

Draft Basic Assessment Report and Environmental Management Programme for the Proposed Prospecting Right Application for Manganese ore on Portion 02 of the farm Adams No 328 under Joe Morelong Local Municipality, John Taolo Gaetsewe District in Northern Cape Province.

DMR REF: NC 30/5/1/1/2/ 12581 PR

Prepared for: Red Dust Trading (Pty) Ltd

Prepared by: Mielelani Consultancy

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mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

BASIC ASSESSMENT REPORT

And

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

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

NAME OF APPLICANT:	RED DUST TRADING (PTY) LTD
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FILE REFERENCE NUMBER SAMRAD:	NC 30/5/1/1/2/ 12581 PR

1. 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 the these aspects to determine:
 - (i) the nature, significance, consequence, extent, duration, and probability of the impacts occurring to; and
 - (ii) the degree to which these impacts—
 - (aa) can be reversed;
 - (bb) may cause irreplaceable loss of resources; and
 - (cc) can be managed, avoided or mitigated;
- (e) through a ranking of the site sensitivities and possible impacts the activity and technology alternatives will impose on the sites and location identified through the life of the activity to—
 - (i) identify and motivate a preferred site, activity and technology alternative;
 - (ii) identify suitable measures to manage, avoid or mitigate identified impacts; and
 - (iii) identify residual risks that need to be managed and monitored.

PART A

SCOPE OF ASSESSMENT AND REPORT

1. Contact Person and correspondence address

a) Details of

i) Details of the EAP

Names of Practitioner:	Phathutshedzo Mugagadeli
Qualifications	BSc in Environmental Sciences and Bachelor of Science Honours in Geography.
Cell No.:	073 796 6769
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e-mail address:	phathu@mielelani.co.za / eenvironment@gmail.com

ii) Expertise of the EAP.

The EAP has BSc in Environmental Sciences and Bachelor of Science Honours in Geography.

Please see Curriculum Vitae attached as Appendix.

Summary of the EAP's past experience.

- Mr Mugagadeli Phathutshedzo has a solid 4 years' experience in Conducting EIAs. He has conducted EIAs for various projects including but not limited to Construction, Agricultural, Prospecting and Mining as well as Waste Management. His exposure to different working environment has greatly advanced his technical ability in identifying and assessing impacts as well as providing mitigation thereof, from this role he has learnt the best practical strategies to manage and mitigate impacts. The EAPs' CVs are attached as Appendix.

b) Location of the overall Activity

Farm Name:	Portion 02 of Farm Adams 328	
Application area (Ha)	Approximately 1 767.9881 Ha	
Magisterial district:	Kalahari District, Northern Province	
Distance and direction from nearest town	Approximately about 15.7km South of Hotazel, 38km North from Kathu and 56km west of the town of Kuruman.	
21 digit Surveyor General Code for each farm portion	21 DIGIT CODE	FARM PORTION
	C04100000000032800002	Portion 02 of Adams 328

c) Locality map

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

The Map has been attached as **Appendix**

Proposed Prospecting Area

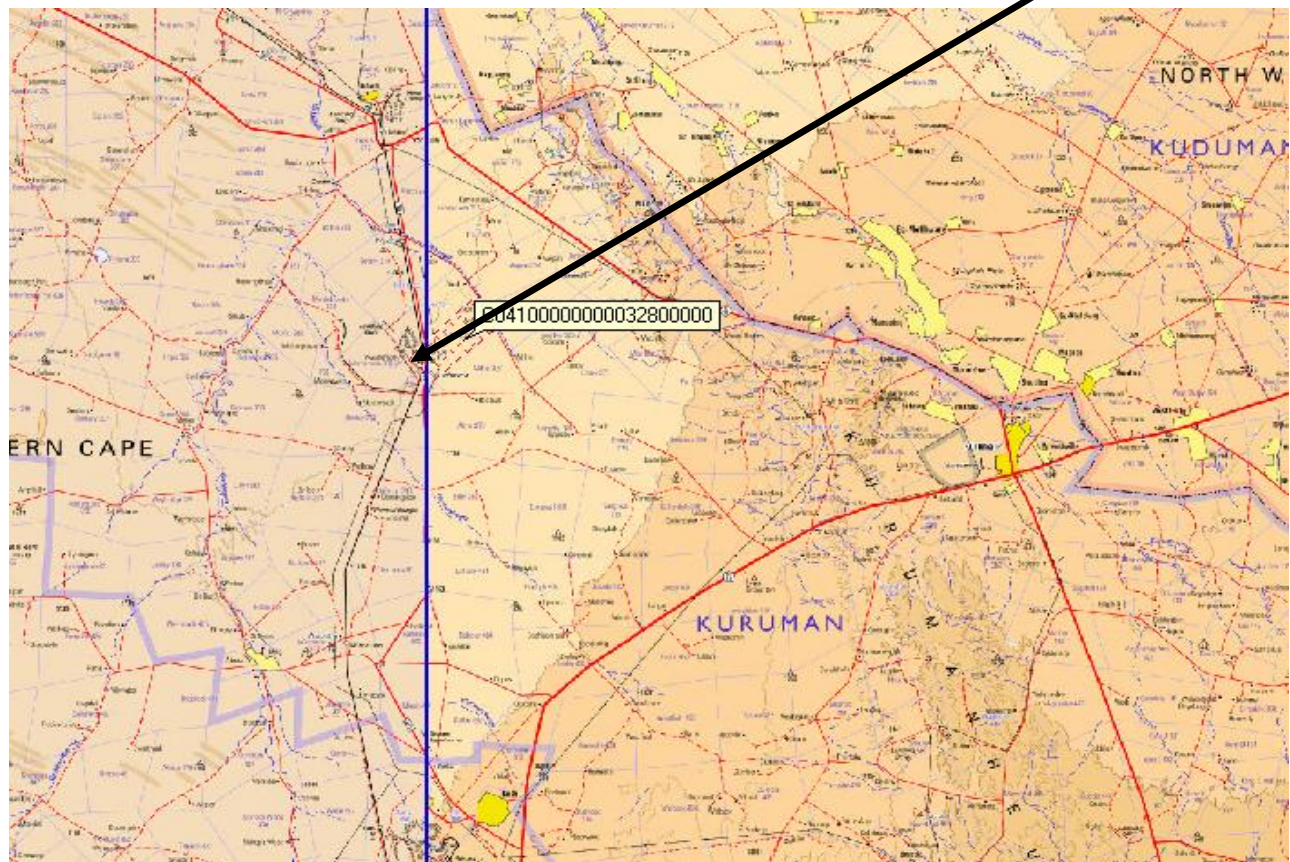
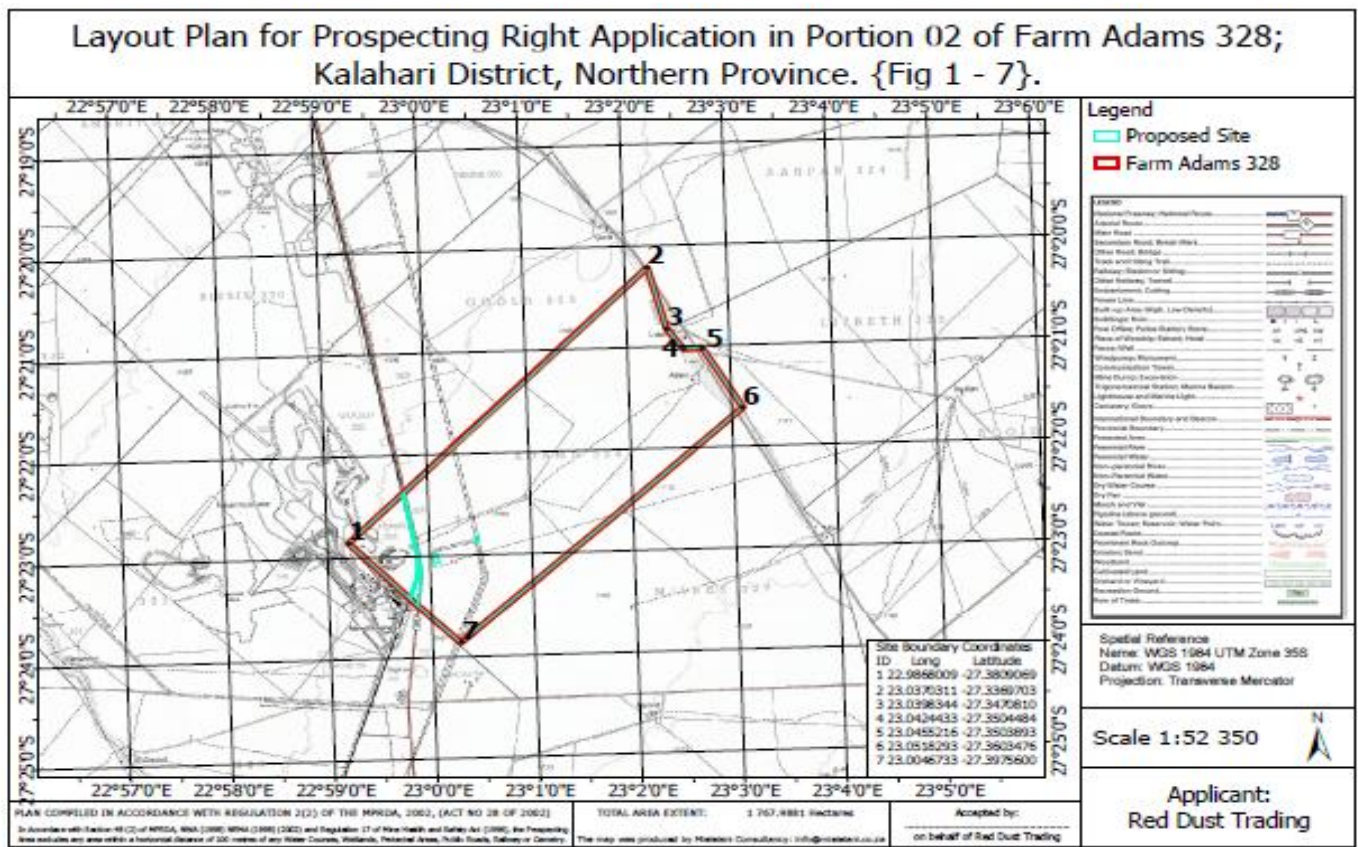


