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**BASIC ENVIRONMENTAL IMPACT ASSESSMENT REPORT FOR KAY'S
COMMODITY AND INSTRUMENTS TRADING CC PROSPECTING RIGHT
APPLICATION**

REFERENCE NUMBER: NW30/5/1/1/2/12037PR

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Directors and Management: ST Netshiozwi, MS Masoga

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Conducted on behalf of:

Kay's Commodity and Instruments Trading CC

Compiled by:

Kimopax Pty Ltd

Compiled By



C.G. Chigurah (SACNASP, IWMSA & SAIOSH)



mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

**BASIC ASSESSMENT REPORT
AND
ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT**

SUBMITTED FOR ENVIRONMENTAL AUTHORIZATION 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: KAY'S COMMODITY AND INSTRUMENTS TRADING CC

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IMPORTANT NOTICE

In terms of the Mineral and Petroleum Resources Development Act (Act 28 of 2002 as amended), the Minister must grant a prospecting or mining right if among others the mining “will not result in unacceptable pollution, ecological degradation or damage to the environment”.

Unless an Environmental Authorisation can be granted following the evaluation of an Environmental Impact Assessment and an Environmental Management Programme report in terms of the National Environmental Management Act (Act 107 of 1998) (NEMA), it cannot be concluded that the said activities will not result in unacceptable pollution, ecological degradation or damage to the environment.

In terms of section 16(3)(b) of the EIA Regulations, 2014, any report submitted as part of an application must be prepared in a format that may be determined by the Competent Authority and in terms of section 17 (1) (c) the competent Authority must check whether the application has taken into account any minimum requirements applicable or instructions or guidance provided by the competent authority to the submission of applications.

It is therefore an instruction that the prescribed reports required in respect of applications for an environmental authorisation for listed activities triggered by an application for a right or a permit are submitted in the exact format of, and provide all the information required in terms of, this template. Furthermore, please be advised that failure to submit the information required in the format provided in this template will be regarded as a failure to meet the requirements of the Regulation and will lead to the Environmental Authorisation being refused.

It is furthermore an instruction that the Environmental Assessment Practitioner must process and interpret his/her research and analysis and use the findings thereof to compile the information required herein. (Unprocessed supporting information may be attached as appendices). The EAP must ensure that the information required is placed correctly in the relevant sections of the Report, in the order, and under the provided headings as set out below, and ensure that the report is not cluttered with un-interpreted information and that it unambiguously represents the interpretation of the applicant.

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 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.

1. PART A

1.2 SCOPE OF ASSESSMENT AND BASIC ASSESSMENT REPORT

Contact person and correspondence address

a) Details of the EAP

Name of The Practitioner: Charles Chigurah

Tel No.: 011 312 9765

Fax No. : 011 312 9768

E-mail address: charles@ugwa.co.za

1.3 Expertise of the EAP.

1.3.1 The qualifications of the EAP

BSc Hon Environmental Management

PostGraduate Diploma in Water Supply and Sanitation

1.3.2 Summary of the EAP's past experience.

Charles Chigurah has an honours degree in Environmental Management from the Midlands State University in Zimbabwe and Postgraduate Diploma in Water Supply and Sanitation from the Institute of Water Supply, Sanitation and Development in Zimbabwe; SAMTRAC and is currently finalizing his NEBOSH International Diploma in Occupational Safety and Health. He is a Senior SHE Consultant with Kimopax Pty Ltd and also a member of International Association of Impact Assessors (IAIA), South African Council for Natural Scientific Professions (SACNASP), Institute of Waste Management in Southern Africa (IWMSA) and is in the process of registering with the South African Council for Project and Construction Management Professions (SACPCMP) as a Construction Health and Safety Manager (CHSM). He has more than 10 years working experience in the field of Construction, Waste Management, Environmental Management and Environmental Management Systems (EMS) Implementation and Auditing and has published a paper in Geographical Information Systems (GIS) and Remote Sensing. He has worked on a number of municipality projects among them included the following:

- ✚ Integrated Waste Management Plan for Nkonkobe Local Municipality
- ✚ Integrated Waste Management Plan for Tokologo Local Municipality
- ✚ Integrated Environmental Management Plan for Xhariep District Municipality
- ✚ Environmental Management Framework for Amajuba District Municipality

Apart from doing municipality projects, Charles has also managed more than fifty (50) Environmental Impact Assessment Projects both in Zimbabwe and South Africa. He has also worked as a Construction SHE Advisor and Consultant on a number of major construction projects across South Africa among them include the construction of multi-storey buildings in Mpumalanga and Limpopo Provinces; the construction of gas pipelines for Sasol in Gauteng, the construction and upgrades of road networks in Limpopo Province as well the construction and upgrades of Bulk Water and Sewer Systems for Ekurhuleni Metropolitan Municipality and was also a Safety Advisor for Eskom Hendrina Power Station responsible for managing sub-contractor’s safety officers.

1.5 Location of the overall Activity.

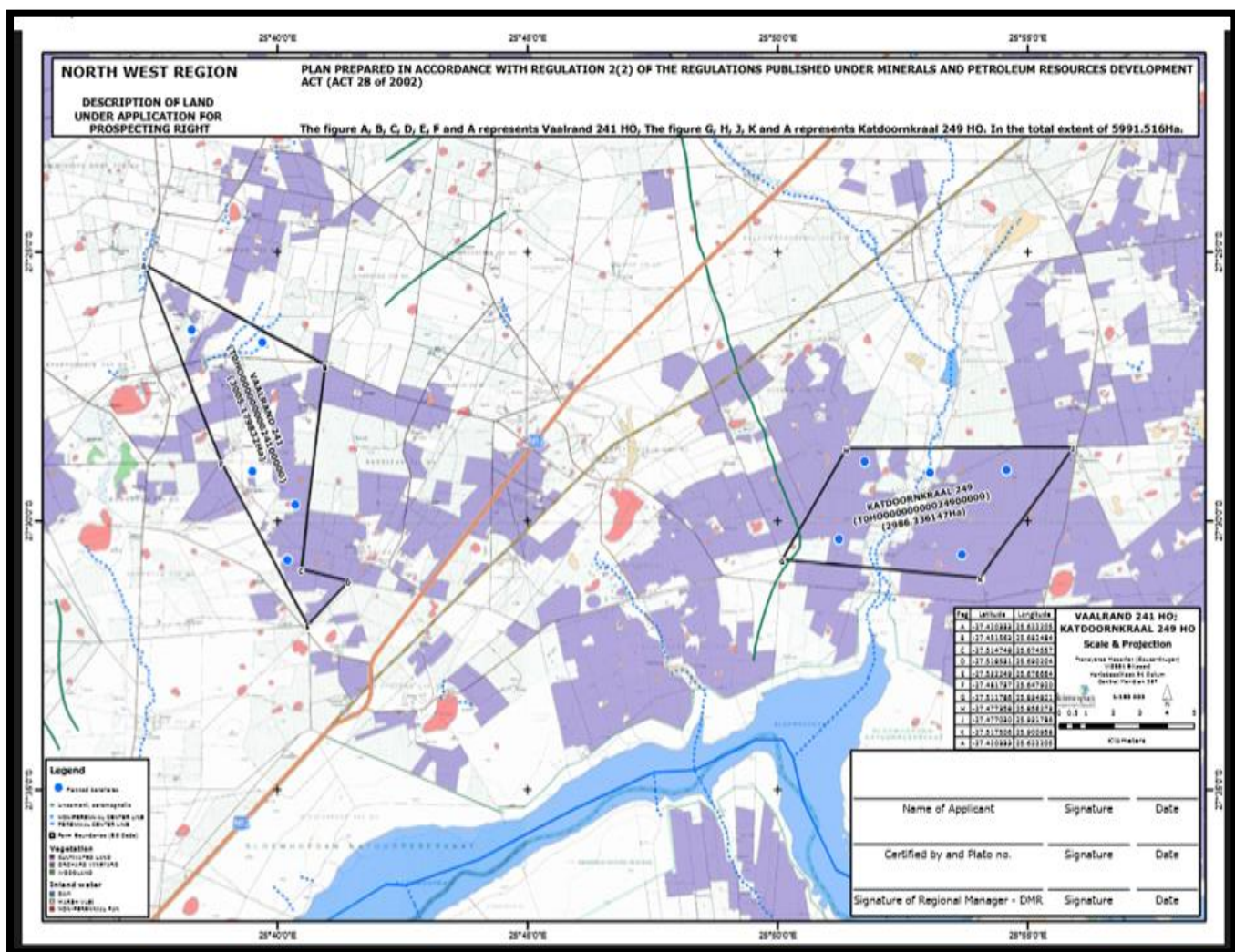
Table 1: Location of overall Activity

Farm Name:	Vaalrand 241 HO
Application area (Ha)	3005Ha
Magisterial district:	Bloemhof
Distance and direction from nearest town	Approximately 30km
21 digit Surveyor General Code for each farm portion	T0H000000000024100000

1.6 Locality map

(show nearest town, scale not smaller than 1:250000).

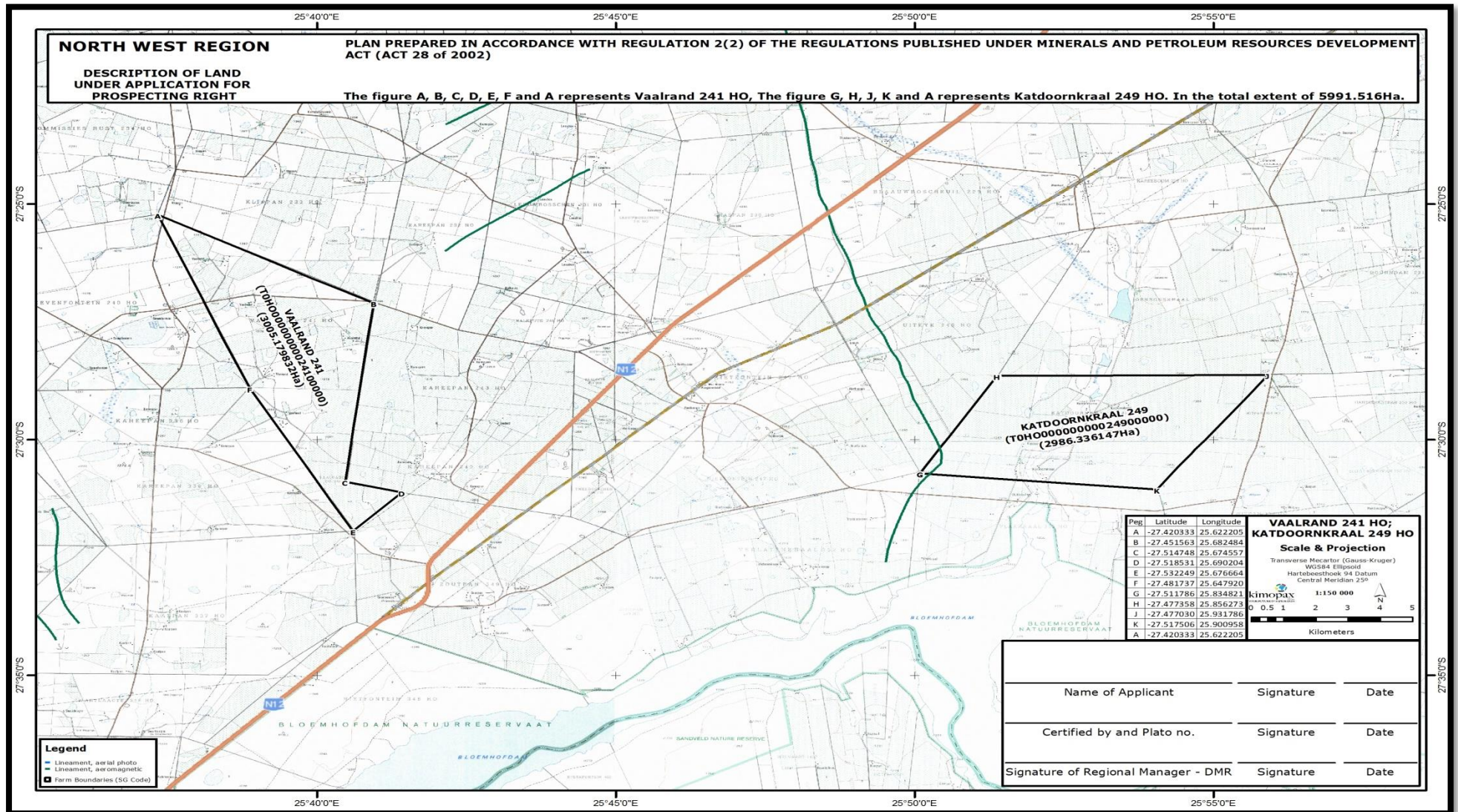
Figure 1: Locality Map



1.7 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

Figure 2: Area of interest



1.8 Listed and specified activities

Table 2: Listed and specified activities

NAME OF ACTIVITY	AERIAL EXTENT OF THE ACTIVITY HA OR M ²	LISTED ACTIVITY	APPLICABLE LISTING NOTICE
Drill site	8.7 H	X	GNR983 & 985
Ablution facilities	1 H	X	GNR 983 & 985
Equipment storage	170 m2	X	GNR983 &985
Access routes	1500m2	X	GNR983 & 985

1.9 Description of the activities to be undertaken

The project will involve the following prospecting methods:

Literature Survey/ Desktop analysis in an exploration program is the gathering together of all available information pertinent to the area in question. This includes the study of published and unpublished scientific papers, geological maps, reports and theses as well as topographic and cadastral maps, legal records, aerial photographs and satellite imagery. Collection of all these literature which facilitate picking up of targets for further probing, form the first step in exploration process. From such a study the geologic framework of the area should be able to be assessed as well as the topographical, access, water supply, land ownership and other factors that may govern the exploration program.

