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).

NAME OF APPLICANT: THAYA TRADING ENTERPRISE CC

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Consulting Company : Envirod Global Solutions (Pty) Ltd

Author/Consultant : Zandile Dwane (M. Sc in Geology)

Reviewer : Siyasanga Mbele (Registered EAP. EAPASA)

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_{10}	Particulate matter with an aerodynamic diameter of less than 10 µm
$PM_{2.5}$	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: Siyasanga Mbele (EAP) and Zandile Dwane (Consultant)

Tel No.: 083 265 7992

e-mail address: kamvisto@gmail.com

(ii) Expertise of the EAP.

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

Siyasanga Mbele holds the following qualifications:

- Master's Degree in Administration
- Environmental Assessment Practitioners of South Africa-Registered EAP

Zandile Dwane (Consultant) holds the following qualification:

- 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.

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

Farm Name:	FARM PERTH 343.
Application area (Ha)	Approximately 4 500 Ha
Magisterial district:	Kuruman, John Taolo Gaetsewe
Distance and direction from nearest town	The application area is situated on the piece of ground of the Farm Perth No. 343, near Kuruman, John Taolo Gaetsewe District
21 digit Surveyor General Code for each farm portion	PERTH 343: 0000C08100000000343000000

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

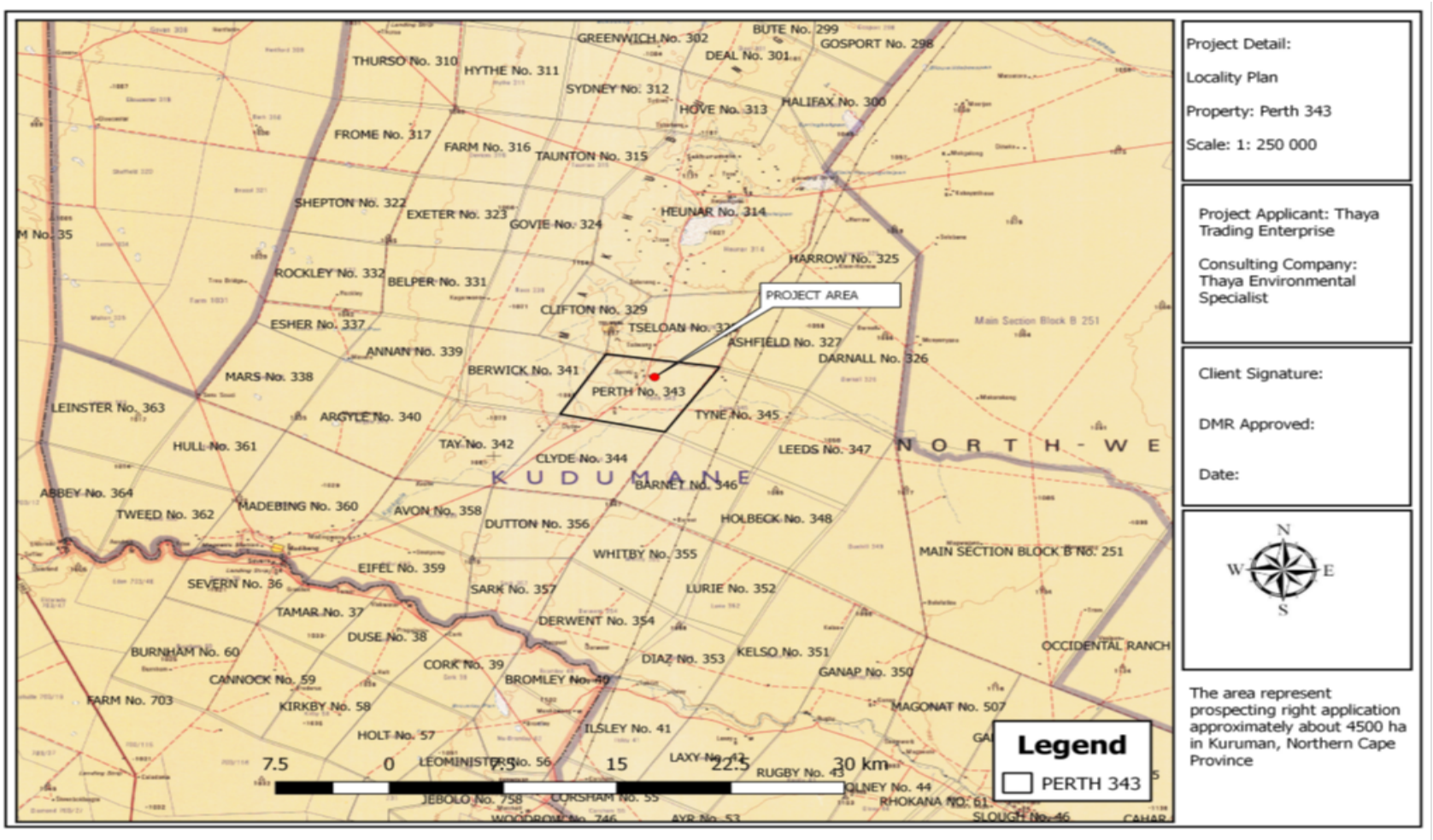


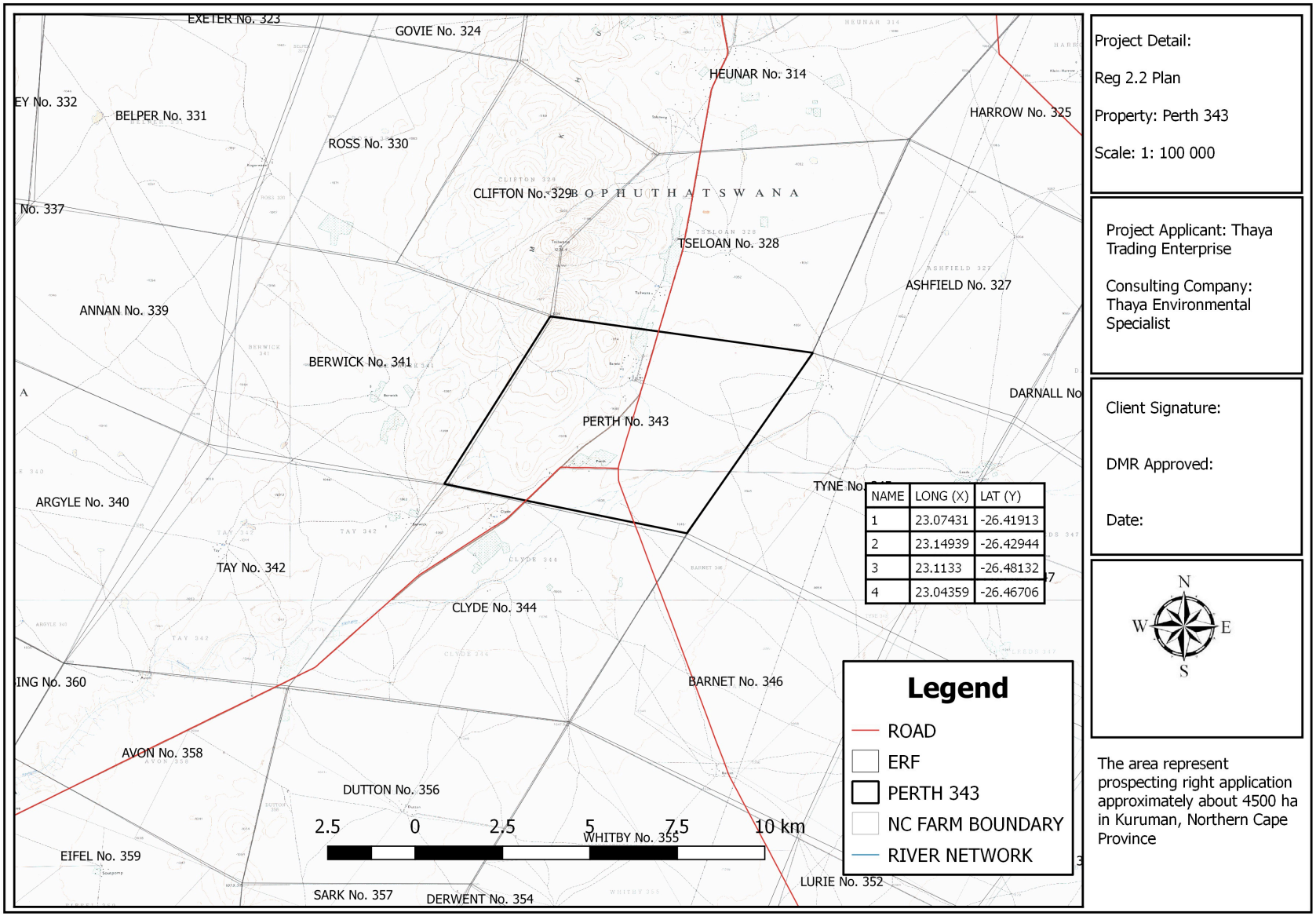
Figure 1: *Locality Map Joe Morolong Municipality*

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

Thaya Trading Enterprise proposes to prospecting for diamonds (alluvial, general and in kimberlite), manganese and iron ores on a small piece (4500 Ha) of Farm Perth 343. 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.

Prospecting activities will be conducted in phases. The plan on the quantity and quality of work and the next step to take executed based on the results generated during the preceding phase. The prospecting operation will commence with desktop studies, inclusive of literature review, satellite imagery among others. Thereafter, a mapping programme will be designed. The planned operations will include the drilling and pitting, subsequently process material thereof in order to send samples to the laboratory for assay.



