could be positive or negative, depending on the nature of impact)

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

Table 10: Significance

Colour Code	Significance Rating	Value	Negative Impact Management Strategy	Positive Impact Management Strategy
	VERY HIGH	126 – 150	Improve current management	Maintain current management
	HIGH	101 – 125	Improve current management	Maintain current management
	MEDIUM – HIGH	76 – 100	Improve current management	Maintain current management
	LOW – MEDIUM	51 – 75	Improve current management	Maintain current management
	LOW	26 – 50	Improve current management	Maintain current management
	VERY LOW	1 – 25	Improve current management	Maintain current management

**Table 11: The Rating System (Summary of Impact Rating Parameters)**

<b>NATURE</b>		
Include a brief description of the impact of environmental parameter being assessed in the context of the project. This criterion includes a brief written statement of the environmental aspect being impacted upon by a particular action or activity.		
+1	Positive	Likely to result in a beneficial impact.
-1	Negative	Likely to result in a detrimental impact.
<b>SPATIAL SCOPE/EXTENT</b>		
This is defined as the area over which the impact will be experienced.		
0	Activity Specific	The impact will only affect the activity and personnel working on it.
1	On-site	The impact will only affect the site.
2	Local or immediate surroundings outside project footprint	Will affect the local area or district.
3	Regional Impact	Will affect the Province
4	National	Will affect the entire country.
5	International	Will affect the Globe/Earth
<b>FREQUENCY OF IMPACT</b>		
This describes the chance of occurrence of an impact.		
1	Unlikely/Annually	The chance of the impact occurring is extremely low (Less than a 25% chance of occurrence).
2	Rare/Temporary	The impact may occur (Between a 25% to 50% chance of occurrence).
3	Relatively low likelihood/Infrequent	The impact will likely occur (Between a 50% to 75% chance of occurrence).
4	Probable/Possible/Life of operation	Impact will most likely occur (Greater than a 75% chance of occurrence).
5	Definite/Certain/Life of operation	Impact will certainly occur (100% chance of occurrence).
<b>FREQUENCY OF ACTIVITY</b>		
This describes the chance of activity taking place.		
1	Annually or Less	The chance of the activity occurring is extremely low (Less than a 25% chance of occurrence).
2	6 Monthly or Temporarily	The activity may occur (Between a 25% to 50% chance of occurrence).
3	Infrequent	The activity will likely occur (Between a 50% to 75% chance of occurrence).
4	Frequently	Activity will most likely occur (Greater than a 75% chance of occurrence).
5	Life of Operation	Activity will certainly occur (100% chance of occurrence).
<b>DURATION</b>		
This describes the duration of the impacts. Duration indicates the lifetime of the impact as a result of the proposed activity.		
0	Immediate	The impact is avoidable through conducting and implementing risk assessment.
1	Short term	The impact will either disappear with mitigation or will be mitigated through natural processes in a span shorter than the construction phase (0 – 1 years), or the impact will last for the period of a relatively short construction period and a limited recovery time after construction, thereafter, it will be entirely negated (0 – 2 years).

2	Medium to medium term/ Life of operation	The impact will continue or last for some time after the construction phase but will be mitigated by direct human action or by natural processes thereafter (2 – 10 years).
3	Medium term/Decommissioning	The impact and its effects will continue or last for the entire operational life of the development, but will be mitigated by direct human action or by natural processes thereafter (10 – 30 years).
4	Medium to Long term/Residual	The only class of impact that will be non-transitory. Mitigation either by man or natural process will not occur in such a way or such a time span that the impact can be considered indefinite.
5	Long term/Permanent	The only class of impact that will be non-transitory. Mitigation either by man or natural process will not occur in such a way or such a time span that the impact can be considered indefinite.
<b>INTENSITY/ SEVERITY</b>		
Describes the severity of an impact.		
0	Insignificant/ Non-harmful	Impact affects results of an performance an individual task.
1	Minimal/ Potentially Harmful	Impact affects the quality, use and integrity of the system/component in a way that is barely perceptible.
2	Medium/Slightly Harmful	Impact alters the quality, use and integrity of the system/component but system/component still continues to function in a moderately modified way and maintains general integrity (some impact on integrity).
3	High/Critical/Serious	Impact alters the quality, use and integrity of the system/component but system/component still continues to function in a moderately modified way and maintains general integrity (some impact on integrity).
4	Major/Catastrophic	Impact affects the continued viability of the system/ component and the quality, use, integrity and functionality of the system or component is severely impaired and may temporarily cease. High costs of rehabilitation and remediation
5	Disastrous	Impact affects the continued viability of the system/component and the quality, use, integrity and functionality of the system or component permanently ceases and is irreversibly impaired. Rehabilitation and remediation often impossible. If possible rehabilitation and remediation often unfeasible due to extremely high costs of rehabilitation and remediation.
<b>REVERSIBILITY</b>		
This describes the degree to which an impact can be successfully reversed upon completion of the proposed activity.		
0	Completely reversible	The impact is reversible with implementation of minor mitigation measures.
1	Partly reversible	The impact is partly reversible but more intense mitigation measures are required.
2	Barely reversible	The impact is unlikely to be reversed even with intense mitigation measures.
3	Irreversible	The impact is irreversible and no mitigation measures exist.
<b>IRREPLACEABLE LOSS OF RESOURCES</b>		
This describes the degree to which resources will be irreplaceably lost as a result of a proposed activity.		
1	No loss of resource	The impact will not result in the loss of any resources.
2	Marginal loss of resource	The impact will result in marginal loss of resources.
3	Significant loss of resources	The impact will result in significant loss of resources.
4	Complete loss of resources	The impact is result in a complete loss of all resources.
<b>CUMULATIVE EFFECT</b>		
This describes the cumulative effect of the impacts. A cumulative impact is an effect which in itself may not be significant but may become significant if added to other existing or potential impacts emanating from other similar or diverse activities as a result of the project activity in question. Cumulative Impact: Considering predicted effects, residual effects, effects of other projects and activities in the form of potential synergistic, interactive system components, pattern, augmentative, consecutive impacts and mitigation measures.		
0	Low cumulative impact	The impact would result in negligible/insignificant cumulative effects.

1	Medium cumulative impact	The impact would result in minor cumulative effects.
2	High cumulative impact	The impact would result in significant cumulative effects

### PUBLIC RESPONSE

1	Low public response	Issue has received relatively low public response
2	Medium Public Response	Issue has received relatively moderate public response
3	High Public Response	Issue has received relatively high public response

### SIGNIFICANCE

Significance is determined through a synthesis of impact characteristics. Significance is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. The calculation of the significance of an impact uses the following formula: **Nature x (Extent + severity + duration) x (frequency of impact + frequency of activity)**. The summation of the different criteria will produce a non-weighted value. By multiplying this value with the magnitude/intensity, the resultant value acquires a weighted characteristic which can be measured and assigned a significance rating.

Points	Impact significance rating	Description
1 to 25	Negative very low impact	The anticipated impact will have negligible negative effects and will require little to no mitigation.
1 to 25	Positive very low impact	The anticipated impact will have negligible positive effects.
26 to 50	Negative low impact	The anticipated impact will have minor negative effects and will require minor mitigation measures.
26 to 50	Positive low impact	The anticipated impact will have minor positive effects.
51 to 75	Negative low to medium impact	The anticipated impact will have moderate negative effects and will require moderate mitigation measures.
51 to 75	Positive low to medium impact	The anticipated impact will have moderate positive effects.
76 to 100	Negative medium to high impact	The anticipated impact will have moderate to high negative effects and will require moderate to high significant mitigation measures.
76 to 100	Positive medium to high impact	The anticipated impact will have moderate to high positive effects.
101 to 125	Negative high impact	The anticipated impact will have significant effects and will require significant mitigation measures to achieve an acceptable level of impact.
101 to 125	Positive high impact	The anticipated impact will have significant positive effects.
126 to 150	Negative very high impact	The anticipated impact will have highly significant effects and are unlikely to be able to be mitigated adequately. These impacts could be considered "fatal flaws".
126 to 150	Positive very high impact	The anticipated impact will have highly significant positive effects.

### PRIORITY

Priority is determined through consideration of other parameters that may relate to the proposed development however not necessarily forming part of the process followed to determine significance. Determination of priority is performed for purposes of assisting all stakeholders at decision-making level reach informed decisions. The calculation of Priority of an impact uses the following formula: **Priority = Public Response (PR) + Cumulative Impact (CI) + Reversibility (R) + Irreplaceable Loss of Resources (LR)**

2	Very Low	The anticipated impact is of negligible effects and will require no attention.
3 to 4	Low	The anticipated impact is of minor effects and will require minor attention.
5 to 7	Low to Medium	The anticipated impact is of moderate effects and will require moderate attention.
8 to 10	Medium to High	The anticipated impact is of moderate to high priority and will require moderate to urgent attention.
11 to 12	High	The anticipated impact is of high priority and requires urgent attention.

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

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

During construction and operation of the mining operation, there is a possibility of sterilisation of the mineral reserves and resources due to improper placement of infrastructure. The infrastructure and slimes dam will alter the topography by adding features to the landscape. Topsoil removal and excavations will unearth the natural topography. The construction of infrastructure and various facilities in the mining area can also result in loss of soil due to erosion. That is if mobile infrastructure is not going to be used during operations. Vegetation will be stripped in preparation for placement of infrastructure and excavations, and therefore the areas will be bare and susceptible to erosion.

Protected trees should be avoided as far as possible during invasive mining activities. Placement of small access roads and or any other associated infrastructure such as office area and storage areas should avoid slow-growing protected trees as far as possible. Areas with high density protected trees should be regarded as “sensitive” it should be mapped and avoided as far as possible. If protected trees cannot be avoided, a licence must be applied for and obtained prior to disturbance of such species.

A search and rescue of plants of special concern (i.e. endemic species; provincially protected or specially protected species; CITES listed species and TOPS listed species) prior to disturbance of natural vegetation will be done. Succulents such as Aloe species should be rescued and transplanted after obtaining the necessary Flora Permit from the Provincial Department of Environment and Nature Conservation (DENC).

The developer may also need a Flora Permit from the DENC for destruction of natural indigenous, protected or specially protected plant species, if encountered, under the Northern Cape Nature Conservation Act, Act 9 of 2009 (NCNCA). The same applies to TOPS or CITES listed plant species under the NEMBA. The topsoil that is stripped and piled on surrounding areas can be eroded by wind and rain. The soil will be carried away during runoff. The declared areas will be rehabilitation, but full restoration of soil might only occur over a number of years, subsequent to the re-establishment of vegetation. Furthermore, improper stockpiling and soil compaction can result in soil sterilisation. Leaching can also occur, resulting in the loss of nutrients.

During the construction and operation of the mining there is a possibility that equipment might leak oil, thus causing surface spillages. The hydrocarbon soil contamination will render the soil unusable unless they are decontaminated. The storage of fuels on site might have an impact on soil if the tanks that are available on site are not properly monitored and maintained to avoid leakages. Then there is the potential that contaminated soil

can be carried through runoff to contaminate water resources and soil stockpiled for rehabilitation. Soil pollution is therefore possible, but through mitigation it can be minimised.

The loss of land capability and land use can occur in two ways. Firstly, through topsoil removal, disturbances and loss of soil fertility; and secondly through the improper placement of infrastructure. The site has a land capability for grazing, but grazing activities can still be performed in areas not earmarked for mining, and with proper rehabilitation the land capabilities and land use potential can be restored.

If oil and fuel spillages occur, then it will seep into the underlying aquifers and contaminate ground water. Improper handling of hazardous material will cause contamination of nearby surface water resourced during runoff episodes. Lack of storm control structures will lead to erosion of stockpiles during heavy rains and runoff will carry suspended solids into the downstream environment. This might cause high silt load and affect stream flow.

Construction and mining activities on site will reduce the natural habitat for ecological systems to continue their operation. It is not expected that the areas of high ecological function will rehabilitation following disturbance events. Vehicle traffic generates lots of dust which can reduce the growth success and seed dispersal of many small plant species. It is expected that protected species will be destroyed during the prospecting operation.

While general clearing of the area and mining activities destroy natural vegetation, invasive plants can increase due to their opportunistic nature in disturbed areas. If invasive plant establish in disturbed areas, it may cause an impact beyond the boundaries of the mining site. These alien invasive species are thus a threat to surrounding natural vegetation and can result in the decrease of biodiversity and ecological value of the area. Therefore, if alien invasive species are not controlled and managed, their propagation into new areas could have a high impact on the surrounding natural vegetation in the long term. With proper mitigation, the impacts can be substantially reduced.

The transformation of natural habitats to mining and associated infrastructure will result in the loss of habitat affected individual species, and ecological processes. In turn this will result in the displacement of faunal species dependent upon such habitat. Increased noise and vibration due to mining activities will disturb and possibly displace birds and other wildlife. Fast moving vehicles take a heavy toll in the form of road kills of small mammals, birds, reptiles, amphibians and a large number of invertebrates. The construction of the mine and associated infrastructure will result in the loss of connectivity and fragmentation of natural habitat. Fragmentation of habitat will lead to the loss of migration corridors, in turn resulting in degeneration of the affected population's genetic make-up. This results in a subsequent loss of genetic variability between meta-

populations occurring within the site. Pockets of fragmental natural habitats hinder the growth and development of populations.

During the mining operation the abovementioned activities have potential for dust generation. It is anticipated that the extent of dust emissions would vary substantially from day to day depending on the level of activity and the specific operations. The mining will add a certain amount of noise to the existing noise in the area. However, levels of noise generated by mining activities are low.

The impact of site generated trips on the traffic of the existing roads is experienced to be low. Nevertheless, if road safety is not administered it can have a high impact on the safety of fellow road users.

The mining operation, especially during construction, will create a limited number of new employment opportunities. The magnitude of this impact will depend on the number of people that will be employed and the number of contractors sourced. An influx of people into the rural area will possibly impact on safety and security of local residents. During the decommissioning and at closure of the mining, staff will most likely be retrenched. This can potentially flood the job market, resulting in people being unable to find new employment for a long period of time. It is normally more difficult for people with highly specialised skills to find employment immediately. Those with fewer skills have more flexibility in the job market.

Economic slump of the local towns after mine closure is an associated potential impact although this will only be at mining operation. Income streams from wage bills as well as goods and services contracts (at all geographical levels) will come to an end, reducing the monetary income of individuals and mine-related businesses. People who have derived income directly or indirectly from the project may be inclined to leave the region in search of employment or business opportunities. This could result in further decline of the economy of the region as well as the abandonment of infrastructure. The loss of the mine workforce income will also impact upon non-mine related industries within the local and regional areas, particularly the rental property market and retail and service industries who would have received income during the life of mine from the salaried workforce.

It is likely, however that there will be residual positive economic impacts that are not fully reversed with the closure of the mine, and that the economy will not decline to its original level prior to the development of this project. This is because the mine will generate substantial income for the regional and local economy, both directly and indirectly, during its life.

It is difficult to predict the actual impact of the mine closure in advance, but it is acceptable to assume that the mine closure will have a negative impact on the local and regional economy with a high probability of occurrence, a high severity and a high significance.

Positive impacts include employment and training opportunities for people in the local community and local contractors; social upliftment and community development programmes; economic benefits.

**(viii) The possible mitigation measures that could be applied and the level of risk.**

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

#### Geology and Mineral Resource

Level of risk: Low

Proposed Mitigation measures:

- Ensure that optimal use is made of the available mineral resource through proper planning of the prospecting operations;
- The mining should be well planned and delineated first and all infrastructure positions should be selected with the main aim of avoiding sterilization of future resources; and,
- No dumping of materials prior to approval by exploration geologist.

#### Loss of Vegetation and faunal habitat

Level of risk: Low

Proposed Mitigation measures:

- Development planning must ensure loss of vegetation and disturbance is restricted to within the minimum and designated areas only;
- Vegetate and irrigate open areas to limit erosion, but take care not to promote erosion by irrigating;
- Removal of vegetation during construction and operation will be minimised to reduce the risk of excessive open areas occurring;
- Adhere to existing roads, and if new roads are constructed, these must not cross sensitive areas such as the ridges or drainage lines; and,
- Protected plant or animal species encountered must be managed in accordance with an accepted management plan for these species.

Cumulative Impact: Considering predicted effects, residual effects, effects of other projects and activities in the form of potential synergistic, interactive system components, pattern, augmentative, consecutive impacts and mitigation measures, cumulative impact will be low.

## Topography

Level of risk: Low to Medium

Proposed Mitigation measures:

- Backfill all trenches/excavations continuously;
- Employ effective rehabilitation strategies to restore surface topography of excavations and plant site;
- Stabilise the mine residue deposits; and,
- All temporary infrastructure will be demolished during closure.

## Soil Erosion

Level of risk: Low to Medium

Proposed Mitigation measures:

- At no point may plant cover be removed within the no-development zones;
- All attempts must be made to avoid exposure of dispersive soils;
- Re-establishment of plant cover on disturbed areas must take place as soon as possible, once activities in the area have ceased;
- Ground exposure should be minimised in terms of the surface area and duration, wherever possible;
- The mining operation must co-ordinate different activities in order to optimise the utilisation of the excavated trenches and thereby prevent repeated and unnecessary excavations;
- Construction that requires the clearing of large areas of vegetation and excavation should ideally occur during the dry season only;
- Construction during the rainy season (November to March) should be closely monitored and controlled;
- The run-off from the exposed ground should be controlled with the careful placement of flow retarding barriers;
- The soil that is excavated during construction should be stock-piled in layers and protected by berms to prevent erosion;
- All stockpiles must be kept as small as possible, with gentle slopes (18 degrees) in order to avoid excessive erosional induced losses;
- Excavated and stockpiled soil material are to be stored and bermed on them higher laying areas of the footprint area and not in any storm water run-off channels or any other areas where it is likely to cause erosion, or where water would naturally accumulate;
- Stockpiles susceptible to wind erosion are to be covered during windy periods;
- Audits must be carried out at regular intervals to identify areas where erosion is occurring;
- Appropriate remedial action, including the rehabilitation of the eroded areas, must occur;
- Rehabilitation of the erosion channels and gullies;
- The mining operation should land with steep slopes;

- Dust suppression must take place, without compromising the sensitive water balance of the area; and,
- Linear infrastructure such as roads and pipelines will be inspected at least monthly to check that the associated water management infrastructure is effective in controlling erosion.

Cumulative Impact: Considering predicted effects, residual effects, effects of other projects and activities in the form of potential synergistic, interactive system components, pattern, augmentative, consecutive impacts and mitigation measures, cumulative impact will be low.

#### Generation of waste

Level of risk: High

Proposed Mitigation measures:

- All waste produced to be disposed of in permitted designated waste disposal site;
- Waste must be stored in designated areas for storage;
- Clearly demarcate and label appropriate storage for the different types of waste; and,
- Ensure regular removal of waste on site to prevent attraction of pests and disposal of waste in a permitted disposal site at a licenced landfill site.

#### Soil Pollution

Level of risk: Very low

Proposed Mitigation measures:

- Refuelling must take place in well demarcated areas and over suitable drip trays to prevent soil pollution;
- Spill kits to clean up accidental spills from earthmoving machinery must be well-marked and available on site;
- Workers must undergo induction to ensure that they are prepared for rapid clean-up procedures;
- All facilities where dangerous materials are stored must be contained in a bund wall; and,
- Vehicles and machinery should be regularly serviced and maintained.

Cumulative Impact: Considering predicted effects, residual effects, effects of other projects and activities in the form of potential synergistic, interactive system components, pattern, augmentative, consecutive impacts and mitigation measures, cumulative impact will be low.

#### Land Capability and Land Use

Level of risk: Low to Medium

Proposed Mitigation measures:

- Ensure that optimal use is made of the available land through consultation with land owner and proper planning of mining activities;

- Surface agreement to be signed with land owners;
- Employ effective rehabilitation strategies to restore land capability and land use potential of the farm;
- All activities to be restricted within the demarcated areas; and,
- Ensure that land which is not used during construction is made available for grazing.

## Groundwater

Level of risk: Medium to High

Proposed Mitigation measures:

- Refuelling must take place in well demarcated areas and over suitable drip trays to prevent soil pollution;
- Spill kits to clean up accidental spills from earthmoving machinery must be well-marked and available on site;
- Workers must undergo induction to ensure that they are prepared for rapid clean-up procedures;
- All facilities where dangerous materials are stored must be contained in a bund wall;
- Vehicles and machinery should be regularly serviced and maintained;
- Monitor the quality of the boreholes located down-gradient of the mining site; and,
- Sample according to the sampling method and parameters for analysis as indicated in the Geohydrological study.

Cumulative Impact: Considering predicted effects, residual effects, effects of other projects and activities in the form of potential synergistic, interactive system components, pattern, augmentative, consecutive impacts and mitigation measures, cumulative impact will be low.