The study should also indicate the type of base maps available for field studies and the need for any further ground surveying or photogrammetric mapping to allow fieldwork at the required scale. This phase has already been initiated through a literature review of geological articles and previous prospecting which took place on site. The synthesis of this information and the use of the information gained from this prospecting cycle will provide the full picture of the deposit as required by the applicants.

Geological mapping Preparation of a good geological map of the area of interest, initially on a regional scale (1:50 000) by taking up number of field geological traverses, and with the help of aerial

photographs and Landsat imageries is generally the next step. Topographical maps were compiled and the topographic data was processed to give a digital terrain model of the land surface.

These targets will be explored by trenching and rock-chip sampling. Depending on the sampling results the target areas are demarcated for detailed sampling in three dimensions.

Three dimension sampling of and diamonds is carried out by reverse circulation (RC) drilling and diamond core drilling. The RC drill is mounted on a truck and is easily mobile. The rock sample is obtained in the form of rock chips for every 1 m drilling. The RC drill can drill up to 100m a day and works on compressed air. The mobility of a diamond core drill is slow. In diamond core drilling, the rock sample is obtained in the form of solid core. Approximately 20 to 25 m can be drilled in a day depending on the hardness of the rock formation.

Pre-feasibility exploration: The global resource is further worked upon by close spaced diamond core drilling along length and dip of ore body and sampling to improve the reliability of the global resource estimate. It also helps in ascertaining whether the deposit is mineable or not.

Feasibility exploration involves additional extensive sampling on surface and underground. An open pitiable resource of reasonable dimensions has to be further sampled on surface by closed spaced drilling, bench cutting and bench sampling to delineate the mineable reserves and to demarcate ore from waste. A resource that could be exploited by only underground method of mining needs to be sampled by sinking shafts and developing ore body along its length. This sampling enables the delineation of rich pockets of ore within the ore body and assessment of mineable reserves.

Access Roads.

The contractor will be encouraged to use existing roads. Temporary access roads may be established for repeated access to the site if the identified site cannot be accessed via existing roads.

Water Supply

Water requirements relate to the portable water supply for employees and workers. A temporary 260 litre on-site vertical water storage tank for drinking water and general use by persons will be provided on site.

Ablution

Ablution facilities on site will involve the installation of the chemical toilets that will be emptied on a weekly basis.

Temporary Office area

A temporary site office area will be erected on site. On-site electricity generation through the use of generators will be undertaken. A shaded eating area will be provided.

Accommodation.

No accommodation for staff and workers will be provided on-site and all the people will be accommodated in nearby town

Storage of dangerous goods

No fuel, oil and lubricants will be stored on site.

Vegetation clearing and topsoil stripping.

During this activity, the clearing of the vegetation will take place, as well as stripping of the topsoil and overburden in order to expose the underlying materials to be utilized. The topsoil will be cleared by means of an excavator and stockpiled adjacent to active mining area. Top soil or overburden will be removed and stockpiled for rehabilitation use purposes.

1.10 Policy and Legislative Context

Table 3: Policy and Legislative Context

<p>APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT</p> <p>(a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process)</p>	<p>REFERENCE WHERE APPLIED</p>	<p>HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.</p> <p>(E.g. In terms of the National Water Act a Water Use License has/ has not been applied for)</p>
<p>National Environmental Management Act (No. 107 of 1998)</p> <p>Environmental Impact Assessment Regulations(2014)</p>	<p>This Basic Assessment Report & EMP</p>	<p>The activity triggers a listed activity as set out by the Act as well as GNR 983 and GNR 985</p>
<p>National Water Act, 1998 (Act 36 of 1998)</p>	<p>Section 21</p>	<p>All the water uses associated with the proposed development will be exercised in terms of the National Water Act, 1998 (Act 36 of 1998)</p>
<p>Mineral and Petroleum Resources Development Act, 2002</p>	<p>Application for Prospecting Right</p>	<p>Application for Prospecting Right has been submitted to the Department of Minerals and Resources.</p> <p>The application was accepted by the Department of Mineral Resources.</p>
<p>Constitution of the Republic of South Africa (108 of 1996)</p>		<p>Chapter 2 of the Constitution includes an environmental right (Section 24). Obligation to ensure that the proposed development will not result in pollution and ecological degradation; and</p>

		obligation to ensure that the proposed development is ecologically sustainable, while demonstrating economic and social development.
--	--	--

1.11 Need and desirability of the proposed activities.

Due to the current rise of diamond prices on the international market, the proposed project will create revenue base for the local economy if results of prospecting phase are favourable. Apart from a revenue base, there will also be a likelihood of employment creation and improved housing conditions and household income.

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

Preferred site.

The proposed area is targeted as the occurrence of diamonds are known in the area, therefore the site is regarded as preferred site and alternatives are not considered.

Technological and Site Activity Alternatives.

Drilling:

The planned invasive activities consist of the drilling of boreholes in phase two. It is planned to drill these unconsolidated sediments using sonic drilling. Sonic drilling utilizes resonant sonic energy to achieve fast, clean, low-impact drilling in a wide variety of geotechnical, geothermal, environmental and mineral drilling and sampling applications. Sonic rigs can drill and sample many unconsolidated materials without the need for drilling fluids achieving high productivity and superior sample quality

A sonic drill head works by sending high frequency resonant vibrations down the drill string to the drill bit, while the operator controls these frequencies to suit the specific conditions of the soil/rock geology. Vibrations may also be generated within the drill head. Resonance magnifies the amplitude of the drill bit, which fluidizes the soil particles at the bit face, allowing for fast and easy penetration through most geological formations.

Air core drilling may be used for some of the boreholes. Hardened steel or tungsten blades are used to bore a hole into unconsolidated ground. The rods are hollow and contain an inner tube which sits inside the hollow outer rod barrel. The drill cuttings are removed by injection of compressed air into the hole via the annular area between the inner tube and the drill rod. The cuttings are then blown back to surface up the inner tube where they pass through the sample separating system and are collected if needed. Drilling continues with the addition of rods to the top of the drill string

Phase 2 Prospect Drilling

This will consist of an initial 6 boreholes that will be used to confirm the presence of the diamond target horizon.

Phase 3 Target Definition Drilling

These boreholes will be drilled in order to outline the extent of the diamond deposit and will be drilled to the base of the target horizon i.e. 25 metres.

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.

1.13.1 Details of the development footprint alternatives considered.

With reference to the site plan provided as **Appendix 3** 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.

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

The activity will take place on farm Vaalrand 241 HO in the magisterial district of Bloemhof

(b) The type of activity to be undertaken;

The following minerals will be prospected for:

- Diamonds (alluvial)
- Diamonds (general)
- Diamonds (in kimberlite)

(c) The technology to be used in the activity

Drilling:

The planned invasive activities consist of the drilling of boreholes in phase two. It is planned to drill these unconsolidated sediments using sonic drilling. Sonic drilling utilizes resonant sonic energy to achieve fast, clean, low-impact drilling in a wide variety of geotechnical, geothermal, environmental and mineral drilling and sampling applications. Sonic rigs can drill and sample many unconsolidated materials without the need for drilling fluids achieving high productivity and superior sample quality

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Air core drilling may be used for some of the boreholes. Hardened steel or tungsten blades are used to bore a hole into unconsolidated ground. The rods are hollow and contain an inner tube which sits inside the hollow outer rod barrel. The drill cuttings are removed by injection of compressed air into the hole via the annular area between the inner tube and the drill rod. The cuttings are then blown back to surface up the inner tube where they pass through the sample separating system and are collected if needed. Drilling continues with the addition of rods to the top of the drill string

(d) The operational aspects of the activity;

The mined material will be transported by truck to a stockpile area which will be located within the same property and boundary.

f) The option of not implementing the activity.

A huge demand of diamonds in the jewellery industry will make existing companies monopolise the industry due to lack of competition. Apart from industry monopoly, there will also be high unemployment rates in the area.

1.14 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.

Identification of Interested and Affected Parties

Settlements were identified through the use of the 1:50 000 topographical map, aerial imagery title deed searches and through consultation. No communities are situated on the said property. All the affected properties belong to private owners.

Other I&APs identified, include Organs of State, who have jurisdiction over, or might have an interest in the proposed prospecting activities, adjacent and other landowners, non-governmental organisations and other organisations and/ private persons.

Adjacent and non-adjacent landowners were identified through the review of property databases and deed searches, natural person (s) contact databases, and expanded through queries and recommendations made by identified stakeholders and general internet based searches.

Methodology of Notification:

- Cadastral search and Deeds searches to identify farm portions
- Newspaper adverts and Site Notices to notify stakeholders
- Distribution of BIDs with comments sheet requesting the recommendation of any other stakeholders
- Site Visit to consult with stakeholders
- Distribution of Draft Basic Assessment Report

Land Claims

Still pending

Traditional Authorities

Ongoing.

Landowners and Notification Methodology

Each landowner will be contacted and informed of the said application. A BID will be sent. In addition a Site Visit to the study will be done.

Relevant Government Departments

List of State departments that Kimopax Consulting consulted with are as follows:

- Department of Rural Development and Land Reform;
- ESKOM
- Department of Water and Sanitation

Consultation documents (BIDs) and Draft BAR will be distributed for review.

Issues and Response Register

All comments received from Stakeholders will be included in the table 4 below.

1.14.1 Summary of issues raised by I&APs

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

Table 4: Summary of issues raised by I&APs

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.
<u>AFFECTED PARTIES</u>				
Landowner/s				
		•		
		•		
		•		
Lawful occupier/s of the land				

Landowners or lawful occupiers on adjacent properties					
Municipal councillor					
Municipality					
Organs of state (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWA e					

Communities					
Dept. Land Affairs					
Traditional Leaders					
Dept. Environmental Affairs					
Other Competent Authorities affected					
<u>OTHER AFFECTED PARTIES</u>					

<u>INTERESTED PARTIES</u>				

1.15 The Environmental attributes associated with the alternatives.

(The environmental attributed described must include socio-economic, social, heritage, cultural, geographical, physical and biological aspects)

1.15.1 Baseline Environment

15.1.1 Type of environment affected by the proposed activity.

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

15.1.2 Description of the current land uses.

Based on the available information it is assumed that the land is currently utilized for grazing

15.1.3 Description of specific environmental features and infrastructure on the site.

Soils

The main soils types in this area are as follows: However, these soils are poor in the following which are necessary for crop production. This indicates that without the use of fertilizers to supplement the soils, agricultural activities will be low or done only by commercial farmers able to buy expensive fertilizers. There is a need by the LTLMA to encourage emerging and small scale farmers by providing them with seeds which do not require high soil nutrients and suitable to the local rainfall levels which are low. The South African Development Community Food Security Network has recommendations on these seeds.

Vegetation

The vegetation is characterized by turf thornveld and mixed bushveld areas. This type of vegetation is good for cattle and rearing goats and wild animals. This suggests that potential of national and private game reserves exists. Productive use of land which is non arable in alternative ventures like private farms run in partnerships with the local rural communities of the LTLMA.

Climate

Lekwa - Teemane LM normally receives about 344mm of rain per year, with most rainfall occurring mainly during mid-summer. It receives the lowest rainfall (0mm) in June and the highest (70mm) in January. The monthly distribution of average daily maximum temperatures shows that the average midday temperatures for Lekwa- Teemane LM range from 19°C in June to 32.9°C in January. The municipal area is the coldest during June when the temperature drops to 0°C on average at night. The municipal area is semi-arid, with occasional hail and frost. The area receives variable rain with scattered thunder storms and flooding. The floods are a nuisance as they make the un-tarred roads unusable thereby cutting off the villages from clinics and shops. During hot summers there is high evaporation and elevated temperature.

Rainfall

The area normally receives about 350mm of rain per year. A limited part of the geographical area adjacent to the eastern boundary has slightly higher rainfall averages between 340 to 344mm per year. The average rainfall per annum is being calculated at 450mm. Thunderstorms and hails do occur but are lower than the figures obtained for the Highveld region.