NAME	LONG (X)	LAT (Y)
1	23.07431	-26.41913
2	23.14939	-26.42944
3	23.1133	-26.48132
4	23.04359	-26.46706

Project Detail:

Reg 2.2 Plan

Property: Perth 343

Scale: 1: 100 000

Project Applicant: Thaya Trading Enterprise

Consulting Company: Thaya Environmental Specialist

Client Signature:

DMR Approved:

Date:

N
W E
S

The area represent prospecting right application approximately about 4500 ha in Kuruman, Northern Cape Province

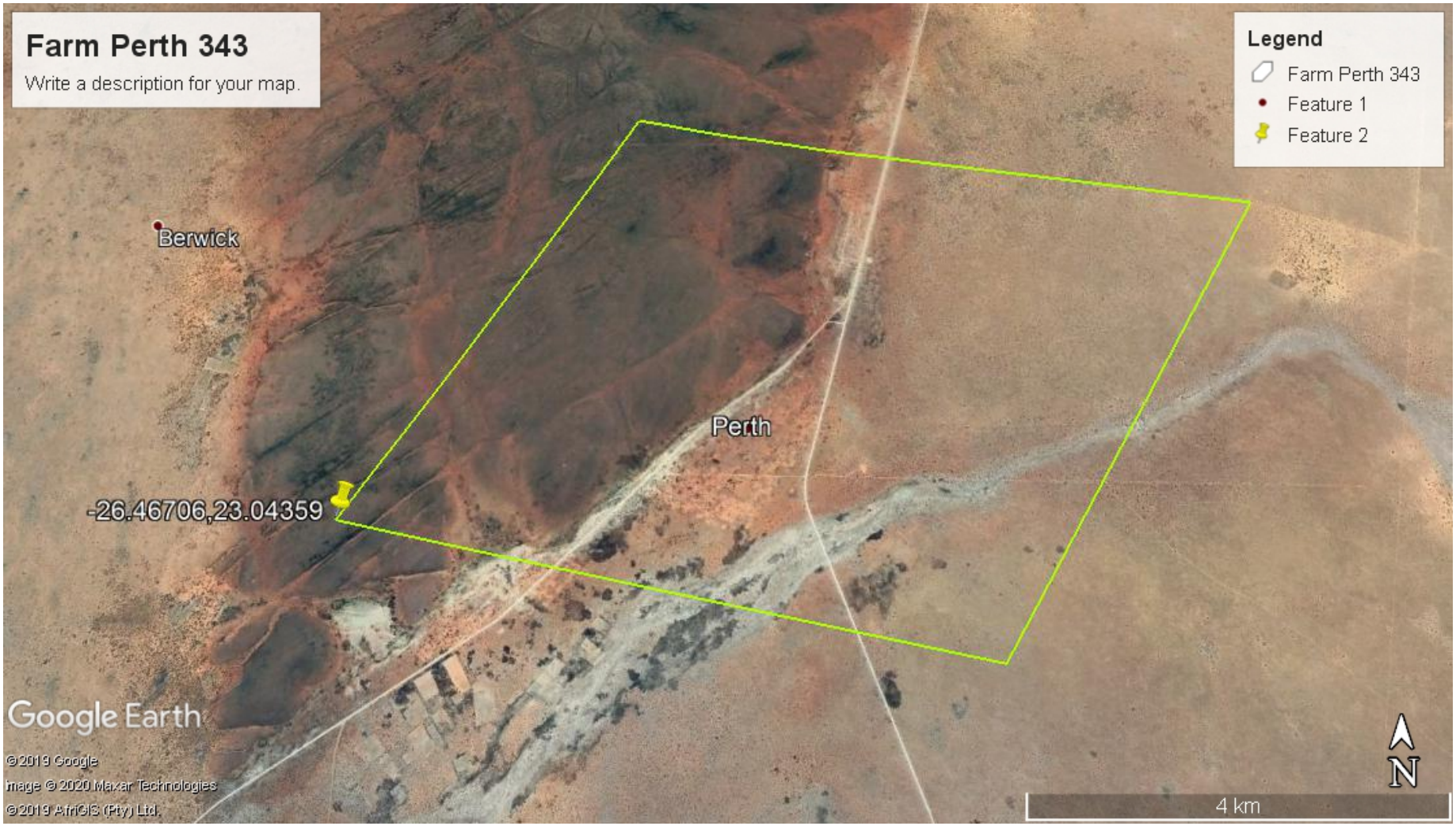


Figure 2: *Map shows the location, and area (hectares) of all the aforesaid main and listed activities*

(i) Listed and specified activities

Table 2: Listed and specified activities

NAME OF ACTIVITY 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.)	Aerial extent of the Activity Ha or m²	LISTED ACTIVITY Mark with an X where applicable or affected.	APPLICABLE LISTING NOTICE (*GNR 324, GNR 325, GNR 326 or GNR 327)*
This includes any activity, together with the operations of that activity which requires a prospecting right in terms of Section 16 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), including associated infrastructure, structures and earthworks, directly related to prospecting of a mineral resource, including activities for which an exemption has been issued in terms of Section 106 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002) Activity 20 of Listing Notice 1	4 500 Ha	X	GNR 327-Listing Notice 1 Activity No.20
Clearance of indigenous vegetation	1 Ha or less - Only the area where prospecting activities are going to take place will be cleared of indigenous vegetation. Concurrent rehalibilation will be conducted with normal backfilling.	X	GNR. 327, Listing Activity 27
Temporary structures (3 x Park Homes)	0.215 ha		Not listed
Temporary Dump Site	0.19 ha		Not listed
Concrete spillage control at diesel bousers	100 m²		Not listed
Oil storage facility	100 m²		Not listed
Water pipeline of undetermined length but less than 10 Km	3 Km		Not listed
Temporal topsoil storage 0.001 ha	0.001ha	X	
Exploration Boreholes (Drilling Operation)	< 1 Ha – scattered over entire property 1000 m deep drill holes (20)	X	GNR 327-Listing Notice 1 Activity No.20

	4m X 4m pit (≈10 pits) (Noteworthy: the plan is to back-fill each drill hole or pit immediately after being prospected satisfactorily prior to final rehabilitation.)		
Construction of a temporal Concrete slab with a bund wall for the temporal storage of hydrocarbon	0.0025ha	X	
Ablution facility (two)	0.0010ha	X	
Mobile office	0.0025ha	X	
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	Concurrent backfilling and rehabilitation; Obtain closure certificate after prospecting activities have been completed, if necessary.	X	Listing Notice GNR 327, Activity 22
Construction of temporary access roads	500 m^2 (narrower than 4 m)	X	GNR 327 Listing Activity 20

(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)

Thaya Trading Enterprise plans to prospect for diamonds, iron and manganese ores within a 4 500 Ha area that is located on a piece of Farm Perth 343, John Taolo Gaetsewe district. The commodity for which to prospect are diamonds (general, alluvial and in kimberlite), iron and manganese ores. The process will focus on the use of drilling methods, few exploration boreholes will be drilled on a grid spacing of about 300m X 300m using drill rigs. The further processing of the sample will take place at the laboratory for analysis.

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, Manganese and Iron Ores.

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

Mapping will involve ground thruthing the occurrence of the ore body within the proposed prospecting area; as shown in published geological maps. The Main Zone will be the target zone as it overlies the Critical Zone in which the ore body occurs. Mapping is completed that meaningful structural and geological data may be derived from it and to confirm that the desktop study is accurate.

Phase 2

Description of Planned Invasive Activities

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

Drilling and Sampling

The results of the Phase 1 will be used to assist in the ideal location of 20 diamond drill holes at maximum depth of 1000 m. Initially, only four of the ten planned boreholes will be drilled (Please refer to Table 3). The objective of the initial drilling will be to confirm the occurrence of the Critical Zone within the proposed prospecting area. As a result of the known structural complexity of the area in which the proposed prospecting areas is located, initial boreholes will be widely spaced in order to increase the understanding of the overall geology. The expected depth of the Critical Zone will be guided by initial geological interpretation pre-existing data, and mapping.

Sample Assay

The drill core will be sampled where a mineralized section is intersected. The core will be split into two halves, with one half of the core taken for assay purposes and the other half being retained. Each sample will be measured and weighed and the sample lengths will be recorded before dispatch for assays at a South African National Accreditation System (SANAS) accredited laboratory. Samples will be analysed.

Phase 3

Resource drilling and sampling

Subsequent to Phase 2 drilling, the results will be used to design a systematic drilling programme aimed at delineating a Mineral Resource on the Proposed Prospecting Area. The number of boreholes will depend greatly

of the results of Phase 2 drilling; a minimum of five is planned thus far. This programme will be more focused more on parts on which the ore body were intersected.

Phase 4

Pre-feasibility Studies

The pre-feasibility and feasibility studies are more detailed. By the time a decision is made to proceed with a prefeasibility study, a preliminary mineral resource report has been finalized and an ore body model demonstrating its shape, tonnes, and grade is available. A resource cannot be converted to a reserve unless it backed up by at least a pre-feasibility study. Their results will show with more certainty whether the project is viable. At this point, the mineral resource, or a portion thereof, becomes a mineral reserve. The activities associated with the Prospecting Work Programme will be scheduled over a period of 5 years at a maximum inclusive of all phases. A detailed Prospecting Work Programme will be confirmed upon appointment of the contractor to conduct the proposed activity.

The operation is to be conducted using conventional drilling machinery and / or equipment at the beginning:

Earthmoving and ancillary equipment

1 x Excavator

1 x Drill Rig

1 x Water Truck

Clearance of a small part of site (including access roads) and levelling, if necessary.

Drilling and Pitting

A maximum of 20 holes will be drilled. Depending on the results obtained during the process, approximately 10 pits will be opened are estimated at this stage. Concurrent Rehabilitation is going to be undertaken (Drill and Rehabilitate one hole at a time).

Rehabilitation

Once the open drill holes reaches a steady state, on-going rehabilitation of the excavated areas using methods such as simultaneous backfilling will occur as prospecting activities advance. In this regard, waste rock will be used to backfill the pit voids (once there is enough space to dump).

Noteworthy: the plan is to back-fill each drill hole or pit immediately after being prospected satisfactorily before proceeding to the next one and / or prior to final rehabilitation.

Table 3: some of activity details

ACTIVITY		DETAILS
Number of pits/trenches planned		20 holes and 10 trenches
	Number of drill holes/pits (core)	**Diameter of Drill Hole Depth**
	20/10	≤ 134.0 mm 1 000 m
	Percussion drilling	60 mm 100 m
Locality		See figure 1
Volume Overburden (Waste)		500 m^3 (estimate ore at 100 mbgl)
Volume Ore		< 4 500 m^3
Density Overburden		To be determined during Prospecting Activities.
Density Ore		≈5.15 g/cc
Timeframe(s)		From time-to-time during months 7 to 30 or less.

a. Policy and Legislative Context

Table 4: Policy and Legislative Context

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT (a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process	**REFERENCE WHERE APPLIED**	**HOW DOES THIS DEVELOPMENT COMPLIY WITH AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.** (E.g. In terms of the National Water Act a Water Use License has/ has not been applied for)
Minerals and Petroleum Resources Development Act, 2002 (Act 28 of 2002)	Prospecting Right application process	Mining Permit has been applied for and to the Department of Mineral Resources.
Minerals and Petroleum Resources Development Act, 2002 (Act 28 of 2002)	Prospecting Right and Environmental Authorisation processes	In progress
National Environmental Management Act, 1998 (Act 107 of 1998)	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 posses 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	In progress

	environment. Section 31 covers the aspect of access to environmental information and 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”	In progress although it may not be necessary

	includes a watercourse, surface water, estuary, or aquifer. “Aquifer” means a 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. 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, thewater 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. 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.	to acquire at this stage.
Environmental Conservation Act, 1989 (Act 73 of 1989)	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.	
In terms of the National Heritage	In terms of the National Heritage	

Resources Act, 1999 (Act No. 25 of 1999)	Resources Act, Act No. 25 of 1999, any person who intends to undertake "any development or other activity which change the character of a site – exceeding 5 000m² 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.	
Conservation of Agricultural Resources Act, Act No 43 of 1983	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.	
National Forests Act, 1998 (Act No. 84 of 1998)	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.	
Subdivision of Agricultural Land Act, Act	Control the subdivision, and in connection therewith, the use of	

70 of 1970	agricultural land. It also controls long 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 is could constitute a	

	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.	

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. To a great extent, bulk commodities such as Iron and Manganese ores have proven to be significant contributors to South Africa's GDP in the recent years. Big local mining houses such as Anglo American Kumba Iron Ore, ASSMANG LIMITED and South 32 to mention but a few have a good story to tell about how they have been performing even during and after the period of the global credit crunch.. 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.