Figure: Regulation 2.2 Map of the Prospecting Application Area



d) DESCRIPTION OF THE SCOPE OF THE PROPOSED OVERALL ACTIVITY

1) DESCRIPTION OF PLANNED NON-INVASIVE ACTIVITIES:

a) Desktop Study

It is more of a literature review and research on all the completed work on the area, it also includes accruing results from the companies that has already worked on the area.

b) Field Mapping

This involves the geologist walking the area and making observations which are then recorded on a map.

c) Geophysical surveys to be undertaken

A geomagnetic survey will be undertaken to determine the presence of igneous intrusions. This survey will consist of traverses using a hand held magnetometer. A GPS will be used to record the data point locations. No roads will need to be constructed for this survey. No trees will need to be removed during this survey.

DESCRIPTION OF PLANNED INVASIVE ACTIVITIES:

Proposed Activity Description

Non-Invasive activities

(a) Geological surface mapping

The first phase of geological mapping will be focused on evaluation the potential of the manganese deposit within the prospecting area. This will be conducted through surface mapping, structural mapping and subsurface interpretations of the structural trends to identify potential open-castable mineral reserves of undisturbed structural blocks.

(b) Geophysical Surveys

Ground magnetics and ground gravity geophysical programmes will be conducted on a 100m x 100m pre-determined grid to determine the location of the manganese formation. From the primary geophysics, infill substations (50m x 50m grid spacing) will be conducted on geophysical targets.

(c) Geochemical Surveys

A geochemical survey/sampling programme will be utilised in terms of analysing the in-situ ore material across the area. The purpose of this assaying technique is to determine the subsurface ore grade variation throughout the prospecting area. The sample spacing will be confined to approximately 200m, where possible, and selected based on the availability of fresh subsurface ore material.

(d) Geological Modelling

Structural interpretation revisited with follow up field mapping. This phase constitutes the following:

Validation of data and input into computer software package;

Generation of geological model and generation of mineral resource estimates;

Structural Interpretation revisited with follow up field mapping;

CPR report construction JORC compliant.

Invasive Activities

(i) Diamond Drilling

A programme of (30) surface diamond drill holes are planned, comprising HQ and NQ size core at depths of 50m to 100m, thus producing drilled cores. The drilling locations are selected based on the previous phases of exploration in which data acquisition and interpretations of the ore body have resulted in the delineation of target areas for subsurface drilling exploration. The drilling programme consists of the following:

- 30 drilling holes in total
 - 20 Drill holes allocated to delineating the shallow pockets of the manganese ore;
 - 10 drill holes allocated for deeper drilling for duplicate material.

The drilling programme is envisaged within the following timeframe:

- Health and safety, environment and community – 1 month
- HSEC risk assessment – 3 days
- Engage contractor – 3 weeks
- Safety induction of contractor – 3 days
- Site establishment/ intersite move – 1 day per site
- Commencement of drilling – within 6 months
- Rehabilitation will be carried concurrently as drilling progresses
- Logging of core, capturing and validating into database – concurrently with drilling on an ongoing basis
- Chemical analyses – concurrently with drilling

Access

Due to terrain, it is envisaged that access may have to be constructed for the drill rig to reach a particular site. The type of access envisaged is limited to removal of large rocks and disturbance of vegetation. Such access roads may also require 'light' grading to allow the movement of surface mobile vehicles.

Several existing tracks exist on the site and these will be used whenever possible. The Farmer's access road will be utilized in most cases, so no envisaged ground disturbance is planned or foreseen.

Rehabilitation

Rehabilitation of drill-sites will be done concurrently as each hole is completed. Access road rehabilitation is carried out when all prospecting phases are completed at the end of the diamond drilling activity. Rehabilitated sites will be monitored after drilling and trenching has been completed to ensure vegetation growth re-occurs.

On completion of the prospecting operation, the various surfaces, including the access road, will finally be rehabilitated as follows: Any compacted area will be ripped to a depth of 300mm, where possible, the topsoil or growth medium returned and landscaped.

All equipment and other items used during the operational period will be removed from the site.

- Rehabilitation of the secured storage areas

On completion of the prospecting operation, the above areas will be cleared of any remaining contaminated soil which will be placed in acceptable containers and removed with the industrial waste to a recognised disposing facility or by a waste removal company. All buildings, structures or objects in the secured storage areas shall be dealt with in accordance with regulation 44 of the Mineral and Petroleum Resources Development Act, 2002.

The surface will be ripped or ploughed to a depth of at least 300mm, where possible, and the topsoil, previously stored adjacent the site, distributed evenly to its original depth over the whole area. The area will then be fertilized if necessary (based on a soil analysis). The site will be seeded with a vegetation seed mix adapted to reflect the local indigenous flora if necessary.

Any other disturbed areas will be rehabilitated as described under the relevant activities.

- Submission of information

Reports on rehabilitation and monitoring will be submitted annually to the Department of Mineral Resources.

- Maintenance (Aftercare)

Maintenance after closure will mainly concern the regular inspection and monitoring and/ or completion of the re-vegetation programme.

The aim of this BAR and Environmental Management Programme is for rehabilitation to be stable and self-sufficient, so that the least possible aftercare is required.

The aim with the closure of the mine will be to create an acceptable to post-mine environment and land-use. Therefore, all agreed commitments will be implemented by the Mine Management.

- **After-effects following closure**

- Acid mine drainage.

No potential for bad quality leachate or acid mine drainage development exist after mine closure.

- Long term impact on ground water.

No after effects on the groundwater yield or quality is expected.

- Long-term stability of rehabilitated land.

One of the main aims if any rehabilitated ground will be to obtain a self-sustaining and stable end result. The drill holes will be closed as prescribed and will have long term stability.