THE DEMOGRAPHIC PROFILE OF LEKWA - TEEMANE LOCAL MUNICIPALITY

Population Size

Statistics South Africa, records 56 025 as the total population of LekwaTeemane Local Municipality. This is 9.94% of the total population of Dr Ruth S Mompati District Municipality of about 500,365 people. However, the Community Survey 2007 indicated a total population figure of 32 809 for Lekwa-Teemane Local Municipality. To date it is anticipated that this figure has increased due to various factors like the attraction of job opportunities in agriculture and hunting in the area. Below diagram show estimated population within Lekwa - Teemane Local Municipality.

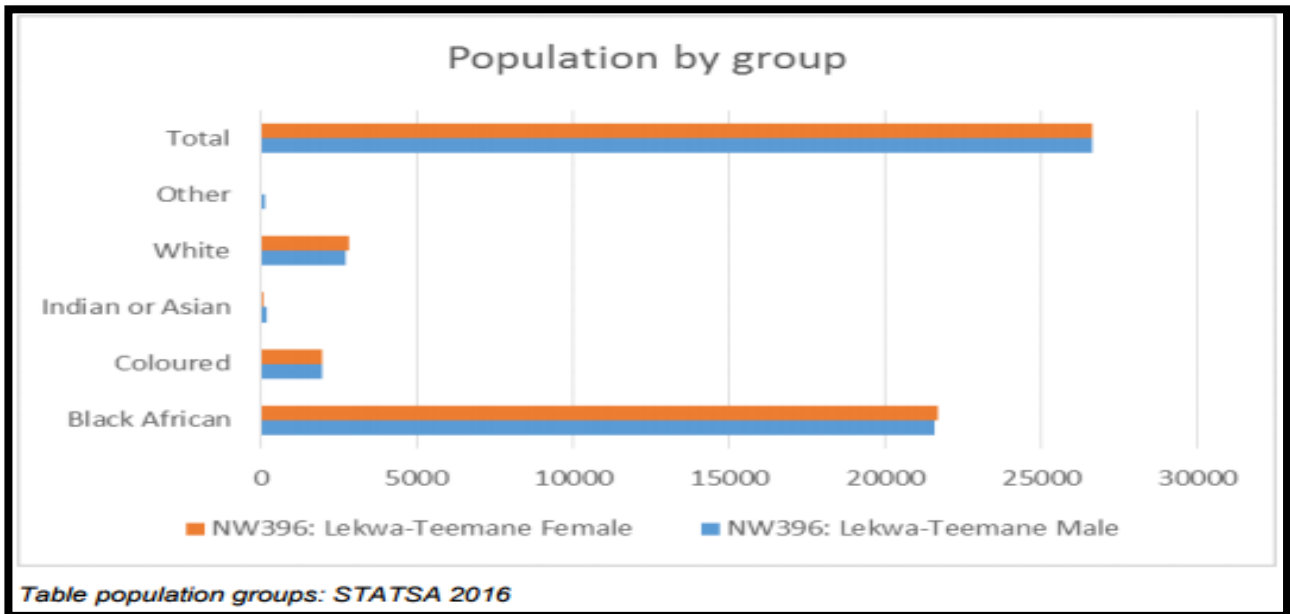
Population estimate 2016	Households total population
56 025	16 496

Source: STATSA CS 2016

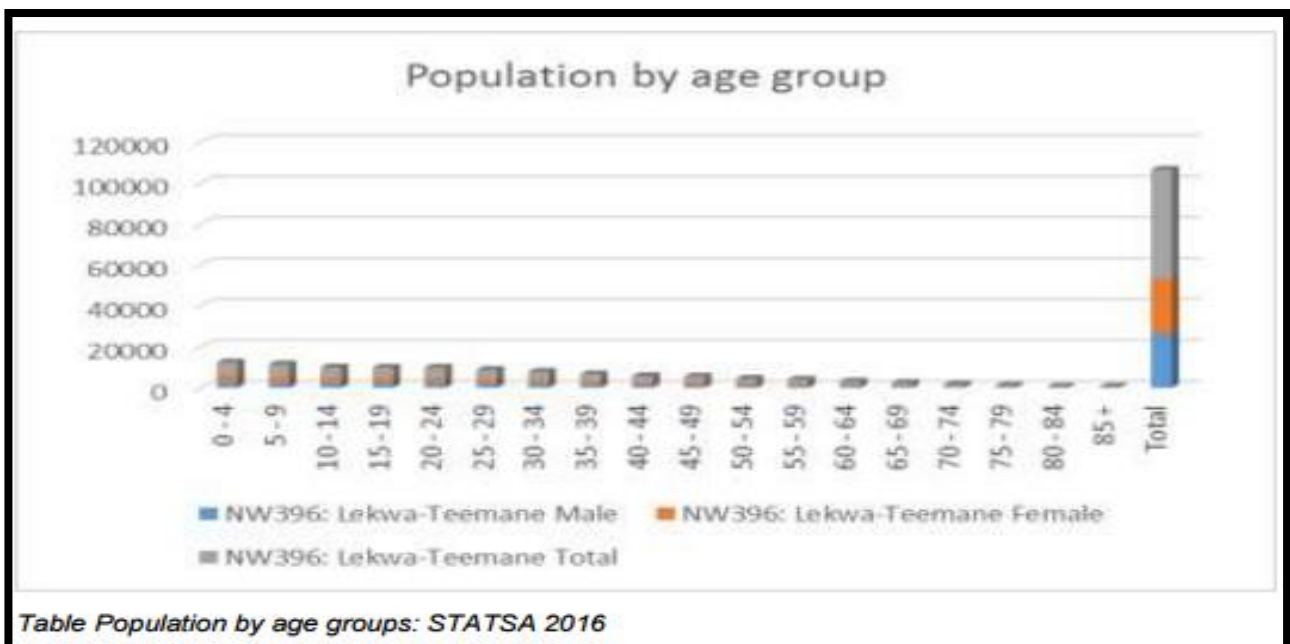
Population Groups

The Community Survey (2016) conducted by STATSA, depicts that Africans are in the majority and constitute about 45 538 people (81.3%) of the total population of Lekwa- Teemane LM). The Whites group is about 7951 (14.2%) of the total population of Lekwa-Teemane LM), Coloureds constitute 2408 (4.3%) of the total population of Lekwa Teemane LM) and the total number of Asians is 128 (0.2%) of the total population of Lekwa-Teemane LM.

Population Groups



Population by Age Groups



The above table depicts a high population between the age groups of 0-44 years. This is an indication that the Lekwa-Teemane population is relatively young and the municipality will have to focus on these groupings

THE DEVELOPMENTAL PROFILE OF THE LEKWA - TEEMANE LOCAL MUNICIPAL AREA (SOCIO-ECONOMIC PROFILE)

Households

The Community Survey (2016) conducted by STATSA, depicts that the total number of households in Lekwa-Teemane Local Municipality is 16496.

Household Structure

The distribution of household sizes in the Lekwa - Teemane LM area which indicates the following aspects about the population sizes of the Lekwa - Teemane LM: The households in the Lekwa - Teemane LM consisted of three members or less.

Household Size

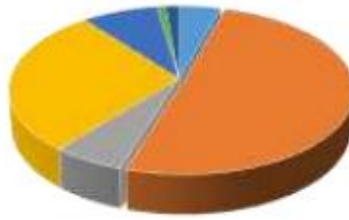
Lekwa-Teemane Local Municipality (NW 396) has approximately 16496 households, 12.5% of the total households in DRRSM. The majority of the household has occupancy rate of three or less members. The average household size of 3.56% is relatively low as compare to previous years and this is due to the new RDP houses which are built within the Municipal area.

Education Analysis

The level of education has improve compare to previous years. Almost 50% of the LTLM population has some primary education. The table below shows that LTLMA has to reduce people with no schooling and increase the matric, certificates and diploma numbers. This is a challenge to the municipality

Number of highest level of education within Lekwa-Teemane

Highest level of education



- No Schooling
- Some Primary
- Completed Primary
- Some Secondary
- Completed Secondary
- Higher Education
- Not Applicable

1.15.2 Environmental and current land use map.

(Show all environmental and current land use features)

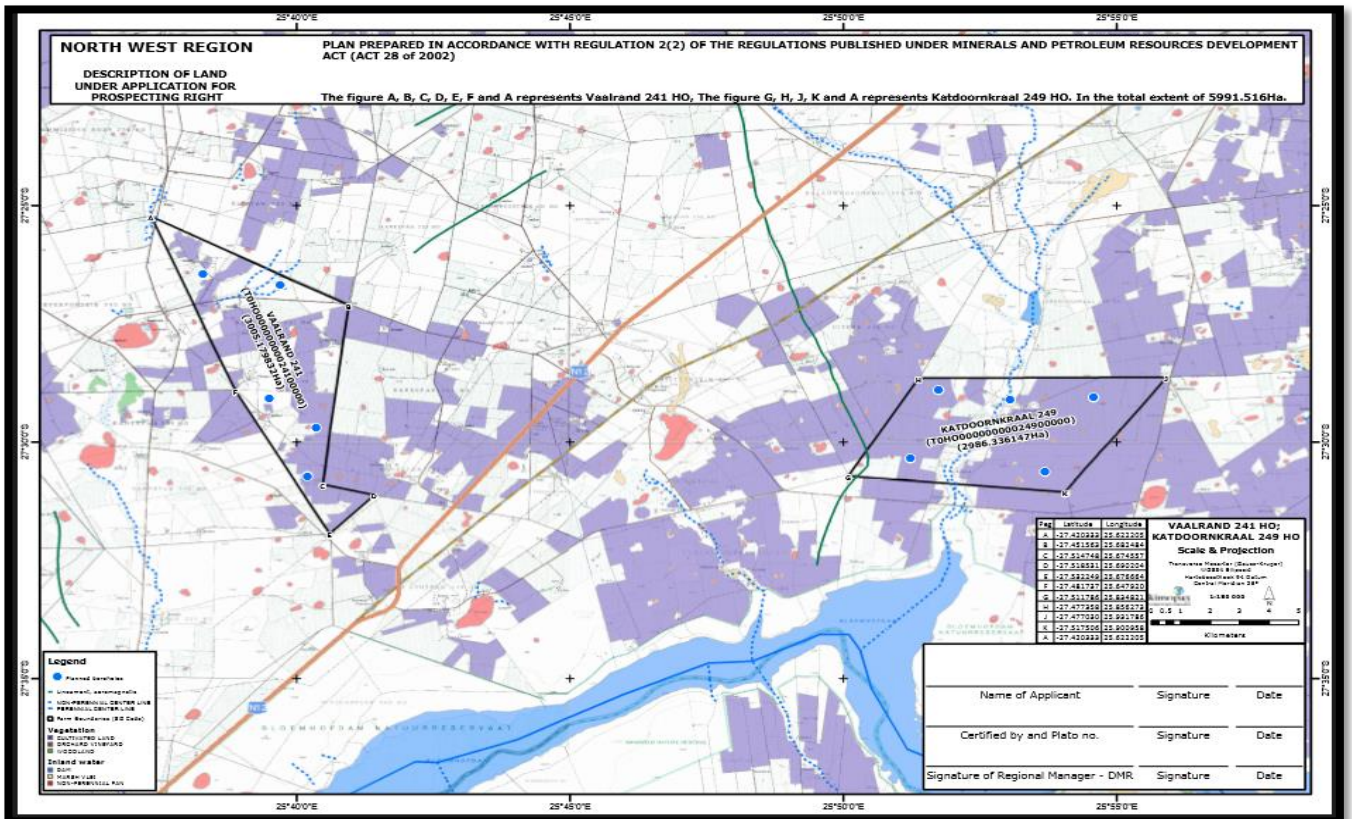


Figure 3: Current Land use Map

1.15.3 Impacts and risks identified including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts

The following table illustrates the potential impacts associated with each activity.