## Surface Water

Level of risk: High

Proposed Mitigation measures:

- Sufficient care must be taken when handling hazardous materials to prevent pollution;
- Under no circumstances may ablutions occur outside the provided facilities;
- No uncontrolled discharges from the staff camps to any surface water resources shall be permitted;
- If servicing and washing of the vehicles occur on site, there must be specific areas constructed for these activities, which must have concrete foundations, bunding as well as oil traps to contain any spillages;
- A walled concrete platform, dedicated store with adequate flooring or bermed area and ventilation must be used to accommodate chemicals such as fuels, oils, paints, herbicide and insecticides;
- Oil residue shall be treated with oil absorbent and this material removed to an approved waste site;
- Spill kits must be easily accessible and workers must undergo induction regarding the use thereof;
- At all times care should be taken not to contaminate surface water resources;

- Store all litter carefully to prevent it from washing away or blown into any of the water courses within the area;
- Provide bins for staff at appropriate locations, particularly where food is consumed;
- The mining site should be cleared daily and litter removed; and,
- Conduct on-going staff awareness programmes in order to reinforce the need to avoid littering, which contributes to surface water pollution.

Cumulative Impact: Considering predicted effects, residual effects, effects of other projects and activities in the form of potential synergistic, interactive system components, pattern, augmentative, consecutive impacts and mitigation measures, cumulative impact will be low.

### Indigenous Flora

Level of risk: Medium to High

Proposed Mitigation measures:

- Minimise the footprint of transformation;
- Encourage proper rehabilitation of mined areas;
- Encourage the growth of natural plant species;
- Ensure measures for the adherence to the speed limit;
- Footprint areas of the prospecting activities must be scanned for Red Listed and protected plant species prior to mining;
- It is recommended that these plants are identified and marked prior to mining;
- These plants should, where possible, be incorporated into the design layout and left *in-situ*;
- However, if threatened of destruction by mining, these plants should be removed (with the relevant permits from DAFF and DENC) and relocated if possible;
- A management plan should be implemented to ensure proper establishment of ex situ individuals, and should include a monitoring programme for at least two years after re-establishment in order to ensure successful translocation;
- All those working on site must be educated about the conservation importance of the fauna and flora occurring on site; and,
- Areas of high sensitivity must be regarded as no-go areas and must be excluded from mining activity related to the project. A buffer zone around these areas must be enforced to ensure development related activities do not encroach on the sensitive environment. The area surrounding the pans that is included in the buffer zone ecological corridor should be rehabilitated as part of the rehabilitation program to repair the damage inflicted by past activities.

Cumulative Impact: Considering predicted effects, residual effects, effects of other projects and activities in the form of potential synergistic, interactive system components, pattern, augmentative, consecutive impacts and mitigation measures, cumulative impact will be low.

#### All Invasive Plants

Level of risk: Very low

Proposed Mitigation measures:

- Minimise the footprint of transformation;
- Encourage proper rehabilitation of mined areas;
- Encourage the growth of natural plant species;
- Mechanical methods (hand-pulling) of control to be implemented extensively;
- Annual follow-up operations to be implemented; and,
- Alien vegetation that has grown as a result of land clearing and historical land use must be removed by methods recommended by DWA. A comprehensive Alien Invasive Plant removal programme must be drawn up and implemented for the property.

#### Fauna

Level of risk: Very low

Proposed Mitigation measures:

- Careful consideration is required when planning the placement for stockpiling topsoil and the creation of access routes in order to avoid the destruction of pristine habitats and minimise the overall mining footprint;
- The appointment of a full-time ECO must render guidance to the staff and contractors with respect to suitable areas for all related disturbance;
- The extent of the mine should be demarcated on site layout plans, and no construction personnel or vehicles may leave the demarcated area except those authorised to do so. Those areas surrounding the mine site that are not part of the demarcated development area should be considered as a no go zone for employees, machinery or even visitors;
- All those working on site must be educated about the conservation importance of the fauna and flora occurring on site;
- The ECO must ensure that all contractors and workers undergo environmental induction prior to commencing with work on site;
- The environmental induction should occur in the appropriate languages for the workers who may require translation;

- Reptiles and amphibians that are exposed during the clearing operations should be captured for later release or translocation by a qualified expert;
- Employ measures that ensure adherence to the speed limit and,
- It is important that identified ecological corridors are excluded from vegetation clearing and disturbance. It is important to ensure that no disturbance occurs in the no-go areas and that suitable linking corridors of natural habitat are left intact. The intentional killing of fauna can be mitigated through education and training and the enforcement of strict policy against the killing of fauna

Cumulative Impact: Considering predicted effects, residual effects, effects of other projects and activities in the form of potential synergistic, interactive system components, pattern, augmentative, consecutive impacts and mitigation measures, cumulative impact will be low.

#### Habitat

Level of risk: Low

Proposed Mitigation measures:

- Mining activities must be planned, where possible in order to encourage faunal dispersal and should minimise dissection or fragmentation of any important faunal habitat type; and,
- The extent of the prospecting area should be demarcated on site layout plans (preferably on disturbed areas or those identified with low conservation importance). No construction personnel or vehicles may leave the demarcated area except those authorised to do so.

#### Impact on health and safety of humans

Level or Risk: Low to Medium

Proposed Mitigation measures:

- Training of workers in the correct use of the machinery and/or equipment so as to avoid incidents and training of personnel on compliance to Mine Health and Safety Act;
- Workers to wear Personal Protective Equipment (PPE);
- Hazardous material must be correctly labelled and handled in a safe manner;
- Ensure access to mining area is controlled;
- Perform regular monitoring of water quality;
- Protect Health and Safety, in relation to the proposed mining operations, of users of water downstream;
- Establish and maintain effective communication with Interested and Affected Parties;
- Employ individuals who are healthy and fit for duty; and,
- Eliminate, minimise, control impact on health and safety of fellow human beings.

Cumulative Impact: Considering predicted effects, residual effects, effects of other projects and activities in the form of potential synergistic, interactive system components, pattern, augmentative, consecutive impacts and mitigation measures, cumulative impact will be low.

#### Air Quality

Level of risk: Low to Medium

Proposed Mitigation measures:

- Vegetation must be removed when soil stripping is required only. These areas should be limited to include those areas required for prospecting only, hereby reducing the surface area exposed to wind erosion. Adequate demarcation of these areas should be undertaken;
- Control options pertaining to topsoil removal, loading and dumping are generally limited to wet suppression;
- Where it is logistically possible, control methods for gravel roads should be utilised to reduce the re-suspension of particulates. Feasible methods include wet suppression, avoidance of unnecessary traffic, speed control and avoidance of track-on of material onto paved and treated roads;
- The length of time where open areas are exposed should be restricted. Prospecting should not be delayed after vegetation has been cleared and topsoil removed;
- Dust suppression methods should, where logistically possible, must be implemented at all areas that may/are exposed for long periods of time;
- For all mining activities management should undertake to implement health measures in terms of personal dust exposure, for all its employees; and,
- 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, 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.

Cumulative Impact: Considering predicted effects, residual effects, effects of other projects and activities in the form of potential synergistic, interactive system components, pattern, augmentative, consecutive impacts and mitigation measures, cumulative impact will be low.

#### Noise and Vibration

Level of risk: Very low

Proposed Mitigation measures:

- Restrict mining activities to daytime unless agreements obtained to do 24hr operations;

- Systematic maintenance of all forms of equipment, training of personnel to adhere to operational procedures that reduce the occurrence and magnitude of individual noisy events;
- Where possible material stockpiles should be placed so as to protect the boundaries from noise to individual operations;
- Standardised noise measurements should be carried out on individual equipment at the delivery to site to construct a reference data-base and regular checks carried out to ensure that equipment is not deteriorating and to detect increases which could lead to increase in the noise impact over time and increased complaints; and,
- Environmental noise monitoring should be carried out at regularly to detect deviations from predicted noise levels and enable corrective measures to be taken where warranted.

Cumulative Impact: Considering predicted effects, residual effects, effects of other projects and activities in the form of potential synergistic, interactive system components, pattern, augmentative, consecutive impacts and mitigation measures, cumulative impact will be low.

#### Visual Impacts

Level of risk: Very low

Proposed Mitigation measures:

- Infrastructure should be placed to optimise the natural screening capacity of the vegetation;
- Where practical, protect existing vegetation clumps during in order to facilitate screening during the prospecting operation;
- Remove rubble and other building rubbish off site as soon as possible or place it in a container in order to keep the mining site free from additional unsightly elements;
- Locate the staff camps and the material stockpiles outside of the visual field of sensitive visual receptors;
- Dust suppression procedures should be implemented especially on windy days during earth works;
- Rehabilitation should aim to establish a diverse and self-sustaining surface cover that is visually and ecologically representative of naturally occurring vegetation species; and,
- Implement a management plan for the post-mining site in order to control the invasion of alien vegetation and to manage erosion, until the site is fully rehabilitated.

#### Traffic and Road Safety

Level of risk: Very low

Proposed Mitigation measures:

- Implement measures that ensure the adherence to traffic rules.

## Heritage Resources

Level of risk: Medium to High

Proposed Mitigation measures:

- The heritage and cultural resources (e.g. graveyards, ruins, historic structures, fossils etc.) must be protected and preserved by the delineation of a no-go zone if any of these areas are to be found in the mining area;
- Intact bedrock strata should be avoided during mining of terrace gravels where possible;
- An avoidance measure was implemented by reducing size of Mining Permit application area in order not to encroach on the graves nearby;
- Compile and implement a Conservation Management Plan in respect of the graves that are nearby;
- Apply for exemption in respect of the legislated 100 m servitude;
- Stone tools should be avoided where possible and fresh exposure should be recorded before destruction. All stone tool artefacts should be recorded, mapped and collected before destruction; and,
- Should development necessitate impact on any building structures, the developer should apply for a SAHRA Site Destruction Permit prior to commencement of construction.

## Socio-Economic

Level of risk: Very low

Proposed Mitigation measures:

- The mine must ensure that false expectations are not created regarding job creation;
- Jobs must be allocated as advertised and in so far as is possible to local inhabitants;
- Contractors and employees should not be permitted to wander outside the mining area;
- Uncontrolled settlement of contractors and workers outside of the site will be prevented;
- The expectations of what benefits can occur to the community must be managed from the initiation of the project; and,
- Commitments as set out in the SLP must be attained.

Cumulative Impact: Considering predicted effects, residual effects, effects of other projects and activities in the form of potential synergistic, interactive system components, pattern, augmentative, consecutive impacts and mitigation measures, cumulative impact will be medium.

## Interested and Affected Parties

Level of risk: Very low

Proposed Mitigation measures:

- Maintain active communications with I&AP's;
- Ensure transparent communication with I&AP's at all times;

- I&AP's must be kept up to date on any changes in the prospecting operation; and,
- A complaints management system should be maintained by the mine to ensure that all issues raised by community members are followed up and addressed appropriately.

## Waste

Level of Risk: High

Proposed Mitigation Measure:

- Applicant to compile an Integrated Water and Waste Management Plan;
- Identify Waste streams on site and conduct waste classification at an appropriate time;
- Design storm water management plan;
- Compile, Implement and Monitor and Effective Waste Management Plan;
- Design an environmentally friendly remediation of contaminated sites management plan;
- Appoint a competent contractor to handle waste on site;
- Divert clean water around the site and collect storm water into a containment facility;
- Conduct further analyse of waste rock during operation to determine geochemical properties;
- Sewage Septic Tanks should be inspected and serviced regularly;
- All waste produced to be disposed of in permitted designated waste disposal site;
- Waste must be stored in designated areas for storage;
- Clearly demarcate and label appropriate storage for the different types of waste;
- Ensure regular removal of waste on site to prevent attraction of pests and disposal of waste in a permitted disposal site at a licensed landfill site;
- Waste will be collected in colour coded / clearly marked bins;
- Waste must be classified according to the risk that it poses;
- Containers will be placed at strategic points throughout the mining operation site;
- Waste classification is based on the concept of risk. The severity of the risk posed to the environment must be determined as well as the degree of control necessary during disposal;
- The Waste Management Procedure shall be used as a guideline document for classification;
- Hazardous waste must be placed in a suitable bin in accordance with its properties and characteristics;
- Storage must be based on compatibility of raw materials and waste accordingly;
- Containers will be placed at strategic points throughout the prospecting operation site;
- Separation at source strategy must be implemented;
- Waste will be collected in colour coded / clearly marked refuse bags and / or bins;
- Industrial, hazardous and contaminated waste is transported to the to the nearest license disposal site;
- Used oil will be recycled as far as possible;

- Industrial, hazardous and contaminated waste is transported to the to the nearest license disposal site;
- Garden refuse is transported to the nearest composting site;
- Rubber and contaminated waste is disposed to a licensed landfill site;
- Queries regarding waste classification must be directed to the ECO;
- Scrap metal, electric cable and used conveyor belts are weighed separately and transported to site or recyclers;
- Hazardous waste is disposed to a suitably licensed landfill site;
- SAWIC may be used to register generated waste at all times;
- Document control and proper filing must be in place;
- Waste disposal certificates must be provided by the contractor for each load of waste removed from site and each load disposed to a licensed landfill site;
- Waste Tyres: removed from site by service provider and handles according to Waste Tyres Regulations and Integrated Waste Tyre Management Plan;
- There should be constant communication between the ECO and various suppliers of all consumables on site for smooth handling of their waste, information sharing and record keeping; and,
- Some waste may be used to backfill excavated areas.

#### Agriculture

Level of Risk: High

Proposed Mitigation Measures:

- African Gemstone Mining to enter into amicable agreements with personnel who practice agriculture on the mining site currently;
- The agreements to be signed have to take into consideration sustainable development, environment and safety among other factors;
- Relocate livestock, if necessary, in a manner which is sustainable, safe and protects the health of animals;
- Eliminate, minimize or control dust generation;
- The area of application must be properly fenced; and,
- Access into the mining area must be controlled.

Cumulative Impact: Considering predicted effects, residual effects, effects of other projects and activities in the form of potential synergistic, interactive system components, pattern, augmentative, consecutive impacts and mitigation measures, cumulative impact will be low.

## Impact on Wildlife

Level of Risk: Low to Medium

### Proposed Mitigation Measures:

- The area of application must be properly fenced;
- Access into the mining area must be controlled;
- Wildlife should be relocated if endangered; and,
- Speed limits set on the mine and in the surroundings must be kept at minimum.

Cumulative Impact: Considering predicted effects, residual effects, effects of other projects and activities in the form of potential synergistic, interactive system components, pattern, augmentative, consecutive impacts and mitigation measures, cumulative impact will be low.

### **(ix) Motivation where no alternative sites were considered.**

The locality of the proposed development is based on the location of the possible diamond deposits, as Mining Permit/Right has been issued by the DMR previously. There is therefore no other alternative with regard to the overall operation footprint. Only the existing pits are to be rehabilitated and closed.

The location of the plant is primarily based on proximity to the access roads, proximity to the areas earmarked for processing, rehabilitation and closure, including recovery of diamonds, and the limited additional impact on the environment and heritage resource.

The mining, waste handling, tailings processing, borrow pit rehabilitation and closure activities and methodologies associated with the proposed development (i.e. mining, processing, borrow pit rehabilitation and closure, waste license application, tailings processing and recovery of diamonds with continued backfilling) is the only economic viable method currently being used by the mining sector.

### **(x) Statement motivating the alternative development location within the overall site. (Provide a statement motivating the final site layout that is proposed)**

The site layout would have to be determined by taking into consideration factors such as existing report inputs, spatial and practical operational and closure aspects. Considering the nature of commodities of interest, security measures will be considered in order to determine the final site layout. The EMPr presented herein proposes, in general, the rehabilitation and closure of abandoned pits, restoration of ecological status of the area of interest prior mining operations and improved alternative land uses post-closure among others. Noteworthy, African

Gemstone Mining (Pty) Ltd is partly going to be the waste generator of tailings and / or waste rock dumps lying on the property, a certain piece of land on ERF 687 and a certain piece of land on ERF 1526 Remainder, near Barkly West, Northern Cape.

- i) Full description of the process undertaken to identify, assess and rank the impacts and risks the activity will impose on the preferred site (In respect of the final site layout plan) through the life of the activity. (Including (i) a description of all environmental issues and risks that are identified during the environmental impact assessment process and (ii) an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures.)

Not applicable. There is no alternative development location for the site and therefore the initial site locality is considered to be the final site locality. The impact assessment provided in section h(v) is therefore sufficient and the process undertaken to identify impacts is the same as in section h(vi).

### **Description of the Process Undertaken To Identify Impacts**

The “triple bottom line” to sustainable development - Environmental and socio-economic impacts associated with the proposed development were identified using desktop study information, through field surveys that were conducted by Thaya Trading Enterprise, consultation with Interested and Affected Parties and related feedback and consideration of the project description, proposed site layout and available reports and plans, including specialist study reports.

### **Description of the Process Undertaken To Assess and Rank the Impacts and Risks**

The assessment methodology enables the assessment of environmental issues in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks including: cumulative impacts, the severity of impacts (including the nature of impacts and the degree to which impacts may cause irreplaceable loss of resources), the extent of the impacts, the duration and reversibility of impacts, the probability of the impact occurring, and the degree to which the impacts can be mitigated (please see section vii) . This assessment method was used to assess impacts associated with all project alternatives. The criteria used to assess the significance of the impacts are shown in Tables 7 – 11.

### **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 12).

**Table 12: Environmental Impacts and Risks Identified**

Activity/process or part	Impacts (Pre-mitigation)
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thereof	
Earthworks	<p>Deep excavations and infrastructure, posing safety risks to personnel and animals</p> <p>Loss of soil and land capability through contamination</p> <p>Loss of soil and land capability through physical disturbance</p> <p>Physical destruction of biodiversity</p> <p>General disturbance of biodiversity</p> <p>Destruction of riverbanks and alteration of natural drainage patterns</p> <p>Contamination of surface water resources</p> <p>Contamination of groundwater resources and destruction of aquifers</p> <p>Air pollution, greenhouse gas emissions, global warming</p> <p>Increase in disturbing vibrations and noise levels</p> <p>Negative visual impact</p> <p>Loss of heritage/cultural and palaeontological resources</p> <p>Influx of labour</p> <p>Wetlands</p> <p>Health and Safety</p> <p>Traffic</p> <p>Waste</p> <p>Economic impact</p> <p>Interference with existing land uses</p>
Mineralise ore and waste	<p>Loss and sterilisation of mineral resources</p> <p>Deep excavations and infrastructure, posing safety risks to personnel and animals</p> <p>Loss of soil and land capability through contamination</p> <p>Loss of soil and land capability through physical disturbance</p> <p>Physical destruction of biodiversity</p> <p>General disturbance of biodiversity</p> <p>Destruction of riverbanks and alteration of natural drainage patterns</p> <p>Contamination of surface water resources</p> <p>Contamination of groundwater resources and destruction of aquifers</p> <p>Air pollution, greenhouse gas emissions, global warming</p> <p>Increase in disturbing vibrations and noise levels</p> <p>Negative visual impact</p> <p>Loss of heritage/cultural and palaeontological resources</p> <p>Influx of labour</p> <p>Wetlands</p> <p>Health and Safety</p> <p>Traffic</p> <p>Waste</p> <p>Economic impact</p> <p>Interference with existing land uses</p>
Non-mineralised waste	<p>Deep excavations and infrastructure, posing safety risks to personnel and animals</p> <p>Loss of soil and land capability through contamination</p> <p>Loss of soil and land capability through physical disturbance</p> <p>Physical destruction of biodiversity</p> <p>General disturbance of biodiversity</p> <p>Destruction of riverbanks and alteration of natural drainage patterns</p> <p>Contamination of surface water resources</p> <p>Contamination of groundwater resources and destruction of aquifers</p> <p>Air pollution, greenhouse gas emissions, global warming</p> <p>Increase in disturbing vibrations and noise levels</p>

	<p>Negative visual impact  Loss of heritage/cultural and palaeontological resources  Influx of labour  Wetlands  Health and Safety  Traffic  Waste  Economic impact  Interference with existing land uses</p>
Water use and management; Waste Management	<p>Deep excavations and infrastructure, posing safety risks to personnel and animals  Loss of soil and land capability through contamination  Loss of soil and land capability through physical disturbance  Physical destruction of biodiversity  General disturbance of biodiversity  Destruction of riverbanks and alteration of natural drainage patterns  Contamination of surface water resources  Contamination of groundwater resources and destruction of aquifers  Air pollution, greenhouse gas emissions, global warming  Increase in disturbing vibrations and noise levels  Negative visual impact  Loss of heritage/cultural and palaeontological resources  Influx of labour  Wetlands  Health and Safety  Traffic  Waste  Economic impact  Interference with existing land uses</p>
Support services	<p>Deep excavations and infrastructure, posing safety risks to personnel and animals  Loss of soil and land capability through contamination  Loss of soil and land capability through physical disturbance  Physical destruction of biodiversity  General disturbance of biodiversity  Destruction of riverbanks and alteration of natural drainage patterns  Contamination of surface water resources  Contamination of groundwater resources and destruction of aquifers  Air pollution, greenhouse gas emissions, global warming  Increase in disturbing vibrations and noise levels  Negative visual impact  Loss of heritage/cultural and palaeontological resources  Influx of labour  Wetlands  Health and Safety  Traffic  Waste  Economic impact  Interference with existing land uses</p>
Transport system	<p>Deep excavations and infrastructure, posing safety risks to personnel and animals  Loss of soil and land capability through contamination  Loss of soil and land capability through physical disturbance</p>