Table

Phase	Activity <small>(what are the activities that are planned to achieve optimal prospecting)</small>	Skill(s) required <small>(refers to the competent personnel that will be employed to achieve the required results)</small>	Timeframe <small>(in months) for the activity)</small>	Outcome <small>(What is the expected deliverable, e.g. Geological report, analytical results, feasibility study, etc.)</small>	Timeframe for outcome <small>(deadline for the expected outcome to be delivered)</small>	What technical expert will sign off on the outcome? <small>(e.g. geologist, mining engineer, surveyor, economist, etc)</small>
Phase 1	NON – INVASIVE (2 years)					
	Desk-to survey	geologist	12 months	All past information & results. Initial report	Months 12	Geologist
	Geological mapping	Samplers, geologist	2 months	Geological map of area	Months 18	Geologist
	Geochemical survey	Geologist	6 months	Geochemical map and targets	Months 24	Geologist
	Interpretation	Geologist	3 months	Sections, plans and report	Months 24	Geologist
	Drilling plans	Geologist	1 months	Exact locations, orientations, contract	Months 24	Contracted driller Site manager
Phase 2	INVASIVE PROSPECTING (2 years)					
	Scout reconnaissance drilling	Foreman, driller, labour, geologist	6 months	Drill samples, assay	Months 36	Geologist & compliance officer
	Resource Infill drilling	Labour, driller, geologist	12 months	Foreman, labour, driller, geologist	Months 36	Contractor and site manager
	Specialist core studies	Several specialists	2 months	Mineralogy, rock mechanics	Months 48	Mineralogist
	Metallurgical testwork	Consulting metallurgist	3 months	Information on crushing, milling, recovery and equipment	Months 48	Metallurgist
	Interpretation of results	Geologist	1 months	Technical reports	Months 48	Geologist, mining engineer

Phase 3	NON INVASIVE (1 year)					
	Completion of all site work	Labour, Environmentalist	3 months	Restoration of site	Months 60	Geologist, environmentalist
	Additional studies	Specialized inputs	3 months	Modeling, ore resources	Months 60	IT & Resource specialists
	Valuation	Mineral economist	2 months	Financial analysis, funding options	Months 60	Mineral economist
	Completion Report	All disciplines	2 months	Pre-feasibility report and resource statement	Months 60	Geologist, mineral economist. Senior manager
	Preparation of mining right or decommissioning and closure	Specialized inputs	2 months	Mining Right or closed operation	Months 60	Geologist, environmentalist

I) Listed and specified activities

Table: 2 Listed Activities

NAME OF ACTIVITY (E.g. For prospecting - drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route etc...etc...etc	Aerial extent of the Activity Ha or m²	LISTED ACTIVITY (Mark with an X where applicable or affected).	APPLICABLE LISTING NOTICE (GNR 983, 984, 985)	WASTE MANAGEMENT AUTHORISATION (Indicate whether an authorisation is required in terms of the Waste Management Act). (Mark with an X)
Any activity which requires a prospecting right in terms of section 16 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).	Extent of application area:1767.9881 Hectares	Activity 20	GNR 327 Listing Notice 1 (April 2017)	N/A
Vegetation will be cleared to establish drill pad areas and to create access roads.	≤1 ha	Activity 27	GNR 327 – Listing Notice:1 (April 2017)	N/A
Equipment & Sample Storage	300 m ²			N/A
Access Routes	0.32 ha			N/A
Site Camp Establishment	0.45 ha			N/A

II) DESCRIPTION OF THE ACTIVITIES TO BE UNDERTAKEN

The following section presents a detailed description of all the activities associated with the proposed Prospecting Application. Due to the nature of the Prospecting Works Programme, and the fact that the specific prospecting activities required are dependent on the preceding phase, assumptions are presented where required.

Invasive Activities

(ii) Diamond Drilling

A programme of (30) surface diamond drill holes are planned, comprising HQ and NQ size core at depths of 50m to 100m, thus producing drilled cores. The drilling locations are selected based on the previous phases of exploration in which data acquisition and interpretations of the ore body have resulted in the delineation of target areas for subsurface drilling exploration. The drilling programme consists of the following:

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Rehabilitation

Rehabilitation of drill-sites will be done concurrently as each hole is completed. Access road rehabilitation is carried out when all prospecting phases are completed at the end of the diamond drilling activity. Rehabilitated sites will be monitored after drilling and trenching has been completed to ensure vegetation growth re-occurs.

On completion of the prospecting operation, the various surfaces, including the access road, will finally be rehabilitated as follows: Any compacted area will be ripped to a depth of 300mm, where possible, the topsoil or growth medium returned and landscaped.

All equipment and other items used during the operational period will be removed from the site.

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On completion of the prospecting operation, the above areas will be cleared of any remaining contaminated soil which will be placed in acceptable containers and removed with the industrial waste to a recognised disposing facility or by a waste removal company. All buildings, structures or objects in the secured storage areas shall be dealt with in accordance with regulation 44 of the Mineral and Petroleum Resources Development Act, 2002.

The surface will be ripped or ploughed to a depth of at least 300mm, where possible, and the topsoil, previously stored adjacent the site, distributed evenly to its original depth over the whole area. The area will then be fertilized if necessary (based on a soil analysis).

The site will be seeded with a vegetation seed mix adapted to reflect the local indigenous flora if necessary.

Any other disturbed areas will be rehabilitated as described under the relevant activities.

- Submission of information

Reports on rehabilitation and monitoring will be submitted annually to the Department of Mineral Resources.

- Maintenance (Aftercare)

Maintenance after closure will mainly concern the regular inspection and monitoring and/ or completion of the re-vegetation programme.

The aim of this BAR and Environmental Management Programme is for rehabilitation to be stable and self-sufficient, so that the least possible aftercare is required.

The aim with the closure of the mine will be to create an acceptable to post-mine environment and land-use. Therefore, all agreed commitments will be implemented by the Mine Management.

- **After-effects following closure**

- Acid mine drainage.

No potential for bad quality leachate or acid mine drainage development exist after mine closure.

- Long term impact on ground water.

No after effects on the groundwater yield or quality is expected.

- Long-term stability of rehabilitated land.

One of the main aims if any rehabilitated ground will be to obtain a self-sustaining and stable end result. The drill holes will be closed as prescribed and will have long term stability.



e) Policy and Legislative Context

Table 3: Policy and Legislative Context

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED	HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.
(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		(E.g. In terms of the National Water Act a Water Use License has/ has not been applied for)

considered in the assessment process		
<p>Constitution of South Africa, specifically everyone has a right;</p> <ul style="list-style-type: none"> a. to an environment that is not harmful to their health or well-being; and b. to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that <ul style="list-style-type: none"> i. prevent pollution and ecological degradation; ii. promote conservation; and <p>secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.</p>	Entire document	The prospecting activities will only proceed after effective consultation.
Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)	Entire document	The conditions and requirements attached to the granting of the prospecting right will apply to the prospecting activities.
NEMA Environmental Impact Assessment (EIA) Regulations, 2014	Entire document	<p>The appropriate environmental authorization will be obtained before proceeding with any prospecting activities.</p> <p>No drilling activity will be conducted within a sensitive environment.</p> <p>Measures will be implemented to prevent any pollution occurring during the drilling activities</p> <p>Once drilling at a drill pad is complete the area will be rehabilitated to its pre-drilling state.</p>
National Environmental Management: Waste Act	Provisions of the waste act were consulted to determine whether a waste license was required for any aspect of the proposed development.	The project activities do not trigger a waste management license but proper waste management measures will be addressed in the EMPr.
Section 38 of the National Heritage Resources Act (Act No. 25 of 1999)	Legislation consulted during the impact assessment process, to determine what legal requirements with regards to the management of national heritage resources were	No prospecting activities will take place within 500m of any identified heritage resource such as a grave. (no graves have been identified)

	relevant to this application.	
National Environmental Biodiversity Act The National Environmental Management Biodiversity Act (NEM:BA), 2004 (Act No.10 of 2004), provides for: (i) the management and conservation of South Africa`s biodiversity within the framework of the National Environmental Management Act, 1998; (ii) the protection of species and ecosystems that warrant national protection; (iii) the sustainable use of indigenous biological resources; (iv) the fair and equitable sharing of benefits arising from bio-prospecting involving indigenous biological resources; (v) the establishment and functions of a South African National Biodiversity Institute;	Impact Assessment	Impacts on the biodiversity have been identified and mitigation has been provided.
National Water Act The NWA (Act No. 36 of 1998)	N/A	No water use license is required for this application. Any water required for drilling activities will be obtained from a legal source within the area and brought to site by a tanker.
Regulation 704 (GN704) (Government Gazette 20118, 4 June 1999) was drawn up to address these issues in relation to mining activities. Compliance to the requirements of GN704 is a legal requirement for all mining operations.	Management measures	No drilling activities will take place within 100m of a recognized watercourse or wetland. No new access tracks will be created which cross a watercourse. (Only existing roads / tracks will be used).
National Environmental Management: Air Quality Act, 2004 (Act no.39 of 2004);	Dust monitoring on site during the operation	As part of the EMPr dust suppression methods will be used.
Mine Health and Safety Act, 1996 (Act No. 29 of 1996);	Health and Safety Policy	Risk Impact Assessment to be conducted
Kalahari District Municipality	Source of background demographic and socio-economic information	Utilized as a source of demographic and socio-economic information for the Kalahari Municipal area.

f) Need and desirability of the proposed activities

Prospecting South Africa has one of the world's largest manganese reserves. The highest concentration of manganese mines who produce predominant high and mid-grade ores, are located in the Kalahari Manganese Basin. These predominant high grade ores are the most common export commodity in the Northern Cape. Research also indicates that the manganese industry will experience an even stronger export demand within the next 10 years. The proposed prospecting right application will ensure that the Northern Cape and South Africa will benefit from the projected growth of the manganese industries. This

growth will be based on the increasing global need for steel manufacturing, as well as ensuring higher steel grades through altering the steel product mix.