Figure 4: Potential Impacts associated with the activities

Activity	Description	Affected Environment	Potential Impact
CONSTRUCTION PHASE			
Transportation of Equipment	The prospecting operation will require equipment to commence with the process of mining	Soil	Soil compaction due to the repetitive movement on gravel roads.
		Interested and Affected Parties	Potential damage to roads caused by movement of heavy vehicles and continual use of vehicles moving to and from the site.
		Air Quality	Increased dust emissions due to entrainment of dust particles by the movement and operation of construction equipment.
Construction of temporary administration office.	This will involve vegetation clearing and topsoil removal to construct offices, a change house, etc.	Soil	Permanent compaction of soil in areas of infrastructure
		Land Capability	Decreased land capability due to damage to the natural soil structure, soil loss through wind and water erosion and leaching of soil nutrients.
		Natural Vegetation	Disturbance of vegetation could result in soil erosion due to exposed soils.
		Surface Water	Altered surface flow dynamics around surface infrastructure;
		Air Quality	Dust from construction vehicles

			on gravel and secondary roads.
Topsoil Removal and Stockpile	It is assumed that the topsoil thickness averages 1.5 m over the disturbed area. The topsoil stockpile is tentatively located in an area south - east of the contractor's surface facilities.	Topography	Alteration of the local topography and disturbance of natural drainage lines.
		Visual	The creation of stockpiles alters the visual quality of the landscape.
		Soil	Damage to the natural soil structure due to soil handling, removal and mixing of soil types and horizons; removal of vegetation causes a change in the water runoff characteristics of the site and increased probability of soil erosion. This leads to the loss of topsoil and an increase of siltation in the streams and rivers with the runoff carrying sediment; and Leaching of soil nutrients during long-term stockpiling.
		Land Capability	Decreased land capability due to damage to the natural soil structure, soil loss through wind and water erosion and leaching of soil nutrients.
		Natural Vegetation	Damage to natural vegetation due to deposition of dust emitted during the tipping and stockpiling, restricting photosynthesis.
Animal Life	Potential direct impacts on threatened fauna species; Habitat disturbance and destruction; Potential disruption on birds nesting,		

			foraging or roosting in project area.
		Surface Water	Altered surface flow dynamics due to alterations in the onsite topography; and increase of siltation in the streams and rivers with the runoff carrying sediment
		Air Quality	Increased potential for dust emissions due to wind erosion during the tipping of soil into trucks and onto stockpiles, as well as exposure of stockpiles to wind erosion; and Potential increase of dust generation.
		Noise	Potential increase of noise of hauling trucks to topsoil stockpile site.

OPERATIONAL PHASE

Access Roads	Roads will be used to access the site and to transport equipment onto and off the site.	Soil	Site clearing to construct road will cause a potential to result in soil erosion, soil loss.
		Land Capability	Decreased agricultural and grazing potential of surrounding land due to deposition of dust emitted by vehicle entrainment on haul roads
		Natural Vegetation	Decreased agricultural and grazing potential of surrounding land due to deposition of dust emitted by vehicle entrainment on haul roads; Site clearing and removal of topsoil could lead to soil erosion and soil loss.
		Surface Water	Altered surface flow dynamics due to removal of topsoil and

			topographical alterations and increased surface runoff from cleared areas; Potential surface water runoff over haul roads will result in erosion and consequent siltation of surface water resources; Potential contamination of surface water runoff from hauls roads due to the spillage of hydrocarbons from vehicles travelling on haul roads.
		Air Quality	Potential dust pollution caused by construction vehicles
		Noise	Potential elevated noise levels due to continuous vehicular movement on haul roads.
		Interested and Affected Parties	Potential damage to roads could impact safety of people and animals.
Drilling	This will involve the processing of the proposed applied minerals	Air quality	Potential dust pollution during the processing of minerals applied for
		Noise	Potential elevated noise levels due to continuous machinery being used for drilling
		Biodiversity	Noise pollution can have a significant impact on some species and affect their successful reproduction
		Water	Dust produced during mining and processing of the minerals settling in the nearby surface

			water
DECOMMISSIONING AND CLOSURE			
Rehabilitation	All areas disturbed will be rehabilitated to its original state with the waste rock and topsoil stockpiles. Roads should be ripped or ploughed and fertilised if necessary to promote re-growth of vegetation.	Soil and Vegetation	Positive impact as topsoil will be replaced to enhance vegetation growth.
		Animal Life	Positive impact as vegetation will re-establish itself and the natural Fauna will gradually return to the rehabilitated sites.

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

Criteria of assigning significance to potential impacts

The evaluation of impacts is conducted in terms of the criteria detailed in Table below. The various environmental impacts and benefits of this project are discussed in terms of impact status, extent, duration, probability, and intensity. Impact significance is regarded as the sum of the impact extent, duration, probability and intensity and a numerical rating system has been applied to evaluate impact significance; therefore, an impact magnitude and significance rating is applied to rate each identified impact in terms of its overall magnitude and significance.

In order to adequately assess and evaluate the impacts and benefits associated with the project, it was necessary to develop a methodology that would scientifically achieve this and to reduce the subjectivity involved in making such evaluations. To enable informed decision-making, it is necessary to assess all legal requirements and clearly defined criteria in order to accurately determine the significance of the predicted impact or benefit on the surrounding natural and social environment.

Impact status

The nature or status of the impact is determined by the conditions of the environment prior to construction and operation. A discussion on the nature of the impact will include a description of what causes the effect, what will be affected and how it will be affected. The nature of the Impact can be described as negative, positive or neutral.

Figure 5: Status of impact

Rating	Description	Quantitative Rating
Positive	A benefit to the receiving environment	P
Neutral	No cost or benefit to the receiving environment	-
Negative	A cost to the receiving environment	N

Impact Extent

The extent of an impact is considered as to whether impacts are either limited in extent or if it affects wide area or group of people. Impact extent can be site specific (within the boundaries of the development area), Local, regional or national and /or international.

Figure 6: Extent of impact

Rating	Description	Quantitative Rating
Low	Site specific: occurs within the site boundary	1
Medium	Local: Extends beyond the site boundary; Affects the immediate surrounding environment (i.e. up to 5km from the project site boundary)	2
High	Regional: Extends far beyond the site boundary; widespread effect (i.e. 5km and more from the project site boundary)	3
Very High	National: Extends far beyond the site boundary; widespread effects.	4

Impact Duration

The duration of the impact refers to the time scale of the impact or benefit.

Figure 7: Duration of the impact

Rating	Description	Quantitative Rating
Low	Short term: Quickly reversible; less than the project lifespan; 0-5 years.	1
Medium	Medium term: Reversible over time; Approximate lifespan of the project; 5-17 years.	2
High	Long term: Permanent; Extends beyond the decommissioning phase; >17 years	3

Impact Probability

The probability of the impact describes the likelihood of the impact actually occurring.

Figure 8: Probability of impact

Rating	Description	Quantitative Rating
Improbable	Possibility of the impact materialising is negligible; Chance of occurrence <10%.	1
Probable	Possibility that the impact will materialise is likely; Chance of occurrence 10 - 49.9%.	2
Highly Probable	It is expected that the impact will occur; Chance of occurrence 50- 90%.	3
Definite	Impact will occur regardless of any prevention measures; Chance of occurrence >90%.	4
Definite and Cumulative	Impact will occur regardless of any prevention measures; Chance of occurrence >90% and is likely to result in cumulative impacts	5

Impact Intensity

The intensity of the impact is determined to quantify the magnitude of the impacts and benefits associated with the proposed project.

Figure 9: Intensity of impact

Rating	Description	Quantitative Rating
Maximum Benefit	Where natural, cultural and/or social functions or processes are positively affected resulting in the maximum possible and permanent benefit.	+5
Significant Benefit	Where natural, cultural and/ or social functions or processes are altered to the extent that it will result in temporary but significant benefit.	+4
Beneficial	Where the affected environment is altered but natural, cultural and/ or social functions or processes continue, albeit in a modified, beneficial way.	+3
Minor Benefit	Where the impact affects the environment in such a way that natural, cultural and/ or social functions or processes are only marginally benefited.	+2
Negligible Benefit	Where the impact affects the environment in such a way that natural, cultural and/ or social functions or processes are negligibly benefited.	+1
Neutral	Where the impact affects the environment in such a way that natural, cultural and/ or social functions or processes are not affected.	0
Negligible	Where the impact affects the environment in such a way that natural, cultural and/ or social functions or processes are negligibly affected.	-1
Minor	Where the impact affects the environment in such a way that natural, cultural and/ or social functions or processes are only marginally affected.	-2
Average	Where the affected environment is altered but natural, cultural and/ or social functions or processes continue, albeit in a modified way.	-3
Severe	Where natural, cultural and/ or social functions or processes are altered to the extent that it will temporarily cease.	-4
Very Severe	Where natural, cultural and/ or social functions or processes	-5

	are altered to the extent that it will permanently cease.	
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Impact Significance

The impact magnitude and significance rating is utilised to rate each identified impact in terms of its overall magnitude and significance.

Figure 10: Impact Significance

Impact	Rating	Description	Quantitative Rating
7	High	Of the highest positive order possible within the bounds of impacts that could occur.	+12- 16
	Medium	Impact is real, but not substantial in relation to other impacts that might take effect within the bounds of those that could occur. Other means of achieving this benefit are approximately equal in time, cost and effort.	+6- 11
	Low	Impacts is of a low order and therefore likely to have a limited effect. Alternative means of achieving this benefit are likely to be easier, cheaper, more effective and less time-consuming.	+1- 5
No Impact	No Impact	Zero impact	0
Negative	Low	Impact is of a low order and therefore likely to have little real effect. In the case of adverse impacts, mitigation is either easily achieved or little will be required, or both. Social, cultural, and economic activities of communities can continue unchanged.	-1- 5
	Medium	Impact is real, but not substantial in relation to other impacts that might take effect within the bounds of those that could occur. In the case of adverse impacts, mitigation is both feasible and fairly possible. Social cultural and economic activities of communities are changed but can be	-6- 11

		continued (albeit in a different form). Modification of the project design or alternative action may be required.	
	High	Of the highest order possible within the bounds of impacts that could occur. In the case of adverse impacts, there is no possible mitigation that could offset the impact, or mitigation is difficult, expensive, time-consuming or a combination of these. Social, cultural and economic activities of communities are disrupted to such an extent that these come to a halt.	-12- 16

1.15.5 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)

Potential Impacts on communities, individual or competing land uses in close proximity

The following impacts are regarded as community impacts.

- ✚ Potential soil pollution resulting from hydrocarbons spills and soil erosions.
- ✚ Noise pollution
- ✚ Poor access control resulting in impacts on cattle movement, breeding and grazing practices.
- ✚ Influx of person (job seekers) to site as a results of increased activity and the possible resultant increase in opportunistic crime
- ✚ Visual impact.

It is anticipated that the proposed project will create few employments. People from local communities will be given first preference when employment opportunities arise. If the required skills are not available in the affected areas, people from other areas might be appointed to work for the applicant.

Influx of persons resulting in increased crime rates

The potential impacts of an increase in crime rates associated with an influx of unemployed Persons travelling to mine sites seeking employment may occur.

1.15.6 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).

The section below provides a summary of the key management measures associated with the impacts identified

Measure to manage the potential impacts on heritage resources.

Should any unknown heritage site be identified during mining activities, all activities will cease immediately and the SAHRA will be conducted and an appropriate Heritage Impact Assessment will be undertaken on the site identified.

Measures to manage the potential impacts on communities, individuals or competing land uses in close proximity.

Pollution Prevention

- Mitigation and management measures must be implemented to prevent environmental pollution which may impact on environmental resources utilized by communities, landowners and other stakeholders. These mitigation and management measures are discussed in the following section

Poor access control resulting in the impacts on cattle movement, breeding and grazing practices

- Access control procedures must be agreed on with farm owners and all staff trained on these procedures

Influx of persons (job seekers) to site as a result of increased activity and the possible resultant increase in opportunistic crime.

- Casual labour will not be recruited at the site to eliminate the incentive for persons travelling to site seeking employment.

- A local security company will be appointed to eliminate the potential increase in the theft and security concerns. As far as practically possible the applicant will make use of local supplier.
- Only registered and contractors with a good track record will be utilized.
- If deemed necessary, the South African Police service will be informed of unauthorised persons encountered on site.

Visual Impact

- Based on visual observation, wet dust suppression will be undertaken to manage dust emissions from vehicles movement and other construction activities as and when needed. Depending on the need and quantity of water used for wet suppression, a suitable, low environmental impacts chemical suppression alternative must be used considered in order to conserve water resources.
- A waste management system will be implemented and sufficient waste bins will be provided for on-site. A fine system will be implemented to further prohibit littering and poor housekeeping practices.

Measure to manage the potential impact on water quality and availability

- Potential water and soil pollution impacts resulting from hydrocarbons spills and soil erosion will be mitigated and managed as follows;
- Existing tracks and roads must be used as far as is practicable to minimize the potential for soil erosion. In instances where access to mine sites are to be established, and if required, raised blade clearing will be undertaken with a view to maintain vegetation cover to limit soil erosion potential.
- Soil disturbances are to be limited as far as is practicable to minimize the potential for soil erosion
- The stockpile will be shaped to divert storm water around the drill pad to minimise soil erosion of the pad. Stockpiled topsoil will be used during rehabilitation efforts
- Where practicable topsoil will be stripped to a depth of 10cm.
- Topsoil will be stockpiles to a maximum height of 15m with a side slope of not more than 1:3.
- Mechanical erosion control methods will be implemented if required.
- Where practicable, vehicle maintenance will be undertaken off-site.
- In the event that vehicle maintenance is undertaken on-site (i.e. such as breakdown maintenance), drip trays and / or UPVC sheets will be used to prevent spills and leaks onto the soil.
- A waste management system will be implemented and sufficient waste bins will be provided for onsite. A fine system will be implemented to further prohibit littering and poor housekeeping practices.
- Waste separation will be undertaken at source and separate receptacles will be provided (i.e. general waste, recyclables and hazardous waste).