	<p>Physical destruction of biodiversity  General disturbance of biodiversity  Destruction of riverbanks and alteration of natural drainage patterns  Contamination of surface water resources  Contamination of groundwater resources and destruction of aquifers  Air pollution, greenhouse gas emissions, global warming  Increase in disturbing vibrations and noise levels  Negative visual impact  Loss of heritage/cultural and palaeontological resources  Influx of labour  Wetlands  Health and Safety  Traffic  Waste  Economic impact  Interference with existing land uses</p>
Trenching and Pitting	<p>Deep excavations and infrastructure, posing safety risks to personnel and animals  Loss of soil and land capability through contamination  Loss of soil and land capability through physical disturbance  Physical destruction of biodiversity  General disturbance of biodiversity  Destruction of riverbanks and alteration of natural drainage patterns  Contamination of surface water resources  Contamination of groundwater resources and destruction of aquifers  Air pollution, greenhouse gas emissions, global warming  Increase in disturbing vibrations and noise levels  Negative visual impact  Loss of heritage/cultural and palaeontological resources  Influx of labour  Wetlands  Health and Safety  Traffic  Waste  Economic impact  Interference with existing land uses</p>
Use of facilities and services	<p>Deep excavations and infrastructure, posing safety risks to personnel and animals  Loss of soil and land capability through contamination  Loss of soil and land capability through physical disturbance  Physical destruction of biodiversity  General disturbance of biodiversity  Destruction of riverbanks and alteration of natural drainage patterns  Contamination of surface water resources  Contamination of groundwater resources and destruction of aquifers  Air pollution, greenhouse gas emissions, global warming  Increase in disturbing vibrations and noise levels  Negative visual impact  Loss of heritage/cultural and palaeontological resources  Influx of labour  Wetlands  Health and Safety  Traffic</p>

	Waste Economic impact Interference with existing land uses
Final land forms	Deep excavations and infrastructure, posing safety risks to personnel and animals Loss of soil and land capability through contamination Loss of soil and land capability through physical disturbance Physical destruction of biodiversity General disturbance of biodiversity Destruction of riverbanks and alteration of natural drainage patterns Contamination of surface water resources Contamination of groundwater resources and destruction of aquifers Air pollution, greenhouse gas emissions, global warming Increase in disturbing vibrations and noise levels Negative visual impact Loss of heritage/cultural and palaeontological resources Influx of labour Wetlands Health and Safety Traffic Waste Economic impact Interference with existing land uses
Closure	Influx of labour Economic impact

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

The option of not approving the proposed development will result in significant loss of valuable information regarding the mineral status (in terms of Diamonds) and will deny an opportunity to rehabilitate and close abandoned pits, post-closure-related alternative land uses, restoration of ecological status of the area of interest to pre-mining status. In addition to this, should economical reserves be present and the applicant does not have the opportunity to utilize these reserves for future land uses will be lost.

**j) Assessment of each identified potentially significant impact and risk**

(This section of the report must consider all the known typical impacts of each of the activities (including those that could or should have been identified by knowledgeable persons) and not only those that were raised by registered interested and affected parties).

**Table 13: Assessment of each identified potentially significant impact and risk**

Aspect	Activity	Potential Impact	Phase/s	Significance (Pre-mitigation)	Management actions type	Significance (Post-mitigation)	Impact management objectives
Geology	Mineralised waste Use of facilities and services prospecting final land forms	Loss and sterilisation of mineral resources	Operational Decommissioning	Low	<ul style="list-style-type: none"> <li>• Management through best practises; and</li> <li>• Ensure optimal use of the available mineral resource.</li> </ul>	Low	Can be managed/mitigated to acceptable levels
Topography	Earthworks; Mineralised waste; Water use and management; Support services; Transportation system; Use of facilities and services; Pitting and Trenching; Final land forms	Deep excavations and infrastructure resulting in safety risks to third parties and animals	Construction Operational Decommissioning	Low - Medium	<ul style="list-style-type: none"> <li>• Backfill all excavations continuously and employ effective rehabilitation strategies to restore surface topography of excavations and plant site, and to stabilise the mine residue deposit;</li> <li>• Control through access control;</li> <li>• control through management and monitoring;</li> <li>• control through rehabilitation; and</li> <li>• remedy through emergency response procedures</li> <li>• Concurrent backfilling</li> </ul>	Low - Medium	Can be managed/mitigated to acceptable levels
Soil and land capability	Earthworks; Mineralised waste; Water use and management; Support services; Transportation	Loss of soil resources and land capability through	Construction Operational Decommissioning	Low - Medium	<ul style="list-style-type: none"> <li>• Implement appropriate rehabilitation strategies to restore land capability;</li> </ul>	Low - Medium	Can be managed/mitigated to acceptable levels

	system; Use of facilities and services; Pitting and Trenching; Final land forms	contamination			<ul style="list-style-type: none"> <li>• Implement appropriate management strategies to preserve soil resources</li> <li>• Control through waste management practices;</li> <li>• control through rehabilitation;</li> <li>• control through appropriate design; and</li> <li>• remedy through emergency response procedures</li> </ul>		
	Earthworks; Mineralised waste; Water use and management; Support services; Transportation system; Use of facilities and services; Pitting and Trenching; Final land forms	Loss of soil resource and land capability through physical disturbance	Construction Operational Decommissioning	Low - Medium	<ul style="list-style-type: none"> <li>• Manage through limiting the project footprint to the plan;</li> <li>• manage through soil conservation procedures; and</li> <li>• manage through closure planning and rehabilitation</li> </ul>	Low - Medium	Can be managed/mitigated to acceptable levels
<b>Biodiversity</b>	Earthworks; Mineralised waste; Water use and management; Support services; Transportation system; Use of facilities and services; Pitting and Trenching; Final land forms	Physical destruction of biodiversity	Construction Operational Decommissioning	Medium - High	<ul style="list-style-type: none"> <li>• Prevention of overspill of mine associated activities onto the surrounding ecological environment;</li> <li>• Employ proper protection and rehabilitation strategies;</li> <li>• Management through biodiversity action plan and offset (when relevant);</li> <li>• managing through limiting the project footprint;</li> </ul>	Low	Can be managed/mitigated to acceptable levels

					<ul style="list-style-type: none"> <li>• management through rehabilitation; and</li> <li>• control through permits for removal</li> </ul>		
	Earthworks; Mineralised waste; Water use and management; Support services; Transportation system; Use of facilities and services; Pitting and Trenching; Final land forms	General disturbance of biodiversity	Construction Operational Decommissioning	Medium - High	<ul style="list-style-type: none"> <li>• Prevention of overspill of mine associated activities onto the surrounding ecological environment;</li> <li>• Employ proper protection and rehabilitation strategies;</li> <li>• Management through alien invasive species programme;</li> <li>• management through training;</li> <li>• management through monitoring;</li> <li>• management through appropriate design; and</li> <li>• remedy through emergency response procedures</li> </ul>	Low	Can be managed/mitigated to acceptable levels
Surface water	Earthworks; Mineralised waste; Water use and management; Support services; Transportation system; Use of facilities and services; Pitting and Trenching; Final land forms	Altering the bed, banks, course or characteristics of a watercourse and Impeding or diverting the flow of water in a watercourse	Construction Operational Decommissioning	Medium - High	<ul style="list-style-type: none"> <li>• Frequent monitoring of surface water resources;</li> <li>• Prevention of overspill of mine associated activities into the surrounding drainage channels streams;</li> <li>• Implementation of the necessary management;</li> <li>• programs to ensure the integrity of surface water (Standing water) resources;</li> </ul>	Low - Medium	Can be managed/mitigated to acceptable levels

					<ul style="list-style-type: none"> <li>• Implement recommendations of Surface Water Resource Specialist;</li> <li>• Management through storm water control; and</li> <li>• manage through monitoring water requirements</li> </ul>		
	Earthworks; Mineralised waste; Water use and management; Support services; Transportation system; Use of facilities and services; Pitting and Trenching; Final land forms	Contamination of surface water resources	Construction Operational Decommissioning	Low - Medium	<ul style="list-style-type: none"> <li>• Frequent monitoring of surface water resources;</li> <li>• Prevention of overspill of mine associated activities into the surrounding drainage channels streams;</li> <li>• Implementation of the necessary management programs to ensure the integrity of surface water (Standing water) resources</li> <li>• Management through waste management practises;</li> <li>• management through monitoring;</li> <li>• Enter into agreements with Azania KBKM (Pty) Ltd of locating plant, machinery &amp; Equipment on their application area;</li> <li>• management through compensation; and</li> <li>• remedy through emergency response procedures</li> </ul>	Low	Can be managed/mitigated to acceptable levels

Groundwater	Earthworks; Mineralised waste; Water use and management; Support services; Transportation system; Use of facilities and services; Pitting and Trenching; Final land forms	Contamination of groundwater resources	Construction Operational Decommissioning	Low - Medium	<ul style="list-style-type: none"> <li>• Construction of measures to prevent seepage into the groundwater by biological and engineering means;</li> <li>• Implementation of the necessary management programs to ensure the integrity of ground water resources;</li> <li>• management through monitoring;</li> <li>• management through compensation;</li> <li>• management through appropriate design; and</li> <li>• remedy through emergency response procedures</li> </ul>	Low	Can be managed/mitigated to acceptable levels
	Deep excavation and pits	Lowering of groundwater levels and reducing availability and destruction of aquifers.	Operational	Medium - High	<ul style="list-style-type: none"> <li>• Construction of measures to prevent seepage into the groundwater by biological and engineering means;</li> <li>• Implementation of the necessary management programs to ensure the integrity of ground water resources and aquifers;</li> <li>• Management through monitoring; and</li> <li>• management through compensation</li> </ul>	Medium - High	Can be managed/mitigated to acceptable levels

Air quality	Earthworks; Mineralised waste; Water use and management; Support services; Transportation system; Use of facilities and services; Pitting and Trenching; Final land forms	Air pollution and Global Warming (Climate Change)	Construction Operational Decommissioning	Low - Medium	<ul style="list-style-type: none"> <li>• Effective soil management;</li> <li>• Identification of the required control efficiencies in order to maintain greenhouse gas emissions, dust generation within acceptable levels;</li> <li>• Manage through air controls and monitoring</li> </ul>	Low - Medium	Can be managed/mitigated to acceptable levels
Noise & Vibration	Earthworks; Mineralised waste; Water use and management; Support services; Transportation system; Use of facilities and services; Pitting and Trenching; Final land forms	Increase in disturbing vibration and noise levels	Construction Operational Decommissioning	Low - Medium	<ul style="list-style-type: none"> <li>• Minimise the generation of excessive noise and vibration;</li> <li>• Ensure all vehicles and equipment is in a good working order; proper communication;</li> <li>• Manage through vibration and noise controls and once-off sampling</li> </ul>	Low	Can be managed/mitigated to acceptable levels
Visual	Earthworks; Mineralised waste; Water use and management; Support services; Transportation system; Use of facilities and services; Pitting and Trenching; Final land forms	Negative visual Views	Construction Operational Decommissioning	Low	<ul style="list-style-type: none"> <li>• Effective planning of the location of Infrastructure and operations to minimise visual impact;</li> <li>• Manage through limiting project footprint, rehabilitation and visual controls</li> </ul>	Low	Can be managed/mitigated to acceptable levels

Heritage/cultural and palaeontologic	Earthworks; Mineralised waste; Water use and management; Support services; Transportation system; Use of facilities and services; Pitting and Trenching; Final land forms	Loss of heritage/cultural and palaeontological resources	Construction Operational Decommissioning	Medium – High (Heritage)  Low – Medium (Palaeontology)	<ul style="list-style-type: none"> <li>• Preservation and protection of heritage and Cultural resources identified within a No-Go zone;</li> <li>• Further resources uncovered during mining activities need to be reported to the relevant authorities and a suitably qualified Archaeologist and/or Palaeontologist should be called in to attend;</li> <li>• Reduce footprint application area;</li> <li>• Compile and implement effectively Heritage Management Plan in respect of the graves nearby the application area;</li> <li>• Control through avoidance; and</li> <li>• remedy through emergency response procedures</li> <li>• Follow Chance-Find Protocol</li> </ul>	Low  Low	Can be avoided  Can be managed through implementation of Chance-Find Protocol
Socio-economic	Earthworks; Mineralised waste; Water use and management; Support services; Transportation system; Use of facilities and services; Pitting and Closure associated activities that are in line with closure plan	Influx of labour	Construction Operational	Low - Medium	<ul style="list-style-type: none"> <li>• Control Access into the property; Fence may be erected around pits; Implement and monitor EMPr presented herein;</li> <li>• Control through the monitoring of living conditions of employees, recruitment processes,</li> </ul>	Low	Can be managed/mitigated to acceptable levels

					disease management; and <ul style="list-style-type: none"> <li>remedy through emergency response procedures</li> </ul>		
	Earthworks; Mineralised waste; Water use and management; Support services; Transportation system; Use of facilities and services; Pitting and Closure associated activities that are in line with closure plan	Socio-economic impact	Construction Operational Decommissioning	Low - Medium	<ul style="list-style-type: none"> <li>Ensure continuous and transparent communication with IAP's;</li> <li>Control through good communication, recruitment and procurement processes</li> </ul>	Low - Medium	Can be managed/mitigated to acceptable levels
<b>Health and Safety</b>	Earthworks; Mineralised waste; Water use and management; Support services; Transportation system; Use of facilities and services; Pitting and Closure associated activities that are in line with closure plan	Health and Safety impact	Construction Operational Decommissioning	Low - Medium	<ul style="list-style-type: none"> <li>Control Access into the property; Fence may be erected around pits; Implement and monitor EMPr presented herein;</li> <li>Implement provisions of the Mine Health and Safety Act</li> </ul>	Low	Can be managed/mitigated to acceptable levels
<b>Land use</b>	Earthworks; Mineralised waste; Water use and management; Support services; Transportation system; Use of facilities and services; Pitting and Closure associated activities that are in line with closure plan	Interference with land uses	Construction Operational Decommissioning	Medium - High	<ul style="list-style-type: none"> <li>Carefully plan the placement of infrastructure and employ rehabilitation strategies to restore land capability</li> <li>Management through communication</li> </ul>	Low	Can be managed/mitigated to acceptable levels

Traffic	Use of existing infrastructure with minimal construction of haul roads and use of existing facilities and services	Road disturbance and traffic safety	Construction Operational Decommissioning	Low - Medium	<ul style="list-style-type: none"> <li>• Utilise existing access roads, where applicable;</li> <li>• Implement measures that ensure adherence to traffic rules;</li> <li>• Manage through road maintenance; and</li> <li>• Remedy through emergency response procedures</li> </ul>	Low - Medium	Can be managed/mitigated to acceptable levels
Wetlands	Earthworks; Mineralised waste; Water use and management; Support services; Transportation system; Use of facilities and services; Pitting and Trenching; Final land forms	Disturbance of Riparian zone	Construction Operational Decommissioning	Low - Medium	<ul style="list-style-type: none"> <li>• Manage through the principle of avoidance of disturbance of the anything within the Riparian zone; and</li> <li>• Implement recommendations of the wetland specialist</li> </ul>	Low	Can be managed/mitigated to acceptable levels
Waste	Earthworks; Mineralised waste; Water use and management; Support services; Transportation system; Use of facilities and services; Pitting and Trenching; Final land forms	Pollution	Construction Operational Decommissioning	Low - Medium	<ul style="list-style-type: none"> <li>• Ensure effective Integrated Waste and Water Management Plan and environmentally friendly remediation of hydrocarbon-contaminated sites;</li> <li>• Manage through the principle of waste separation at source;</li> <li>• Implement the waste National Waste Management Strategy and Waste Hierarchy</li> </ul>	Low	Can be managed/mitigated to acceptable levels

Alien invasive plants	Earthworks; Mineralised waste; Water use and management; Support services; Transportation system; Use of facilities and services; Pitting and Trenching; Final land forms	Colonisation by alien invasive plants	Construction Operational Decommissioning	Medium - High	<ul style="list-style-type: none"> <li>• Compile weed/alien plant management programme in consultation with DENC and DA;</li> <li>• Eradicate, and control the spread, of alien invasive species; and</li> <li>• Implement the compiled weed/alien management programme effectively.</li> </ul>	Low	Can be managed/mitigated to acceptable levels
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## **Cumulative Impacts**

Activities related and /or associated with any infrastructural development may result in several complex effects (whether jointly, severally or in synergy) on the natural ecosystem and social environment. These impacts are mainly identified in relation to the immediate environment and natural processes. Cumulative impacts can be defined as changes to the environment that are caused by the combined impact of past, present and future human activities and natural processes. Multiple individual activities and associated individual direct impacts may be relatively minor at first glance or during a specific environmental impact assessment process, however, result in significant environmental effects when combined with impacts associated with other activities. These impacts may aggregate or interact with other impacts to cause additional effects, not easily quantified when assessing an individual entity. The cumulative impact rating considers the predicted effects, residual effects, effects of other projects and activities in the form of potential synergistic, interactive system components, pattern, augmentative, consecutive impacts and mitigation measures, within the context of proposed prospecting activities.

The NEMA, 2014, specifically requires that cumulative impacts be assessed. This section provides a description and analysis of the potential cumulative effects of the diamond prospecting activities and past and present projects hereby considering the effects of any changes on the:

- Biophysical; and
- Socio – Economic conditions.

The impact assessment ratings in relation to cumulative effects could to be utilised as a useful tool for decision-makers and stakeholders in respect of the proposed development in relation to the surrounding environment. Two important aspects require consideration prior to the evaluation of cumulative effects:

- The determination of an appropriate spatial and temporal boundaries for evaluation of cumulative effects of the project; and
- The evaluation of relevant projects for consideration in the cumulative effects analysis.

Spatial and temporal boundaries for analysis of cumulative effects are dependent on several factors, including:

- The size and nature of the project and its potential effects;
- The size, nature and location of past and (known) future projects and activities in the area,
- The aspect of the environment impacted by the cumulative effect; and
- The period of occurrence of effects.

The spatial extent of the cumulative impact analysis is generally aligned with the zone of influence of the project and other projects in the vicinity. Most impact will be localised; however, others may be experienced on a regional scale. This is taken into consideration during the assessment of cumulative impacts.

It is reasonably straightforward to identify significant past and present projects and activities that may interact with the proposed Prospecting Operations to produce cumulative impacts, and in many respects, these are considered in the descriptions of the biophysical and socio-economic baseline.

#### *Air Quality Impacts*

The potential air quality and / or Global Warming impacts associated with the proposed prospecting activities relate to the potential generation of VOC's, SO<sub>2</sub>, NO<sub>2</sub>, PM<sub>2.5</sub>, PM<sub>10</sub> and dust emissions as a result of site clearance, vehicular movements, and the emission of pollutants from the operations in general.

Mitigation measures have been proposed to mitigate these adverse impacts. It is expected that the implementation of these mitigation measures will reduce this impact to an acceptable standard.

Mismanagement of dust generation sources at the proposed site for development may lead to an increase in air quality contamination in the atmosphere surrounding the Operations; however, the cumulative impact will be negligible.

#### *Noise and Vibration Impacts*

The potential vibration and noise nuisance associated with the proposed prospecting activities relate to the movement of vehicles, borrow pit rehabilitation and closure, processing of tailings, recovery of diamonds, and operation of trackless mobile machinery on site. Mitigation measures have been proposed to avoid and/or reduce the nuisance noise impacts. It is expected that with the implementation of the mitigation measures this impact will be reduced to an acceptable level.

The majority of the land use in the vicinity of the proposed Operations where the processing plant will be located is mostly agricultural, game farming and mining in nature, land uses associated with significant nuisance noise levels. It is not anticipated that the proposed development will have negative cumulative on noise impact in the area.

Other cumulative impacts have been described as part of the impact assessment discussions provided under the different phases of the proposed prospecting activities. None of the aspects were found to have negative cumulative impacts on the surroundings associated with the processing of tailings, recovery of diamonds, borrow pit rehabilitation and closure.

### *Groundwater and Surface Water Impacts*

The potential groundwater and surface water quality impact associated with the proposed activities relates to the potential contamination as a result of mismanagement of materials stored and leakages from vehicles and machinery. Mitigation measures have been proposed for the impacts on groundwater and surface water contamination. It is expected that with the implementation of the mitigation measures this impact will be reduced to an acceptable level.