Socio-economic:

Unemployment is a major problem within the John Taolo Gaetsewe District. The proposed Prospecting Right will determine if there is manganese on the application area and this will have a significant positive impact on the baseline socio-economic conditions of the local communities involved. The prospecting will create few employment opportunities and preference will be given to the locally unemployed wherever possible. If manganese is found, possible an application for the Right of Permit will be lodged and then mine will contribute towards the socio-economic development of the region as a whole through social upliftment and job creation as primary agents.

Employment

The Mining Intelligence Database points out that, currently, the mining and related industries not only employs over one million people – spending R78 billion in wages and salaries – but is the largest contributor by value to Black Economic Empowerment (BEE). Importantly, mining provides job mining opportunities for unskilled and semi-skilled people. Although the prospecting activities will not require large number of employees, a successful prospecting project will eventually lead to the realisation of mining activities which will require a large number of both skilled and unskilled labour.

Analysis of the need of the project

The Project is in line with the relevant IDP, SDF, EMF and PDP. There is no reason why this development should not be considered at this particular point in time considering the growing demand of Manganese in South Africa.

Analysis of the 'desirability' of the project

The proposed development is one of the better practicable environmental options for this particular site, given the industrial zoning of the area, the dump with very low biodiversity present.

The Project aims to have the site utilized by an on-going, sustainable, profitable business. The prosed Project is also not anticipated to result in unacceptable cumulative impacts.

g) Motivation for the overall preferred site, activities and technology alternative

Preferred Site

Motivation for application

Potential impacts on the social, cultural and environmental aspects were identified. These impacts were assessed for their effect on the social, cultural and environmental aspects. The significance of the impacts was also determined.

Mitigation measures are aimed at lessening negative consequences of the proposed prospecting operation. The mitigation measures include designs and management practises that will be embarked on, to prevent the identified impacts on the social, cultural and environmental aspects. For each significance identified, mitigation measures were specified. These mitigation measures are described in more detail in the environmental management programme.

Mining activities in the region have been rapidly on the decrease in the country increase in the last few years due to low productivity as well as depletion of reserves. As an attribute of urbanisation coupled with environmental degradation, agriculture in the area is not as significant as it is in other parts of Mpumalanga. Manufacturing in the area is also therefore significant. The retail and services sector and tourism are regarded as substitute activities to mining act as a driver of the economy into the future.

Opportunities that exist within mining are as follows:

- Constant demand on the global market for commodities;
- Establishment of a permanent working group between the Municipality and the mine managers responsible from developing local economic development initiative;
- Encourage local SMME's and entrepreneurs to take advantage of procurement;
- Develop a database of available labour and skills to encourage the employment of local people;
- Provide skills training and support programmes;
- Instigate mining procurement opportunities in consultation with the mines, develop a database of such opportunities and ensure that this information is made available to local businesses and communities.

Technological and Site Activity Alternatives

Due to the nature of the proposed prospecting activities future land use alternatives will not be compromised. Once viable reserve has been confirmed a comprehensive social and environmental impact assessment will be required (in accordance with legislation), during which time alternative land use to mining would be investigated.

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

The location of intrusive drilling activities will be determined during Phase1 of the Prospecting Works Programme.

h) Full description of the process followed to reach the proposed preferred alternatives within the site.

Alternatives were chosen based on the consideration of both geological attributes and current land uses on the site.

Geological attributes were determined with the use of geological maps. That means areas not were demarcated for non-invasive prospecting methods.

Also, the local geology determines the type of technology to be used, such as Geological core drilling and pitting or trenching with back actors for Manganese

A comparison of cost-benefit of alternatives chosen was done to choose the most cost-effective methods that are environmentally sound.

Existing infrastructure was also considered. Areas that need protection would be excluded from the targeted sites in the demarcation process. Existing infrastructure that could be of use was also considered such as farm roads to ensure minimal impact on the environment.

i) Details of the development footprint alternatives considered.

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

The proposed site is located about Approximately about 15.7km South of Hotazel, 38km North from Kathu and 56km west of the town of Kuruman. The site is within the Joe Morolong Local Municipality under the Jurisdiction of John Taolo Gaetsewe District, Northern Cape Province.

b) Minerals applied for;

Manganese ore

c) The type of activity to be undertaken;

The layout of the activity is determined by the location and extent of the ore bodies, which can be determined through surface surveys such as magnetic, gravity and seismic surveys. From the conducted studies the location of the boreholes can then be determined. The surveys also determine the areas to be avoided, and also areas that have been intruded by ingenious formations.

d) The design or layout of the activity;

The location of activities will be determined based on the location of the prospecting activities, which will only be determined during Phase1 of the Prospecting Works Programme.

Final boreholes and Camp Sites to be determined after phase one of the prospecting.

e) The technology to be used in the activity;

All equipment to be used will be provided by contractors

Recycling: The prospecting project will in its operational phase implement recycling policies and measures for optimal utilisation of resources and minimisation of waste generation.

f) The operational aspects of the activity

Stores and Material: A containerized store will be provided by the contractor, in the contractor's yard, to hold a limited store of high use items such as oils, grease, air filters etc. These stores will meet the requirements of the various health and safety and environmental legislation.

Electricity: Electricity is sourced from a mobile generator.

Water: Potable water at the mine is sourced and transported to site by the contractor. Some of the water is stored in water tanks next to the mine area and offices. The same water is also used for dust suppression when necessary.

Access Roads: The existing access tracks on site will be used to access drilling points. No new roads will be developed without prior communication with the landowner.

Energy: Fuel types will be investigated as well as energy conserving measures will be implemented i.e. prospecting times will be during the day to save on using lights in the evening. Where solar energy can be utilised, it will be implemented.

g) The option of not implementing the activity

The option of not approving the activities will result in a significant loss to valuable information regarding the mineral reserve status on these properties. In addition to this, should economical reserves be present and the applicant does not have the opportunity to prospect, the opportunity to utilize these reserves for future phases will be lost.

Red Dust Trading (Pty) Ltd has plans to boost local socio-economic development through this proposed project, which is not far from Coronation community, and will provide employment opportunities, thus stimulating development in the community.

ii) DETAILS OF THE PUBLIC PARTICIPATION PROCESS FOLLOWED

This section of the report provides an overview of the tasks undertaken for the PPP to date. All PPP undertaken is in accordance with the requirements of the EIA Regulations (2014). It further provides an outline of the next steps in the PPP and makes recommendations for tasks to be undertaken during the environmental assessment phase of the environmental authorisation process.

Land owners were identified through a search conducted via online search engines accessing the Title Deed office database. In addition to land owner's other relevant organisations were identified and notified of the application. This includes municipal and State departments with jurisdiction in the area and Non-governmental Organisations (NGOs) with an interest.

The PPP tasks conducted for the proposed project to date include:

1. Identification of key Interested and Affected Parties (affected and adjacent landowners) and other stakeholders (organs of state and other parties);
2. Formal notification of the application to key Interested and Affected Parties (all adjacent landowners) and other stakeholders;
3. Consultation and correspondence with I&AP's and Stakeholders and the addressing of their comments; and
4. Newspaper adverts.

I&AP and Stakeholder identification, registration and the creation of an electronic database

Public Participation is the involvement of all parties who are either potentially interested and or affected by the proposed development. The principle objective of public participation is to inform and enrich decision-making. This is also its key role in this process.

Interested and Affected parties (I&AP's) representing the following sectors of society has been identified:

- National, provincial and local government;
- Agriculture, including local landowners;
- Community Based Organisations;
- Non-Governmental Organisations;
- Water bodies;
- Tourism;
- Industry and mining;
- Commerce; and
- Other stakeholders.

Formal notification of the application to key Interested and Affected Parties (adjacent landowners) and other stakeholders

The project was announced as follows:

1. Newspaper advertisement

Newspaper Advert will be published in the local Newspaper.

2. Site notice placement

In order to inform surrounding communities and adjacent landowners of the proposed development, site notices were erected on site and at visible locations close to the site.

3. Written notification

I&AP's and other key stakeholders were notified of the project. A background information document and landowner notification letter was also sent out to the identified I&AP's.

4. Letters

A letter indicating the announcement of the Basic Assessment Process, a Background Information Document (BID) and a comment and registration form was sent to all identified I&AP's. This communication was sent electronically via email as well as via hand to whose email addresses were not available. Copies of the documents mentioned above can be seen as Appendix. The I&AP database is attached as Appendix.