1.15.7 Motivation where no alternative sites were considered.

As is clear based on the geological survey done, it is showing that the portion that the applicant is applying for is the only portion around the area that is available with minerals that are applied for. Therefore, there is no alternative site to consider for this application.

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

This will only be determined after a year of operation. Therefore, the current location applied for is the only alternative.

1.15.9 Full description of the process undertaken to identify, assess and rank the impacts and risks the activity will impose on the preferred site

In order to identify the potential impacts associated with the proposed prospecting activities the following steps were undertaken:

- The stakeholder consultation process is currently undertaken in a manner to be interactive, providing landowners and identified stakeholders with the opportunity to provide input into the project. This is a key focus, as the local residence has capabilities of providing site specific information, which may not be available in desktop research material. Stakeholders are requested (as part of the BID) to provide their views on the project and any potential concerns which they may have. All comments and concerns will be captured and formulated into the impact assessment.
- A detailed desktop investigation was undertaken to determine the environmental setting in which the project is located. Based on the desktop investigations various resources were used to determine the significance and sensitivity of the various environmental considerations. The desktop investigation involved the use of:
 - South African National Biodiversity Institute (SANBI) Biodiversity Geographic Database LUDS system;
 - Geographic Information System base maps;
 - GIS;
 - Municipal Integrated Development Plan; etc.

The ratings of the identified impacts were undertaken in a quantitative manner as provided from Impact Ratings. The ratings are undertaken in a manner to calculate the significance of each of the impacts. The EAP also assesses the outcomes of the calculation to determine whether the outcome reflects the perceived and actual views.

The identification of management measures is done based on the significance of the impacts and measures that have been considered appropriate and successful, specifically as Best Practical and Economical Options.

1.15.10 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).

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE if not mitigated	MITIGATION TYPE	SIGNIFICANCE if mitigated
<p>(E.g. For prospecting - drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route etc...etc...etc</p> <p>E.g. For mining,-</p>	<p>(Including the potential impacts for cumulative impacts)</p> <p>(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination,</p>		<p>In which impact is anticipated</p> <p>(e.g. Construction, commissioning, operational Decommissioning , closure, post-closure)</p>		<p>(modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc)</p> <p>E.g. Modify through alternative method. Control through noise control Control through management and monitoring through rehabilitation..</p>	

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.)	groundwater contamination, air pollution etc....etc...)					
--	--	--	--	--	--	--

Transportation of equipment	Soil compaction.	Soil	Construction and operation	Moderate	<ul style="list-style-type: none"> Vehicles and machinery should be adequately maintained to prevent leaks resulting in soil contamination. Also only use designated roads and avoid the use of multiple roads. 	Low
	Roads destruction	Interested and Affected parties	Construction and operation	Moderate	<ul style="list-style-type: none"> All heavy machinery transporting the equipment must move in a normal speed. Always use designated roads and avoid the use of multiple roads. 	Low
	Dust pollution	Air quality	Construction and operation	Moderate	<ul style="list-style-type: none"> Dust on roads should be suppressed with the use of water by a water cart truck. 	
	Water pollution	Surface – and ground-water	Construction and operational	High/Moderate	<ul style="list-style-type: none"> Vehicles and machinery should be adequately maintained to prevent spillages resulting in groundwater contamination. Should spillage occur implement appropriate clean up immediately 	
Construction of the temporary offices	Soil compaction	Soil	Construction	High	<ul style="list-style-type: none"> Topsoil should be removed from all areas where physical disturbance of the surface will occur; The topsoil removed for this activity should be stored within an area on higher ground of the mining area, outside the 1:50 	

					<p>flood level, but within the boundaries of the project area; and</p> <ul style="list-style-type: none"> Oil spills should be cleaned up immediately 	
	Decreased land capability due to damage to the natural soil structure, and soil loss	Land Capability	Construction	Moderate	<ul style="list-style-type: none"> This should involve the least disturbance to vegetation; and Topsoil should be removed from all areas where physical disturbance of the surface area will occur. 	Low
	Vegetation disturbance	Natural vegetation	Construction	Moderate	<ul style="list-style-type: none"> No trees or shrubs should be felled or damaged; and Open fires should not be allowed. 	Low
	Water disturbance	Surface – and ground-water	Construction	Moderate	<ul style="list-style-type: none"> Surface infrastructure such as offices and camps should not be located closer than 100 metres from any water courses. They should also not be located in an area that majorly blocks the water flow. Spillages should be cleaned up immediately. 	Low
	Dust pollution	Air quality	Construction	Moderate	<ul style="list-style-type: none"> Dust suppression by means of a water cart should be conducted on a daily basis to reduce dust emissions. 	Low

Topsoil removal and stockpile	Visual quality of the landscape	Visual	Construction and Operation	Moderate	<ul style="list-style-type: none"> Topsoil should be stockpiled in a designated area. 	Low
	Damage to the natural soil structure due to soil handling, removal and mixing of soil types.	Soil	Construction	High	<ul style="list-style-type: none"> Topsoil should be removed from all areas where physical disturbance of the surface area will occur; The topsoil removed should be stored in an area on high ground in the project area outside the 1:50 flood level; Topsoil should be kept separate from subsoil; and Topsoil fertility, biological quality should be monitored and a management plan should be implemented. 	Moderate
	Damage to natural vegetation due to dust emitted during the tipping and stockpiling, restricting photosynthesis	Vegetation	Construction and operation	High	<ul style="list-style-type: none"> Vegetation should be removed prior to topsoil removal in order to limit the effects of site clearance 	Moderate

	Altered surface flow dynamics	Surface water	Construction	Moderate	<ul style="list-style-type: none"> Vegetation should be removed prior to topsoil removal in to limit the effects of site clearance on surface water flow dynamics; and Stockpiles should be allowed to naturally vegetate in to stabilise soil particles and prevent erosion, 	Low
	Increased potential for dust emissions	Air quality	Construction and operation	Moderate	<ul style="list-style-type: none"> Topsoil stockpiles will be allowed to naturally vegetate in order to stabilise particles and reduce the risk of wind erosion. 	Low
	Potential increase of noise	Noise	Construction and operation	Moderate	<ul style="list-style-type: none"> Tipping of topsoil into stockpiles should occur between sunrises to sunset. 	Low
Access roads	Decreased agricultural and grazing potential of surrounding land	Natural vegetation	Construction and operation	Moderate	<ul style="list-style-type: none"> Route should be selected that a minimum number of bushes or trees are felled for roads. 	Low
	Potential dust pollution	Air quality	Construction and operation	High	<ul style="list-style-type: none"> Dust suppression on roads with the use of water- roads should be sprayed with 	Moderate

					water.	
	Potential elevated noise levels	Noise	Construction and operation	Moderate	<ul style="list-style-type: none"> Usage of roads by trucks should be restricted to between sunrise and sunset. 	Low
	Loss of soil quantity	Soil	Construction and operation	Moderate	<ul style="list-style-type: none"> Ensure surface levelling after use to prevent soil erosion. 	Low
Drilling	Potential increase of air quality pollution	Air quality	Operation	High	<ul style="list-style-type: none"> Ensure that the stockpiles for the processed minerals are wetted to avoid dust generation. Also ensure that the processing machine is installed the water sprays for minimising the dust during the processing of the minerals 	Moderate
	Contamination of surface water	Water quality	Operation	Moderate	<ul style="list-style-type: none"> Ensure that the dust is always being minimised to avoid the transportation of the dust to the local surface water through wind transportation 	Low
	Threat to the local biodiversity	Biodiversity	Operation	Moderate	<ul style="list-style-type: none"> Noise level must be measured and the report must be produced with the recommendations once operational to 	Medium

	(Animals)				determine the most generating noise equipment. This will help to mitigate the noise affecting the local biodiversity.	
	Increase in noise level in the area	Noise	Operation	High.	<ul style="list-style-type: none"> Noise level must be measured and should be less than 85dBA; the report must be produced with the recommendations once operational to determine the most generating noise equipment. This will help to mitigate the noise affecting the local people 	Moderate

The supporting impact assessment conducted by the EAP must be attached as an appendix, marked **Appendix**

1.16 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):-

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.
No specialist studies have been undertake	N/A	N/A	N/A

Attach copies of Specialist Reports as appendices(N/A)

1.17 Environmental impact statement

1.17.1 Summary of the key findings of the environmental impact assessment;

This Basic Assessment illustrates that there are various potential negative and positive impacts that may arise as a result of the proposed mining operations which will have an effect on the following environmental components

- Terrestrial ecology;
- Aquatic ecology
- Air quality
- Heritage;
- Soils and land capability
- Social environment; and
- Visual aesthetics.

However, no impacts which could cause detrimental harm to the environment were identified as part of this assessment, should the prescribed mitigation measures proposed as part of this report, and as well as the EMP be implemented.

1.17.2 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. Attached as **Appendix 1**

Attached: **Appendix 1**

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

- Potential water and soil pollution impacts resulting from hydrocarbon spills and soil erosion may impact on environmental resources utilized by communities, landowners and other stakeholders.
- Potential water and soil pollution impacts result from hydrocarbon spills and soil erosion which may impact on ecosystem functioning.

- Increased vehicle activity within the area may result in the possible destruction and disturbance of fauna and flora.
- Poor access control to mining permit area may impact on cattle movement, breeding and grazing practices.
- Influx of persons (job seekers) to site as a result of increased activity and the possible resultant increase in opportunistic crime.
- Potential visual impacts caused by drilling activities.
- Employment creation in the local communities

1.17.4 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 following management objectives are prescribed for the proposed mining operation:

- Ensure an approach that will provide the necessary confidence in terms of environmental compliance.
- Provide a management plan that is effective and practical for implementation
- Restrict the area of impact to as small an area as possible;
- Ensure health and safety of employees;

Through the implementation of the proposed mitigation measures, it is anticipated that the identified social & environmental Impacts can be managed and mitigated effectively. Through the implementation of the mitigation and management measures it is expected that:

- Noise impacts can be managed through consultation and through the restriction of operating hours;
- The pollution of soil and water resources can be effectively managed through containment;
- Ecological impact can be managed through the implementation of pollution prevention measures, minimizing land clearing, restricting working hours (faunal disturbance) and rehabilitation.

- Concerns regarding access control to farms can be managed through the development and ensuring compliance to an appropriate access control procedure.
- Risks associated with crime can be mitigated through avoiding recruitment activities on site, as well as monitoring and reporting.

1.17.5 Aspects for inclusion as conditions of Authorisation.

Any aspects which must be made conditions of the Environmental Authorisation

The following aspects are proposed to be included as conditions in the Environmental Authorisation:

- Vegetation clearing should be restricted to the footprint of the site under construction as far as possible;
- All construction areas should be demarcated prior to construction, to ensure that the footprint of the impacts is limited;
- Movement of construction vehicles and workers is to be restricted from areas outside of the boundaries of the demarcated construction areas;
- The construction staff should be educated about the value of wildlife and environmental sensitivity;
- Should a grave or any other historically significant feature be identified in the construction footprint, the feature may not be removed and a heritage specialist must be contacted immediately;
- Avoid leaving any building material or waste on site that could create a visual impact.

1.17.6 Description of any assumptions, uncertainties and gaps in knowledge.

The following assumptions, uncertainties and gaps are applicable to this project:

- Due to significant time constraints allowed for the assessment of the impacts, and at the time of compiling the draft Basic Assessment Report and EMP:
- The Stakeholder Consultation is still on-going.
- All landowners were consulted with in person.
- Details regarding the presence and status of land claims are not yet available, and we still waiting for feedback from Department of Rural Development and Land Reform.
- No Heritage Impact Assessment was undertaken for this application.

1.18 Reasoned opinion as to whether the proposed activity should or should not be authorised

1.18.1 Reasons why the activity should be authorized or not.

It is the opinion of the EAP that the activity may be authorized. The option of not approving the activities will result in a significant loss to Job creation. The creation of jobs will have positive impact on the local economy.

1.18.2 Conditions that must be included in the authorisation

The following conditions must be included in the authorisations:

- A map detailing the mining locations should be submitted to the relevant landowners, DWS and DMR prior to the commencement of these activities;
- No activities, with the exception of the soil sampling, may take place within 100 m from any river.

1.18.3 Period for which the Environmental Authorisation is required.

As the application is for the mining permit and as per the mining permit period, the environmental authorization period required is five years. The extension will be done towards the end of mining permit period.


1.19 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.

An undertaken by the EAP and the client is provided for in Section 2 of the EMP.

1.20 Financial Provision

The closure cost estimate was determined in accordance with the DMR guidelines and is based, where possible, on actual costs provided by a third party contractor. The closure cost is estimated to.