**k) Summary of specialist reports.**

(This summary must be completed if any specialist reports informed the impact assessment and final site layout process and must be in the following tabular form):-

**Table 14: Specialist Reports**

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with an <b>X</b> where applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED.
Heritage Impact Assessment	The developer will apply for exemption from the mandatory 100 m buffering between the graves and the footprint of the mining and have a 20 m buffer instead. A boundary fence will be erected on the side facing the mine. A Conservation Management Plan will be prepared for the burial ground. As a standard procedure, in the event of other heritage resources being discovered in future phases of the project, the Provincial Heritage Resources Authority or SAHRA must be alerted immediately and an archaeologist or heritage expert called to attend.	X	ANNEXURE D
Palaeontological Impact Assessment (Desktop)	Based on experience and the lack of any previously recorded fossils from the area, it is unlikely that any fossils would be preserved in the sands and alluvium of the Quaternary. There is a only a small chance that fossils may have been transported so a Fossil Chance Find Protocol should be added to the EMPr. If fossils are found once excavating and prospecting have commenced then they should be rescued and a palaeontologist called to assess and collect a representative sample.	X	ANNEXURE D
Hydrological Impact Assessment	<ul style="list-style-type: none"> <li>• The applicant must develop an offset strategy for any loss of the Vaal River riparian zone/natural seasonal streams due to the mining activities;</li> <li>• The applicant need to develop and/or update their approved Environmental Management Program/ Plan which describe in detail how identified impacts will be managed on site to ensure that impacts are minimized;</li> </ul>	X	ANNEXURE D

	<ul style="list-style-type: none"> <li>• All hydrocarbon storage tanks used on-site should be self banded and roofed;</li> <li>• Following the detailed design of the mining program, appropriate measures should be implemented to ensure clean and dirty water separation and thereby mitigating the impact of pollution of the receiving Vaal River System;</li> <li>• A clear surface water monitoring plan should be developed prior to starting operations to protect the integrity of the receiving Vaal River System;</li> <li>• The applicant must, throughout all development phases, ensure adherence to the principle of avoidance, management, mitigation and rehabilitation measures of impact on the receiving surface water environment;</li> <li>• If chemicals are going to be used in the treatment process, pollution control dams must be lined adequately;</li> <li>• Water quality monitoring must be undertaken both upstream and downstream.</li> </ul>		
Wetland Assessment	<ul style="list-style-type: none"> <li>• No mining activities should take place within the delineated riparian zone as well as the proposed buffer zones unless the necessary authorisation and exemptions / licenses have been obtained from the Responsible Authority (Department of Human Settlements, Water and Sanitation;</li> <li>• All mining activities should be performed in a that applies the principle of avoidance, management, mitigation and rehabilitation;</li> <li>• If any prospecting activities are to take place within the delineated riparian zones, the associated buffer zone or disturb the network of dry seasonal streams, a Water Use License Application (WULA) must be submitted to the Department of Human Settlements, Water and Sanitation (DHSWS) in terms of Section 21 of the National Water Act (Act No. 36 of 1998);</li> <li>• A 500m buffer zone was recommended around the Vaal River Riparian Zone in order to protect the integrity of the system notwithstanding the fact that the riparian vegetation is largely modified;</li> <li>• All protected plant species must be left <i>in-situ</i>;</li> </ul>	X	ANNEXURE D

	<ul style="list-style-type: none"><li>• Should any mining activities take place within Vaal Rive Riparian Zone, a riparian zone offset area must be identified before proceeding with operations.</li></ul>		

Attach copies of Specialist Reports as appendices

## **l) Environmental impact statement**

### **i. Summary of the key findings of the environmental impact assessment;**

The proposed development is an open cast small-scale diamond mine. The piece of land under which this proposed development is to take place is undisturbed pasturable land. The nature of impacts can vary widely depending on the type of physical environment, the size of the activity and the perceptions and values of each of the affected parties. It is the objective of this kind of assessments to identify to all possible impacts a reasonable practicable manner. The planned development, related activities and associated infrastructure was used as reference to assess potential impacts.

In general, the environmental impacts associated to the mining operation are rather negative, while the social impacts are more beneficial. Impacts on vegetation are likely to be most profound, because the mining operation will constitute clearance of indigenous vegetation and most likely also the removal of protected species. Protected trees should be avoided as far as possible during invasive mining activities. Placement of small access roads and or any other associated infrastructure such as office area and storage areas should avoid slow growing protected trees as far as possible. Areas with high density protected trees should be regarded as "sensitive" it should be mapped and avoided as far as possible. If protected trees cannot be avoided, a licence must be applied for and obtained prior to disturbance of such species.

A search and rescue of plants of special concern (i.e. endemic species; provincially protected or specially protected species; CITES listed species and TOPS listed species) prior to disturbance of natural vegetation will be done. Succulents such as Aloe species should be rescued and transplanted after obtaining the necessary Flora Permit from the Provincial Department of Environment and Nature Conservation (DENC).

The developer may also need a Flora Permit from the DENC for destruction of natural indigenous, protected or specially protected plant species under the Northern Cape Nature Conservation Act, Act 9 of 2009 (NCNCA). The same applies to TOPS or CITES listed plant species under the NEMBA.

Storage of material and equipment on site, movement of TMM's and vehicles, stockpiles of topsoil and general excavation to mine minerals from the ground will, with certainty, alter the general topography and visual environment in the area of application. All proposed and other reasonable measures should be implemented in order to manage these impacts.

Mining activities on site will result in soil erosion. Soil erosion and surface water deterioration are likely to be possible important impacts if appropriate management strategies are not practised.

Noise pollution is going to occur as a result of machinery, equipment and vehicles that are going to be utilised in the mine during operations. These impacts are likely to affect life in the nearby Barkly West community. All proposed and other reasonable mitigating measures should be implemented in order to effectively manage these kind of impacts.

Positive impacts include the demarcation and subsequent protection of heritage resources and the eradication of alien invasive species. Positive social impacts include the creation of jobs, social upliftment, training opportunities, community development and numerous economic benefits.

It is expected that environmental impacts on groundwater will occur as result of potential contaminants being on site. The significance is expected to be of low significance and thus low risk of groundwater contamination on a local scale; however this impact may increase to moderate at a regional scale. Mining operations may also influence groundwater recharge as a result of excavations. Ground water dewatering is expected to be of very low risk, due to the fact that the proposed mining activities will occur above the groundwater levels.

The Vaal River is in the proximity of these proposed mining operations. The river that is present within the immediate vicinity of the proposed mine, will likely be contaminated. Surface water impacts are therefore considered moderate risk if not mitigated. Destruction of already considerably impacted Riparian zone of the Vaal River is inevitable. It is recommended that the applicant devise an offset strategy in this regard.

Monitoring and the implementation of the recommended mitigation measures can reduce the potential hydrogeological impacts to the environment.

Based on the environmental assessment presented in this report with outstanding specialists' reports, it is the provisional conclusion of this Basic Assessment that the proposed project will have relatively low impacts on the environment. With effective implementation management and mitigation measures, as well as recommended monitoring plans suggested in this report and those of the specialists', if any will be made, the significance of most potential environmental impacts on site from an environmental perspective will be reduced to low. There will be potential impacts on vegetation and habitat, groundwater, soil, dust, air quality and visual environment as a result of earthworks associated with the activity, influx and movement of vehicles, infrastructure, waste and waste water generated by the project as a whole.

To conclude, it must be accepted that any activities will have both physical and social impacts. Therefore the destruction of the natural environmental features within the mining area is inevitable. The significance of the impacts will however be affected by the success of the mitigation measures implemented and the rehabilitation programme for the mining area.

## ii. Final Site Map

Provide a map at an appropriate scale which superimposes the proposed overall activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers. **Attach as Appendix**

The final site map below indicates some parts of the application area in one site of which not all processing of tailings, recovery of diamonds and borrow pit rehabilitation and closure will take place. Existing roads are also depicted. The associated infrastructure relating to the developmental site will be placed in the area marked as the "mine infrastructure footprint".

The only buffers that must be implemented is the 100m away from any fixed infrastructure like the road that cuts through the farm and the out buildings in terms of the Mine Health and Safety Act, 1996 (Act No. 29 of 1996) Regulations relating to surveying, mapping and mine plans.

These regulations states that a mine must take reasonable measures to ensure that-

*No mining operations are carried out within a horizontal distance of 100 (one hundred) metres from reserve land, buildings, roads, railways, dams, waste dumps, or any other structure whatsoever including such structures beyond the mining boundaries, or any surface, which it may be necessary to protect in order to prevent any significant risk, unless a lesser distance has been determined safe by risk assessment and all restrictions and conditions determined in terms of the risk assessment are complied with;*

Please see final site map below:

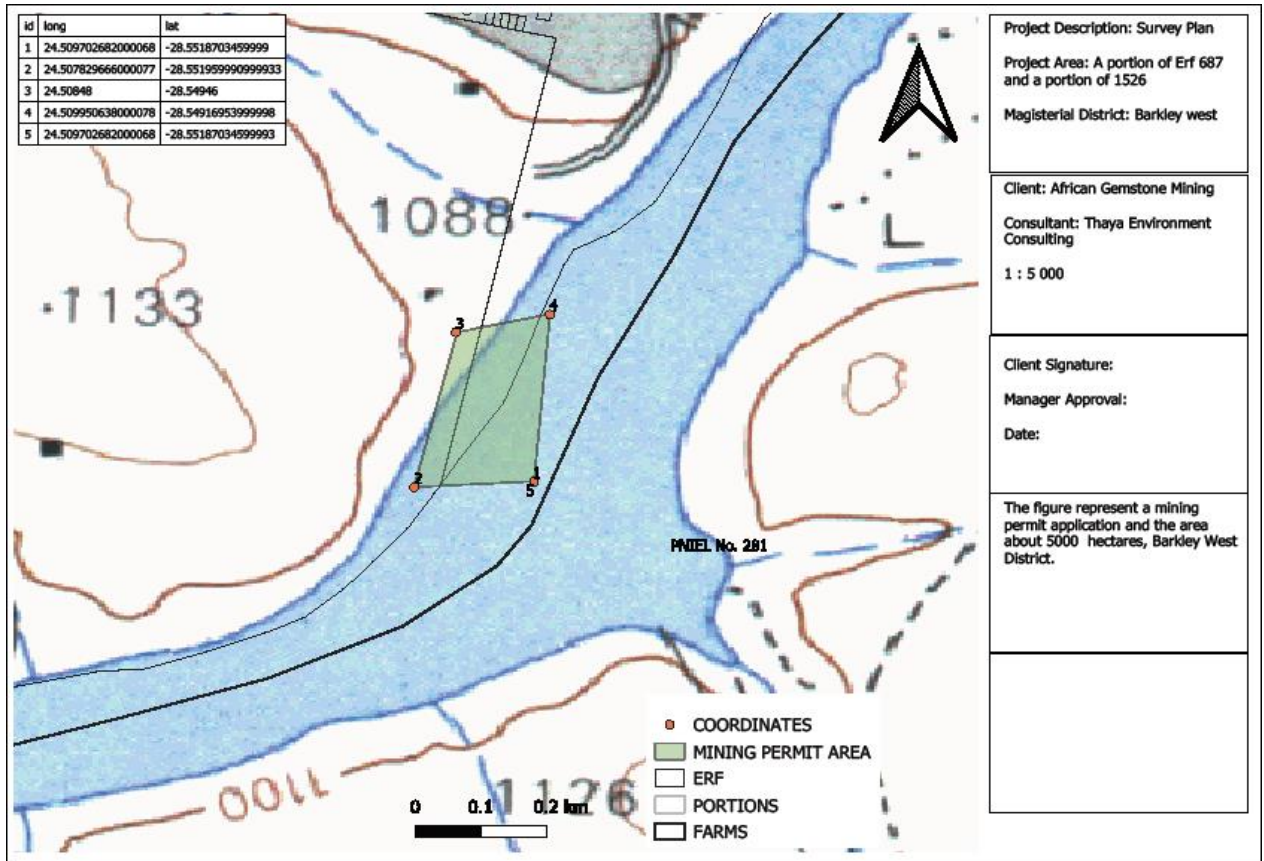


Figure 6: Final Site Map



Figure 7: Final Site Map

**iii. Summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;**

As mentioned before, the specific occurrence of diamonds in the area dictates the selection of the specific mining site and there are no alternatives in terms of project location.

The mining operation/Rehabilitation operation will provide  $\pm$  15 jobs and will also add to the increased economic activity and the area surrounding the properties.

Negative impacts on the area are expected to be temporary and can be mitigated to a large extent if the recommendations of the EMPr area adhered to e.g. rehabilitation.

**m) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPr;**

Based on the assessment and where applicable the recommendations from specialist reports, the recording of proposed impact management objectives, and the impact management outcomes for the development for inclusion in the EMPr as well as for inclusion as conditions of authorisation.

The EMPr addresses the environmental impacts associated with the project during all Phases of the proposed project. The objectives of the EMPr will be to provide detailed information that will advise the planning design of African Gemstone Mining mining activities in order to avoid and/or reduce impacts that may be detrimental to the environment.

The impact management objective for African Gemstone Mining mining operation should include:-

- To ensure efficient extraction of the diamond resource;
- To limit the alteration of the surrounding topography;
- To manage and preserved sensitive soil types;
- To prevent the loss of land capability;
- To ensure the continuation of economically viable land use;
- To ensure that the surrounding ground water resources are not adversely affected to the detriment of the health and welfare of nearby communities; and to ensure suitable quality of ground water resources;
- To ensure that the surrounding surface water resources are not adversely affected to the detriment of the health and welfare of nearby communities; and to ensure suitable quantity and quality of surface water resources;
- To contain soils and materials within demarcated areas and prevent contamination of storm water run-off;
- To minimise the loss of natural vegetation;
- Avoid impact on possible heritage finds;
- To avoid impact on burial graves nearby;
- To prevent the proliferation of alien invasive plants species;

- To protect the wildlife and bird species;
- To promote health and safety of workers;
- To protect the natural habitat of wildlife and bird species;
- To maintain visual integrity; and to minimise the extent of the generation of dust in order to minimise the aspect of nuisance and health impacts to sensitive receptors;
- To minimise noise and vibration to a level that disturbances felt by the communities are limited;
- To reduce the impact on visual quality due to intrusive mine infrastructure, activities and facilities;
- In essence, to promote sustainable development.

**n) Aspects for inclusion as conditions of Authorisation.**

Any aspects which must be made conditions of the Environmental Authorisation

Consider available reports and plans, if any pertaining to the proposed development.

The applicant must compile a Conservation Management Plan in respect of the burial graves that are near the application area.

The applicant must acquire authorisation from the Department of Human Settlements, Water and Sanitation before impacting the Riparian Zone of the Vaal River.

The developer must apply for exemption from the mandatory 100 m buffering between the graves and the footprint of the mining and have a 20 m buffer instead.

As a standard procedure, in the event of other heritage resources being discovered in future phases of the project, the Provincial Heritage Resources Authority or SAHRA must be alerted immediately and an archaeologist or heritage expert called to attend.

If fossils are found once excavating and prospecting have commenced then they should be rescued and a palaeontologist called to assess and collect a representative sample.

**o) Description of any assumptions, uncertainties and gaps in knowledge.**

(Which relate to the assessment and mitigation measures proposed)

Uncertainties form part of any proposed development pertaining the accuracy of the actual degree of impact on the environment that the proposed development will have. This report was compiled by incorporating information provided by the applicant and the various project specific employees/directors and no warranty or guarantee, whether expressed or implied, is made by the EAP with respect to the completeness, accuracy or truth or any aspect of this document with reference to the instructions, information and data supplied by the aforementioned parties.

The impact assessment was conducted based on the EAP's knowledge and experience. The probability, intensity/severity and significance pertaining to the criteria used to assess the significance of the impacts were based on rule-of-thumb and experience.

It was assumed that, by and large in this particular landscape segment, with its relatively sparse vegetation, surface archaeological traces would be relatively visible. However, it was likely that where artefacts are present, they would tend to occur in buried gravel deposits.

A proviso is routinely given, that should sites or features of significance be encountered during planned operations on the site (this could include an unmarked burial, an ostrich eggshell water flask cache, or a high density of stone tools, for instance), specified steps are necessary (beginning with immediate suspension of work, and reporting to the heritage authority).

The impact assessment was conducted based on the EAP's knowledge and experience. The probability, intensity/severity and significance pertaining to the criteria used to assess the significance of the impacts were based on rule-of-thumb and experience.

The financial provision presented herein does not include comparison of previous and current proposed financial quantum because of lack of access to reports pertaining to mining operations that took place previously on the area of application. If any new information becomes available, the EMPr presented herein will be revised to cater for necessary changes, if any. Furthermore, it is assumed that the volume of abandoned waste rock dumps and / or tailings that are lying on the surface will suffice to ensure acceptable closure of the pits.

The socio-economic aspect of sustainable development is difficult to include in this piece of work because the post-closure alternative land uses associated with the area of interest were not known at the time of compilation of this report. .

**p) Reasoned opinion as to whether the proposed activity should or should not be authorised**

**i. Reasons why the activity should be authorized or not.**

The proposed development does have some negative impacts on the environment. Mining-related activities, in their very nature, have both negative and positive environmental and socio-economic impacts. In some instances, such as the present instance, old mining operations were abandoned and rehabilitation was not undertaken. It is beneficial to the environment to have a proponent who wishes to rehabilitate and close the

abandoned old mines even though they (the proponent) did not mine the area under discussion. There are no significant reasons why the activity should not be authorized, especially if the applicant commits to adhere to mitigation measures as presented herein. However, if the proposed management and mitigation measures are not properly applied or if the proponent intentionally disregards any of these measures, it will negatively affect the environment and have more long-term consequences. Therefore, the competent authority should take all the necessary steps to ensure that the operation complies with the conditions set out in the approval of the EMPr.

**ii. Conditions that must be included in the authorisation**

Apart from ensuring that the necessary permits and authorisations are obtained for restricted activities, no disturbance of burial graves, all recommendations and mitigation measures as set out in the EMPr should be adhered to or other reasonable mitigating measures should be implemented.

**q) Period for which the Environmental Authorisation is required.**

Environmental Authorisation is required for 5 years.

**r) Undertaking**

**Confirm that the undertaking required to meet the requirements of this section is provided at the end of the EMPr and is applicable to both the Basic assessment report and the Environmental Management Programme report.**

The undertaking required to meet the requirements of this section is provided at the end of the EMPr and is applicable to both the Basic Assessment Report and the Environmental Management Programme.

**s) Financial Provision d**

**State the amount that is required to both manage and rehabilitate the environment in respect of rehabilitation.**

**i. Explain how the aforesaid amount was derived.**

The quantum of the financial provision contemplated in Regulation 54 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) will be revised and adjusted accordingly annually, based on a survey assessment of the environmental liability of Thaya Trading Enterprise. Surveys of tailings processing, borrow pit rehabilitation and closure are conducted by a registered surveyor and results are forwarded to the Environmental Manager who calculates the outstanding rehabilitation as per the agreed rate in the DMR Guideline. A bank guarantee is prepared for the amount and submitted to the DMRE.

The proposed Financial Provision Regulations, 2019 (Government Gazette 42464, 2019) were taken into consideration.

Financial provision for the rehabilitation or management of negative environmental impacts caused by the mining operation [as required by Section 41 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)] will be made in the form of a financial guarantee from a South African registered bank. This document will guarantee the financial provision relating to the Environmental Management Programme in a format as approved by the Director-General.

- ii. **Confirm that this amount can be provided for from operating expenditure.** (Confirm that the amount, is anticipated to be an operating cost and is provided for as such in the Mining work programme, Financial and Technical Competence Report or Prospecting Work Programme as the case may be).

African Gemstone Mining (Pty) Ltd does require external funding for purposes of mining, conducting the processing of tailings, recovery of diamonds and Borrow Pit Rehabilitation and Closure activities.

**t) Specific Information required by the competent Authority**

Not yet requested for.

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

- 1. Impact on the socio-economic conditions of any directly affected person.** (Provide the results of Investigation, assessment, and evaluation of the impact of the mining, bulk sampling or alluvial diamond prospecting on any directly affected person including the landowner, lawful occupier, or, where applicable, potential beneficiaries of any land restitution claim, attach the investigation report as an **Appendix** .

The proposed development is going to have a positive impact as approximately 15 jobs are going to be created.

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

There are known sites of archaeological and cultural interest of high significance that occur on or within close proximity to the mining area and avoidance measures have been put in place. Where and when level of significance of impacts before mitigation is high, the Department of Mineral Resources, SAHRA and heritage specialist will be notified.

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

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

There are no alternatives considered as the application area applied for is the area identified based on the fact that mining operations did take place previously.