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 prospecting rights are granted, prove to be bearing commodities of high economic value. Only small portions of the farms that are targeted will be temporarily disturbed. The remainder of the farm portions will proceed as normal at this stage.

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

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, iron ore and manganese deposits. Farm Perth 343 is known bear Iron ore, manganese and alluvial diamond deposits and some kimberlite pipes. As a consequence, a number of individuals who reside in Kuruman 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 iron ore, manganese and diamond (alluvial, general and in 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 Prospecting right application was lodged with the Department of Mineral Resources.

Water Usage

In an event the mining activities go as planned, few exploration boreholes will be drilled on a grid spacing of about 300m X 300m using drill rigs. Use of water will be minimal during these activities, therefore, a water use license application may not be necessary to lodge with the Department of Water and Sanitation. However, a water use license may be applied for in the near future.

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 (which may not be necessary to have on site in this instance).

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.

A prospecting right application was lodged and accepted by the Department of Mineral Resources to be done whereby the grade and quality will be determined.

Volumes of the mineral to be tested

It is estimated that an average 30 m of overburden (calcrete and soil) will be removed before accessing the ore body for bulk commodities. Whereas, in order to discover diamonds, these parameters will be determined during prospecting activities.

Why will they be tested?

The Iron and Manganese Ore, Diamond (Alluvial, General and in Kimberlite) will be tested to determine a grade and the value of the ore or commodity.

How will they be tested?

The operation is to be conducted using conventional open pit mining equipment:

Earthmoving and ancillary equipment

- 1 x Drill Rig;
- 1 x Excavator;
- 1 x Front-end Loader;
- 1 x Dump Truck; and
- 1 x Water Truck**.**

. In addition, kindly refer to section d(ii).

(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 BAR 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. Therefore, alternatives for the locality of the prospecting activities are not discussed in this piece of work because the position and location of the mine are influenced to an unlimited extent by the availability of the commodity at a location.

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

Piece of Farm Perth 343, John Taolo Gaetsewe District.

Land use

Some specialist studies have been conducted such as Heritage Impact Assessment and Palaeontological Impact Assessment (both Desktop Studies). The process that is going to be employed from beginning to end of prospecting works is going to be step-wise; the initial step is going to be to establish whether or not their commodities of economic value that could be mined in the area of interest before any development can take place. Some parts of the farms of interest have been drilled for Iron and Manganese ores previously; as such there is existing infrastructure on them. It would be convenient, environmentally friendly and economically viable to utilise the existing infrastructure. If need arises, during prospecting phase, the infrastructure used will be mobile only where applicable.

(b) the type of activity to be undertaken;

Diamonds, iron and manganese ores.

(c) the design or layout of the activity;

See FIGURE 8: Regulation 2(2) plan and mining plan for a detailed plan of the mine and its layout..

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

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

Prospecting 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. Proceed without the Mine (no go).

(e) the operational aspects of the activity; and

It is a small scale operation**.**

Due to the nature of the prospecting activities, no permanent services in terms of water supply, electricity, or sewerage services are required. The activities will commence with a site investigation and desktop studies, which will comprise 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 drill rig 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 prospecting by means of the open percussion drilling and core drilling, simultaneously or after pitting depending on the information obtained from the earlier work done.

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

No feasible alternatives to the pitting method currently exist as far as we are aware. Impacts associated with the prospecting operations will be managed through the implementation of a management plan, developed as part of the application for authorisation. See Figure 3.

The rehabilitation process and the prospecting phase are going to be conducted simultaneously in order to ensure that the drill holes that get opened during the prospecting phase are backfilled. All the material taken out of the test 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 activities to be undertaken after the prospecting has been deemed economically not viable.

Biodiversity

biodiversity provides value for ecosystem functionality, aesthetic, spiritual, cultural, and recreational reasons. The known value of biodiversity and ecosystems is: • soil formation and fertility maintenance; • primary production through photosynthesis, as the supportive foundation for all life; • provision of food and fuel; • provision of shelter and building materials; • regulation of water flows and water quality; • regulation and purification of atmospheric gases; • moderation of climate and weather; • control of pests and diseases; and • maintenance of genetic resources.

The establishment of infrastructure as well as certain supportive activities have the potential to result in the loss of vegetation, habitat and related ecosystem functionality through physical disturbance and/or contamination of soil and/or water resources.

As a baseline, this section provides an outline of the type of vegetation occurring on site and the status of the vegetation, highlights the occurrence of sensitive ecological environments including sensitive/ endangered species (if present) that require protection and/or additional management actions should they be disturbed.

Socio-Economy

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

Heritage and Cultural Resources

The existing heritage resources, if any, are going to be protected through avoidance of the NO-GO zone(s) and implementation of the Chance Finds Protocol as proposed by both the Archaeologist and Palaeontologist. 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. The procedures/protocols that are recommended by specialists must have to be followed. The proposed Chance Find Protocol is going to be followed should any fossils, heritage and cultural finds be encountered at any phase of this development.

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 preparation; Use of infrastructure and associated activities; Waste Management; Pitting and Trenching; Revenue collection; Poverty Alleviation; Water use and management	Vegetation Clearance; Soil preparation; Use of infrastructure and associated activities; Waste Management; Pitting and Trenching; Revenue collection; Poverty Alleviation; Water use and management	Vegetation Clearance; Ploughing; Use of infrastructure and associated activities; Waste Management; Pitting and Trenching; Revenue collection; Poverty Alleviation; Water use and management; Final land forms

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 5: 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 Prospecting Project. It is the opinion of the EAP for the Environmental Authorisation.					
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). Identified I&APs, including key stakeholders representing various sectors, will be directly informed of the proposed development and the availability of the Basic Assessment Report via registered post. Thaya Trading Enterprise assisted.

The consulted parties include the following:

Departments:
Water and Sanitation, SAHRA, Agriculture, Environment and Nature Conservation, Eskom, Transnet, Joe Morolong Municipality, John Taolo Gaetsewe Municipality, SAHRA, Public Works, Rural Development, Land Commission & SANRAL

A notice was published on 08 February 2020 in English on Kathu Gazette newspaper for public participation and registration as Interested and Affected Parties (I&APs) to comment. All the I&APs will be requested to submit comments and objections to Envirod Global Solutions (Pty) Ltd within 30 days of the advertisement.

The process as described by NEMA for Environmental Authorisation will be followed. Letters were sent by registered mail to all parties given below. See attachment.
Notices were on site (Farm Perth 343) for communities of Perth and surrounding communities to see; Hotazel Library, Kathu Library, Bathlaros Library, Kuruman Library. There was no show for a public participation meeting.

Copies of the Basic Assessment Report were placed at Hotazel Library, Kathu Library, Bathlaros Library and Kuruman Library were sent out by registered mail to interested and affected parties (land owners, neighbouring farmers, certain government departments and parastatals).

(i) Summary of issues raised by I&AP's
(Complete the table summarising comments and issues raised, and reaction to those responses)
Table 6: Summary of issues raised by I&AP

Interested and Affected Parties List the names of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted.		Date Comments Received	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.
AFFECTED PARTIES					
Landowner/s	X				
Joe Morolong Local Municipality	X				
Lawful occupier/s of the land					
Landowners or lawful occupiers on adjacent properties					
Municipal councillor					
Municipality	X				
Dept. of Water Sanitation	X				

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

(iii) 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

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

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

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

Maremane anticline, is brecciated and ferruginised in places and constitutes the Blinkklip Breccia (Moen et al., 1977).

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

The Ongeluk Formation forms the lower part of the Olifantshoek Group. The formation consists of greyish-green andesitic lava with amygdales and lenses of red jasper. The Voëlwater Formation overlies the Ongeluk Formation and has a thickness of 450 m. The lower beds are banded iron stone and banded red jaspilite with chert, dolomite and lava. The upper portion of the succession consists predominantly of dolomite with chert, banded jasper and lava (Moen et al., 1977). The Lucknow Formation occurs east of the Olifantshoek Group in the Korannaberg where the strata are disturbed by a number of faults Fig 5. It lies unconformably on the Voëlwater Formation and is absent in places in the north. The formation has a maximum thickness of 1500 m. The lower portion consists mainly of shale with subordinate layers of quartzite and lava and an upper portion of whitish quartzite with lenses of flagstone and dolomitic limestone. The Hartley Formation, the upper part of Olifantshoek Group, follows conformably on the Lucknow Formation with a basal conglomerate containing pebbles of quartzite, jaspilite and lava. It is overlain by andesitic lava which contains amygdales, tuff, breccia and pebbles of quartzite (Moen et al., 1977). The Matsap Subgroup lie conformably on the Hartley Formation but in places is found unconformably on the Voëlwater Formation in the Korannaberg. Three members were recognized. They consist predominantly of sub-greywacke and purple, grey and brown quartzite with thin pebble beds and a layer of conglomerate in which quartz, banded iron formation and red jasper pebbles are abundant. The Brulsand Formation consists mainly of quartzite with subordinate shale and subgreywacke. Together with the Matsap Subgroup they form the Volop Group with a thickness of 500m (Moen et al., 1977).