 Sub- Total 1: R 26 047.32 (Excluding Vat)

- ✚ Sub -Total 2: R 31 777,73(Excluding Vat)
- ✚ Sub- Total 3: R 36 227(Including Vat)

1.20.1 Explain how the aforesaid amount was derived.

- **Method of Assessment**

As mentioned, Kimopax made use of Guideline Document for the Evaluation of Financial Provisions made by Mining industry. For the purposed of determining the quantum for closure, It is assumed that the infrastructure will have no salvage value

- **Quantity Estimation**

For the purpose of this assessment, Kimopax can confirm that the method adopted to obtain and compile the schedule of quantities is sound, correct, and provides detail that is required by the DMR. The Information will allow for continued monitoring and updating of quantities and provides the ideal platform to manage and monitor the actual on-site rehabilitation measures and cost incurred.

- **Determination of Rates**

The method of determining the applicable rehabilitation rates is based on practical experience and information by third party contractors.

CALCULATION OF THE QUANTUM

Applicant: **KAYS COMMODITY AND INSTRUMENTS TRADING CC**

Ref: **30/5/1/1/2/12037PR**

Evaluator: **KIMOPAX PTY LTD**

Date:

19/04/2017

No.	Description	Unit	A	B	C	D	E=A*B*C*D
			Quantity	Master Rate	Multiplication factor	Weighting factor 1	Amount (Rands)
1	Dismantling of processing plant and related structures (including overland conveyors and power lines)	m3	0	14.55	1	1	0
2 (A)	Demolition of steel buildings and structures	m2	0	202.63	1	1	0
2(B)	Demolition of reinforced concrete buildings and structures	m2	0	298.61	1	1	0
3	Rehabilitation of access roads	m2	10	36.26	1	1	362.60
4 (A)	Demolition and rehabilitation of electrified railway lines	m	0	351.93	1	1	0
4 (A)	Demolition and rehabilitation of non-electrified railway lines	m	0	191.96	1	1	0
5	Demolition of housing and/or administration facilities	m2	0	405.26	1	1	0

6	Opencast rehabilitation including final voids and ramps	ha	0.05	212 439.65	1	1	10 621.98
7	Sealing of shafts adits and inclines	m3	0	108.78	1	1	0
8 (A)	Rehabilitation of overburden and spoils	ha	0.05	141 626.44	1	1	7 081.32
8 (B)	Rehabilitation of processing waste deposits and evaporation ponds (non-polluting potential)	ha	0	176 393.17	1	1	0
8 (C)	Rehabilitation of processing waste deposits and evaporation ponds (polluting potential)	ha	0	512 329.37	1	1	0
9	Rehabilitation of subsided areas	ha	0.02	118 590.81	1	1	2 371.82
10	General surface rehabilitation	ha	0.05	112 192.03	1	1	5 609.60
11	River diversions	ha	0	112 192.03	1	1	0
12	Fencing	m		127.98	1	1	0
13	Water management	ha	0	42 658.57	1	1	0
14	2 to 3 years of maintenance and aftercare	ha	0	14 930.50	1	1	0
15 (A)	Specialist study	Sum	0			1	0
15 (B)	Specialist study	Sum				1	0
Sub Total 1							26 047.32

1	Preliminary and General	3 125.68	weighting factor 2		3 125.68
			1		

2	Contingencies	2 604.73	2 604.73
			Subtotal 2
			31 777.73
			VAT (14%)
			4 448.88
			Grand Total
			36 227

1.20.2 Financial Provision

In terms of the newly promulgated NEMA Regulations 1147 and Regulation 53 of S41 of the MPRDA, the holder of a Mining Permit must make financial provisions, by one or more of the following methods, in order to achieve the total quantum of rehabilitation and remediation of environmental impacts and damage as well as final closure:

- Approved dedicated trust fund;
- Financial guarantee from a South African registered bank or any other approved financial institution;
- Cash deposit to be deposited at the office of the Regional Manager; or
- Any other manner determined by the Minister.

The client is required to annually assess the total quantum of environmental liability for the operation and ensure that financial provision is sufficient to cover the current liability (in the event of premature closure), as well as the end of life liability.

As per Government Legislature, the client is required to ensure full financial cover for the current liability at any point in the life of the operation. Pecuniary provision must be made for the short fall between the existing trust fund balance and the premature closure or current environmental rehabilitation liability if applicable.

1.20.3 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).

The amount of the finance the Mining activities have been estimated to **R 36 227, 00**. Financing will be sourced from the capital expenditure as planned by the company; this capital will come from Kays Commodity and Instruments Trading cc.

It should be noted that the current expenditure provided for in the Prospecting works programme does not include the calculated Financial Provisions included into the Basic Assessment, as these values were not available at the time of the submission of the Prospecting works programme.

The provision for closure, should be updated into the mining works programme prior the decision by the DMR should this decision be positive.

1.21 Specific Information required by the competent Authority

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

1.21.2 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 following impacts are regarded as community impacts.

- Potential soil pollution resulting from hydrocarbon spills and soil erosion.
- Noise due to the Drilling activities.
- Poor access control resulting in impacts on cattle movement, breeding and grazing practices.
- Influx of persons (job seekers) to site as a result of increased activity and the possible resultant increase in opportunistic crime.
- Job creation (The proposed project will create few employment opportunities).
- Visual Impact.

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

No heritage sites of significance were identified within the proposed development footprint.

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

None. Alternatives were considered and evaluated

2. PART B

2.1 ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

2.2 Draft environmental management programme.

2.3 Details of the EAP,

The requirement for the provision of the details and expertise of the EAP are included in PART A, section 1(a)

2.4 Description of the Aspects of the Activity

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).

2.5 Composite Map

Please refer to Appendix 1 for the Composite Map.

2.6 Description of Impact management objectives including management statements

2.6.1 Determination of closure objectives.

The rehabilitation plan is developed on the basis that the rehabilitated areas are safe, stable and non-polluting and are able to support a self-sustaining ecosystem similar to surrounding natural environment. To ensure that the rehabilitation plan is aligned with the closure objectives, a high level risk assessment of the mining components has been undertaken to establish the potential risks associated therewith.

The closure objectives are to:

- Remove and/or rehabilitate all pollution and pollution sources such as waste materials and spills.
- To establish rehabilitated area which is not subject to soil erosion which may result in the loss of soil and degradation of the environment.
- Restore disturbed area and re-vegetate this area with grass species naturally occurring in the area to restore the ecological function of such areas as far as practicable. Implement progressive rehabilitation measures, leaving a safe and stable environment for communities and animals
- To enhance positive socio-economic impacts in the area in which the operation is located following decommissioning and subsequent rehabilitation and closure by achieving sustainable

land-use conditions similar to that which existing prior to the mining, or alternatively as agreed with the applicable government regulator and affected communities.

2.7 Volumes and rate of water use required for the operation.

The applicant will use municipal water; therefore, there are no values for volumes of water per cubic meter which will be required.

2.8 Has a water use licence has been applied for?

The applicant will use municipal water; therefore, won't be a need for Water Use License Application for this prospecting application.

2.9 Impacts to be mitigated in their respective phases

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

ACTIVITIES	PHASE	SIZE AND SCALE of disturbance	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
<p>(E.g. For prospecting - drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route etc...etc...etc</p> <p>E.g. For mining,- excavations,</p>	<p>(Of operation in which activity will take place.</p> <p>State; Planning and design, Pre-Construction' Construction, Operational, Rehabilitation, Closure, Post closure).</p>	<p>(volumes, tonnages and hectares or m²)</p>	<p>(describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)</p>	<p>(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)</p>	<p>Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required.</p> <p>With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either: -. Upon cessation of the</p>

blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodatio n, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.)					individual activity or. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
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Transportation of equipment	Construction and operation	Only on the access roads to the area	Vehicles and machinery should be adequately maintained to prevent leaks resulting in soil contamination. Also only use designated roads and avoid the use of multiple roads.	Rehabilitation standards/ objectives	During construction and operational phases
	Construction and operation	Only on the access roads to the area	<ul style="list-style-type: none"> All heavy machinery transporting the equipment must move in a normal speed. Always use designated roads and avoid the use of multiple roads. 	Complying with local roads Regulations and Standards	During construction and operational phases
	Construction and operational	Only on the access roads to the area	Dust on roads should be suppressed with the use of water by a water cart truck.	Conduct dust suppression techniques to ensure that applicable standards for PM10 and PM2.5 are not exceeded	During construction and operational phases
	Construction and operational	Only on the access roads to the area	<ul style="list-style-type: none"> Vehicles and machinery should be adequately maintained to prevent spillages resulting in groundwater contamination. Should spillage occur implement appropriate clean up immediately	Maintaining spillage free surface	During construction and operational phases

Setting up mobile offices	Construction	Approximately less than 100m ²	<ul style="list-style-type: none"> This should involve the least disturbance to vegetation; and <p>Topsoil should be removed from all areas where physical disturbance of the surface area will occur.</p>	Remain within the ambits of the mining operations and Environmental Authorization	During construction phase
	Construction	Approximately less than 2ha	<ul style="list-style-type: none"> No trees or shrubs should be felled or damaged; and Open fires should not be allowed. 	<p>Remain within the ambits of the mining operations and Environmental Authorization.</p> <ul style="list-style-type: none"> No removal of vegetation outside demarcated area 	During construction phase
Topsoil removal and stockpile	Construction and Operation	Approximately 100m ²	Topsoil should be stockpiled in a designated area.	Remain within the ambits of the mining operations and Environmental Authorization.	During construction and operational phases
	Construction	Approximately 100m ²	<p>Topsoil should be removed from all areas where physical disturbance of the surface area will occur;</p> <ul style="list-style-type: none"> Topsoil should be kept separate 	Rehabilitation standards/ objectives	During construction phase

			<p>from subsoil; and</p> <ul style="list-style-type: none"> • Topsoil fertility, biological quality should be monitored and a management plan should be implemented. 		
	Construction and operation	Approximately 100m2	<ul style="list-style-type: none"> • Vegetation should be removed prior to topsoil removal in order to limit the effects of site clearance • Topsoil stockpiles will be allowed to naturally vegetate in order to stabilise particles and reduce the risk of wind erosion. 	<ul style="list-style-type: none"> • Remain within the ambits of the mining operations and Environmental Authorization. • No removal of vegetation outside demarcated area 	During construction and operational phases
Access roads	Construction and operation	Only on the access roads to the area	Route should be selected that a minimum number of bushes or trees are felled for roads.	<p>Remain within the ambits of the mining operations and Environmental Authorization.</p> <ul style="list-style-type: none"> • No removal of vegetation outside demarcated area 	During construction and operational phases
	Construction and operation	Only on the access roads to the area	Dust suppression on roads with the use of water- roads should be sprayed with water.	Conduct dust suppression techniques to ensure	During construction and operational phases

				that applicable standards for PM10 and PM2.5 are not exceeded	
	Construction and operation	Only on the access roads to the area	Usage of roads by trucks should be restricted to between sunrise and sunset.	Remain within the noise Regulations and Standards	During construction and operational phases
	Construction and operation	Only on the access roads to the area	Ensure surface levelling after use to prevent soil erosion.	Rehabilitation standards/ objectives	During construction and operational phases
Drilling	Operation	Approximately less than 3ha	Ensure that the stockpiles for the processed minerals are wetted to avoid dust generation. Also ensure that the processing machine is installed the water sprays for minimising the dust during the processing of the minerals	Conduct dust suppression techniques to ensure that applicable standards for PM10 and PM2.5 are not exceeded	During operational phase
	Operation	Approximately less than 3ha	Ensure that the dust is always being minimised to avoid the transportation of the dust to the local surface water through wind transportation	Conduct dust suppression techniques to ensure that applicable	During operational phase

				standards for PM10 and PM2.5 are not exceeded	
	Operational	Approximately less than 3ha	Noise level must be measured and the report must be produced with the recommendations once operational to determine the most generating noise equipment. This will help to mitigate the noise affecting the local biodiversity.	Remain within the noise Regulations and Standards	During operational phase
	Operational	Approximately less than 3ha	Noise level must be measured and the report must be produced with the recommendations once operational to determine the most generating noise equipment. This will help to mitigate the noise affecting the local people.	Remain within the noise Regulations and Standards	During operational phase