5. Telephonic conversations

Where necessary telephonic conversations were held prior to sending out information.

6. Background Information Document

A Background Information Document (BID) was be distributed (by email, fax or post) to land owners. The BID provided information concerning the proposed project and invited IAPs to register. IAPs distributed the documents to other parties who may be interested or affected by the project.

Consultation and correspondence with I&AP's and Stakeholders and the addressing of their comments (continuous).

To date there has been a few acknowledgements from I&AP's, queries or registration requests have been received from stakeholders.

This report was released to the public for review and comment. All stakeholders and I&AP's where notified of the report's availability for comment for 30 days.

Additional electronic and or hard copies will be made available to interested and affected parties and stakeholders who request for them. Hardcopies of the report will also be submitted to all organs of state and relevant authorities.

Meeting with the landowners

No meeting yet.

Next Phases of the Public Participation Process

All comments and responses received and sent throughout the entire process will be updated and included in the comments and responses report which will be submitted to the Department of Mineral Resources. Note that this PPP Report shall be updated at each phase as required.

Summary of issues raised by Interested and Affected Parties

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

<p>Interested and Affected Parties</p> <p>List the names of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted.</p>	<p>Date Comments Received</p>	<p>Issues raised</p>	<p>EAPs response to issues as mandated by the applicant</p>	<p>Section and paragraph reference in this report where the issues and or response were incorporated.</p>
<u>AFFECTED PARTIES</u>				
Landowner/s				
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				
Traditional Leaders				
Dept. Environmental Affairs				
Other Competent Authorities affected				
<u>OTHER AFFECTED PARTIES</u>				
<u>INTERESTED PARTIES</u>				
All neighbours were notified of the Application				

1) BASELINE ENVIRONMENT

a) Type of environment affected by the proposed activity

Key aspects of the baseline environment that are likely to impact on the scope of the impact assessment and management measures that are implemented as well as project decisions regarding alternatives are listed below.

Topography

The topography of Kuruman, is predominately flat-lying at <1 100m elevation, with relatively low relief. The regional drainage pattern is broadly northwards but water-flows in the streams are generally very rare. The topography of the application area is also relatively flat and gently.

Climate

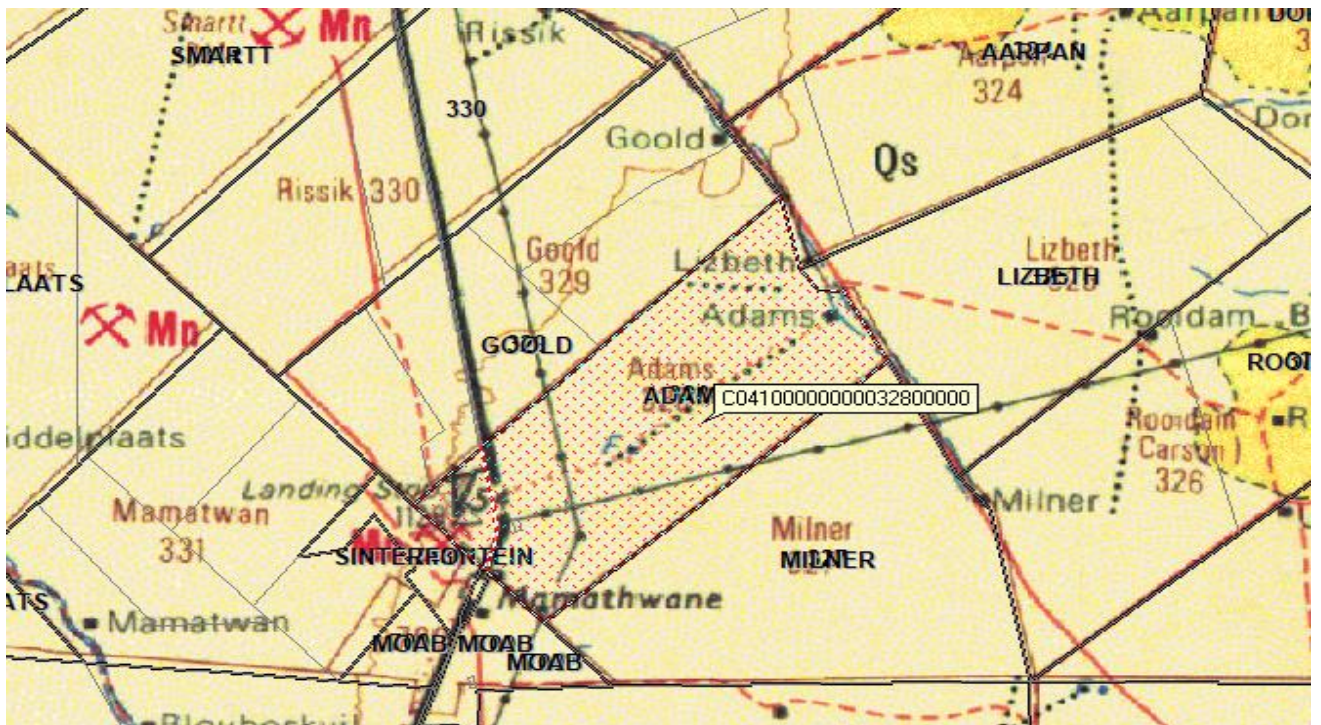
The climate of the study The Northern Cape is mainly semi-desert, its weather typical of desert and semi-desert with fluctuating temperature and varying topography. The annual rainfall is sparse ranging from 50-400 mm per annum mainly between January and April, whilst the summer temperature in the afternoon ranges from 34-40°C and may even peak above the 40°C mark. Winter days are favourably warm while nights are characterised by dew and frost. Mean annual temperatures range between 16 and 20°C. The mean annual minimum/maximum temperatures are estimated to range between 8 and 28°C. The seasonal temperature patterns for Kuruman is expected to be predominantly representative of the larger area around Kuruman including the proposed mining area, as well as the highest recorded maximum and lowest recorded minimum temperatures per month.

Geology and Soils

The study area is underlain by the south-western part of the Kalahari Manganese Fields. The manganese deposits are in the Hotazel Formation at the top of the Transvaal Supergroup. The stratigraphy of the ore-bearing succession in the area consists of three manganese beds named the Upper (UMO), Middel (MMO) and Lower Manganese (LMO) Ore bodies. The LMO has been subdivided (Nel 1984) on the basis of mineralogical composition which is often manifested by visual mineralogical differences. The mineralised bodies are hosted by altered banded iron-formation (BIF) and jaspilites of the Hotazel Formation, which unconformably overlies the Ongeluk Lava. The deposits are overlain by younger, mainly dolomitic and chertbearing lithologies of the Olifantshoek Group, which are in turn overlain by the Karoo-age Dwyka Group, represented by a succession of glacial diamictites deposited on an uneven paleosurface. Recent Kalahari Sand and other poorly consolidated sediments cover the entire sequence to approximately 70 m below surface (Mucina, 2006).

The area is characterised by Kalahari Bushveld, parallel red sand dunes, dry Savanna, sandy soils and a lack of water resources. The region forms the southern rim of the Great Kalahari Desert. The surface is characterised by Kalahari sands (to the depth of 80 m) and limestone outcrops (Figure 9 below). The water table is situated within the Kalahari sand layer beneath which there are rock pebbles and clay layer before intersecting the Dwyka. The topography of the area consists of the flat sand plains between the Korannaberg Mountains and Kuruman River. It is characterised by two sand dunes with one situated on the south east corner of the farm and another situated along the banks of the non-perennial Ga-Magara River, a tributary of the Kuruman River (Mucina, 2006).

Attach a geological map that justifies the description why there is a possibility that the minerals applied for could occur on the land concerned.