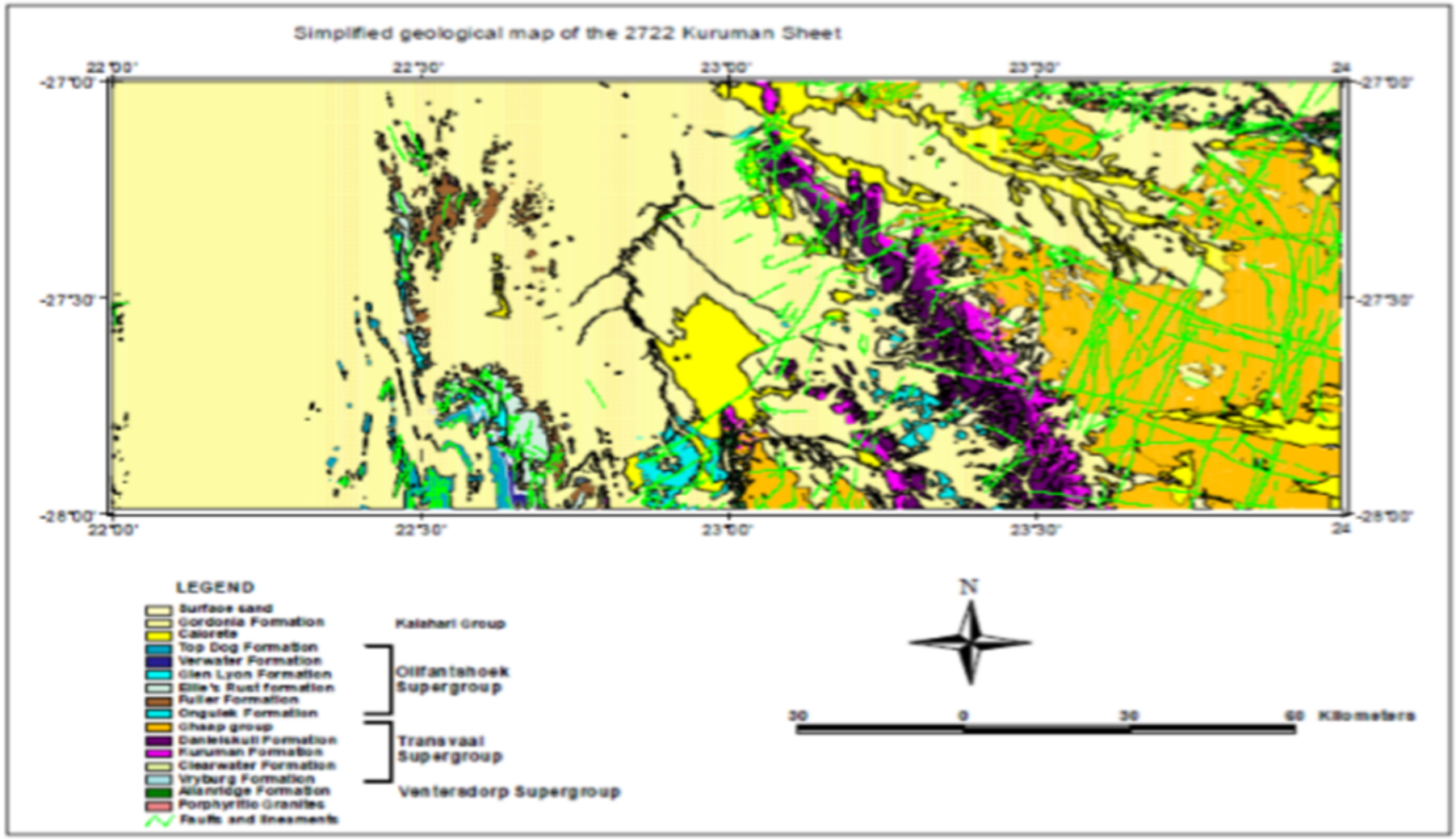


Figure 3: *A simplified geological area of Kuruman (after Moen, 1979)*

Table 6: Lithostratigraphic column of the Kuruman Area

STRATIGRAPHY				DESCRIPTION	MAGNETIC EVENT
				Red to flesh-coloured wind-blown sand	
				Rubble	
				River-sand and gravel	
				Surface limestone	
OLIFANTSHOEK SUPERGROUP (±2 223-2 216 MA)	BRULPAN GROUP		Groblershoop Fm	Quartzite, quartz-sericite schist	Dolerite dykes
	VOLOP GROUP	Brulsand SBGRP	Top dog Fm	White, grey and pink quartzite with subordinate brown subgreywacke	
			Verwater Fm	Grey quartzite with nodule of and lenses of haematite	
		Matsap SBGRP	Glen Lyon Fm	Brown subgreywacke and conglomerate	
			Ellie's Rust Fm	Quartzite and subgreywacke	
			Fuller Fm	Quartzite, subgreywacke and conglomerate	
		Hartley Fm		Andesitic lava with interbedded tuff, agglomerate, quartzite and conglomerate	
		Lucknow Fm		Quartzite, dolomitic limestone; shale and lava	
TRANSVAAL	POSTMASBURG GROUP	Voëlwater SBGRP		Red jasper, dolomite, chert and lava	Basic lava
		Ongeluk Fm		Amygdaloidal andelisitic lava with interbedded tuff, agglomerate, chert, red jasper	
		Makganyene Fm		Diamicite, banded jasper, siltstone, mudstone, sandtone grit and dolomite	
	GH	Campbell Rand	Monteville Fm	Dolomite; quartzite	

		SBGRP			
		Asbestos Hills SBGRP	Danielskuil Fm	Yellow-brown jaspilite with crocidolite; conglomerate	
			Kuruman Fm	Banded Iron formation, subordinate amphibolite, crocidolite, jaspilite and chert	
		Schmidtsdrif SBGRP	Clearwater Fm	Conglomerate, chert ans dolomite, shale	
			Boomplaas Fm	Oolitic and stromatic dolomite and dolomite with chert and quartzite lenses	
	Vryburg Fm		Quartzite, grit, conglomerate, shale amygdaloidal lava		
VENTERSDORP SUPERGROUP (±2 714 MA)			Allanrigde Fm	Andesitic lava, amygdales and agglomerate	Andesitic lava
Porphyritic granite (basement)					

Land Use

The land use and land cover of the area can be classified into three classes. These are: grazing land, **forest** 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

Soils are a significant component of most ecosystems. As an ecological driver, soil is the medium in which most vegetation grows and a range of vertebrates and invertebrates exist. In the context of mining operations, soil is even more significant if one considers that mining is a temporary land use where after rehabilitation (using soil) is the key to re-establishing post closure land capability that will support post closure land uses.

Prospecting projects have the potential to damage soil resources through physical loss of soil and/or the contamination of soils, thereby impacting on the soils' ability to sustain natural vegetation and altering land capability. Contamination of soils may in turn contribute to the contamination of surface and groundwater resources. Loss of the topsoil resource reduces chances of successful rehabilitation and restoration

The soil study indicate that the soil form associated with the Thaya Trading Enterprise is Hutton. The Hutton soil form comprises the following characteristics:

- homogeneous texture, structure, and soil depth;
- reddish brown a pedal sandy topsoil on yellowish red apedal sandy subsoil;
- low clay content; and
- it consists of deep (1.5m) windblown sand and therefore drains rapidly.

Climate

The area of interest is situated approximately 80 Km to Hotazel and about 112 Km to Kuruman. The 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 18.5°C in June, to 35°C in January. The mean maximum average temperature during the summer months range from 27 to 34°C, while during the winter months the mean average minimum temperature range from between 5.6 and 7.4°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 15.3 °C.

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

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

Topography

The area is characterised by a flat topography with gentle slope towards the North West. The elevation is between 1 045m and 1 185m. The terrain morphological class of the area can be described as plains with high relief, either moderately or strongly undulating.

Ecology

The information below was obtained from Mucina & Rutherford, 2006, On describing the existing status of any heritage environment that may be affected, according to the SAHRA's Palaeo Sensitivity map depicts that the area of interest is of a not so high sensitivity in orange colour (Desktop studies is required and based on the outcomes, the field assessment is likely to be conducted) and of low sensitivity in blue colour (no studies required). A specialist report gave a more accurate and comprehensive account of the Palaeontology of the area of interest.

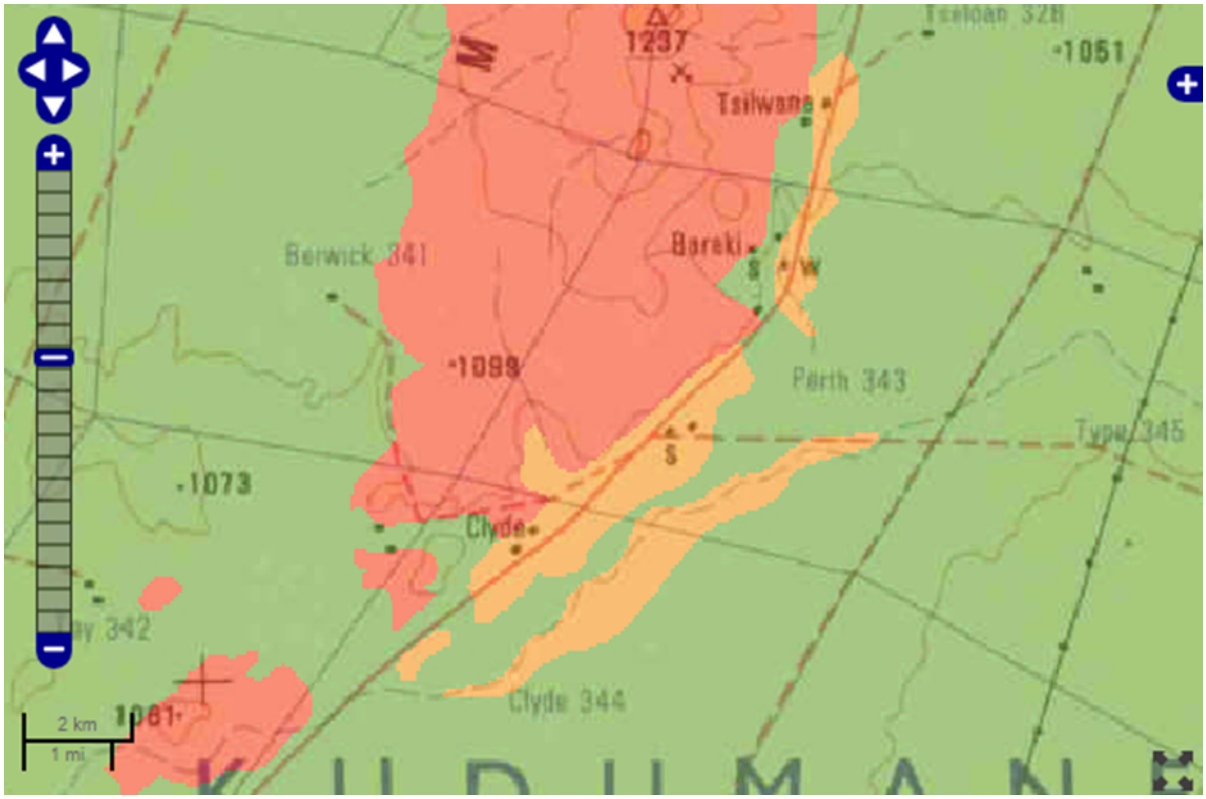


Figure 4: *SAHRA's Palaeo Sensitivity map (Source: Bamford)*

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 shrubveld grass also occurs approximately 800m to the south east of the study area. 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*) All the protected plant species are not going to be disturbed during the proposed prospecting activities.

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.

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.

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 congloromate are a prominent feature of the geology and result in considerable linkage between surface and ground water systems.

Hydrogeology

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 30 m; these boreholes would, however, have insufficient yields for organised irrigation (Hodgson, 2001).

Groundwater Levels and Flow Direction – Groundwater depths range from 0 to 150 mbgl. In general, groundwater follows the topographical setting of the area.

(ii) *Description of the current land uses*

The farm land in the broader region is mostly used for agriculture in the form livestock grazing, with residential area and many small-scale to medium-scale mining operations found throughout the region. The site is covered with indigenous vegetation of mixed shrubland/grassland, as well as alien bushtrees. There is also historic evidence of digging around the site, in the form of shallow holes and spoil heaps that have eroded with time. The majority of the land area is used for cattle grazing and, as such, is degraded from its natural state.

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

Please 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 residential and agricultural purposes. The land capability for the study site is non-arable with low to medium potential grazing land (See Figure 5). Additionally, there is artisanal mining going on in the area of interest.