## VI. PART B

### ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

#### 1) Draft environmental management programme.

- a) **Details of the EAP**, (Confirm that the requirement for the provision of the details and expertise of the EAP are already included in PART A, section 1(a) herein as required).

I hereby confirm that the requirements for the provision of the details and expertise of the EAP are already included in PART A, section 1(a).

- b) **Description of the Aspects of the Activity** (Confirm that the requirement to describe the aspects of the activity that are covered by the draft environmental management programme is already included in PART A, section 1(h) herein as required).

I hereby confirm that the requirements to describe the aspects of the activity that are covered by the draft environmental management programme is already included in PART A, section 1(h, i, j & k).

c) **Composite Map**

**(Provide a map (Attached as an Appendix) at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that any areas that should be avoided, including buffers)**

The final site map below indicates the mining permit application area in which all mining operations will take place. Existing roads are also depicted. The associated infrastructure relating to the mining site will be placed in the area marked as the “mine infrastructure footprint”.

The only buffers that must be implemented is the 100 m away from any fixed infrastructure like the tar road and the out buildings in terms of the Mine Health and Safety Act, 1996 (Act No. 29 of 1996) Regulations relating to surveying, mapping and mine plans.

These regulations states that a mine must take reasonable measures to ensure that:

No mining-related operations are carried out within a horizontal distance of 100 (one hundred) metres from reserve land, buildings, roads, railways, dams, waste dumps, or any other structure whatsoever including such structures beyond the application area boundaries, or any surface, which it may be necessary to protect in order to prevent any significant risk, unless a lesser distance has been determined safe by risk assessment and all restrictions and conditions determined in terms of the risk assessment are complied with.

Please see Final Site Map below:

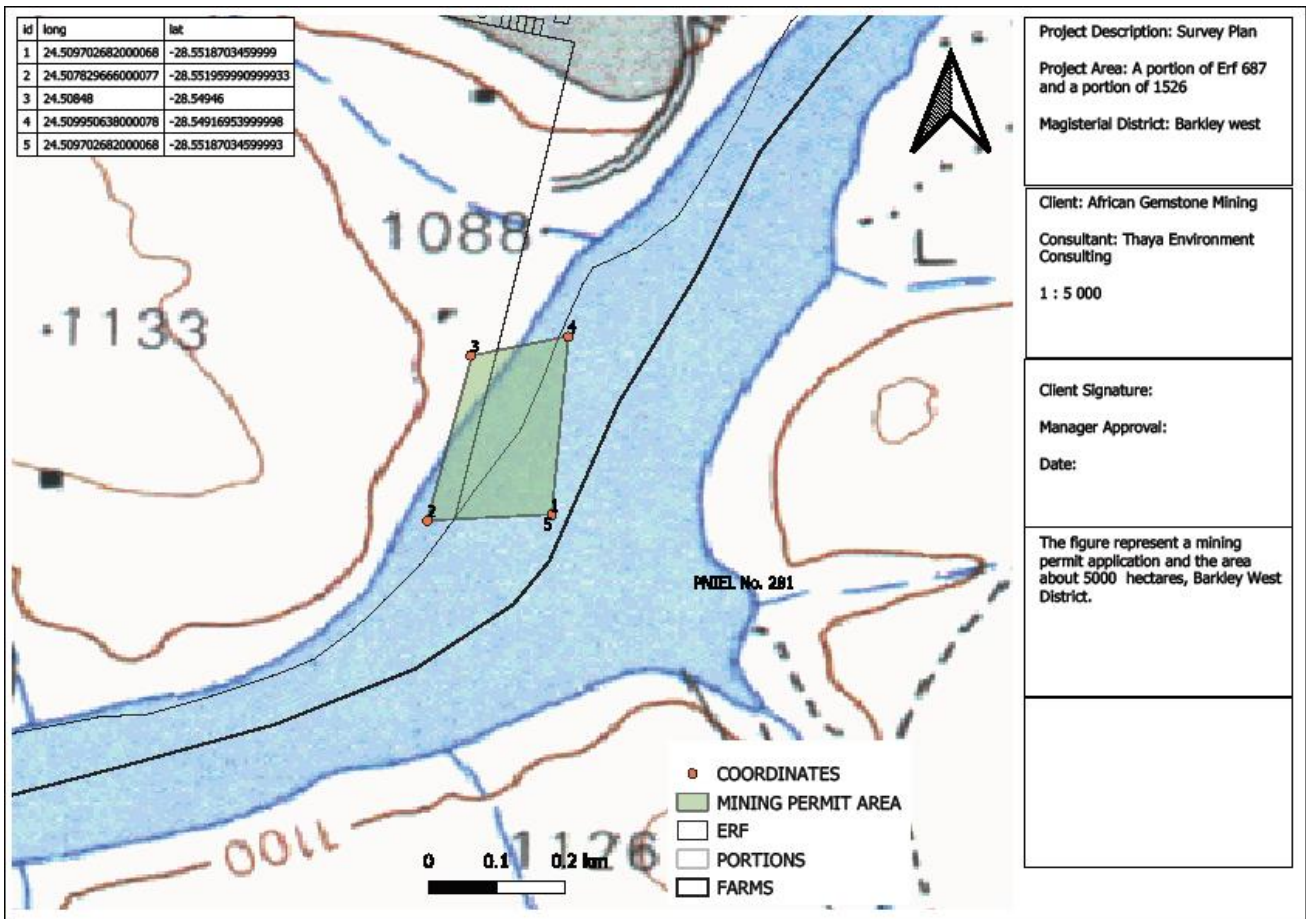


Figure 8: Final Site Map



Figure 9: Final Site Map

#### d) **Description of Impact management objectives including management statements**

The proposed impact management objectives and management statements are informed by the environmental setting of the proposed mining site, as well as the desired state during closure and post closure of the mine.

- i) **Determination of closure objectives.** (ensure that the closure objectives are informed by the type of environment described)

The key aim of decommissioning and closure is to ensure that all the significant impacts are ameliorated. All rehabilitated areas should be left in stable, self-sustainable state. African Gemstone Mining will be using a mobile camp site for its mining activities, and therefore no infrastructure associated with the camp site will require breaking down or demolishing at closure. The areas disturbed as a result of the mining operation will be rehabilitated by maintaining the general topography of the surrounding area, ensuring that there are no remnants of the structures. The closure objectives aim to return the affected area to a land use condition or desired state similar to that of the pre-mining state. Closure and rehabilitation of pits will be undertaken during the operational phase when the activities are completed in those pits, to achieve a desired land condition as early as possible. The pollution control dams (PCD) will be removed at closure and the plastic lining will be removed and recycled.

The key aim decommissioning and closure is to ensure that all the significant impacts are ameliorated. All rehabilitated areas should be left in a stable, self-sustainable state. Proof of this should be submitted at closure.

Specific objectives include:

Rehabilitation of infrastructure areas

The objective for the removal of infrastructure and the subsequent rehabilitation of the areas they occupied include:

- To ensure that infrastructure identified for removal is successfully demolished and removed;
- To ensure that infrastructure identified to remain after mine closure is maintained until the issue of a closure certificate.

The removal, decommissioning and disposal of all mining infrastructure, will comply with all conditions contained in the MRPDA. To this end, decommissioning and rehabilitation of all infrastructure areas will follow the following principles:-

- The plant and associated disused infrastructure will be dismantled or demolished. Any building foundations will be removed and land exposed to the demolition and dismantling of infrastructure and all other disturbed land will be rehabilitated;
- Rubble will be disposed of at a suitable site. The site will be selected in consultation with DENC;
- Any surface water management infrastructure will be maintained to ensure they are stable and functional;
- Just before closure, when disturbed land has been rehabilitated and erosion is controlled by vegetation cover, all disused surface water management facilities will be decommissioned.

#### Mine residue deposits

The mine residue deposits will comprise of a slimes dam. The objectives pertaining to the effective management and rehabilitation of the slimes dam include:

- To ensure that the mine residue deposits are stable and that there is an acceptably low risk of failure of these deposits during the decommissioning phase and following mine closure;
- To establish self-sustainable vegetation cover on the slimes dam so that the visual impact of the slimes dam improves and in order to prevent erosion.

Management principle pertaining to the slimes dam includes:

- The slimes dams will continuously be inspected by a suitable qualified professional engineer to ensure their stability. If they are unstable, the appropriate remedial measures will be implemented;
- Inspection and monitoring should continue until a suitable qualified professional engineer has confirmed the long-term stability of the slimes dam;
- Any infrastructure or facilities that serve the slimes dam will be maintained to ensure that they are both stable and functional.

#### Maintenance

The necessary agreements and arrangement will be made by African Gemstone Mining to ensure that all natural physical, chemical and biological processes for which a closure condition were specified are monitored until they reach a steady state or for three (3) years after closure or as long as deemed necessary at the time:

- Such processes include erosion of the slimes dams, rehabilitated surfaces, surface water drainage, air quality, surface water quality, ground water quality, vegetative re-growth, weed encroachment;
- The closure plan will be reviewed yearly;
- Rehabilitation of the land will be maintained until a closure certificate is granted or until the land use is regarded as sustainable;
- All rehabilitated areas will be monitored and maintained until such time as required to enable the mine to apply for closure of these different areas.

#### Performance assessments

As per the MPRDA and associated Regulations, this Environmental Management Programme will be continually assessed in terms of its appropriateness and adequacy. In order to achieve this, African Gemstone Mining will undertake the following:

- Implement the necessary monitoring programmes, as discussed as part of this EMP;
- Conduct performance assessments of this EMP as required by the MPRDA and associated Regulations; and
- Compile and submit the afore-mentioned performance assessment reports to the DMR. The frequency of the performance assessments will occur every year. An independent and competent person will undertake all performance assessments.

#### Decommissioning and closure objectives

The key aim decommissioning and closure is to ensure that all the significant impacts are ameliorated. All rehabilitated areas will be left in a stable, self-sustainable state. Proof of this will be submitted at closure.

Specific objectives include:

- To identify potential post-closure land uses in consultation with the surrounding land owners and land users. This should be done during the operational phase of the mine;
- Rehabilitate disturbed land to a state suitable for its post-closure uses;

- Rehabilitate disturbed land and mine residue deposits to a state that facilitates compliance with applicable environmental quality objectives;
- Limit the impact on staff whose positions become redundant at the time of mine closure, as addressed in the SLP;
- Keep relevant authorities informed of the progress of the decommissioning phase;
- Submit monitoring data to the relevant authorities;
- Maintain required pollution control facilities and rehabilitated land until closure.

#### Negative economic impacts

The objective is to alleviate the negative socio-economic impacts that will result from mine closure.

Management principles to achieve this include:

- African Gemstone Mining will undertake a carefully planned stepwise decommissioning process;
- Closure planning will form an integral part of mine planning;
- Strategies for sustainable development of surrounding towns have been and will continue to be developed by the project in collaboration with district and local authorities, local businesses and other interested parties. Early warning of impending closure will be given to IAP's;
- In conjunction with long-term closure planning, the mine will actively participate in regional and local planning to enhance the economic benefits of the project through development of alternative forms of income generation;
- African Gemstone Mining will initiate and participate in regional planning exercises that will mitigate the impacts of closure of the mine, the local and regional economies and associated abandonment of community infrastructures surrounding the mine.

The mine will fulfil the requirements for closure and the management of downscaling.

Possible after-use economic activities include further mining, agriculture, establishment of a recreational facility and power generation. All the suggested activities have a potential to contribute to the economy of Barkly West, the Northern Cape Province and South Africa as a whole.

#### ii) **Volumes and rate of water use required for the operation.**

The volume of water required by these operations per day over the 5 year operation period is yet to be determined.

#### iii) **Has a water use licence has been applied for?**

The water use license application license is going to be lodged with the responsible authority.

iv) Impacts to be mitigated in their respective phases f

Measures to rehabilitate the environment affected by the undertaking of any listed activity

Table 15: Impacts to be mitigated

ACTIVITIES  (E.g. For prospecting - drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route etc...etc...etc  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.)	PHASE  (of operation in which activity will take place.  State; Planning and design, Pre-Construction' Construction, Operational, Rehabilitation, Closure, Post closure).	SIZE AND SCALE of disturbance  (volumes, tonnages and hectares or m <sup>2</sup> )	MITIGATION MEASURES  (describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)	COMPLIANCE WITH STANDARDS  (A description of how each of the recommendations herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)	TIME PERIOD FOR IMPLEMENTATION  Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. .With regard to Rehabilitation, therefore state either:-. Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
Disturbance of biodiversity; Mineralised waste Use of facilities and services mining final land forms; Stripping Topsoil; Earthworks; Pitting and Trenching;	Construction  Operational  Decommissioning	5 hectares of vegetation clearance;  <100 tons of mineralised waste at time.	<ul style="list-style-type: none"> <li>• Management through best practises;</li> <li>• Carefully plan the placement of infrastructure and employ rehabilitation strategies to restore land capability;</li> <li>• Eradicate, and control the spread, of alien invasive species;</li> <li>• Ensure optimal use of the available mineral resource;</li> <li>• Planning and implementation of plan must ensure loss of vegetation is limited and disturbance is restricted to within the designated areas;</li> <li>• Backfill all excavations</li> </ul>	<ul style="list-style-type: none"> <li>• Manage and avoid through Environmental Conservation Management Plan;</li> <li>• Implement in accordance with the rehabilitation plan and standards;</li> <li>• Comply with the Alien invasive Management Plan in accordance with NEM:BA;</li> <li>• Monitor and manage through Dust Management Plan and Measures to ensure that the acceptable standards as set out in Regulation 3 of NEM:AQA National Dust Control Regulations;</li> </ul>	On-going

			<p>continuously and employ effective rehabilitation strategies to restore surface topography of excavations and plant site, and to stabilise the mine residue deposit;</p> <ul style="list-style-type: none"> <li>• Re-vegetate disturbed areas as soon as practicably possible to prevent soil erosion by water and wind and to prevent the proliferation of alien invasive species;</li> <li>• Protect and manage, if possible, any encountered protected plant or animal species;</li> <li>• Employ appropriate rehabilitation strategies to restore land capability.</li> <li>• Implement dust suppression measures;</li> <li>• Enter into amicable agreements that will promote wellbeing and protection of wildlife. Should there be necessity to relocate wild animals, that should be done in sustainable, environmentally friendly and safe manner;</li> <li>• Prevent any form of spillages;</li> <li>• Control Access into the property; Fence may be erected around pits; Implement and monitor EMPPr presented herein;</li> <li>• Ensure effective Integrated Waste</li> </ul>	<ul style="list-style-type: none"> <li>• Manage through Emergency Response Plan; and</li> <li>• Manage through Best Practice Guidelines.</li> <li>• Manage in accordance with Best Practice Guidelines, NWA, NEM:WA.</li> </ul>	
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			<p>and Water Management Plan and environmentally friendly remediation of hydrocarbon-contaminated sites;</p> <ul style="list-style-type: none"> <li>• Enter into amicable agreements that will promote wellbeing and protection of on-going agricultural activities. Should there be necessity to relocate wild animals, that should be done in sustainable, environmentally friendly and safe manner;</li> <li>• Report to relevant authorities any encountered heritage and palaeontological resources; and</li> <li>• Waste must be effectively managed within demarcated storage facilities and disposed of in accordance with relevant legislation and guidelines.</li> </ul>		
Water use and management;	Construction Operational Decommissioning	17 000 ℓ/day	<ul style="list-style-type: none"> <li>• Frequent monitoring of surface water resources;</li> <li>• Prevention of overspill of mine associated activities into the surrounding drainage channels streams.</li> <li>• Implementation of the necessary management programs to ensure the integrity of surface water resources;</li> <li>• Apply water saving techniques, such as re-use of water;</li> <li>• At construction, operation and</li> </ul>	<ul style="list-style-type: none"> <li>• Manage through Water Conservation Plan and Regular Inspection of Water Facilities.</li> </ul>	Daily; throughout life of operation

			<p>decommissioning, ECO must implement measures to prevent seepage into the groundwater by biological and engineering means;</p> <ul style="list-style-type: none"> <li>• Implementation of the necessary management programs to ensure the integrity of ground water resources; and</li> <li>• Effective soil management; identification of the required control efficiencies in order to maintain greenhouse gas emissions, dust generation within acceptable levels.</li> </ul>		
<p>Transportation system; Processing; Extraction; sorting</p>	<p>Construction  Operational  Decommissioning</p>	<p>&lt;1 hectare</p>	<ul style="list-style-type: none"> <li>• Minimise the generation of excessive noise and vibration;</li> <li>• Ensure all vehicles and equipment is in a good working order;</li> <li>• Ensure transparent and proper communication with and between Interested and Affected Parties;</li> <li>• Preservation and protection of heritage and Cultural resources identified within a no go zone; further resources uncovered during mining activities need to be reported to the relevant Authority and a suitably qualified Archaeologist and/or Palaeontologist should be called in to attend;</li> <li>• Utilise existing roads, and if new</li> </ul>	<ul style="list-style-type: none"> <li>• Manage and avoid through Environmental Conservation; Management Plan;</li> <li>• Minimise through Mine Design and Management Plan;</li> <li>• Monitor and manage through Dust Management Plan and Measures; and</li> <li>• Implement noise reduction measures in compliance with Noise standards and Regulations;</li> <li>• Control through Storm water Management Plan;</li> <li>• Regular vehicle and machinery inspection;</li> <li>• Implement in accordance with the rehabilitation plan and</li> </ul>	<p>Daily and on-going during the life of operation.</p>

			<p>roads are constructed, these must be less than 4 m in width and not cross sensitive areas such as the ridges or drainage lines;</p> <ul style="list-style-type: none"> <li>• Limit vehicles travelling to and from site in order to minimise green-house gas emissions and noise pollution;</li> <li>• Effective signage must be displayed and traffic control measures must be implemented along the route;</li> <li>• Implement effective and environmentally-friendly dust control measures, such as mulching, suppression or periodic wetting of the processing plant and access and haul roads;</li> <li>• Vehicles operating on the mine must keep at minimum speed for safety of personnel and animals and to minimise generation of dust;</li> <li>• Avoid contamination of surface water and divert any dirty water to suitable storage facility;</li> <li>• Avoid contamination of groundwater sources;</li> <li>• Implement noise minimisation measures, such as plant maintenance;</li> <li>• Implement effective and environmentally-friendly dust</li> </ul>	<p>standards; and</p> <ul style="list-style-type: none"> <li>• Monitor and manage through Dust Management Plan and Measures to ensure that the acceptable standards as set out in Regulation 3 of NEM:AQA National Dust Control Regulations.</li> </ul>	
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			<p>control measures; and</p> <ul style="list-style-type: none"> <li>• Undertake concurrent back-filling during operational phase and closure and rehabilitation of pits when activities are completed in pits and trenches.</li> </ul>		
Construction of infrastructure (PCD, trenches, water pipes, storm water management facilities).	Construction	<1 hectare	<ul style="list-style-type: none"> <li>• Implement effective Storm water Management measures;</li> <li>• Vegetate soil stockpiles to prevent dust generation and soil erosion; and</li> <li>• Avoid watercourse contamination and divert any dirty water to designated storage facility.</li> </ul>	<ul style="list-style-type: none"> <li>• Manage through Storm water Management Plan;</li> <li>• Manage in accordance with the rehabilitation plan; and</li> <li>• Manage through Storm water Management Plan and Groundwater Monitoring Plan.</li> </ul>	On-going during the construction phase.
Preparing an area of approximately 1 hectare for a portable camp site to accommodate infrastructure associated with stockpiling, crushing, washing, sorting and offices).	Construction	<1 hectare	<ul style="list-style-type: none"> <li>• Planning and implementation of plan must ensure loss of vegetation is limited and disturbance is restricted to within the designated areas;</li> <li>• Re-vegetate disturbed areas as soon as practicably possible to prevent soil erosion by water and wind and to prevent the proliferation of alien invasive species;</li> <li>• Vegetation cover must be reinstated through rehabilitation; and</li> <li>• Implement effective and environmentally-friendly dust control measures.</li> </ul>	<ul style="list-style-type: none"> <li>• Minimise through Mine Design and Management Plan;</li> <li>• Manage in accordance with the Rehabilitation Plan; and</li> <li>• Dust Monitoring Measures to ensure that the acceptable standards as set out in Regulation 3 of NEM:AQA National Dust Control Regulations.</li> </ul>	Daily during construction in accordance with the Management Plan.