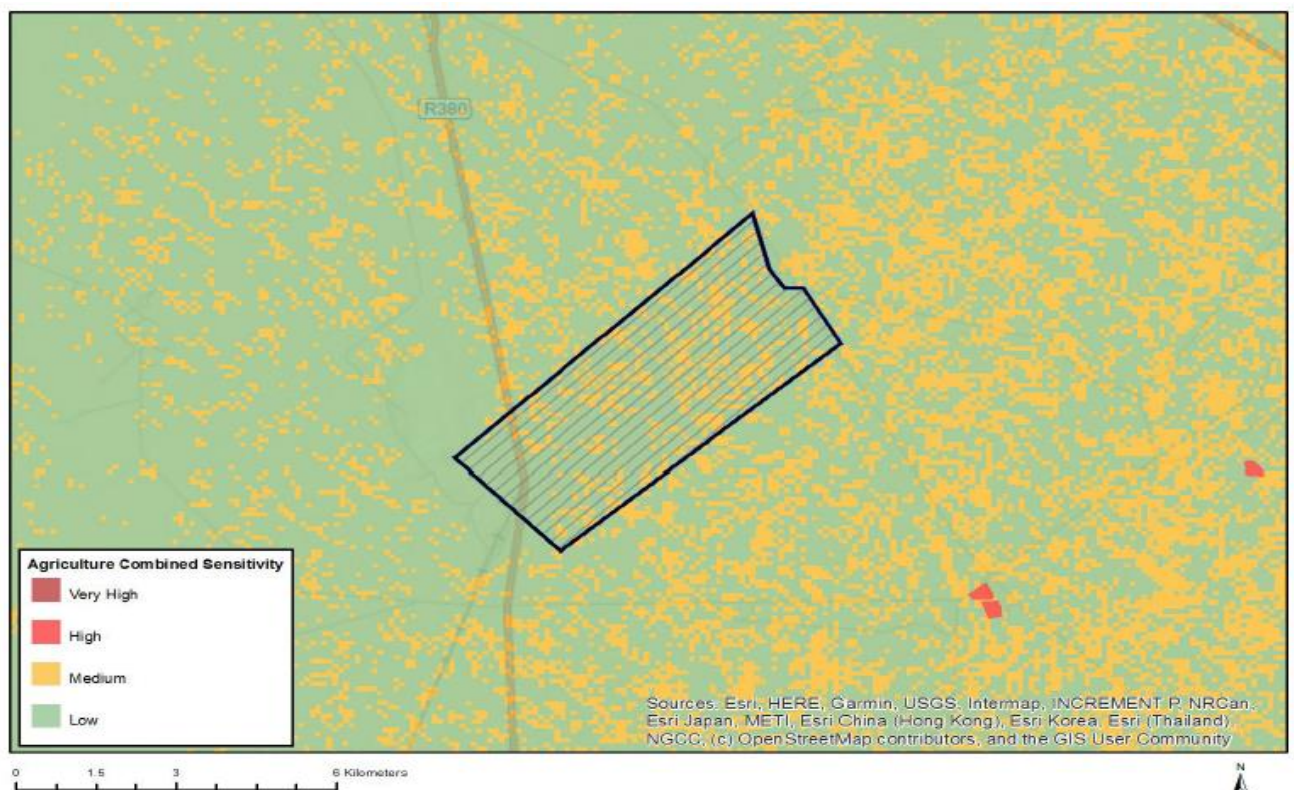
Hydrology

The site is located within the Lower Vaal: quaternary catchment, which in turn is located within the Orange Primary Catchment. No permanent surface water features such as dams or lakes are located within the boundaries of the study area. A large catchment of approximately 13 780 km² feeds the Kuruman River, and consequently when the river is in flood, flows can become considerable. The Kuruman River is, however, considered ephemeral as the river only produces surface flows during periods of heavy precipitation. The Kuruman catchment is large but sparsely vegetated and features freely draining soils which indicates that minor rainfall events would infiltrate to groundwater as opposed to generating significant volumes of runoff.

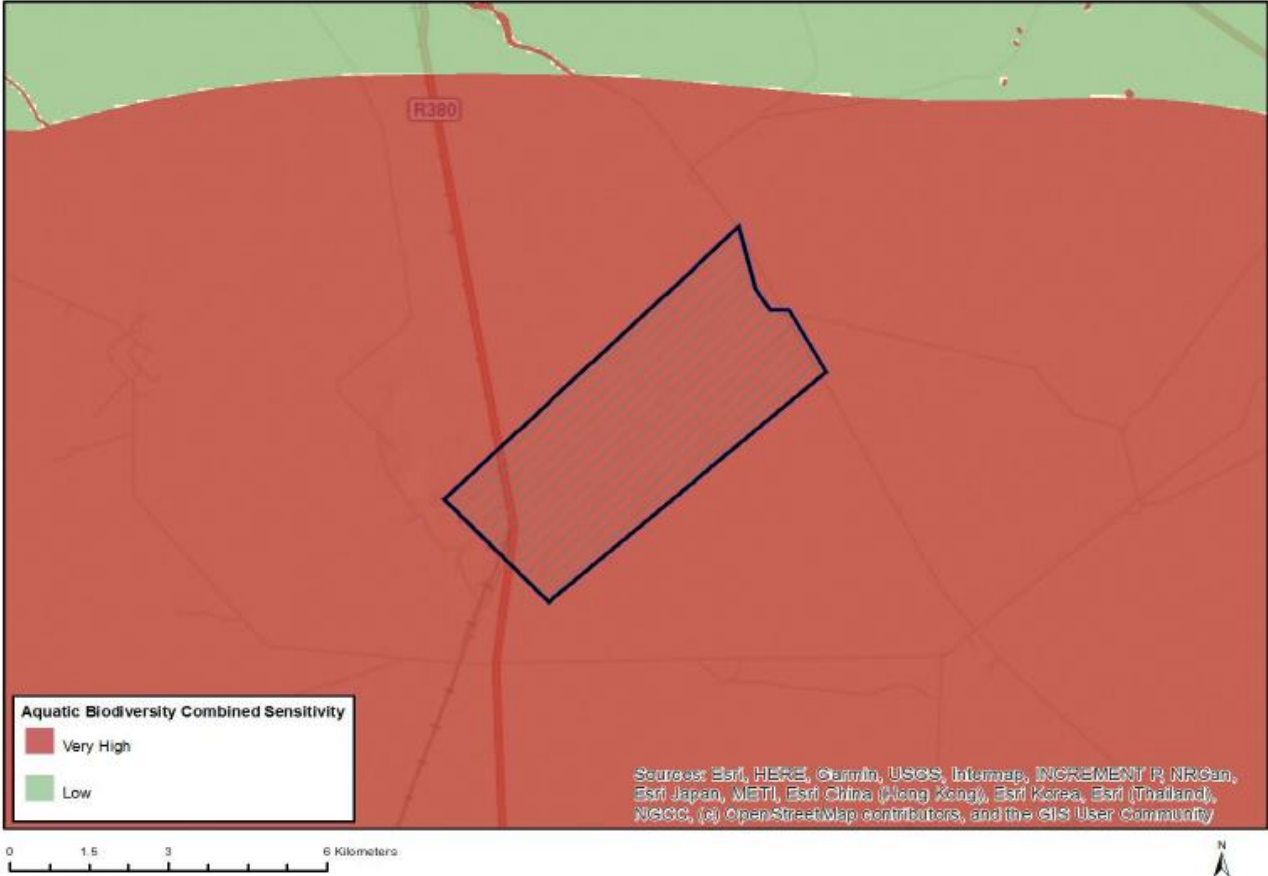
Vegetation

The proposed prospecting area falls within the Savanna Biome which is characterised by Kalahari Bushveld vegetation and Khathu Bushveld vegetation unit. The vegetation unit is presented by scattered tall trees such as *Acacia erioloba* and a variety of sparse shrubs such as *Boscia albitrunca*, *A. heamoxylon* and *A. mellifera* with variable gramnoid cover dominated by *Stipagrostis ciliate*. The proposed prospecting area is significantly transformed; most portions and the adjacent areas are mainly used as livestock pasture. Note that protected trees, such as *Acacia erioloba*, *Acacia haematoxylon* and *Boscia albitrunca* are known to occur in the area. the most of the vegetation types of Northern Cape have been extensively degraded, however the degradation and transformation is often localized, thus making the province percentage of transformation low (about 4%). In terms of biodiversity the Northern Cape Province boasts a total of 4 864 of taxa of which 1 302 are only recorded to be endemic to the province with 23.5% of the country's flora occurring within the province making North Cape the province with the fourth highest percentage of floral occurrence. However, 295 of the taxa found within the province is threatened with 236 of the threaten taxa being endemic, listing NC as the province with third highest number of threaten flora. Only 739 of all the taxa within the province are of conservation concern of which 584 is endemic. This makes the Northern Cape the province with the second highest number of species or taxa of conservation concern (April, 2012).