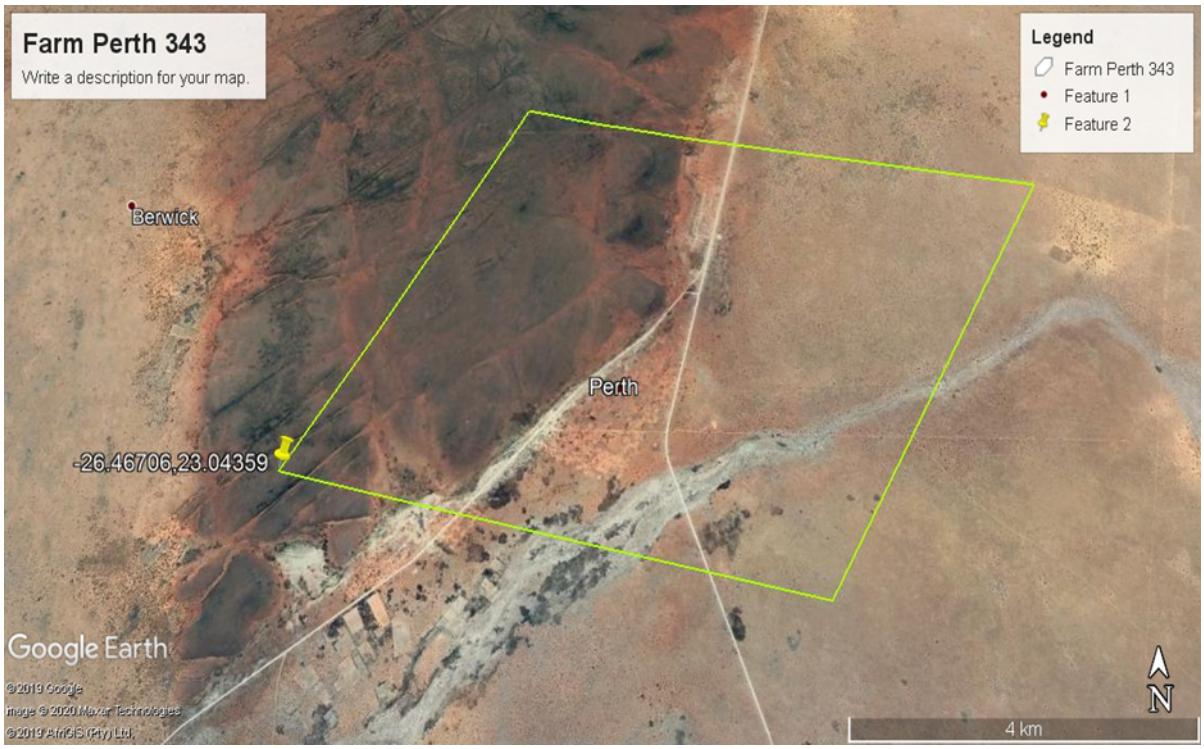


Figure 5: Current land use Map

(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 7: Potential impacts identified

Environmental Factor	Nature of impact	Management
Geology and mineral resource	Sterilisation of mineral resources.	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.	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.	Employ appropriate management strategies to preserve soil resources.
Land capability	Loss of land capability through topsoil removal, disturbances and loss of soil fertility.	Employ appropriate rehabilitation strategies to restore land capability.
Land use	Loss of land use due to poor placement of Surface infrastructure and ineffective Rehabilitation	Carefully plan the placement of infrastructure and employ rehabilitation strategies to restore land capability.
Groundwater	Pollution of underground water sources.	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	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.	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.	Eradicate, and control the spread, of alien invasive species.
Fauna	Displacement of fauna	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.	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.	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.	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.	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	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.	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.	Application of commitments made in the Social and Labour Plan; implementation of Community development programmes.
Interested and affected parties	Loss of income.	Ensure continuous and transparent communication with IAP's.
Interested and affected parties	Health and Safety	Control Access into the property; Fence may be erected around pits; Implement and monitor EMPr presented herein.
Waste	Pollution of the environmental.	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	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	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 9 – 13. 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 8 to 12.

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:

CONSEQUENCE	*X*	*PROBABILITY*
N x(Severity + Spatial Scope + Duration)		(Frequency of activity + Frequency of impact)

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 8: **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 9: 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 10: Significance Rating (It could be positive or negative, depending on the nature of impact)

PROBABILITY (Frequency of activity + frequency of impact)	CONSEQUENCE (Severity + Spatial Scope + Duration)														
	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 11: 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 12: The Rating System (Summary of Impact Rating Parameters)

NATURE		
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.
SPATIAL SCOPE/EXTENT		
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
FREQUENCY OF IMPACT		
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).
FREQUENCY OF ACTIVITY		
This describes the chance of activity taking place.		
1	Annually of 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).
DURATION		
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.
INTENSITY/ SEVERITY		
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.
REVERSIBILITY		
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.
IRREPLACEABLE LOSS OF RESOURCES		
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.
CUMULATIVE EFFECT		
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 prospecting operation, there is a possibility of sterilisation of the mineral reserves and resources due to improper placement of infrastructure. The infrastructure 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 unusual 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 prospecting 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 prospecting 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 prospecting 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 prospecting 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 prospecting 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 prospecting 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 prospecting activity closure is an associated potential impact although this will only be at prospecting 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 potential 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 proposed development, and that the economy will not decline to its original level prior to the development of this project. This is because the prospecting activities will generate substantial knowledge to resources underground, 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 potential 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, subsequently.

(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

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

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: Low

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

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: 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;
- 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: Low

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: Low

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

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

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_{10}), larger total suspended particulates (TSP) that relate to dust fallout, SO_2, NO_2 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: Low

Proposed Mitigation measures:

- Restrict prospecting 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: 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: 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: Very low

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: Low

Proposed Mitigation Measures:

- Thaya Trading Enterprise CC 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

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 Iron Ore deposits, as per the local geological map. 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 potential target areas, road network, proximity to the areas earmarked for processing, rehabilitation and closure, including the recovery of ores, and the limited additional impact on the environment and heritage resources.

The prospecting activities and methodologies associated with diamond, iron and manganese ore mining (i.e. open pits with continued backfilling) is the only economic viable method currently being used by the diamond fraternity. However, percussion drilling and core drilling methods are going to be employ during prospecting activities in this instance. Noteworthy, diamond kimberlite, if encountered, will be dealt with accordingly.

(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.

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 9 – 13.

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 14).

Table 13: Environmental Impacts and Risks Identified

Activity/process or part thereof	Impacts (Pre-mitigation)
Earthworks	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
Mineralise ore and waste	Loss and sterilisation of mineral resources 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
Non-mineralised waste	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
Water use and management; Waste Management	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
Support services	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
Transport system	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
Drillling, Trenching and Pitting	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
Use of facilities and services	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
Final land forms	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, Iron and Manganese Ores) 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 14: 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	• Management through best practises; and • Ensure optimal use of the available mineral resource.	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	• 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; • Control through access control; • control through management and monitoring; • control through rehabilitation; and • remedy through emergency response procedures • Concurrent backfilling	Low	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 services; Pitting and Trenching; Final land forms	Loss of soil resources and land capability through contamination	Construction Operational Decommissioning	Low	• Implement appropriate rehabilitation strategies to restore land capability; • Implement appropriate management strategies to preserve soil resources • Control through waste management practices; • control through rehabilitation; • control through appropriate design; and • remedy through emergency response procedures	Low	Can be managed/mitigated to acceptable levels
	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	• Manage through limiting the project footprint to the plan; • manage through soil conservation procedures; and • manage through closure planning and rehabilitation	Low	Can be managed/mitigated to acceptable levels
Biodiversity	Earthworks; Mineralised waste; Water use and management; Support services; Transportation	Physical destruction of biodiversity	Construction Operational Decommissioning	Low	• Prevention of overspill of mine associated activities onto the	Low	Can be managed/mitigated to acceptable levels

	system; Use of facilities and services; Pitting and Trenching; Final land forms				surrounding ecological environment; • Employ proper protection and rehabilitation strategies; • Management though biodiversity action plan and offset (when relevant); • managing through limiting the project footprint; • management through rehabilitation; and • control through permits for removal		
	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	Low	• Prevention of overspill of mine associated activities onto the surrounding ecological environment; • Employ proper protection and rehabilitation strategies; • Management through alien invasive species programme; • management through training;	Low	Can be managed/mitigated to acceptable levels

					• management through monitoring; • management through appropriate design; and • remedy through emergency response procedures		
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	Low	• Frequent monitoring of surface water resources; • 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; • Implement recommendations of Surface Water Resource Specialist; • Management through storm water control; and	Low	Can be managed/mitigated to acceptable levels

					• manage through monitoring water requirements		
	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	• Frequent monitoring of surface water resources; • 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 • Management through waste management practises; • management through monitoring; • Enter into agreements with Azania KBKM (Pty) Ltd of locating plant, machinery & Equipment on their application area; • management through compensation; and	Low	Can be managed/mitigated to acceptable levels

					• remedy through emergency response procedures		
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	• 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; • management through monitoring; • management through compensation; • management through appropriate design; and • remedy through emergency response procedures	Low	Can be managed/mitigated to acceptable levels
	Deep excavation and pits	Lowering of groundwater levels and reducing availability and destruction of aquifers.	Operational	Low	• Construction of measures to prevent seepage into the groundwater by biological and engineering means;	Low	Can be managed/mitigated to acceptable levels

					• Implementation of the necessary management programs to ensure the integrity of ground water resources and aquifers; • Management through monitoring; and • management through compensation		
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	• Effective soil management; • Identification of the required control efficiencies in order to maintain greenhouse gas emissions, dust generation within acceptable levels; • Manage through air controls and monitoring	Low	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	• Minimise the generation of excessive noise and vibration; • Ensure all vehicles and equipment is in a good working order; proper communication; • Manage through vibration and noise controls and once-off sampling	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	• Effective planning of the location of Infrastructure and operations to minimise visual impact; • Manage through limiting project footprint, rehabilitation and visual controls	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)	• 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 authorities and a suitably qualified Archaeologist and/or Palaeontologist should be called in to attend; • Reduce footprint application area; • Compile and implement effectively Heritage Management Plan in respect of the graves nearby the application area; • Control through avoidance; and • remedy through emergency response procedures • Follow Chance-Find Protocol	Low Low	Can be avoided Can be managed through implementation of Chance-Find Protocol
Socio-	Earthworks; Mineralised waste; Water use and	Influx of labour	Construction Operational	Low	• Control Access into the property; Fence	Low	Can be

	management; Support services; Transportation system; Use of facilities and services; Pitting and Closure associated activities that are in line with closure plan				may be erected around pits; Implement and monitor EMPr presented herein; • Control through the monitoring of living conditions of employees, recruitment processes, disease management; and • remedy through emergency response procedures		managed/mitigated to acceptable levels
	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	• Ensure continuous and transparent communication with IAP's; • Control through good communication, recruitment and procurement processes	Low	Can be managed/mitigated to acceptable levels

Health and Safety	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	• Control Access into the property; Fence may be erected around pits; Implement and monitor EMPr presented herein; • Implement provisions of the Mine Health and Safety Act	Low	Can be managed/mitigated to acceptable levels
Land use	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	Low	• Carefully plan the placement of infrastructure and employ rehabilitation strategies to restore land capability • Management through communication	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	• Utilise existing access roads, where applicable; • Implement measures that ensure adherence to traffic rules; • Manage through road maintenance; and • Remedy through emergency response procedures	Low	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	• Manage through the principle of avoidance of disturbance of the anything within the Riparian zone; and • Implement recommendations of the wetland specialist	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	• Ensure effective Integrated Waste and Water Management Plan and environmentally friendly remediation of hydrocarbon-contaminated sites; • Manage through the principle of waste separation at source; • Implement the waste National Waste Management Strategy and Waste Hierarchy	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	Very Low	• Compile weed/alien plant management programme in consultation with DENC and DA; • Eradicate, and control the spread, of alien invasive species; and • Implement the compiled weed/alien management programme effectively.	Very Low	Can be managed/mitigated to acceptable levels

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_2, NO_2, $PM_{2.5}$, PM_{10} 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, drilling, pitting and trenching, rehabilitation and closure, levelling of the ground, sampling, 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 drilling, pitting and trenching, rehabilitation and closure, levelling of the ground, sampling, recovery of diamonds.