2.10 Impact Management Outcomes

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

ACTIVITY (whether listed or not listed).	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE In which impact is anticipated	MITIGATION TYPE	STANDARD TO BE ACHIEVED
<p>(E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors,</p>	<p>(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc....etc...)</p>		<p>(e.g. Construction, commissioning, operational Decommissioning, closure, post-closure)</p>	<p>(modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc)</p> <p>E.g.</p> <ul style="list-style-type: none"> • Modify through alternative method. • Control through noise control 	<p>(Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.</p>

etc...etc...etc.).				<ul style="list-style-type: none"> • Control through management and monitoring • Remedy through rehabilitation.. 	
Transportation of equipment	Soil compaction	Soil	Construction and operation	<ul style="list-style-type: none"> • Vehicles and machinery should be adequately maintained to prevent leaks resulting in soil contamination. • Also only use designated roads and avoid the use of multiple roads. 	Rehabilitation standards/ objectives
	Damage to roads	Interested and Affected parties	Construction and operation	<p>All heavy machinery transporting the equipment must move in a normal speed.</p> <ul style="list-style-type: none"> • Always use designated roads and avoid the use of multiple roads. 	Complying with local roads Regulations and Standards
	Dust pollution	Air quality	Construction and operation	Dust on roads should be suppressed with the use of water by a water cart truck.	Conduct dust suppression techniques to ensure that applicable

					standards for PM10 and PM2.5 are not exceeded
	Water pollution	Surface -and ground-water	Construction and operational	<ul style="list-style-type: none"> • Vehicles and machinery should be adequately maintained to prevent spillages resulting in groundwater contamination. • Should spillage occur implement appropriate clean up immediately 	Maintaining spillage free surface
Construction of the office block	Soil compaction	Soil	Construction	<ul style="list-style-type: none"> • Topsoil should be removed from all areas where physical disturbance of the surface will occur; <p>The topsoil removed for this activity should be stored within an area on higher ground of the mining area, outside the 1:50 flood level, but within the boundaries of the project area; and</p> <p>Oil spills should be cleaned up immediately</p>	Rehabilitation standards/ objectives

	Decreased land capability due to damage to the natural soil structure, and soil loss	Land capability	Construction	<ul style="list-style-type: none"> • This should involve the least disturbance to vegetation; and • Topsoil should be removed from all areas where physical disturbance of the surface area will occur 	Remain within the ambits of the mining operations and Environmental Authorization.
	Vegetation disturbance	Natural vegetation	Construction	<ul style="list-style-type: none"> • No trees or shrubs should be felled or damaged; and • Open fires should not be allowed 	<ul style="list-style-type: none"> • Remain within the ambits of the mining operations and Environmental Authorization. <p>No removal of vegetation outside demarcated area</p>
	Dust pollution	Air quality	Construction	Dust suppression by means of a water cart should be conducted on a daily basis to reduce dust emissions.	Conduct dust suppression techniques to ensure that applicable standards for PM10 and PM2.5 are not exceeded

	Water disturbance	Surface – and ground-water	Construction	<ul style="list-style-type: none"> Surface infrastructure such as offices and camps should not be located closer than 100 metres from any water courses. They should also not be located in an area that majorly blocks the water flow. No construction within the 1:50 year flood line Implement storm water control measures to separate clean and dirty water run off Spillages should be cleaned up immediately. 	<p>Remain within the ambits of the mining operations and Environmental Authorization.</p> <p>Maintaining a spillage free surface</p> <p>Construction activities outside demarcated areas</p>
Topsoil removal and stockpile	Visual quality of the landscape	Visual	Construction and Operation	Topsoil should be stockpiled in a designated area	Remain within the ambits of the mining operations and Environmental Authorization
	Damage to the natural soil structure due to soil handling,	Soil	Construction	<ul style="list-style-type: none"> Topsoil should be removed from all areas where physical disturbance of the surface area will occur; 	Rehabilitation standards/ objectives

	removal and mixing of soil types.			<ul style="list-style-type: none"> • The topsoil removed should be stored in an area on high ground in the project area outside the 1:50 flood level; • Topsoil should be kept separate from subsoil; and • Topsoil fertility, biological quality should be monitored and a management plan should be implemented 	
	Damage to natural vegetation due to dust emitted during the tipping and stockpiling, restricting photosynthesis	Vegetation	Construction and operation	Vegetation should be removed prior to topsoil removal in order to limit the effects of site clearance area	<ul style="list-style-type: none"> • Remain within the ambits of the mining operations and Environmental Authorization. • No removal of vegetation outside demarcated
	Altered surface flow dynamics	Surface water	Construction	<ul style="list-style-type: none"> • Vegetation should be removed prior to topsoil removal in to limit the effects 	<ul style="list-style-type: none"> • Remain within the ambits of the mining operations and

			of site clearance on surface water flow dynamics; and <ul style="list-style-type: none"> • Stockpiles should be allowed to naturally vegetate in to stabilise soil particles and prevent erosion, thus limiting siltation of surface water. 	Environmental Authorization. <ul style="list-style-type: none"> • No removal of vegetation outside demarcated area
Increased potential for dust emissions	Air quality	Construction and operation	Topsoil stockpiles will be allowed to naturally vegetate in order to stabilise particles and reduce the risk of wind erosion.	Conduct dust suppression techniques to ensure that applicable standards for PM10 and PM2.5 are not exceeded
Potential increase of noise	Noise	Construction and operation	Tipping of topsoil into stockpiles should occur between sunrises to sunset.	Remain within the noise Regulations and Standards
Access roads	Decreased agricultural and grazing potential of surrounding land	Natural vegetation	Construction and operation	Route should be selected that a minimum number of bushes or trees are felled for roads. <ul style="list-style-type: none"> • Remain within the ambits of the mining operations and Environmental Authorization. • No removal of vegetation outside

					demarcated area
	Potential dust pollution	Air quality	Construction and operation	Dust suppression on roads with the use of water- roads should be sprayed with water.	Conduct dust suppression techniques to ensure that applicable standards for PM10 and PM2.5 are not exceeded
	Potential elevated noise levels	Noise	Construction and operation	Usage of roads by trucks should be restricted to between sunrise and sunset.	Remain within the noise Regulations and Standards
	Loss of soil quantity	Soil	Construction and operation	Ensure surface levelling after use to prevent soil erosion.	Rehabilitation standards/ objectives
Drilling	Potential increase of air quality pollution	Air quality	Operation	Ensure that the stockpiles for the processed minerals are wetted to avoid dust generation. Also ensure that the processing machine is installed the water sprays for minimising the dust during the processing of the minerals	Conduct dust suppression techniques to ensure that applicable standards for PM10 and PM2.5 are not exceeded
	Contamination of surface water	Water quality	Operation	Ensure that the dust is always being minimised to avoid the transportation of the dust to the local surface water through	Conduct dust suppression techniques to ensure that applicable standards for PM10 and

				wind transportation	PM2.5 are not exceeded
	Threat to the local biodiversity	Biodiversity	Operation	Noise level must be measured and the report must be produced with the recommendations once operational to determine the most generating noise equipment. This will help to mitigate the noise affecting the local biodiversity.	Remain within the noise Regulations and Standards
	Increase in noise level in the area	Noise	Operation	Noise level must be measured and the report must be produced with the recommendations once operational to determine the most generating noise equipment. This will help to mitigate the noise affecting the local people.	Remain within the noise Regulations and Standards

2.10 Impact Management Actions

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

etc...etc...etc.).		<ul style="list-style-type: none"> • Control through noise control • Control through management and monitoring Remedy through rehabilitation.. 	or. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.	
Transportation of equipment	Soil compaction	<ul style="list-style-type: none"> • Vehicles and machinery should be adequately maintained to prevent leaks resulting in soil contamination. • Also only use designated roads and avoid the use of multiple roads. 	Construction and operation	Rehabilitation standards/objectives
	Damage to roads	<ul style="list-style-type: none"> • All heavy machinery transporting the equipment must move in a normal speed. • Always use designated roads and avoid the use of multiple roads. 	Construction and operation	Complying with local roads Regulations and Standards

	Dust pollution	Dust on roads should be suppressed with the use of water by a water cart truck	Construction and operation	Conduct dust suppression techniques to ensure that applicable standards for PM10 and PM2.5 are not exceeded
	Water pollution	<ul style="list-style-type: none"> • Vehicles and machinery should be adequately maintained to prevent spillages resulting in groundwater contamination. • Should spillage occur implement appropriate clean up immediately 	Construction and operational	Maintaining spillage free surface
Setting up of temporary offices	Vegetation disturbance	<ul style="list-style-type: none"> • No trees or shrubs should be felled or damaged; and • Open fires should not be allowed. 	Construction	<p>Remain within the ambits of the mining operations and Environmental Authorization.</p> <ul style="list-style-type: none"> • No removal of vegetation outside demarcated area
	Water disturbance	<ul style="list-style-type: none"> • Surface infrastructure such as offices and camps should not be located closer than 100 	Construction	<ul style="list-style-type: none"> • Remain within the ambits of the mining operations and Environmental Authorization.

		<p>metres from any water courses. They should also not be located in an area that majorly blocks the water flow.</p> <ul style="list-style-type: none"> • No construction within the 1:50 year flood line • Implement storm water control measures to separate clean and dirty water run off • Spillages should be cleaned up immediately 		<ul style="list-style-type: none"> • Maintaining a spillage free surface • Construction activities outside demarcated areas
	Dust pollution	Dust suppression by means of a water cart should be conducted on a daily basis to reduce dust emissions.	Construction	Conduct dust suppression techniques to ensure that applicable standards for PM10 and PM2.5 are not exceeded
Topsoil removal and stockpile	Visual quality of the landscape	Topsoil should be stockpiled in a designated area	Construction and Operation	Remain within the ambits of the mining operations and Environmental Authorization

	<p>Damage to the natural soil structure due to soil handling, removal and mixing of soil types.</p>	<ul style="list-style-type: none"> • Topsoil should be removed from all areas where physical disturbance of the surface area will occur; • The topsoil removed should be stored in an area on high ground in the project area outside the 1:50 flood level; • Topsoil should be kept separate from subsoil; and • Topsoil fertility, biological quality should be monitored and a management plan should be implemented 	<p>Construction</p>	<p>Rehabilitation standards/objectives</p>
	<p>Damage to natural vegetation due to dust emitted during the tipping and stockpiling, restricting photosynthesis</p>	<p>Vegetation should be removed prior to topsoil removal in order to limit the effects of site clearance</p>	<p>Construction and operation</p>	<ul style="list-style-type: none"> • Remain within the ambits of the mining operations and Environmental Authorization. • No removal of vegetation outside

			demarcated area	
Altered surface flow dynamics	Vegetation should be removed prior to topsoil removal in to limit the effects of site clearance on surface water flow dynamics; and Stockpiles should be allowed to naturally vegetate in to stabilise soil particles and prevent erosion, thus limiting siltation of surface water.	Construction	Remain within the ambits of the mining operations and Environmental Authorization. No removal of vegetation outside demarcated area	
Increased potential for dust emissions	Topsoil stockpiles will be allowed to naturally vegetate in order to stabilise particles and reduce the risk of wind erosion.	Construction and operation	Conduct dust suppression techniques to ensure that applicable standards for PM10 and PM2.5 are not exceeded	
Potential increase of noise	Tipping of topsoil into stockpiles should occur between sunrises to sunset	Construction and operation	Remain within the noise Regulations and Standards	
Access roads	Decreased agricultural and grazing potential	Route should be selected that a minimum number of	Construction and operation	Remain within the ambits of the mining operations and

	of surrounding land	bushes or trees are felled for roads		Environmental Authorization. No removal of vegetation outside demarcated area
	Potential dust pollution	Dust suppression on roads with the use of water- roads should be sprayed with water	Construction and operation	Conduct dust suppression techniques to ensure that applicable standards for PM10 and PM2.5 are not exceeded
	Potential elevated noise levels	Usage of roads by trucks should be restricted to between sunrise and sunset	Construction and operation	<ul style="list-style-type: none"> Remain within the noise Regulations and Standards
	Loss of soil quantity	Ensure surface levelling after use to prevent soil erosion.	Construction and operation	Rehabilitation standards/objectives
Drilling	Potential increase of air quality pollution	Ensure that the stockpiles for the processed minerals are wetted to avoid dust generation. Also ensure that the processing machine is installed the water sprays for minimising the dust during the processing of the minerals	Operation	Conduct dust suppression techniques to ensure that applicable standards for PM10 and PM2.5 are not exceeded

	Contamination of surface water	Ensure that the dust is always being minimised to avoid the transportation of the dust to the local surface water through wind transportation	Operation	Conduct dust suppression techniques to ensure that applicable standards for PM10 and PM2.5 are not exceeded
	Threat to the local biodiversity	Noise level must be measured and the report must be produced with the recommendations once operational to determine the most generating noise equipment. This will help to mitigate the noise affecting the local biodiversity	Remain within the noise Regulations and Standards	Operation
	Increase in noise level in the area	Noise level must be measured and the report must be produced with the recommendations once operational to determine the most generating noise equipment. This will help to mitigate the noise affecting	Remain within the noise Regulations and Standards	Operation

		the local people		
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2.11 Financial Provision

2.11.1 Determination of the amount of Financial Provision.

2.11.1.1 Describe the closure objectives and the extent to which they have been aligned to the baseline environment described under the Regulation.

The rehabilitation plan is developed on the basis that the rehabilitated areas are safe, non-polluting and are able to support a self-sustained ecosystem similar to surrounding natural environment. To ensure that the rehabilitation plan is aligned with the closure objective, a high level risk assessment of the mining components has been undertaken to establish the potential risk associated therewith

The closure objectives are to:

- Remove and/or rehabilitate all pollution and pollution sources such as waste material and spills,
- To establish rehabilitated area which is not subject to soil erosion which may result in the loss of soil, degradation of the environment and cause pollution of the surface water resources,
- Restore disturbed area and re-vegetate these areas with grass species naturally occurring in the area to restore the ecological function of such areas as far as is practicable,
- Implement progressive rehabilitation measures, leaving a safe and stable environment for communities and animals.