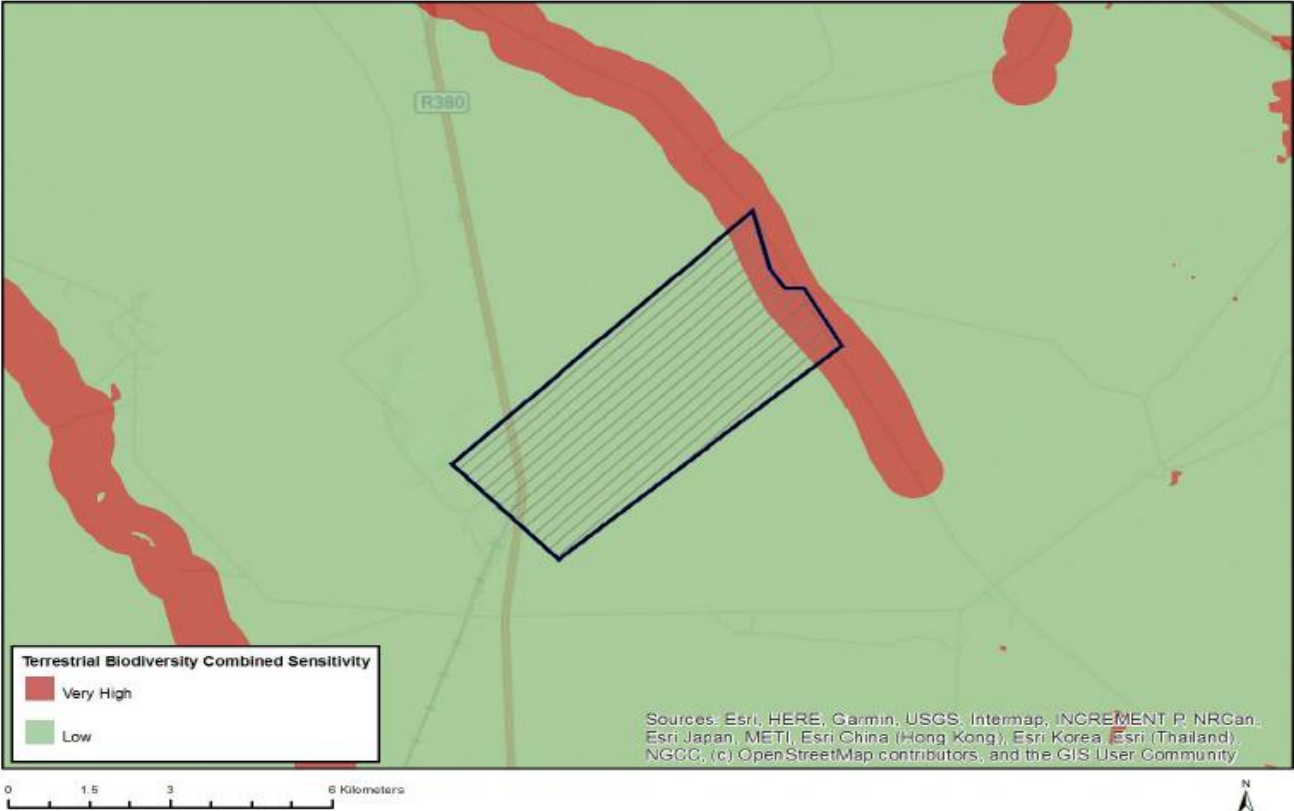
Map of relative agriculture theme sensitivity



Map of relative aquatic biodiversity theme sensitivity

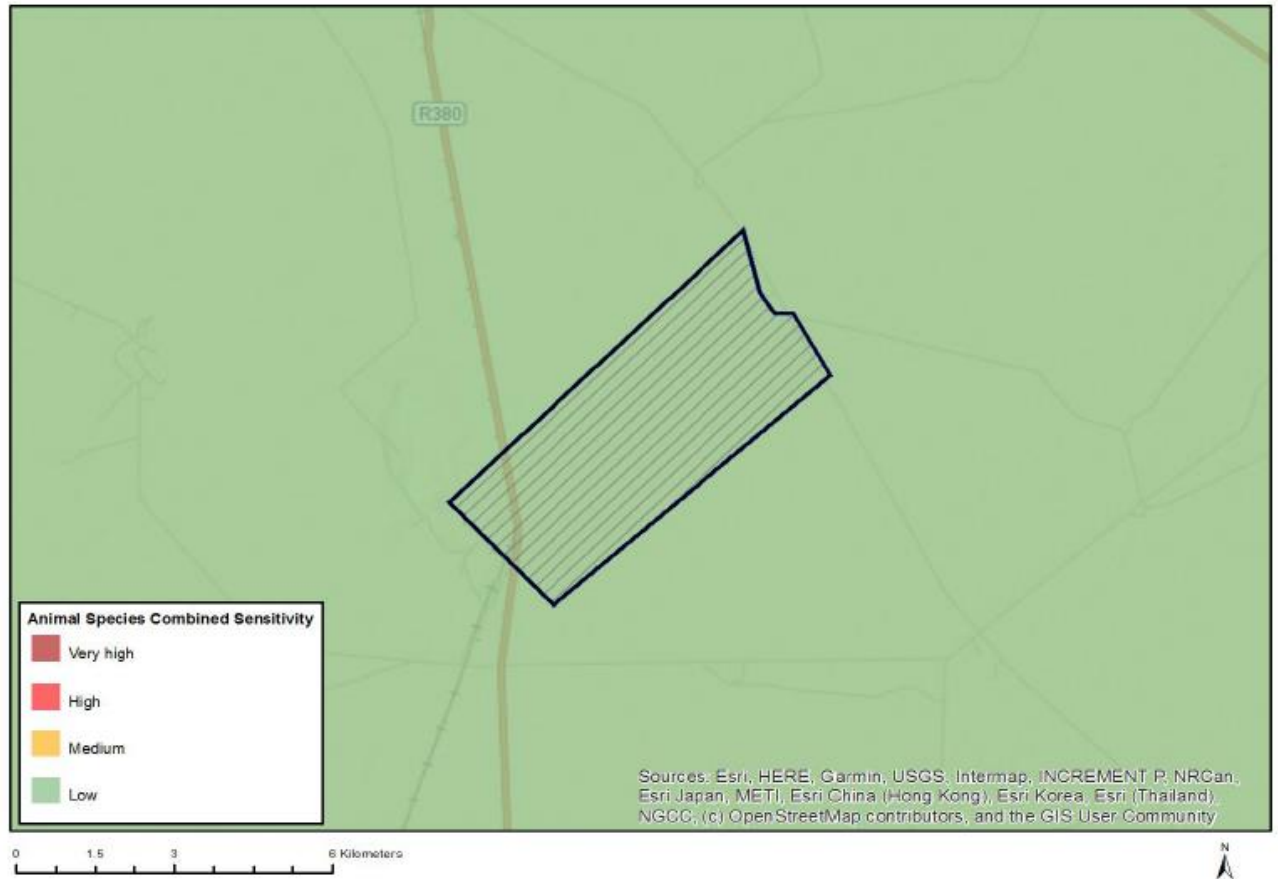


Map of relative terrestrial biodiversity theme Sensitivity.



Fauna

The study area is likely to have a low faunal carrying capacity due to its dry nature, which is characterised by Thorn Bushveld with poor grass cover and moderate shrub and tree development. Furthermore. It is unlikely that a number of larger mammals exist within the project area, due to the fact that agriculture and historical mining practices have significantly altered the environment. However, relatively diverse fauna is still expected.



Heritage Resources

A Heritage Impact Assessment was not undertaken as part of the development of the impact assessment. Based on available Geographic Information System data, graves and any historical and cultural feature are not present within the prospecting area.

Social Characteristics of the Study Area and Surrounds

The study area is located within the municipal boundaries of the John Taolo Gaetsewe (formerly Kgalagadi) District Municipality. The John Taolo Gaetsewe District municipality occupies a sizable 27 283km² (square kilometres) of the northern part of the Northern Cape Province. Employment opportunities are concentrated around Kuruman and the mines situated around Kathu, Hotazel and Black Rock.

Demographic profile of the Municipality

Joe Morolong it is located in the Northern Cape Province based in the John Taolo Gaetsewe District, on the North eastern and western part of the District. The Municipality is accessible via the National infrastructure through the N14 which links North West and the Northern Cape Provinces. Joe Morolong Local Municipality was established on the 6 th December 2000 under the name of “Moshaweng” which is now called Joe Morolong named after Taolo Joseph Morolong who was born at Ditshipeng Village on July the 1st 1927.

Population and education level

The incorporation of Vanzylsrus and Hotazel has increased the geographical area of the municipality. Census 2011 shows that the population has decreased as a result of people migrating to Gasegonyana and Gamagara, being closer to business centre.

The rural nature of the Joe Morolong municipal area has implications in a variety of areas and concerns. The first is the obvious need for the Municipality to respond to service delivery in terms of Government’s policy framework for the upliftment of previously disadvantaged communities.

In this regard, target groups would include blacks, with women, youth and persons with disabilities as target groups. The second implication of the composition of the population are in terms of the staff establishment. The third one is lack of economic opportunities in the municipal area, and the fourth and last implication is the vastness of the area.