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 15: Specialist Reports

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with an X where applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED.
Heritage Impact Assessment (Desktop)	In light of the findings of the desk assessment, the mine prospecting can go ahead. The study is mindful that some important discoveries may be made during prospecting. If this happens operations should be halted, and the provincial heritage resources authority or SAHRA notified in order for an investigation and evaluation of the finds to take place.	X	ANNEXURE D
Palaeontological Impact Assessment (Desktop)	Based on experience and the lack of any previously recorded fossils from the area, it is extremely unlikely that any fossils would be preserved in the overlying sands and calcretes of the Quaternary. There is a very small chance that trace fossils may occur in the adjacent dolomites or the underlying older rocks so a Fossil Chance Find Protocol should be added to the EMPr. If fossils are found by the environmental officer, or other responsible person once drilling has commenced then they should be rescued and a palaeontologist called to assess and collect a representative sample. The impact on the palaeontological heritage would be very low, so as far as the palaeontology is concerned, the prospecting right should be granted.	X	ANNEXURE D

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 involves prospecting activities without bulk sampling. The piece of land under which this proposed development is to take place is partially disturbed pasteurable 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 prospecting 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 form 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 village, Perth is in the proximity of these proposed mining operations, with a small river tributary that traverses through the application area. The river tributary that is present within the immediate vicinity of the proposed development, will likely be contaminated even if that occurs in future stages of the proposed development. Surface water impacts are therefore considered low risk if not mitigated.

Based on the environmental assessment presented in this report with 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 prospecting 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 drilling, pitting and trenching, rehabilitation and closure, levelling of the ground, sampling will take place. Existing roads are also depicted. The associated mobile infrastructure relating to the developmental site will be placed in the area marked as the "prospecting 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:

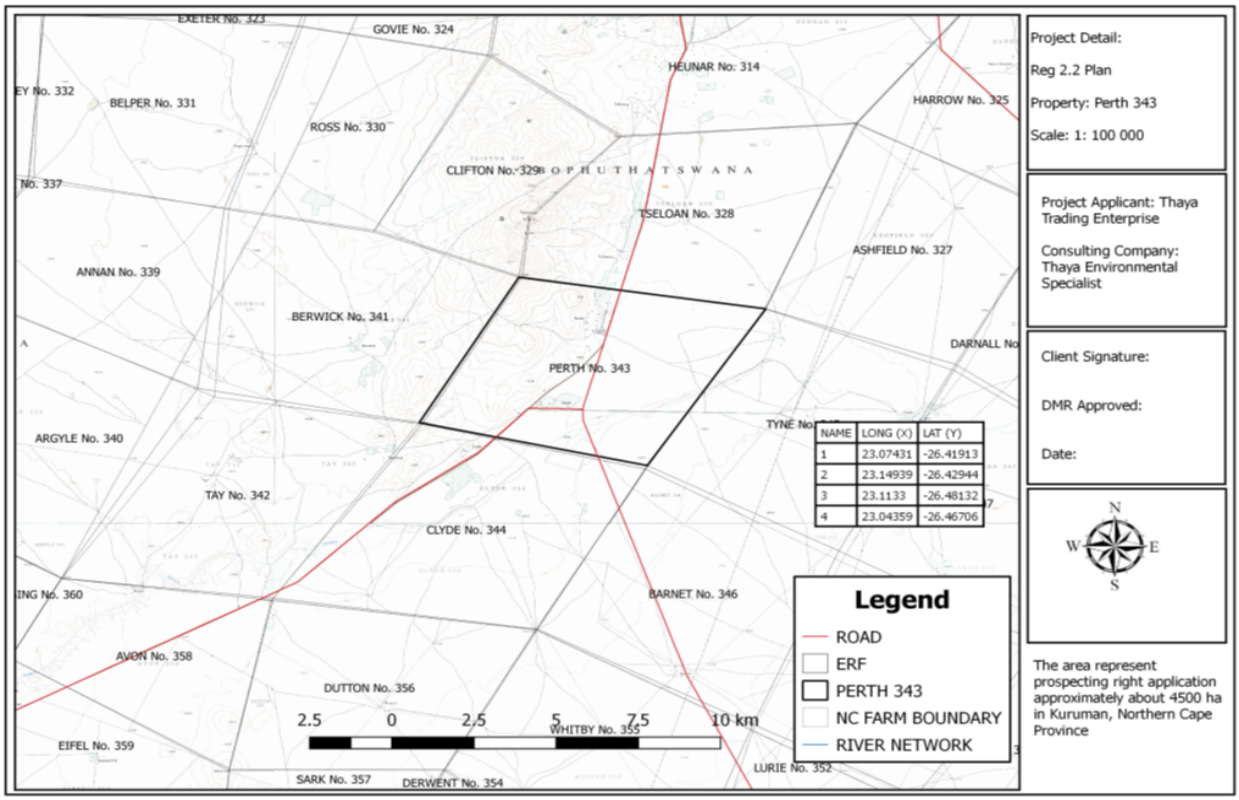


Figure 6: Final Site Map

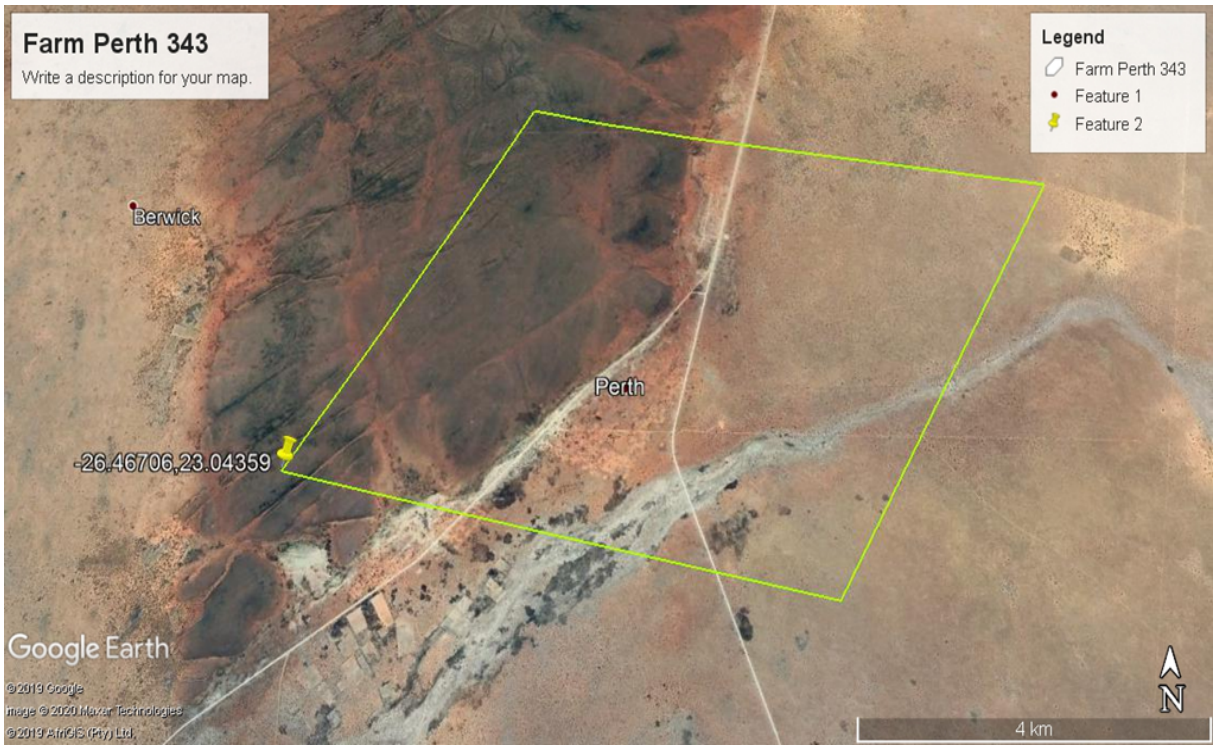


Figure 7: Final Site Map

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

As mentioned before, the specific occurrence of banded Iron Formation in the area dictates the selection of the specific prospecting site and there are no alternatives in terms of project location.

The mining operation/Rehabilitation operation will provide ± 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 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 Thaya Trading Enterprise prospecting activities in order to avoid and/or reduce impacts that may be detrimental to the environment.

The impact management objective for Thaya Trading Enterprise prospecting operation should include:-

- To ensure efficient extraction of the Diamond, Iron and Manganese resources;
- 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 promoted 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 implement Chance Find Protocol as proposed by both the Heritage and Palaeontological Specialists.

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 planed 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. Prospecting-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 surface disturbances 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. A bank guarantee or an acceptable form of surety must be 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).

Thaya Trading Enterprise CC does not require external funding for purposes of Prospecting, 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 prospecting 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 the geological map shows some mineral deposit potential.

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 prospecting right application area in which all prospecting operations will take place. Existing roads are also depicted. The associated mobile infrastructure relating to the prospecting 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 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 plans.