Final land forms	Operational Decommissioning and post-closure	<0.0003 hectares	<ul style="list-style-type: none"> <li>• All disturbed areas must be rehabilitated;</li> <li>• Final rehabilitation should be conducted on the remaining disturbed area;</li> <li>• Limit activity footprint to the plan;</li> <li>• Implement an effective Alien Invasive Management Plan; and</li> <li>• Monitoring on site to be undertaken for a long enough period post closure, eg, 2-3 years.</li> </ul>	<ul style="list-style-type: none"> <li>• Manage in accordance with the Rehabilitation Plan, Environmental Conservation Plan, Alien Invasive Management Plan, NEM:BA and Best Practice Guidelines.</li> </ul>	On-going during Operational, Decommissioning and Post Closure Phases.
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### e) Impact Management Outcomes

(A description of impact management outcomes, identifying the standard of impact management required for the aspects contemplated in paragraph ());

**Table 16: Impact Management Outcomes**

Aspect	Activity	Potential Impact	Phase/s	Significance (Pre-mitigation)	Management actions type	Significance (Post-mitigation)	Impact management objectives
Geology	Mineralised waste Use of facilities and services prospecting final land forms	Loss and sterilisation of mineral resources	Operational Decommissioning	Low	<ul style="list-style-type: none"> <li>• Management through best practises; and</li> <li>• Ensure optimal use of the available mineral resource.</li> </ul>	Low	Can be managed/mitigated to acceptable levels
Topography	Earthworks; Mineralised waste; Water use and management; Support services; Transportation system; Use of facilities and services; Pitting and Trenching; Final land forms	Deep excavations and infrastructure resulting in safety risks to third parties and animals	Construction Operational Decommissioning	Low - Medium	<ul style="list-style-type: none"> <li>• Backfill all excavations continuously and employ effective rehabilitation strategies to restore surface topography of excavations and plant site, and to stabilise the mine residue deposit;</li> <li>• Control through access control;</li> <li>• control through management and monitoring;</li> <li>• control through rehabilitation; and</li> <li>• remedy through emergency response procedures</li> <li>• Concurrent backfilling</li> </ul>	Low - Medium	Can be managed/mitigated to acceptable levels
Soil and land capability	Earthworks; Mineralised waste; Water use and management; Support services; Transportation system; Use of facilities and	Loss of soil resources and land capability through contamination	Construction Operational Decommissioning	Low - Medium	<ul style="list-style-type: none"> <li>• Implement appropriate rehabilitation strategies to restore land capability;</li> <li>• Implement appropriate</li> </ul>	Low - Medium	Can be managed/mitigated to acceptable levels

	services; Pitting and Trenching; Final land forms				<p>management strategies to preserve soil resources</p> <ul style="list-style-type: none"> <li>• Control through waste management practices;</li> <li>• control through rehabilitation;</li> <li>• control through appropriate design; and</li> <li>• remedy through emergency response procedures</li> </ul>		
	Earthworks; Mineralised waste; Water use and management; Support services; Transportation system; Use of facilities and services; Pitting and Trenching; Final land forms	Loss of soil resource and land capability through physical disturbance	Construction Operational Decommissioning	Low - Medium	<ul style="list-style-type: none"> <li>• Manage through limiting the project footprint to the plan;</li> <li>• manage through soil conservation procedures; and</li> <li>• manage through closure planning and rehabilitation</li> </ul>	Low - Medium	Can be managed/mitigated to acceptable levels
<b>Biodiversity</b>	Earthworks; Mineralised waste; Water use and management; Support services; Transportation system; Use of facilities and services; Pitting and Trenching; Final land forms	Physical destruction of biodiversity	Construction Operational Decommissioning	Medium - High	<ul style="list-style-type: none"> <li>• Prevention of overspill of mine associated activities onto the surrounding ecological environment;</li> <li>• Employ proper protection and rehabilitation strategies;</li> <li>• Management through biodiversity action plan and offset (when relevant);</li> <li>• managing through limiting the project footprint;</li> <li>• management through</li> </ul>	Low	Can be managed/mitigated to acceptable levels

					<ul style="list-style-type: none"> <li>rehabilitation; and</li> <li>control through permits for removal</li> </ul>		
	Earthworks; Mineralised waste; Water use and management; Support services; Transportation system; Use of facilities and services; Pitting and Trenching; Final land forms	General disturbance of biodiversity	Construction Operational Decommissioning	Medium - High	<ul style="list-style-type: none"> <li>Prevention of overspill of mine associated activities onto the surrounding ecological environment;</li> <li>Employ proper protection and rehabilitation strategies;</li> <li>Management through alien invasive species programme;</li> <li>management through training;</li> <li>management through monitoring;</li> <li>management through appropriate design; and</li> <li>remedy through emergency response procedures</li> </ul>	Low	Can be managed/mitigated to acceptable levels
Surface water	Earthworks; Mineralised waste; Water use and management; Support services; Transportation system; Use of facilities and services; Pitting and Trenching; Final land forms	Altering the bed, banks, course or characteristics of a watercourse and Impeding or diverting the flow of water in a watercourse	Construction Operational Decommissioning	Medium - High	<ul style="list-style-type: none"> <li>Frequent monitoring of surface water resources;</li> <li>Prevention of overspill of mine associated activities into the surrounding drainage channels streams;</li> <li>Implementation of the necessary management &amp; monitoring; programs to ensure the integrity of surface water (Standing water) resources;</li> </ul>	Low - Medium	Can be managed/mitigated to acceptable levels

					<ul style="list-style-type: none"> <li>• Implement recommendations of Surface Water Resource Specialist;</li> <li>• Halt operations during extreme weather conditions, if necessary;</li> <li>• Management through storm water control; and</li> <li>• Manage through monitoring water requirements</li> </ul>		
	Earthworks; Mineralised waste; Water use and management; Support services; Transportation system; Use of facilities and services; Pitting and Trenching; Final land forms	Contamination of surface water resources	Construction Operational Decommissioning	Low - Medium	<ul style="list-style-type: none"> <li>• Frequent monitoring of surface water resources;</li> <li>• Prevention of overspill of mine associated activities into the surrounding drainage channels streams;</li> <li>• Implementation of the necessary management programs to ensure the integrity of surface water (Standing water) resources</li> <li>• Management through waste management practises;</li> <li>• management through monitoring;</li> <li>• Enter into agreements with Azania KBKM (Pty) Ltd of locating plant, machinery &amp; Equipment on their application area;</li> <li>• management through compensation; and</li> </ul>	Low	Can be managed/mitigated to acceptable levels

					<ul style="list-style-type: none"> <li>remedy through emergency response procedures</li> </ul>		
Groundwater	Earthworks; Mineralised waste; Water use and management; Support services; Transportation system; Use of facilities and services; Pitting and Trenching; Final land forms	Contamination of groundwater resources	Construction Operational Decommissioning	Low - Medium	<ul style="list-style-type: none"> <li>Construction of measures to prevent seepage into the groundwater by biological and engineering means;</li> <li>Implementation of the necessary management programs to ensure the integrity of ground water resources;</li> <li>management through monitoring;</li> <li>management through compensation;</li> <li>management through appropriate design; and</li> <li>remedy through emergency response procedures</li> </ul>	Low	Can be managed/mitigated to acceptable levels
	Deep excavation and pits	Lowering of groundwater levels and reducing availability and destruction of aquifers.	Operational	Medium - High	<ul style="list-style-type: none"> <li>Construction of measures to prevent seepage into the groundwater by biological and engineering means;</li> <li>Implementation of the necessary management programs to ensure the integrity of ground water resources and aquifers;</li> <li>Management through monitoring; and</li> <li>management through</li> </ul>	Medium - High	Can be managed/mitigated to acceptable levels

					compensation		
<b>Air quality</b>	Earthworks; Mineralised waste; Water use and management; Support services; Transportation system; Use of facilities and services; Pitting and Trenching; Final land forms	Air pollution and Global Warming (Climate Change)	Construction Operational Decommissioning	Low - Medium	<ul style="list-style-type: none"> <li>• Effective soil management;</li> <li>• Identification of the required control efficiencies in order to maintain greenhouse gas emissions, dust generation within acceptable levels;</li> <li>• Manage through air controls and monitoring</li> </ul>	Low - Medium	Can be managed/mitigated to acceptable levels
<b>Noise &amp; Vibration</b>	Earthworks; Mineralised waste; Water use and management; Support services; Transportation system; Use of facilities and services; Pitting and Trenching; Final land forms	Increase in disturbing vibration and noise levels	Construction Operational Decommissioning	Low - Medium	<ul style="list-style-type: none"> <li>• Minimise the generation of excessive noise and vibration;</li> <li>• Ensure all vehicles and equipment is in a good working order; proper communication;</li> <li>• Manage through vibration and noise controls and once-off sampling</li> </ul>	Low	Can be managed/mitigated to acceptable levels
<b>Visual</b>	Earthworks; Mineralised waste; Water use and management; Support services; Transportation system; Use of facilities and services; Pitting and Trenching; Final land forms	Negative visual Views	Construction Operational Decommissioning	Low	<ul style="list-style-type: none"> <li>• Effective planning of the location of Infrastructure and operations to minimise visual impact;</li> <li>• Manage through limiting project footprint, rehabilitation and visual controls</li> </ul>	Low	Can be managed/mitigated to acceptable levels

Heritage/cultural and palaeontologic	Earthworks; Mineralised waste; Water use and management; Support services; Transportation system; Use of facilities and services; Pitting and Trenching; Final land forms	Loss of heritage/cultural and palaeontological resources	Construction Operational Decommissioning	Medium – High (Heritage)  Low – Medium (Palaeontology)	<ul style="list-style-type: none"> <li>• Preservation and protection of heritage and Cultural resources identified within a No-Go zone;</li> <li>• Further resources uncovered during mining activities need to be reported to the relevant authorities and a suitably qualified Archaeologist and/or Palaeontologist should be called in to attend;</li> <li>• Reduce footprint application area;</li> <li>• Compile and implement effectively Heritage Management Plan in respect of the graves nearby the application area;</li> <li>• Control through avoidance; and</li> <li>• remedy through emergency response procedures</li> <li>• Follow Chance-Find Protocol</li> </ul>	Low  Low	Can be avoided  Can be managed through implementation of Chance-Find Protocol
Socio-economic	Earthworks; Mineralised waste; Water use and management; Support services; Transportation system; Use of facilities and services; Pitting and Closure associated activities that are in line with closure plan	Influx of labour	Construction Operational	Low - Medium	<ul style="list-style-type: none"> <li>• Control Access into the property; Fence may be erected around pits; Implement and monitor EMPr presented herein;</li> <li>• Control through the monitoring of living conditions of employees,</li> </ul>	Low	Can be managed/mitigated to acceptable levels

					<p>recruitment processes, disease management; and</p> <ul style="list-style-type: none"> <li>• remedy through emergency response procedures</li> </ul>		
	<p>Earthworks; Mineralised waste; Water use and management; Support services; Transportation system; Use of facilities and services; Pitting and Closure associated activities that are in line with closure plan</p>	<p>Socio-economic impact</p>	<p>Construction Operational Decommissioning</p>	<p>Low - Medium</p>	<ul style="list-style-type: none"> <li>• Ensure continuous and transparent communication with IAP's;</li> <li>• Control through good communication, recruitment and procurement processes</li> </ul>	<p>Low - Medium</p>	<p>Can be managed/mitigated to acceptable levels</p>
<p><b>Health and Safety</b></p>	<p>Earthworks; Mineralised waste; Water use and management; Support services; Transportation system; Use of facilities and services; Pitting and Closure associated activities that are in line with closure plan</p>	<p>Health and Safety impact</p>	<p>Construction Operational Decommissioning</p>	<p>Low - Medium</p>	<ul style="list-style-type: none"> <li>• Control Access into the property; Fence may be erected around pits; Implement and monitor EMPr presented herein;</li> <li>• Implement provisions of the Mine Health and Safety Act</li> </ul>	<p>Low</p>	<p>Can be managed/mitigated to acceptable levels</p>
<p><b>Land use</b></p>	<p>Earthworks; Mineralised waste; Water use and management; Support services; Transportation system; Use of facilities and services; Pitting and Closure associated activities that are in line with closure plan</p>	<p>Interference with land uses</p>	<p>Construction Operational Decommissioning</p>	<p>Medium - High</p>	<ul style="list-style-type: none"> <li>• Carefully plan the placement of infrastructure and employ rehabilitation strategies to restore land capability</li> <li>• Management through communication</li> </ul>	<p>Low</p>	<p>Can be managed/mitigated to acceptable levels</p>

<b>Traffic</b>	Use of existing infrastructure with minimal construction of haul roads and use of existing facilities and services	Road disturbance and traffic safety	Construction Operational Decommissioning	Low - Medium	<ul style="list-style-type: none"> <li>• Utilise existing access roads, where applicable;</li> <li>• Implement measures that ensure adherence to traffic rules;</li> <li>• Manage through road maintenance; and</li> <li>• Remedy through emergency response procedures</li> </ul>	Low - Medium	Can be managed/mitigated to acceptable levels
<b>Wetlands</b>	Earthworks; Mineralised waste; Water use and management; Support services; Transportation system; Use of facilities and services; Pitting and Trenching; Final land forms	Disturbance of Riparian zone	Construction Operational Decommissioning	Low - Medium	<ul style="list-style-type: none"> <li>• Manage through the principle of avoidance of disturbance of the anything within the Riparian zone; and</li> <li>• Implement recommendations of the wetland specialist</li> </ul>	Low	Can be managed/mitigated to acceptable levels
<b>Waste</b>	Earthworks; Mineralised waste; Water use and management; Support services; Transportation system; Use of facilities and services; Pitting and Trenching; Final land forms	Pollution	Construction Operational Decommissioning	Low - Medium	<ul style="list-style-type: none"> <li>• Ensure effective Integrated Waste and Water Management Plan and environmentally friendly remediation of hydrocarbon-contaminated sites;</li> <li>• Manage through the principle of waste separation at source;</li> <li>• Implement the waste National Waste Management Strategy and Waste Hierarchy</li> </ul>	Low	Can be managed/mitigated to acceptable levels

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Alien invasive plants</p>	<p>Earthworks; Mineralised waste; Water use and management; Support services; Transportation system; Use of facilities and services; Pitting and Trenching; Final land forms</p>	<p>Colonisation by alien invasive plants</p>	<p>Construction Operational Decommissioning</p>	<p>Medium - High</p>	<ul style="list-style-type: none"> <li>• Compile weed/alien plant management programme in consultation with DENC and DA;</li> <li>• Eradicate, and control the spread, of alien invasive species; and</li> <li>• Implement the compiled weed/alien management programme effectively.</li> </ul>	<p>Low</p>	<p>Can be managed/mitigated to acceptable levels</p>
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**f) Impact Management Actions**

(A description of impact management actions, identifying the manner in which the impact management objectives and outcomes contemplated in paragraphs (c) and (d) will be achieved).

**Table 17: Impact Management Actions**

ACTIVITY whether listed or not listed.	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
<p>(E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.).</p>	<p>(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc....etc...)</p>	<p>(modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc)</p> <p>E.g.</p> <ul style="list-style-type: none"> <li>• Modify through alternative method.</li> <li>• Control through noise control</li> <li>• Control through management and monitoring</li> </ul> <p>Remedy through rehabilitation..</p>	<p>Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required.</p> <p>With regard to Rehabilitation specifically this must take place at the earliest opportunity.</p> <p>.With regard to Rehabilitation, therefore state either:-..</p> <p>Upon cessation of the individual activity or.</p> <p>Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.</p>	<p>(A description of how each of the recommendations in 2.11.6 read with 2.12 and 2.15.2 herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)</p>
See Tables 14 and 15				

**i) Financial Provision**  
**(1) Determination of the amount of Financial Provision.**

**(a) Describe the closure objectives and the extent to which they have been aligned to the baseline environment described under the Regulation.**

The key aim of decommissioning and closure is to ensure that all the significant impacts are ameliorated. All rehabilitated areas should be left in stable, self-sustainable state. African Gemstone Mining (Pty) Ltd will be using a mobile camp site for its mining and related activities which include tailings processing, recovery of diamonds and Borrow Pit Rehabilitation and Closure activities, and therefore relatively little or no infrastructure associated with the camp site will require breaking down or demolishing at closure. The areas disturbed as a result of the tailings processing, recovery of diamonds and Borrow Pit Rehabilitation and Closure operation will be rehabilitated by maintaining the general topography of the surrounding area, ensuring that there are no remnants of the structures. The closure objectives aim to return the affected area to a land use condition or desired state similar to that of the pre-mining state, especially if reports are available of how the environmental state of the area of interest was before mining-related activities occurred. Closure and rehabilitation of pits will be undertaken during both the operational and decommissioning phases when the activities are completed in those pits, to achieve a desired land condition as early as possible. The pollution control dams (PCD) will be removed at closure and the polymeric lining, if any, will be removed and recycled.

The key aim decommissioning and closure is to ensure that all the significant impacts are ameliorated. All rehabilitated areas should be left in a stable, self-sustainable state. Proof of this should be submitted at closure.

Specific objectives include:

- Rehabilitation of infrastructure areas

The objective for the removal of infrastructure and the subsequent rehabilitation of the areas they occupied include:

- To ensure that infrastructure identified for removal is successfully demolished and removed;
- To ensure that infrastructure identified to remain after mine closure is maintained until the issue of a closure certificate.

The removal, decommissioning and disposal of all mining-related infrastructure, will comply with all conditions contained in the MRPDA. To this end, decommissioning and rehabilitation of all infrastructure areas will follow the following principles:-

- The plant and associated disused infrastructure will be dismantled or demolished. Any building foundations will be removed and land exposed to the demolition and dismantling of infrastructure and all other disturbed land will be rehabilitated;
- Rubble will be disposed of at a suitable site. The site will be selected in consultation with DENC;
- Any surface water management infrastructure will be maintained to ensure they are stable and functional;
- Just before closure, when disturbed land has been rehabilitated and erosion is controlled by vegetation cover, all disused surface water management facilities will be decommissioned.

#### Mine residue deposits

The mine residue deposits will comprise of a slimes dam. The objectives pertaining to the effective management and rehabilitation of the slimes dam include:

- To ensure that the mine residue deposits are stable and that there is an acceptably low risk of failure of these deposits during the decommissioning phase and following mine closure;
- To establish self-sustainable vegetation cover on the slimes dam so that the visual impact of the slimes dam improves and in order to prevent erosion.

Management principle pertaining to the slimes dam includes:

- The slimes dams will continuously be inspected by a suitable qualified professional engineer and / or surveyor to ensure their stability. If they are unstable, the appropriate remedial measures will be implemented;
- Inspection and monitoring should continue until a suitable qualified professional engineer and / or surveyor has confirmed the long-term stability of the slimes dam;
- Any infrastructure or facilities that serve the slimes dam will be maintained to ensure that they are both stable and functional.

The necessary agreements and arrangement will be made by African Gemstone Mining (Pty) Ltd to ensure that all natural physical, chemical and biological processes for which a closure condition were specified are monitored until they reach a steady state or for three (3) years after closure or as long as deemed necessary at the time:

- Such processes include erosion of the slimes dams, rehabilitated surfaces, surface water drainage, air quality, surface water quality, ground water quality, vegetative re-growth, weed encroachment;
- The closure plan will be reviewed yearly;
- Rehabilitation of the land will be maintained until a closure certificate is granted or until the land use is regarded as sustainable;
- All rehabilitated areas will be monitored and maintained until such time as required to enable the mine to apply for closure of these different areas.

#### Performance assessments

As per the MPRDA and associated Regulations, this Environmental Management Programme will be continually assessed in terms of its appropriateness and adequacy. In order to achieve this, African Gemstone Mining (Pty) Ltd will undertake the following:

- Implement the necessary monitoring programmes, as discussed as part of this EMPr;
- Conduct performance assessments of this EMPr as required by the MPRDA and associated Regulations; and
- Compile and submit the afore-mentioned performance assessment reports to the DMR. The frequency of the performance assessments will occur every year. An independent and competent person will undertake all performance assessments.

#### Decommissioning and closure objectives

The key aim decommissioning and closure is to ensure that all the significant impacts are ameliorated. All rehabilitated areas will be left in a stable, self-sustainable state. Proof of this will be submitted at closure.

Specific objectives include:

- To identify potential post-closure land uses in consultation with the surrounding land owners and land users. This should be done during the operational and decommissioning phases of the operations;
- Rehabilitate disturbed land to a state suitable for its post-closure uses;
- Rehabilitate disturbed land and mine residue deposits to a state that facilitates compliance with applicable environmental quality objectives;
- Limit the impact on staff whose positions become redundant at the time of mine closure, as addressed in the SLP;
- Keep relevant authorities informed of the progress of the decommissioning phase;
- Submit monitoring data to the relevant authorities;
- Maintain required pollution control facilities and rehabilitated land until closure.

#### Negative economic impacts

The objective is to alleviate the negative socio-economic impacts that will result from mine closure.

Management principles to achieve this include:

- African Gemstone Mining (Pty) Ltd will undertake a carefully planned stepwise decommissioning process;
- Closure planning will form an integral part of mine planning;
- Strategies for sustainable development of surrounding towns have been and will continue to be developed by the project in collaboration with district and local authorities, local businesses and other interested parties. Early warning of impending closure will be given to IAP's;
- In conjunction with long-term closure planning, the mine will actively participate in regional and local planning to enhance the economic benefits of the project through development of alternative forms of income generation;
- African Gemstone Mining (Pty) Ltd will initiate and participate in regional planning exercises that will mitigate the impacts of closure of the mine, the local and regional economies and associated abandonment of community infrastructures surrounding the mine.