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

The Basic Assessment Report and Environmental Management Plan will be made available to each registered stakeholder and Landowners for review and comment. All comments are captured in the comments and response section and are included will be included in the final report.

2.11.2 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.

Soil.

- Where soil is significantly disturbed, topsoil is to be removed and stockpiled as near as reasonably practicable to the working area, together with all leaf and plant litter. Where subsoil is disturbed, this is also to be stockpiled as near as practicable to the working area, but separately to the topsoil.
- When refilling holes and trenches, soil should be compacted into the trench or hole to minimize settlement in the future. Such openings should be initially refilled to above the natural ground level to allow for subsequent settlement. However, this should not normally exceed 150mm above natural ground level. Follow-up surveys should be conducted at appropriate intervals of time following backfilling. Standard conditions will require that soil be placed as soon as is practicable, in order that the microbial activity, seed viability and soil fertility are maintained. Soil is to be replaced such that the subsoil is replaced first, and the topsoil is replaced last.

Vegetation

- Standard conditions require that vegetation removal be kept minimum. Where possible, locate vehicle access tracks at a reasonable distance, normally at least 2m, from trees greater than 15mm in diameter. Minimal tree trimming to gain access for vehicles is preferable to felling. Where trees have to be removed, timber should be cut and moved to one side of the track to allow salvage. Trees should be cut at a base at a height equal to the diameter of the tree rather than uprooted, to allow coppicing.
- Where rehabilitation back to cover of native vegetation is to be undertaken, species native to the local area should be used. Follow-up surveys at appropriate intervals should be undertaken after planting to ensure that successful re-vegetation has been achieved.

Tracks (Access roads)

- Vehicular access to areas should, as far as practicable, utilize existing tracks rather than cutting new ones. If the use of a vehicle involves no marked disturbance to the land surface, the requirement to rehabilitate does not apply.
- Where it is necessary to cut a new track, this should be planned in advance to avoid, if possible, areas where track construction is likely to be difficult or environmentally damaging.

- Measures should be taken to minimize soil erosion and deterioration of water quality in the vicinity of tracks constructed by the licensee. Tracks should not follow the course of streams or drainage lines.
- Tracks routes should also seek to minimize any impact on landscape values. Account should be taken of areas likely to be visible from public vantage points, towns, cities or highways. Tracks should be planned as much as a reasonably possible, to blend into the terrain and maintain landscape values. This may not always be the shortest or maintain landscape values. This may not always be the shortest or most direct route.
- Rehabilitation of embankments and fills should be undertaken at the time of construction of the track. Fills and embankments may require consolidation. If tracks are to be retained for a significant time, faces and slopes requiring stabilization and drainage should be seeded with grasses or other species consistent with the surrounding vegetation to establish protective ground cover. It may be necessary respreads topsoil on embankments to assist in plant establishment.

Rubbish and waste

- Rubbish materials should be removed from a work site or survey area at the completion of works. Where site occupation is prolonged, periodic removal of rubbish may also be required. Rubbish should be disposed of at an appropriate rubbish disposal site. Redundant equipment should also be removed from the license area.
- Work sites should be provided with a rubbish receptacle to facilitate rubbish removal at the completion of an operation.
- Portable self-contained toilets facilities should be provided at work sites, such as drill sites. Toilet waste from portable toilets should be removed from site periodically, and disposed of at a site appropriate for such waste.

2.11.3 Explain why it can be confirmed that the rehabilitation plan is compatible with the closure objectives.

Due to the nature of the activities, the impacts will be very limited. The management plan is provided in such a manner as to ensure concurrent rehabilitation. In this event the activities will be temporary in

nature, and a detailed management plan has been provided to address potential impacts associated with these activities.

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

The “Guideline Document for the evaluation for financial provision made by the Mining Industry” was developed by the DMR in January 2005, in order to empower the personnel at Regional DMR offices to review the quantum determination for the rehabilitation and closure of mining sites. With the determination of the quantum for closure it must be Assumed that the infrastructure has no salvage value (clean closure). The clean closure cost estimate (clean closure) was determined in accordance with the DMR guidelines and is based, where possible, on actual costs provided by the third party contractor.

The amount of finance of the Mining activities will amount to.

- Sub-Total 1:26047,322(Excluding Vat)
- Sub-Total 2:31777,73(Excluding Vat)
- Sub-Total3:36227(Including Vat)

2.11.5 Confirm that the financial provision will be provided as determined.

The amount of finance of the Mining activities will amount to R36 227. Financing will be sourced from the capital expenditure as planned by the company; this capital will come from the treasury of the company.

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

- a) Monitoring of Impact Management Actions
- b) Monitoring and reporting frequency
- c) Responsible persons
- d) Time period for implementing impact management actions
- e) Mechanism for monitoring compliance

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
Transportation of equipment	Soil compaction	Soil quality sampling for laboratory analysis	Environmentalist	Quarterly with report after receiving of the laboratory results
	Damage to roads	Inspection for nearby infrastructures and roads due to mining operations	Community liaising officer	Monthly with a monthly feedback report
	Dust pollution	PM10 monitoring along the mine boundary. Continuous or once-off	Environmentalist	<ul style="list-style-type: none"> • Weekly in the case of once-off samples. • Monthly reports.

		measurements		
	Water pollution	Water quality in and close to the mining operations	Environmentalist	To be determined with consultation with the Department of Water and Sanitation regarding water use
Construction of temporary office administration	Soil compaction	Soil quality sampling for laboratory analysis	Environmentalist	Quarterly with report after receiving of the laboratory results
	Decreased land capability due to damage to the natural soil structure, and soil loss	Soil quality sampling for laboratory analysis	Environmentalist	Quarterly with report after receiving of the laboratory results
	Vegetation disturbance	Develop alien invasive species monitoring programme, as well as eradication programme	Environmentalist	Within existing programmes
	Water disturbance	Water quality in and close to the mining operations	Environmentalist	To be determined with consultation with the Department of Water and Sanitation regarding water use
	Dust pollution	PM10 monitoring along the mine	Environmentalist	<ul style="list-style-type: none"> Weekly in the case of

		boundary. Continuous or once-off measurements		once-off samples. • Monthly reports.
Access roads	Decreased agricultural and grazing potential of surrounding land	Develop alien invasive species monitoring programme, as well as eradication programme	Environmentalist	Within existing programmes.
Drilling	Potential dust pollution	PM10 monitoring along the mine boundary. Continuous or once-off measurements	Environmentalist	Weekly in the case of once-off samples. Monthly reports.
	Potential elevated noise levels	Noise level monitoring on the operation noise generating equipment	Environmentalist	Weekly inspection with a monthly report
	Loss of soil quantity	Soil quality sampling for laboratory analysis	Environmentalist	Quarterly with report after receiving of the laboratory results
Drilling	Potential increase of air quality pollution	<ul style="list-style-type: none"> • PM10 monitoring along the mine boundary. • Continuous or once-off measurements 	Environmentalist	<ul style="list-style-type: none"> • Weekly in the case of once-off samples. • Monthly reports.
	Contamination of surface water	Water quality in and close to the mining operations	Environmentalist	To be determined with consultation with the

				Department of Water and Sanitation regarding water use
	Threat to the local biodiversity	Develop alien invasive species monitoring programme, as well as eradication programme	Environmentalist	Within existing programmes.
	Increase in noise level in the area	Noise level monitoring on the operation noise generating equipment	Environmentalist	Weekly inspection with a monthly report

2.13 Indicate the frequency of the submission of the performance assessment/ environmental audit report.

Annual performance assessments must be undertaken on the EMP. These reports must also include the assessment of the financial provisions. The reports should be submitted to the DMR

2.13.1 Environmental Awareness Plan

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

An Environmental Awareness and Risk Assessment Schedule have been developed and is outline in the table below. The purpose of this schedule is to ensure that employees are not only trained but that the principles are continuously re-enforced.

Figure 20: Environmental Awareness Schedule

Frequency	Time allocation	Objective
Induction (all staff and workers)	1 hour training on environmental awareness training as part of site induction.	<p>1. Develop an understanding of what is meant by the natural environmental and social environment and establish a common language as it relates to environmental, health, safety and community aspects.</p> <p>Establish a basic knowledge of the environmental legal framework and consequences of non-compliance.</p> <p>3. Clarify the content and required actions for the implementation of the Environmental Management</p>

		<p>Plan.</p> <p>4. Confirm the spatial extent of areas regarded as sensitive and clarify restrictions.</p> <p>5. Provide a detailed understanding of the definition, the method for identification and required response to emergency incidents</p>
Monthly Awareness Talks (all staff and workers)	30 minute awareness talks	Based on actual identified risks and incidents (if occurred) reinforce legal requirements, appropriate responses and measures for the adaptation of mitigation and/or management practices.
Risk Assessments (supervisor and workers involved in task)	Daily task based risk assessment	Establish an understanding of the risks associated with a specific task and the required mitigation and management measures on a daily basis as part of daily tool box talks.

2.13.3 Manner in which risks will be dealt with in order to avoid pollution or the degradation of the environment.

As prescribed in Table above, Task/ Issue Based Risk Assessments must be under taken with all worker involved in the specific task in order to establish an understanding of the risks associated with a specific task and the required mitigation and management measures.

Environmental Awareness Training Content - Induction Training:

- The following environmental awareness training will be provided to all staff and workers who will be involved in the Mining activities.

- Description of the approved mining activities and the content of the Mining permit;
- An overview of the applicable legislation and regulations as it relates to environmental, health, safety and community including (but not limited to):
 - ✓ General Environmental Legal Principles and Requirements
 - ✓ Air Quality Management
 - ✓ Water and wastewater management
 - ✓ Hazardous substances
 - ✓ Non-Mining-Related waste management
 - ✓ Biodiversity
 - ✓ Heritage resources
 - ✓ General Health and safety matters
 - ✓ Basic conditions of Employment
 - ✓ Compensation for Occupational Injuries and diseases
 - ✓ Smoking in the work place
 - ✓ Noise and Hearing Conservations
 - ✓ Handling and use of Hazardous substances
 - ✓ Weapons and fire arms.
- Gratiified and implementation of the approved Environmental Management Plan
 - ✓ Allocated responsibilities and functions.
 - ✓ Management and mitigation measures.
 - ✓ Identification of risks and requirements adaptation.
- Sensitive environments and features
 - ✓ Description of the environmentally sensitive areas and features
 - ✓ Prohibitions as it relates to activities in or proximity to such areas
- Emergency Situations and Remediation
 - ✓ Methodology for the identify areas where accidents and emergency situations may occur, communities and individuals that may be impacted
 - ✓ An overview of the response procedures,
 - ✓ Equipment and resources
 - ✓ Designate of responsibilities
 - ✓ Communication, including communication with potentially affected communities
 - ✓ Training schedule to ensure effective response

Development of procedures and checklists

The following procedures will be developed and all staff and workers will be adequately trained on the content and implementation thereof.

Emergency preparedness and response.

The procedure will be developed to specifically include risk identification, preparedness, response measures and reporting. The appropriate emergency control centres (fire department, hospitals) will be identified and the contact numbers obtained and made available on site. The procedure must be developed in consultation with all potentially affected landowners.

In the event that risks are identified which may affect adjacent landowners or other persons, the procedure will include the appropriate communication strategy to inform such persons and provide response measures to minimize impact.

Incident Reporting Procedure

Incident reporting will be undertaken in accordance with an established incident reporting procedure to (including but not limited to):

- Provide details of the responsible person including any person who: (i) is responsible for any incident; (ii) owns any hazardous substance involved in the incident; or (iii) was in control when incident occurred;
- Provide details of the incident (time, date, location);
- The details of the cause of the incident;
- Identify the aspects of the environmental impacted;
- The details corrective action taken, and
- The identification of any potential residual or secondary risks that must be monitored and corrected or managed

Environmental and Social Audit Checklist

An Environmental audit checklist will be established to include the environmental and social mitigation and management measures as developed and approved as part of the Environmental Management Plan. Non-conformances will be identified and corrective action taken where required.

2.13.4 Specific information required by the Competent Authority

No specific information has been required by the Competent Authority so far.

2.14 UNDERTAKING

The EAP herewith confirms

The correctness of the information provided in the reports;

The inclusion of comments and inputs from stakeholders and I&APs;

The inclusion of inputs and recommendations from the specialist reports where relevant and

That the information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties are correctly reflected herein.



Signature of the environmental assessment practitioner:

KIMOPAX PTY LTD

Name of company:

19 April 2017

Date:

APPENDIX 1: MAPS

APPENDIX 2: PUBLIC PARTICIPATION REPORT

APPENDIX 3: SITE LAYOUT PLAN

APPENDIX 4: LAND CLAIM ENQUIRY

APPENDIX 5: DETAILS OF THE EAP