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

No prospectring-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:

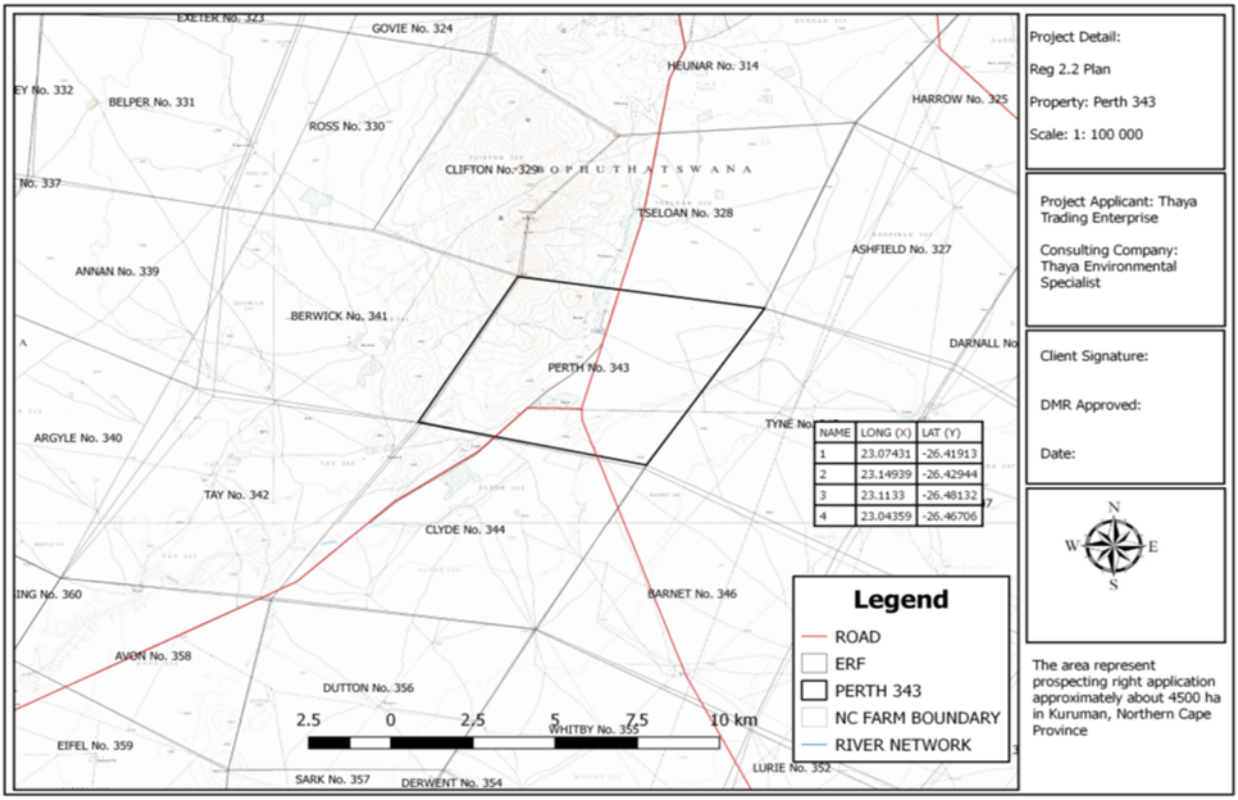


Figure 8: Final Site Map

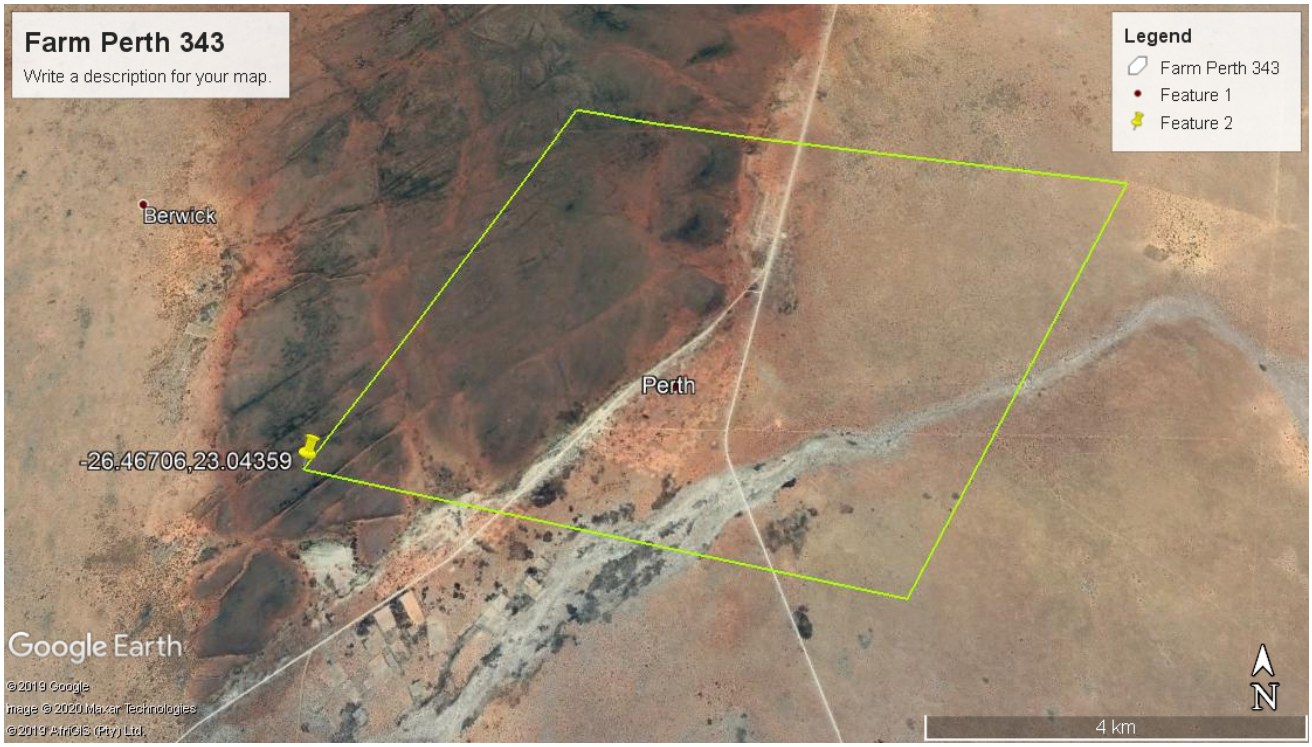


Figure 9: Final Site Map

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 prospecting site, as well as the desired state during closure and post closure of the prospecting activities.

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. Thaya Trading Enterprise CC will be using a mobile camp site for its prospecting 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 prospecting 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 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.

Maintenance

The necessary agreements and arrangement will be made by Thaya Trading Enterprise CC 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 two (2) years after closure or as long as deemed necessary at the time:

- rehabilitated surfaces, surface water drainage, air quality, surface water quality, groundwater 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, Thaya Trading Enterprise CC 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:

- Thaya Trading Enterprise CC 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;
- Thaya Trading Enterprise CC 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 16: 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 m²)	**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	< 1 hectare of vegetation clearance; <10 tons of mineralised waste at time.	• Management through best practises; • Carefully plan the placement of infrastructure and employ rehabilitation strategies to restore land capability; • Eradicate, and control the spread, of alien invasive species; • Ensure optimal use of the available mineral resource;	• Manage and avoid through Environmental Conservation Management Plan; • Implement in accordance with the rehabilitation plan and standards; • Comply with the Alien invasive Management Plan in accordance with NEM:BA; • Monitor and manage through Dust Management Plan and Measures to	On-going

			• Planning and implementation of plan must ensure loss of vegetation is limited and disturbance is restricted to within the designated areas; • 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; • 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; • Protect and manage, if possible, any encountered protected plant or animal species; • Employ appropriate rehabilitation strategies to restore land capability. • Implement dust suppression measures;	ensure that the acceptable standards as set out in Regulation 3 of NEM:AQA National Dust Control Regulations; • Manage through Emergency Response Plan; and • Manage through Best Practice Guidelines. • Manage in accordance with Best Practice Guidelines, NWA, NEM:WA.	

			• 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; • Prevent any form of spillages; • Control Access into the property; Fence may be erected around pits; Implement and monitor EMPr presented herein; • Ensure effective Integrated Waste and Water Management Plan and environmentally friendly remediation of hydrocarbon-contaminated sites; • 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;		

			• Report to relevant authorities any encountered heritage and palaeontological resources; and • Waste must be effectively managed within demarcated storage facilities and disposed of in accordance with relevant legislation and guidelines.		
Water use and management;	Construction Operational Decommissioning	17 000 ℓ/day	• Frequent monitoring of surface water resources; • 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 resources; • Apply water saving techniques, such as re-use of water; • At construction, operation and decommissioning, ECO must implement measures to prevent seepage into the groundwater by biological and engineering means;	• Manage through Water Conservation Plan and Regular Inspection of Water Facilities.	Daily; throughout life of operation

			• Implementation of the necessary management programs to ensure the integrity of ground water resources; and • Effective soil management; identification of the required control efficiencies in order to maintain greenhouse gas emissions, dust generation within acceptable levels.		
Transportation system; Processing; Extraction; sorting	Construction Operational Decommissioning	<1 hectare	• Minimise the generation of excessive noise and vibration; • Ensure all vehicles and equipment is in a good working order; • Ensure transparent and proper communication with and between Interested and Affected Parties; • 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	• Manage and avoid through Environmental Conservation; Management Plan; • Minimise through Mine Design and Management Plan; • Monitor and manage through Dust Management Plan and Measures; and • Implement noise reduction measures in compliance with Noise standards and Regulations; • Control through Storm water Management Plan;	Daily and on-going during the life of operation.

			Palaeontologist should be called in to attend; • Utilise existing roads, and if new roads are constructed, these must less than 4 m in width and not cross sensitive areas such as the ridges or drainage lines; • Limit vehicles travelling to and from site in order to minimise green-house gas emissions and noise pollution; • Effective signage must be displayed and traffic control measures must be implemented along the route; • Implement effective and environmentally-friendly dust control measures, such as mulching, suppression or periodic wetting of the processing plant and access and haul roads; • Vehicles operating on the mine must keep at minimum speed for safety of personnel and animals and to minimise generation of dust;	• Regular vehicle and machinery inspection; • Implement in accordance with the rehabilitation plan and standards; and • 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.	

			• Avoid contamination of surface water and divert any dirty water to suitable storage facility; • Avoid contamination of groundwater sources; • Implement noise minimisation measures, such as plant maintenance; • Implement effective and environmentally-friendly dust control measures; and • Undertake concurrent back-filling during operational phase and closure and rehabilitation of pits when activities are completed in pits and trenches.		
Construction of infrastructure (PCD, trenches, water pipes, storm water management facilities).	Construction	<1 hectare	• Implement effective Storm water Management measures; • Vegetate soil stockpiles to prevent dust generation and soil erosion; and • Avoid watercourse contamination and divert any dirty water to designated storage facility.	• Manage through Storm water Management Plan; • Manage in accordance with the rehabilitation plan; and • Manage through Storm water Management Plan and Groundwater Monitoring Plan.	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	• Planning and implementation of plan must ensure loss of vegetation is limited and disturbance is restricted to within the designated areas; • 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; • Vegetation cover must be reinstated through rehabilitation; and • Implement effective and environmentally-friendly dust control measures.	• Minimise through Mine Design and Management Plan; • Manage in accordance with the Rehabilitation Plan; and • Dust Monitoring Measures to ensure that the acceptable standards as set out in Regulation 3 of NEM:AQA National Dust Control Regulations.	Daily during construction in accordance with the Management Plan.
Final land forms	Operational Decommissioning and post-closure	<0.0003 hectares	• All disturbed areas must be rehabilitated; • Final rehabilitation should be conducted on the remaining disturbed area; • Limit activity footprint to the plan; • Implement an effective Alien Invasive Management Plan; and	• Manage in accordance with the Rehabilitation Plan, Environmental Conservation Plan, Alien Invasive Management Plan, NEM:BA and Best Practice Guidelines.	On-going during Operational, Decommissioning and Post Closure Phases.