**(b) Confirm specifically that the environmental objectives in relation to closure have been consulted with landowner and interested and affected parties.**

The consultation process with interested and affected parties (neighbouring farmers and land owners) will be completed. Regular contact sessions will be held with neighbouring farmers and land owners which are currently affected by the planned operations. Records will be kept of the complaints and the mitigation measures will be implemented. An advert in the DFA was also be placed in order for other interested parties to come forward and register as interested parties in the project.

**(c) Provide a rehabilitation plan that describes and shows the scale and aerial extent of the main mining activities, including the anticipated mining area at the time of closure.**

#### Infrastructure Areas

On completion of the mining operations, the various surfaces, including the access road, the office area, storage areas and the screening plant site should finally be rehabilitated as follows:

- All remaining material on the surface should be removed to the original topsoil level. This material should then be backfilled into the depressions. Any compacted area should be ripped to a depth of 300 mm, where possible, the topsoil or growth medium returned and landscaped;
- All infrastructures, equipment, screening plant, and other items used during the operational period should be removed from the site;
- On completion of operations, all buildings, structures or objects on the office site should be dealt with in accordance with Regulation 44 of the Minerals and Petroleum Resources Development Act, 2002.

#### Topsoil and Stockpile Deposits

Disposal Facilities: Waste material of all description inclusive of receptacles, scrap, rubble and tyres should be removed entirely from the project area and disposed of at a recognized landfill facility. It should be permitted to be buried or burned on the site.

Ongoing Seepage, Control of Rain Water: It is not foreseen that any monitoring of ground or surface water should take place after mine closure, except if so requested by the DHSWS – Northern Cape.

Long Term Stability and Safety: It should be the objective of mine management to ensure the long term stability of all rehabilitated areas including the backfilled depressions. This should be done by the monitoring of all areas until a closure certificate has been issued.

Final rehabilitation in respect of erosion and dust control: Self-sustaining vegetation will result in the control of erosion and dust and no further rehabilitation is deemed necessary, unless vegetation growth is not returned to a desirable state by the time of mine closure.

#### Final Rehabilitation Roads

- After rehabilitation has been completed, all roads should be ripped or ploughed, fertilized and seeded, providing the landowner does not want them to remain that way and with written approval from the Director: Mineral Development of the Department of Mineral Resources.

#### Submission of Information

- Reports on rehabilitation and monitoring should be submitted annually to the Department of Mineral Resources – Northern Cape, as described in Regulation 55.

#### Maintenance (Aftercare)

- Maintenance after closure should include the regular inspection and monitoring and/or completion of the re-vegetation programme;
- The aim of the Environmental Management Programme is for rehabilitation to be stable and self-sufficient, so that the least possible aftercare is required;
- The aim with the closure of the mine should be to create an acceptable post-mine environment and land-use. Therefore all agreed commitments should be implemented by Mine Management.

#### After-effects Following Closure

Long Term Impact on Groundwater: No after effect on the groundwater yield or quality is expected.

Long Term Stability of Rehabilitated Land: One of the main aims of any rehabilitated ground should be to obtain a self-sustaining and stable end result. The concurrent cleaning of all tailings material and replacement of topsoil where available should be ensured.

Step	Final Rehabilitation	Target	Responsible Person	Timeframe
<b>1</b>	<b>Pre-closure activities</b>			
1,1	The closure plan presented herein should be reviewed throughout the life of operation.	In order ensure compliance and / or meet provisions of Land surface use agreement.	ECO/ESHRQ Department/Rehabilitation Specialist	Annually
1,2	Consult with the Competent Authority before commencement of final rehabilitation.	In order ensure compliance and / or meet provisions of Land surface use agreement.	ECO/ESHRQ Department/Rehabilitation Specialist	Before final rehabilitation commences
1,3	Apply for necessary permits and licenses before disturbing protected plant and animal species.	In rescue protected species and to ensure compliance.	ECO/ESHRQ Department/Rehabilitation Specialist	Before disturbance of Protected Species
1,4	Utilise available resources, environmentally friendly waste and material during rehabilitation.	In order to ensure implementation of RRR's in waste management.	Project Manager/ECO	On-going
1,5	Separated and classified waste, if applicable, must be disposed of in accordance with applicable piece of legislation and regulations.	In order to ensure implementation of RRR's in waste management.	Project Manager/ECO/ ESHRQ Department	On-going
1,6	Call in a suitably qualified Archaeologist or Palaeontologist to attend and Notify SAHRA if any heritage and palaeontological resources are encountered during rehabilitation.	In order to preserve and rescue resources of heritage, cultural and palaeontological significance.	Project Manager/ECO/ ESHRQ Department	On-going
<b>2</b>	<b>Surface infrastructure</b>			
2,1	Create a database and collect data through taking of clear photographs of activity and of associated and / or related infrastructure (before, during and after rehabilitation).	In order to ensure compliance end adherence to land surface use agreement provisions	Project Manager/ECO/ ESHRQ Department/Rehabilitation Specialist	Before commencement of operations and on an on-going basis.
2,2	Remove mobile infrastructure from site.	In order to restore the state of land.		After prospecting activities have been completed
2,3	Demolish, dismantle and /or remove all other infrastructure from site, if applicable.	In order to restore the state of land.	Project Manager/ECO/ ESHRQ Department/Rehabilitation Specialist	After prospecting activities have been completed
2,4	Rehabilitate disturbed areas.	In order to restore the state of	Project Manager/ECO/ ESHRQ	On-going

		land.	Department/Rehabilitation Specialist	
2,5	Caution must be exercised in removing infrastructure for purposes of enabling re-usability and resale.	In order to restore the state of land.	Project Manager/ECO/ ESHRQ Department/Rehabilitation Specialist	On-going
2,6	Pollution control dams and associated infrastructure will be rehabilitated after all water grey has been used during rehabilitation.	In order to restore the state of land.	Project Manager/ECO/ ESHRQ Department/Rehabilitation Specialist	After prospecting activities have been completed
2,7	Soil that was beneath hydrocarbon storage facilities and TMM parking area must be screened and / or analysed for presence of hydrocarbons by an experienced and suitably qualified consultant.	In order to restore the state of land.	Project Manager/ECO/ ESHRQ Department/Rehabilitation Specialist	After prospecting activities have been completed
<b>3</b>	<b>Soil and Land</b>			
3,1	Landscaping should be conducted.	In order to restore the state of land.	Project Manager/ECO/ ESHRQ Department/Rehabilitation Specialist	On-going
3,2	Soil erosion should be taken into account when landscaping is conducted.	In order to restore the state of land.	Project Manager/ECO/ ESHRQ Department/Rehabilitation Specialist	On-going
3,3	Restore topography to acceptable levels.	In order to restore the state of land.	Project Manager/ECO/ ESHRQ Department/Rehabilitation Specialist	On-going
3,4	If concurrent back-filling was conducted during operational phase, the topsoil may be compacted and prepared for re-vegetation.	In order to restore the state of land.	Project Manager/ECO/ ESHRQ Department/Rehabilitation Specialist	On-going
3,5	Disturbed areas that were covered by concrete previously must be prepared for re-vegetation.	In order to restore the state of land.	Project Manager/ECO/ ESHRQ Department/Rehabilitation Specialist	On-going
<b>4</b>	<b>Re-vegetation (before and during)</b>			
4,1	Measure should be put in place to ensure that topsoil is suitable for re-vegetation purposes.	In order to restore the state of land.	Project Manager/ECO/ ESHRQ Department/Rehabilitation Specialist	Before re-vegetation commences
4,2	Control access into the rehabilitated areas.	In order to restore the state of land.	Project Manager/ECO/ ESHRQ Department/Rehabilitation Specialist	On-going
4,3	The rehabilitated areas must be protected and monitored for three (3) years post-closure.	In order to restore the state of land.	Project Manager/ECO/ ESHRQ Department/Rehabilitation Specialist	Post decommissioning and closure
<b>5</b>	<b>Maintenance and monitoring</b>			
5,1	Keep the Competent Authority updated of progress and of any developments.	In order to ensure compliance.	Project Manager/ECO/ ESHRQ Department/Rehabilitation Specialist	On-going
5,2	Maintenance of rehabilitated areas should be performed on an on-going basis.	In order to ensure compliance.	Project Manager/ECO/ ESHRQ	On-going

			Department/Rehabilitation Specialist	
5,3	Monitoring of rehabilitated areas must be performed for three (3) years post-closure.	In order to ensure compliance.	Project Manager/ECO/ ESHRQ Department/Rehabilitation Specialist	On-going

**(d) Explain why it can be confirmed that the rehabilitation plan is compatible with the closure objectives.**

The rehabilitation plan will be aligned to the closure objectives and tailor-made to ensure project achieves closure-associated objectives. It will include information about the site prior to the mining operation and provide information on the maintenance of resources required for the rehabilitation process, as well as to give detail on how rehabilitation will be undertaken, if available. It will also provide information on the management and monitoring of disturbance to avoid or minimise detrimental impacts, as well as to give an estimate of the financial closure provision. It will also include information associated with post-closure environmental monitoring of the site to ensure that the rehabilitation plan is followed and its objectives are achieved.

The ultimate rehabilitation of the mining site that involves the sloping, levelling, replacement of topsoil and the seeding of an grass seed mix in areas that does not recover acceptably as agreed to by the land owner will ensure that the site could be regarded as safe for humans and animals and will also ensure that the site is stable from an erosion point of view and also ensuring that the site could be used for grazing again.

The removal of waste material of any description from the mining area and the disposal thereof at a recognised landfill facility is going to be facilitated.

- The removal of infrastructure, equipment, plant and other items from the site.
- The ripping of compacted areas to a level of 300 mm and the levelling of such areas in order to re-establish a growth medium for plants (such areas will furthermore be seeded with a vegetation seed mix adapted to reflect the local indigenous flora that was present prior to the mining operation, if the re-establishment of vegetation is unacceptably slow.

The backfilling of the final excavations with subsoil and the covering thereof with previously stored topsoil (where-after this area will also be seeded with a vegetation seed mix adapted to reflect the local indigenous flora that was present prior to the proposed operation, and seedlings protected for a period of one) if the re-establishment of vegetation is unacceptably slow.

The closure plan will assist the proposed development to achieve cost effective and efficient closure, including management and monitoring of the area post-closure.

(e) Calculate and state the quantum of the financial provision required to manage and rehabilitate the environment in accordance with the applicable guideline.

**Table 18: Provision of financial liability**

No.	Description	Unit	A Quantity	B Master Rate	C	D	E=A*B*C*D
1	Dismantling of processing plant and related structures (including overland conveyors and powerlines)	m3		12.21	1	1	0
2 (A)	Demolition of steel buildings and structures	m2		170.13	1	1	0
2 (B)	Demolition of reinforced concrete buildings and structures	m2		250.72	1	1	0
3	Rehabilitation of access roads	m2		30.44	1	1	0
4 (A)	Demolition and rehabilitation of electrified railway lines	m2		295.49	1	1	0
4 (B)	Demolition and rehabilitation of non-electrified railway lines	m2		161.18	1	1	0
5	Demolition of housing and/or administration facilities	m2		340.26	1	1	0
6	<b>Opencast rehabilitation including final voids and ramps</b>	Ha	<b>0.08</b>	<b>173174.97</b>	<b>2</b>	<b>1</b>	<b>27707.9952</b>
7	Sealing of shafts adits and inclines	m3		91.33	1	1	0
8 (A)	Rehabilitation of overburden and soils	Ha	0.04	118912.29	1	1	4756.4916
8 (B)	Rehabilitation of processing waste deposits and evaporation ponds (non-polluting potential)	Ha		148103.1	1	1	0
8 (C)	Rehabilitation of processing waste deposits and evaporation ponds (polluting potential)	Ha		430161.62	1	1	0
9	Rehabilitation of subsided areas	Ha		99571.13	1	1	0
10	General surface rehabilitation	Ha		94198.59	1	1	0
11	River diversions	Ha		94198.59	1	1	0
12	Fencing	M		107.45	1	1	0
13	Water management	Ha		35816.95	1	1	0
14	2 to 3 years of maintenance and aftercare	Ha		12535.93	1	1	0
15 (A)	Specialist study	Sum				1	0
15 (B)	Specialist study	Sum				1	0

1	Preliminary and General	3895.738416	weighting factor 2	3895.738416	
2	Contingencies	3246.44868		3246.44868	
				<b>Subtotal</b>	<b>39606.67</b>
				<b>VAT (15%)</b>	<b>5941.00</b>
				<b>Grand Total</b>	<b>45548.00</b>

**(f) Confirm that the financial provision will be provided as determined.**

It is hereby confirmed that financial provisions will be submitted with bank guarantees to the Department of Mineral Resources and Energy.

**Mechanisms for monitoring compliance with and performance assessment against the environmental management programme and reporting thereon, including**

- g) Monitoring of Impact Management Actions
- h) Monitoring and reporting frequency
- i) Responsible persons
- j) Time period for implementing impact management actions
- k) Mechanism for monitoring compliance

**Table 19:** Monitoring Compliance, Performance Assessment and Post-Closure Monitoring Programme

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
Air Quality	To control the incidence of unacceptable levels of dust pollution on site. Minimise emission of greenhouse gases.	To ensure that the mine minimizes dust omissions, so that dust does not become a nuisance for affected parties and a health hazard.	ECO/Site Manager/Foreman appointed SHE Consultant	Visual inspections will be done and managed by dust suppression by a water tanker. Quarterly tests will also be conducted by a Safety Health and Environmental Consultant and submitted to Mine Health and Safety for monitoring purposes. Monitor Green House Gas emissions.
Fauna	To minimise vegetation destruction in areas, and therefore a habitat for wildlife; and To eliminate poaching and the extermination of animal species within the boundaries of the study area as well as the surrounding areas.	To ensure that the species diversity and abundance is not significantly reduces.	ECO/Site Manager/ Environmentalists	Monitoring will be done at rehabilitated area on an annual basis to investigate species diversity and abundance.
Flora	To minimise the destruction	To ensure that the rehabilitated	ECO/Site Manager/ Environmentalists	Monitoring will be done at the

	of vegetation units; and To control invasion of exotic and invasive plant species.	areas become self-maintaining.		rehabilitated areas on a <i>twice a year basis</i> (mid-summer and mid-winter), where species diversity and vegetation cover will be investigated.
Topography	To minimise the reduction of land capability.	To ensure that rehabilitation post-mining slopes are stable, free draining and no slopes have an angle in excess of 20°.	ECO/Site Manager/ Environmentalists	Monitoring will be done on an <i>annual basis</i> to ensure that the levels and the slopes are in order.
Soil	To prevent soil pollution; To limit soil compaction; To curb soil erosion; and To reinstate a growth medium able to sustain plant life.	Soil depth and chemical composition will be tested and possible erosion damage will be assisted and rectified.	Site Manager/ECO/Site Manager/ Environmentalists	Monitoring will be done on an <i>annual basis</i> or after a heavy rain event.
Surface Water	To conserve water; and To eliminate the contamination of run-off and sources of surface water. To minimise impact of extreme weather conditions an opening of overflowing dams upstream.	There is one source, Vaal River, in the vicinity of the mine.	Water Supply ECO/Site Manager/ Environmentalists	Monitoring may have to be done to monitor the quality of the surface water.
Groundwater	To minimise and prevent as far as practically possible the contamination of groundwater.	No ground water is used at the beginning.	Water Supply ECO/Site Manager/ Environmentalists	Monitoring may have to be done to monitor the levels and quality.
Noise & Vibration	To control the incidence of unacceptable noise and vibration levels on site.	The management objective will be to reduce any level of noise, shock and lighting that may have an effect on persons or animals, both inside the plant and that which may migrate outside the plant area.	ECO/Site Manager/Foreman appointed SHE Consultant.	Quarterly reports on fallout noise monitoring will be conducted as required by legislation. If any complaints are received from the public or state department regarding noise levels the levels will be monitored at prescribed monitoring points.
Heritage Resources	To limit impacts associated with mining on Heritage	The objective is to limit such impacts to the primary activities associated with the mining	ECO/Site Manager/Environmental Control Officer, Heritage Specialist, SAHRA official	Monitor Heritage and Palaeontological Resources on site against

	Resources in the vicinity of application area.	and hence to limit secondary impacts during the medium and longer term operational life of the operation.		recommendations made by both Archaeologist and Palaeontologist.
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**Monitoring Programme for Palaeontology – to commence once the excavations / drilling / mining activities begin.**

1. The following procedure is only required if fossils are seen on the surface and when drilling/excavations/mining commence.
  2. When excavations begin the rocks and must be given a cursory inspection by the environmental officer or designated person. Any fossiliferous material (plants, insects, bone, coal) should be put aside in a suitably protected place. This way the project activities will not be interrupted.
  3. Photographs of similar fossils must be provided to the developer to assist in recognizing the fossil plants, vertebrates, invertebrates or trace fossils in the shales and mudstones (for example see Figures 4, 5 of PIA). This information will be built into the EMP’s training and awareness plan and procedures.
  4. Photographs of the putative fossils can be sent to the palaeontologist for a preliminary assessment.
  5. If there is any possible fossil material found by the developer/environmental officer/miners then the qualified palaeontologist sub-contracted for this project, should visit the site to inspect the selected material and check the dumps where feasible.
  6. Fossil plants or vertebrates that are considered to be of good quality or scientific interest by the palaeontologist must be removed, catalogued and housed in a suitable institution where they can be made available for further study. Before the fossils are removed from the site a SAHRA permit must be obtained. Annual reports must be submitted to SAHRA as required by the relevant permits.
  7. If no good fossil material is recovered then no site inspections by the palaeontologist will be necessary. A final report by the palaeontologist must be sent to SAHRA once the project has been completed and only if there are fossils.
- If no fossils are found and the excavations have finished then no further monitoring is required.

**l) Indicate the frequency of the submission of the performance assessment/ environmental audit report.**

The Environmental Control Officer (ECO) should conduct post-closure monitoring, audits and reporting in accordance with the EMPr presented herein. Annual Performance Assessment and Environmental Audit reports should be conducted and submitted. The internal audits that are conducted on an on-going basis may be verified by performance of external audits by an independent auditor on an annual basis.

The rehabilitation and closure plan, including the accompanying risk assessment is a "living report" (it is to be reviewed and updated on an on-going basis throughout the period of operations. An independent and suitably qualified consultant must be appointed to review and update the rehabilitation and closure plan, inclusive of updated financial provision in accordance with the proposed 2<sup>nd</sup> Financial Provision Regulations, 2019. .

**m) Environmental Awareness Plan**

**(1) Manner in which the applicant intends to inform his or her employees of any environmental risk which may result from their work.**

An environmental, health and safety induction programme will be provided to all employees prior to commencing work, and they will sign acknowledgement of the induction.

- A daily "toolbox talk" will be held prior to commencing work, which will include discussions on health, safety and environmental considerations. The toolbox talks should be led by the ECO or Site Manager.

**Environmental Awareness Training Programme Procedure**

Natural resources are limited and not always renewable and it is the responsibility of management to ensure that all employees are trained to understand the impacts of their tasks on the environment and to reduce them wherever possible.

Environmental awareness training must be given to new employees on site and any contractors who may come onto site for a short period of time. Refresher training must be given to permanent employees on an annual basis.

The objective of this procedure is to ensure that all employees on the, including contractors, are competent to perform their duties, thereby eliminating negative impacts on their safety, health and the environment.

The Environmental topics to be covered in awareness training should include the following:

- RESOURCE MANAGEMENT

- a. The importance of saving water

- i. South Africa is a water scarce country and rivers are polluted
    - ii. Do not throw litter into river or water drains
    - iii. Do not dispose of oils in sewers

- b. Air pollution - Climate change

- i. The use of fossil fuels is increasing the amount of greenhouse gases that are discharged to the atmosphere. Share transport or use public transport.
    - ii. Don't burn any rubbish, the smoke pollutes the air
    - iii. Plant trees, they clean the air, provide us with oxygen and remove the greenhouse gas carbon dioxide from the air.

- c. Soil conservation

- i. Prevent overgrazing of farmlands, keep vegetation on the surface of the land to prevent soil erosion
    - ii. Plant trees

- HAZARDOUS SUBSTANCE USE AND STORAGE

- a. Solvent, petrol, diesel, insecticides, chlorine, detergents, chemical fertilisers are harmful to the environment and to your health. Use them sparingly and do not let them get into the water systems. Containers must be disposed of to a licensed hazardous waste disposal facility.

- b. Hazardous substances must be stored and used correctly.

- c. Ensure that 16 point Material Substances Safety Data Sheets (MSDS) are available at point of store.