			• Monitoring on site to be undertaken for a long enough period post closure, eg, 2-3 years.		

e) Impact Management Outcomes

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

Table 17: 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	• Management through best practises; and • Ensure optimal use of the available mineral resource.	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	• 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; • Control through access control; • control through management and monitoring; • control through rehabilitation; and • remedy through emergency response procedures • Concurrent backfilling	Low	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 services; Pitting and Trenching; Final land forms	Loss of soil resources and land capability through contamination	Construction Operational Decommissioning	Low	• Implement appropriate rehabilitation strategies to restore land capability; • Implement appropriate management strategies to preserve soil resources • Control through waste management practices; • control through rehabilitation; • control through appropriate design; and • remedy through emergency response procedures	Low	Can be managed/mitigated to acceptable levels
	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	• Manage through limiting the project footprint to the plan; • manage through soil conservation procedures; and • manage through closure planning and rehabilitation	Low	Can be managed/mitigated to acceptable levels
Biodiversity	Earthworks; Mineralised waste; Water use and management; Support services; Transportation	Physical destruction of biodiversity	Construction Operational Decommissioning	Low	• Prevention of overspill of mine associated activities onto the	Low	Can be managed/mitigated to acceptable levels

	system; Use of facilities and services; Pitting and Trenching; Final land forms				surrounding ecological environment; • Employ proper protection and rehabilitation strategies; • Management though biodiversity action plan and offset (when relevant); • managing through limiting the project footprint; • management through rehabilitation; and • control through permits for removal		
	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	Low	• Prevention of overspill of mine associated activities onto the surrounding ecological environment; • Employ proper protection and rehabilitation strategies; • Management through alien invasive species programme; • management through training;	Low	Can be managed/mitigated to acceptable levels

					• management through monitoring; • management through appropriate design; and • remedy through emergency response procedures		
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	Low	• Frequent monitoring of surface water resources; • 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; • Implement recommendations of Surface Water Resource Specialist; • Management through storm water control; and	Low	Can be managed/mitigated to acceptable levels

					• manage through monitoring water requirements		
	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	• Frequent monitoring of surface water resources; • 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 • Management through waste management practises; • management through monitoring; • Enter into agreements with Azania KBKM (Pty) Ltd of locating plant, machinery & Equipment on their application area; • management through compensation; and	Low	Can be managed/mitigated to acceptable levels

					• remedy through emergency response procedures		
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	• 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; • management through monitoring; • management through compensation; • management through appropriate design; and • remedy through emergency response procedures	Low	Can be managed/mitigated to acceptable levels
	Deep excavation and pits	Lowering of groundwater levels and reducing availability and destruction of aquifers.	Operational	Low	• Construction of measures to prevent seepage into the groundwater by biological and engineering means;	Low	Can be managed/mitigated to acceptable levels

					• Implementation of the necessary management programs to ensure the integrity of ground water resources and aquifers; • Management through monitoring; and • management through compensation		
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	• Effective soil management; • Identification of the required control efficiencies in order to maintain greenhouse gas emissions, dust generation within acceptable levels; • Manage through air controls and monitoring	Low	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	• Minimise the generation of excessive noise and vibration; • Ensure all vehicles and equipment is in a good working order; proper communication; • Manage through vibration and noise controls and once-off sampling	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	• Effective planning of the location of Infrastructure and operations to minimise visual impact; • Manage through limiting project footprint, rehabilitation and visual controls	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)	• 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 authorities and a suitably qualified Archaeologist and/or Palaeontologist should be called in to attend; • Reduce footprint application area; • Compile and implement effectively Heritage Management Plan in respect of the graves nearby the application area; • Control through avoidance; and • remedy through emergency response procedures • Follow Chance-Find Protocol	Low Low	Can be avoided Can be managed through implementation of Chance-Find Protocol
Socio-	Earthworks; Mineralised waste; Water use and	Influx of labour	Construction Operational	Low	• Control Access into the property; Fence	Low	Can be

	management; Support services; Transportation system; Use of facilities and services; Pitting and Closure associated activities that are in line with closure plan				may be erected around pits; Implement and monitor EMPr presented herein; • Control through the monitoring of living conditions of employees, recruitment processes, disease management; and • remedy through emergency response procedures		managed/mitigated to acceptable levels
	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	• Ensure continuous and transparent communication with IAP's; • Control through good communication, recruitment and procurement processes	Low	Can be managed/mitigated to acceptable levels

Health and Safety	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	• Control Access into the property; Fence may be erected around pits; Implement and monitor EMPr presented herein; • Implement provisions of the Mine Health and Safety Act	Low	Can be managed/mitigated to acceptable levels
Land use	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	Low	• Carefully plan the placement of infrastructure and employ rehabilitation strategies to restore land capability • Management through communication	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	• Utilise existing access roads, where applicable; • Implement measures that ensure adherence to traffic rules; • Manage through road maintenance; and • Remedy through emergency response procedures	Low	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	• Manage through the principle of avoidance of disturbance of the anything within the Riparian zone; and • Implement recommendations of the wetland specialist	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	• Ensure effective Integrated Waste and Water Management Plan and environmentally friendly remediation of hydrocarbon-contaminated sites; • Manage through the principle of waste separation at source; • Implement the waste National Waste Management Strategy and Waste Hierarchy	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	Very Low	• Compile weed/alien plant management programme in consultation with DENC and DA; • Eradicate, and control the spread, of alien invasive species; and • Implement the compiled weed/alien management programme effectively.	Very Low	Can be managed/mitigated to acceptable levels

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 18: Impact Management Actions

ACTIVITY whether listed or not listed. **(E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc…etc…etc.).**	**POTENTIAL IMPACT** **(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc….etc…)**	**MITIGATION TYPE** **(modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc)** **E.g.** • **Modify through alternative method.** • **Control through noise control** • **Control through management and monitoring** **Remedy through rehabilitation..**	**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.	**COMPLIANCE WITH STANDARDS** (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)
See Tables 17 and 18				

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. Thaya Trading Enterprise CC will be using a mobile camp site for its mining and related activities which include drilling, pitting and trenching, rehabilitation and closure, levelling of the ground, sampling 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 drilling, pitting and trenching, rehabilitation and closure, levelling of the ground, sampling 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 sate 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.

Maintenance

The necessary agreements and arrangement will be made by Thaya Trading Enterprise CC 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 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, Thaya Trading Enterprise CC 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:

- Thaya Trading Enterprise CC 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;
- Thaya Trading Enterprise CC 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 and 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
1	**Pre-closure activities**			
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
2	**Surface infrastructure**			
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 land.	Project Manager/ECO/ ESHRQ Department/Rehabilitation Specialist	On-going
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
3	**Soil and Land**			
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
4	**Re-vegetation (before and during)**			
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
5	**Maintenance and monitoring**			

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 Department/Rehabilitation Specialist	On-going
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

(f) .

Table 19: Provision of financial liability

CALCULATION OF THE QUANTUM

Applicant: Thaya Trading Enterprise CC

Ref No.: 12485PR
Date: 11 October 2

No.	Description	Unit	A Quantity	B Master Rate	C Multiplication factor	D Weighting factor 1	E=A*B*C*D Amount (Rands)
1	Dismantling of processing plant and related structures (including overland conveyors and powerlines)	m3	50	15,94	1	1	797
2 (A)	Demolition of steel buildings and structures	m2	0	221,99	1	1	0
2(B)	Demolition of reinforced concrete buildings and structures	m2	0	327,14	1	1	0
3	Rehabilitation of access roads	m2	200	39,72	1	1	7944
4 (A)	Demolition and rehabilitation of electrified railway lines	m	0	385,55	1	1	0
4 (A)	Demolition and rehabilitation of non-electrified railway lines	m	0	210,3	1	1	0
5	Demolition of housing and/or administration facilities	m2	0	443,97	1	1	0
6	**Opencast rehabilitation including final voids and ramps**	**ha**	**0,01**	**225 957,57**	**1**	**1**	**2259,5757**
7	Sealing of shafts adits and inclines	m3	15,2626	119,17	1	1	1818,844042
8 (A)	Rehabilitation of overburden and spoils	ha	0	155 155,97	1	1	0
8 (B)	Rehabilitation of processing waste deposits and evaporation ponds (non-polluting potential)	ha	0	193 243,96	1	1	0
8 (C)	Rehabilitation of processing waste deposits and evaporation ponds (polluting potential)	ha	0	561 272,05	1	1	0
9	Rehabilitation of subsided areas	ha	0	129 919,76	1	1	0
10	General surface rehabilitation	ha	0,01	122 909,70	1	1	1229,097
11	River diversions	ha	0	122 909,70	1	1	0
12	Fencing	m	0	140,2	1	1	0
13	Water management	ha	0	46 733,73	1	1	0
14	2 to 3 years of maintenance and aftercare	ha	0	16 356,80	1	1	0
15 (A)	Specialist study	Sum	0			1	0
15 (B)	Specialist study	Sum	0			1	0
					Sub Total 1		14048,51674
1	Preliminary and General		1685,822009		weighting factor 2 / 1		1685,822009
2	Contingencies			1404,851674			1404,851674
					Subtotal 2		17139,19
					VAT (15%)		2399,49
					Grand Total		19539

(g) 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 20: 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.
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 of vegetation units; and To control invasion of exotic and invasive	To ensure that the rehabilitated areas become self-maintaining.	ECO/Site Manager/ Environmentalists	Monitoring will be done at the rehabilitated areas on a *twice a year basis* (mid-summer and mid-winter),

	plant species.			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 20º.	ECO/Site Manager/ Environmentalists	Monitoring will be done on an *annual basis* 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 *annual basis* 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, Tributary to a River, in the vicinity of the application area.	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.	Minimal or no groundwater 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 Resources in the vicinity of application area.	The objective is to limit such impacts to the primary activities associated with the mining and hence to limit secondary impacts during the medium and longer term operational life of the operation.	ECO/Site Manager/Environmental Control Officer, Heritage Specialist, SAHRA official	Monitor Heritage and Palaeontological Resources on site against recommendations made by both Archaeologist and Palaeontologist.

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 2nd 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

Thaya Trading Enterprise CC 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 of 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.

ANNEXURE A
CERTIFICATE OF EAP

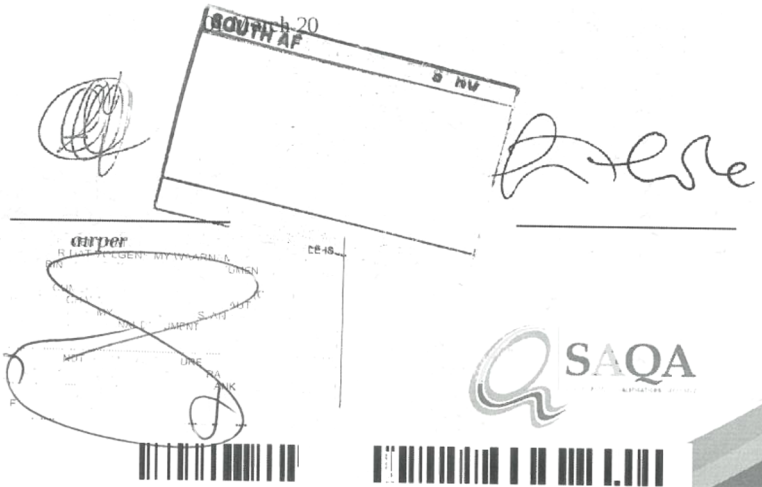
Environmental Assessment Practitioners Association of South Africa

Herewith certifies that

Siyasanga M[illegible]le

is registered as an

nvironmental [illegible] t Practitioner



ANNEXURE B
ENLARGED MAPS

ANNEXURE C
PUBLIC PARTITIPATION RECORDS

ANNEXURE D
SPECIALIST STUDY REPORTS