- d. Compressed gas storage requirements.

- e. Flammable substances store requirements.

- INCIDENT AND EMERGENCY REPORTING

- a. The company must have an emergency/incident reporting system whereby environmental incidents can be reported and actioned to mitigate and follow up on.

- OIL / DIESEL / PETROL SPILL CLEAN UP

a. All employees who work with machines and vehicles must be instructed how to prevent and clean up an oil or diesel spill appropriately. Spill kits must be available on site, drip trays must be used when servicing vehicles.

- CONSERVATION OF WATER

- a. Campaign to save water on site.
- b. Clean water is expensive and potable water must be used carefully.
- c. Prevent pollution of water by preventing spills and dispose of wastes properly.

- CONSERVATION OF VEGETATION

Plants, grasses and trees are very important to our existence on the earth, they provide food, fuel, shelter, raw materials and they clean the air. Indigenous plants are especially important for muti and the whole ecology of life. Human activities are destroying the natural forests of the earth. The natural forests are the “lungs” of the planet and unfortunately they are being cleared faster than they can be regenerated.

- a. EMP's are to be done before virgin bush can be cleared.
- b. Vegetation cover reduces water and topsoil loss from the ground, do not clear vegetation unnecessarily.
- c. Indigenous trees provide shade, attract wild birds.
- d. Do not chop down indigenous trees without good reason.
- e. Implement a tree planting programme.
- f. Remove alien invasive trees in your area such Prosopis, Syringa and Pepper trees, cactus plants.

- WASTE MANAGEMENT

- a. Employees must be instructed on how to tell the difference between hazardous waste and general waste.
- b. They must know how to separate hazardous and general waste and where to dispose of these wastes in the correct way.
- c. Examples of hazardous waste which must be recycled or sent to Waste Tech for disposal:
  - i. Oil, diesel, batteries, acids, paint, thinners, electronic waste.
  - ii. Pesticides, Jik and Handy Andy.
  - iii. Old oil, old oil filters, old paint is hazardous and must not be disposed of to a general land fill. Enviroserv, InterWaste, Drizit or Oilkol of the Rose Foundation will collect old oil.

iv. Mercury in fluorescent light bulbs is hazardous, fluorescent lights must be handled with great care so as not to break the glass and release the mercury vapour into the air to breath.

d. Examples of general wastes which can go to the municipal landfill.

i. Wood, paper, plastic, glass, old PPE.

e. Recycle, Reuse, Reduce, and Recover wherever possible.

#### Heritage Resources

The planned mitigation of constructing buffers within an approved distance away from the burial graves is going to be followed, together with the implementation of the Conservation Management Plan. If that plan proves to an obstruction to planned operations, a permit application to have them removed will be lodged. All employees of the planned operations will be made aware of the importance of protecting heritage resources.

- CONCLUSION

African Gemstone Mining (Pty) Ltd will utilize the Environmental Awareness Plan to assure that all employees and contractors are aware of the environment and know how to manage it correctly.

**(2) Manner in which risks will be dealt with in order to avoid pollution or the degradation of the environment.**

#### Air quality:

- To control the incidence of unacceptable levels of dust pollution on site.

#### Surface water:

- To conserve water; and
- To eliminate the contamination of run-off.

#### Groundwater:

- To minimise and prevent as far as practically possible the contamination of ground water.

#### Natural flora:

- To minimise the destruction of vegetation units; and
- To control invasion by exotic and invasive plant species.

#### Fauna:

- To minimise vegetation destruction in areas, and therefore a habitat for wildlife; and
- To eliminate poaching and the extermination of animal species within the boundaries of the study area, as well as in the surrounding areas.

#### Noise:

- To control the incidence of unacceptable noise levels on site.
- #### Aesthetics:
- To minimise aesthetic disturbance; and
  - To reduce the visual impact of the proposed mining operation through a process of on-going rehabilitation and reclamation.

#### Soils:

- To prevent soil pollution;
- To limit soil compaction;
- To curb soil erosion; and
- To reinstate a growth medium able to sustain plant life.

#### Land capability:

- To minimise the reduction of land capability.

#### Sensitive landscapes:

- To protect sensitive landscapes from potential negative impacts.

#### Surface environment - waste management:

- To ensure that the discarding of any waste material produced as a result of the proposed operations, including rubble, litter, garbage, rubbish or discards of any description, whether solid or liquid, takes place only at a site or sites demarcated for such purposes.
- To prevent waste material from being dumped within the borders or the vicinity of the mining area.

#### Heritage Resources

- To ensure that heritage resources are preserved such as to construct buffers 20 m away from the burial graves if approved by the SAHRA. A Conservation Management Plan is going to be compiled in respect of the graves on site.

**n) Specific information required by the Competent Authority d**  
(Among others, confirm that the financial provision will be reviewed annually).

Section 41 of the MPRDA and regulations 53 and 54 promulgated in terms of the MPRDA deal with financial provision for mine rehabilitation and closure.

The holder of a permit as described in the relevant sections of the MPRDA and its regulations must provide the Department of Mineral Resources and Energy (DMRE) with sufficient financial provision. Officials in the DMRE Regional Offices are required to assess, review and approve the quantum of financial provision submitted (that is, the monetary value of the financial provision that has been computed by the holder of a prospecting right, mining right or mining permit during the annual review) as being sufficient to cover the environmental liability at that time and for closure of the mine at that time.


The holder of a prospecting right, mining right or mining permit is required to annually assess the total quantum of environmental liability for the operation and ensure that financial provision are sufficient to cover the current liability (in the event of premature closure) as well as the end-of-mine liability.

It is hereby confirmed that the financial provision will be reviewed annually.

## 2) UNDERTAKING

The EAP herewith confirms

- a) the correctness of the information provided in the reports
- b) the inclusion of comments and inputs from stakeholders and I&APs ;
- c) the inclusion of inputs and recommendations from the specialist reports where relevant; and
- d) that the information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected. parties are correctly reflected herein.



\_\_\_\_\_  
Signature of the environmental assessment practitioner:

Thaya Trading Enterprise CC

\_\_\_\_\_  
Name of company:

\_\_\_\_\_  
Date:

**-END-**

**ANNEXURE A**  
**CURRICULUM VITAE OF EAP**

**ANNEXURE B  
ENLARGED MAPS**

**ANNEXURE C  
PUBLIC PARTITIPATION RECORDS**

Environ Media  
 Acting Chief Executive Officer  
 Construction Industry Development Board

Year	Capital Expenditure	Legal Cost	Available Capital
1	100 000 000	100 000 000	0
2	2 000 000	2 000 000	1 900 000
3	3 000 000	3 000 000	1 600 000
4	4 000 000	4 000 000	1 200 000
5	5 000 000	5 000 000	800 000
6	6 000 000	6 000 000	400 000
7	7 000 000	7 000 000	0
8	8 000 000	8 000 000	0
9	9 000 000	9 000 000	0
10	10 000 000	10 000 000	0
11	11 000 000	11 000 000	0
12	12 000 000	12 000 000	0
13	13 000 000	13 000 000	0
14	14 000 000	14 000 000	0
15	15 000 000	15 000 000	0
16	16 000 000	16 000 000	0
17	17 000 000	17 000 000	0
18	18 000 000	18 000 000	0
19	19 000 000	19 000 000	0
20	20 000 000	20 000 000	0

Regulation criteria for the...  
 The Rand Index value is published by...  
 the Rand Index value is adjusted and values are rounded

**Envirod**  
 ENVIROD GLOBAL SOLUTIONS (PTY) LTD  
 4 Westport Complex  
 Birchwood Street Senkberg  
 Brackenford  
 Western Cape  
 7560  
 Reg. #: 2019/90196/DT

### PUBLIC CONSULTATION MEETING

**DATE : 17 March 2020**  
**TIME : 12H00 (12 pm)**  
**VENUE : ERF 687, BARKLY WEST**

**AZANIA KBM (PTY) LTD: MINING PERMIT APPLICATION**

In terms of Section 27 of the Mineral & Petroleum Resources Development Act, 2002 (Act 28 of 2002) and NEMA, 1998 (Act 107 of 1998) as amended, the Department of Mineral Resources is processing an application that was lodged by Azania KBM (Pty) Ltd to mine for diamonds on a piece of Erf 687 (Please see Figures 1), located in Barkley West District, Northern Cape.

Notice is hereby given of a joint Public Participation Process in terms of the following pieces of legislation:

- The National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) as amended; and,
- The National Water Act, 1998 (Act No. 36 of 1998) (NWA).

Any interested or affected parties are hereby invited to register on such and any objection or inputs should be raised at a meeting to be held on 17 March 2020 or lodge them in writing with the consultant mentioned below by no later 17 March 2020, for attention:

ENVIROD GLOBAL SOLUTIONS (PTY) LTD  
 4 Westport Complex, Birchwood Street Senkberg, Brackenford, Western Cape, 7560  
 Tel: 082 858 8918 | Email: [kamath@envirod.com](mailto:kamath@envirod.com)

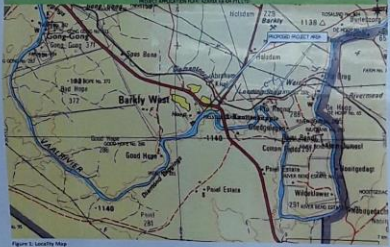


Figure 1: Locality Map

**PUBLIC CONSULTATION MEETING**

**DATE : 17 March 2020**  
**TIME : 12H00 (12 pm)**  
**VENUE : ERF 687, BARKLY WEST**

**AFRICAN GEMSTONE MINING (PTY) LTD: ACCEPTANCE OF MINING PERMIT APPLICATION**

In terms of Section 27(5) of the Mineral & Petroleum Resources Development Act, 2002 (Act 28 of 2002) and NEMA, 1998 (Act 107 of 1998) as amended, the Department of Mineral Resources has accepted an application that was lodged by African Gemstone Mining to mine for diamonds on a piece of Erf 687 and a piece of Erf 1526 Remainder (Please see Figures 1), located in Barkley West District, Northern Cape.

Notice is hereby given of a joint Public Participation Process in terms of the following pieces of legislation:

- The National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) as amended; and,
- The National Water Act, 1998 (Act No. 36 of 1998) (NWA).

Any interested or affected parties are hereby invited to register on such and any objection or inputs should be raised at a meeting to be held on 17 March 2020 or lodge them in writing with the consultant mentioned below by no later 17 March 2020, for attention:

Thava Trading Enterprise  
 9705 1<sup>st</sup> Avenue | Kathuj|8446 | Tel: 071 959 9207 | Fax: 086 522 1335 | Email: [info@thavatrading.co.za](mailto:info@thavatrading.co.za)




Figure 1: Locality Map

# LIBRARY



## PUBLIC CONSULTATION MEETING

DATE : 17 March 2020  
TIME : 12H00 (12 pm)  
VENUE : ERF 687, BARKLY WEST

### AFRICAN GEMSTONE MINING (Pty) Ltd: ACCEPTANCE OF MINING PERMIT APPLICATION

In terms of Section 27(5) of the Mineral & Petroleum Resources Development Act, 2002 (Act 28 of 2002) and NEMA, 1998 (Act 107 of 1998) as amended, the Department of Mineral Resources has accepted an application that was lodged by African Gemstone Mining to mine for diamonds on a piece of Erf 687 and a piece of Erf 1526 Remainder (Please see Figures 1), located in Barkley West District, Northern Cape.

Notice is hereby given of a joint Public Participation Process in terms of the following pieces of legislation:

- The National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) as amended; and,
- The National Water Act, 1998 (Act No. 36 of 1998) (NWA).

Any interested or affected parties are hereby invited to register on such and any objection or inputs should be raised at a meeting to be held on 17 March 2020 or lodge them in writing with the consultant mentioned below by no later 27 March 2020, for attention:

Thava Trading Enterprise  
9705 1<sup>st</sup> Avenue (Kathu) 8446 | Tel: 071 959 9207 | Fax: 086 522 1335 | Email: [info@thavatrading.co.za](mailto:info@thavatrading.co.za)



Figure 1: Locality Map



REPUBLIC OF MALAYSIA  
KERAJAAN MALAYSIA

MINISTRY OF EDUCATION  
KEMENTERIAN PENDIDIKAN  
TANJUNGPEDAGHANG

MEMORANDUM

TO: The Director General of Education

FROM: The Director of Education, Johor Bahru

SUBJECT: [Illegible]

Reference is made to the letterhead memorandum dated 15/10/2023 on the subject mentioned above.

The following information is being provided for your information:

- [Illegible]
- [Illegible]
- [Illegible]

Yours faithfully,

[Illegible name]



The first part of the document discusses the importance of maintaining accurate records of all transactions. This includes not only sales and purchases but also the collection and payment of taxes. Proper record-keeping is essential for determining the correct amount of tax liability and for providing evidence in the event of an audit.

In addition, the document emphasizes the need for businesses to stay up-to-date on changes in tax laws and regulations. Tax laws can change frequently, and businesses must be aware of these changes to ensure they are complying with the current requirements.

The following are some key points to remember when it comes to tax record-keeping:

- Keep records for at least three years after the date of filing.
- Keep records for at least six years if you are claiming a loss or a credit.
- Keep records for at least seven years if you are claiming a capital loss.

By following these guidelines, businesses can ensure they are maintaining accurate records and staying compliant with tax laws.





DEPT. OF PUBLIC WORKS  
CITY OF BANGOR  
1000 BANGOR AVENUE  
BANGOR, ME 04402  
TEL: (207) 688-1000

DEPT. OF PUBLIC WORKS

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2/23



## Property details

Deeds registry	KIMBERLEY
Property type	ERF
Township	BARKLY WES
Ref number	687
	F (REMAINING EXTENT)
	NORTHERN CAPE
	BARKLY WEST RD
	DIKGATLONG MUNICIPALITY
	-
	BWF1/26
	2233.9732 H
	CD070001000006819000

## Title Deeds details

Document	Registration date	Purchase date	Amount	Image Scanned / license	Document copy?
BWF1/26	19081128	-	R247 36	20151030 13:33:04	Yes

## Owners details

Document	Full name	Identity Number	Share	Person	Enquiry?
BWF1/26	DIKGATLONG MUNICIPALITY	-	-	-	Yes
T4343/2001	DIKGATLONG MUNICIPALITY	-	-	-	Yes

## Endorsements / Encumbrances

Endorsement / Encumbrance	Holder	Amount	Microfilm reference	Document copy?
E081/1975	-	-	-	Not available
1-2783/2002C	DIKGATLONG MUNICIPALITY	-	20150702 13:39:39	Yes
1-2446/2009LO	-	-	-	Yes



THAYA TRADING ENTERPRISE  
EERSTE LAAN  
ROOISAND, KATHU, 8446  
TEL: + 27 71 959 9207  
FAX: +27 86 522 1335  
EMAIL: khnobaza@gmail.com

---

March 25, 2020

DEPT. OF PUBLIC WORKS  
PRIVATE BAG X5002  
KIMBERLEY  
8300

**Notice is hereby given in terms of Section 27(5) and Regulation 3 of the Mineral & Petroleum Resources, Development Act, 2002, (Act No. 28 of 2002) of intent to carry out the following activity on a piece of Erf 687 and a piece of Erf 1526 Remainder, Barkly West**

Thaya Trading Enterprise hereby acknowledges receipt your letter dated 03 March 2020, received 09 March 2020. We wish to draw your attention to a series of e-mails that we, as the entity, sent to your department between 09 March 2020 and 13 March 2020 wherein we were humbly requesting for a meeting with the department.

Some of the points we were hoping to discuss with you at the proposed meeting include, but not limited to, the following:

- African Gemstone Mining (Pty) Ltd has applied for mining permit (5 Ha) on a piece of ERF 1526, Remainder from the Department of Mineral Resources and Energy;
- The Northern Cape Provincial Government is the land owner of ERF 1526, Remainder;
- The proposed small-scale mining operation is planned to be developed in a sustainable manner;
- We invite comment/input from your department on mitigation measures to be put in place when addressing anticipated environmental impacts associated with the proposed sustainable development, especially on the health and safety of personnel who will be visiting the Rekaofela Resort;
- The Environmental Management Programme will take into consideration, inter alia, activities that are already taking place onsite (at Rekaofela Resort) and health and safety of passer-by's;
- The said Environmental Management Programme is going to be implemented and monitored effectively;



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- 
- Location of proposed activity is more than 500 m away (and hidden) from Rekaofela Resort (facility) and occupiers on which the Environmental Management Programme will seek to limit impact;
  - Source contact details of land occupier (Rekaofela Resort) of ERF 1526, Remainder;
  - Land occupiers are invited to submit comment to Thaya Trading Enterprise pertaining to the proposed sustainable development;
  - The applicant informed the consultant that mining activities have taken place on the piece of land in question in the past;
  - The scale of this proposed small-scale mine would be equivalent to that of quarries from which gravel for developing our roads is excavated;
  - Some of the benefits associated with mining include, economic growth, job-creation, poverty alleviation;
  - On an on-going basis and at decommissioning phase, backfilling and rehabilitation are going to be conducted.

In light of the above, we propose that we work together to find an amicable solution that would promote sustainable development in the Northern Cape Province.

Yours sincerely,

Kwindla Nobaza

---





BBarends

to me, ENodoba, NPeters, VMolawa  
09 Mar [View details](#)



Good Morning

Attached find correspondence from the Department. The original letter will follow in the post.

Thanking you

Burt Barends

This email and any files transmitted with it are confidential and intended solely for the use of the individual or entity to whom they are addressed. If you have received this email in error please notify the system manager. Please note that any views or opinions presented in this email are solely those of the author and do not necessarily represent those of the company. Finally, the recipient should check this email and any attachments for the presence of viruses. The company accepts no liability for any damage caused by any virus transmitted by this email.

 <b>the dr&amp;pw</b> Department Roads and Public Works NORTHERN CAPE PROVINCE REPUBLIC OF SOUTH AFRICA	<b>HEAD OFFICE</b> P.O. Box 3132, KIMBERLEY 8300 9-11 Stokroos Street Tobago Loop Tunnies Complex Sqaan@ Park KIMBERLEY Tel: 053 839 2100, Fax: 053 839 2291
Enquiries : Ms. O. J. Gill	Reference : L9.8.5.5
The Manager Thaya Trading Enterprise Eerste laan Rooisand	
 rekaofella mining object.pdf  	



**KWINDLA HANDY NOBAZA**

to BBarends, ENodoba, NPeters, VMolawa, bcc: Zandile, kwindla98, kwindla.nobaza  
09 Mar [View details](#)



Good day,

This is to acknowledge receipt of your e-mail. Thank you for the letter. We hereby request to have a meeting with your department to discuss the matter further as part of consultation process that is underway in respect of the application in question. We humbly propose to meet with your department on 17 March 2020 at 08h00.

We look forward to your favorable consideration.

Warmest regards,  
Kwindla Nobaza  
071 959 9207

[Show quoted text](#)



**BBarends**

to me, ENodoba, NPeters  
09 Mar [View details](#)



Good Day

It would be appreciated if you could contact Ms N. Peters at [Npeters@ncpg.gov.za](mailto:Npeters@ncpg.gov.za) , 053 8392122, to secure an appointment with the Director, Mr V.Molawa.

thanking you

Burt Barends

>>> KWINDLA HANDY NOBAZA <[khnobaza@gmail.com](mailto:khnobaza@gmail.com)> 2020/03/09 11:14 AM >>>

[Show quoted text](#)



**KWINDLA HANDY NOBAZA**

to npeters, vmolawa, vmolawa

13 Mar [View details](#)



Good day,

I hope this e-mail finds you well. This is a follow-up to the humble request for the meeting we submitted to your Department.

Warmest regards,  
Kwindla Nobaza  
071 959 9207

[Show quoted text](#)



**Mail Delivery Subsystem**

13 Mar

Address not found Your message wasn't delivered to vmolawa@ncpg.go.za because the domain ncpg.go.za couldn't be found. Check for typos or unnecessary spaces and



**KWINDLA HANDY NOBAZA**

to BBarends, ENodoba, NPeters, VMolawa

01 Apr [View details](#)



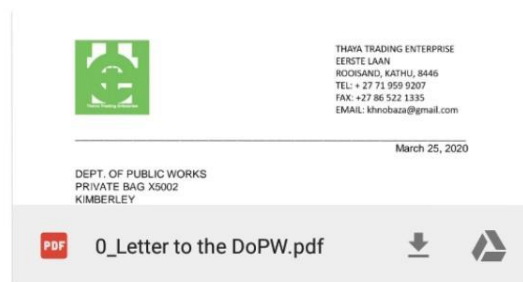
Good day,

I hope this e-mail finds you well. Please find attached herewith letter for your attention.

I look forward to hearing from you.

Warmest regards,  
Kwindla Nobaza  
071 959 9207

[Show quoted text](#)



Reply

Reply all

Forward

**ANNEXURE D  
SPECIALIST STUDY REPORTS**