Households

The total number of households in the Municipality is 23 707

HOUSEHOLDS	NUMBER OF HOUSEHOLDS	%
Female headed	12 016	50.7%
Male headed	11 447	48,3%
Child headed	244	1,0%
TOTAL	23 707	100%

(Source: Census 2011)

Education level

EDUCATION LEVEL	NUMBER
No schooling	10 204
Some primary school	11 887
Completed primary school	2 324
Some Secondary school	12 384
Grade 12	5 986
Higher education	1 823

(Source: Census 2011)

Employment: Industry

Sector	Number of jobs created
Agriculture related work	720
Manufacturing	144
Mining , Quarrying	471
Electricity, gas, water	116
Construction	283
Wholesale, Retail	432
Transport	122
Business services	100
Community services	1 693
Undetermined	87 171

(Source: Municipal Demarcations Board)

Employment

Employment statistics

Category					
Employed	Unemployed	Discouraged work seeker	Other not economically active	Not applicable	Total
7 828	4 912	6 200	29 569	41 022	89 530

(Source: Census 2011)

b) Description of the current land uses.

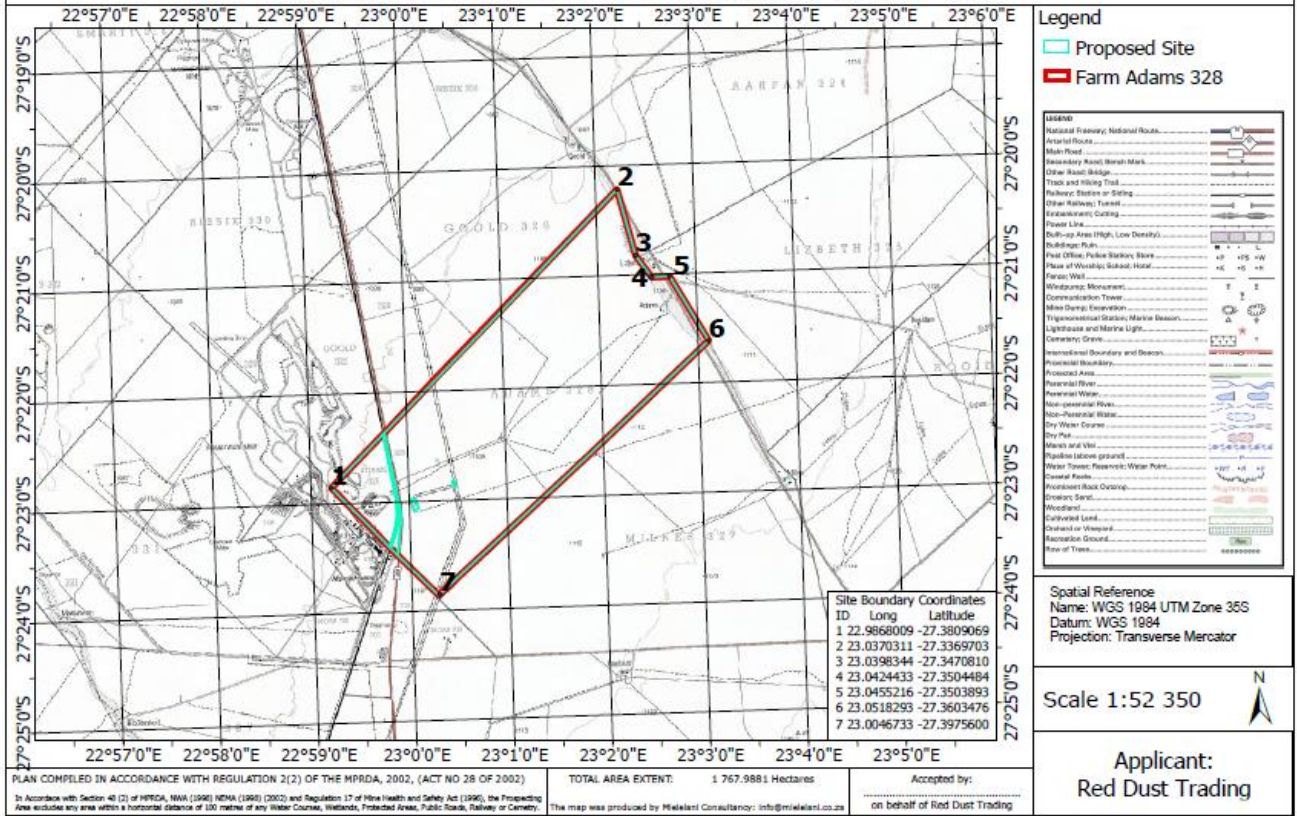
The current land use in the area is predominantly characterised by mining and the proposed site is characterised by agriculture, mostly stock farming.

c) Description of specific environmental features and infrastructure on the site.

- ✓ The current land and surrounding of the proposed site is characterised by agriculture.

d) Environmental and current land use map

Layout Plan for Prospecting Right Application in Portion 02 of Farm Adams 328; Kalahari District, Northern Province. {Fig 1 - 7}.



Land Use Map

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

Table 1: List of Potential Impacts

E = Extent, D = Duration, I = Intensity, P = Probability of occurrence							Where (E + D + I) X P = Significance			
Activity	Potential Impact	What are the Consequences?	Rating Before Mitigation				Significance Before Mitigation	Impact reversal	Irreplaceable loss of resources	
			E	I	D	P				
Desktop Study	No Impacts	N/A								
Site Establishment	Loss of Biodiversity	Disturbance of the natural ecosystem	1	2	1	4	16 Negative	4	1	
	Soil Contamination	Loss of soil fertility	1	1	1	4	12 Negative	4	1	
	Water exploitation	Water shortages	1	1	1	2	6 Negative	4	1	
	Conflict with local community	Property Vandalism and Criminality	1	1	1	1	3Negative	4	1	
	Employment Opportunity	Employment of local people	1	1	1	4	12 Positive	4	1	
Geophysical Survey	Loss of Biodiversity	Disturbance of the natural ecosystem	1	1	1	2	3Negative	4	1	
	Noise generation from site fly-overs	Disturbances of school and hospital operation	1	2	1	3	12 Negative	4	1	
Drilling	Soil and Geology disturbance	Contamination of Groundwater	1	2	1	4	12Negative	3	1	
		Ground instability								
	Groundwater Contamination	Shortage of water for local supply	1	2	1	3	12Negative	4	1	
	Soil contamination	Loss of Biodiversity	1	2	1	3	8Negative	4	1	
	Soil Compaction	Soil infertility								
	Noise nuisance	Community disapproval	1	2	1	2	8Negative	4	1	
	Release of Sulphide gas	Bad odour	1	1	1	1	3Negative	4	1	
Decommissioning	Soil Contamination	Loss of soil fertility	1	1	1	2	6Negative	4	1	
	Waste generation	Littering	1	3	1	4	15Negative	4	1	
		Water Contamination	1	1	1	1	3Negative	4	1	
		Soil Contamination	1	2	1	2	8Negative	4	1	

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

The potential environmental impacts associated with the project will be evaluated according to its nature, extent, duration, intensity, probability and significance of the impacts, whereby:

- **Nature:** A brief written statement of the environmental aspect being impacted upon by a particular action or activity.
- **Extent:** The area over which the impact will be expressed. Typically, the severity and significance of an impact have different scales and as such bracketing ranges are often required. This is often useful during the detailed assessment phase of a project in terms of further defining the determined significance or intensity of an impact. For example, high at a local scale, but low at a regional scale;
- **Duration:** Indicates what the lifetime of the impact will be;
- **Intensity:** Describes whether an impact is destructive or benign;
- **Probability:** Describes the likelihood of an impact actually occurring; and
- **Cumulative:** In relation to an activity, means the impact of an activity that in itself may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area.

Table 2: Criteria Used for Rating of Impacts

CRITERIA	DESCRIPTION			
Extent	National (4) The whole of South Africa	Regional (3) Provincial and parts of neighbouring provinces	Local (2) Within a radius of 2 km of the construction site	Site (1) Within the construction site
Duration	Permanent (4) Mitigation either by man or natural process will not occur in such a	Long-term (3) The impact will continue or last for the entire operational life of the development,	Medium-term (2) The impact will last for the period of the construction	Short-term (1) The impact will either disappear with mitigation or will be mitigated

	way or in such a time span that the impact can be considered transient	but will be mitigated by direct human action or by natural processes thereafter. The only class of impact which will be non-transitory	phase, where after it will be entirely negated	through natural process in a span shorter than the construction phase
Intensity	Very High (4) Natural, cultural and social functions and processes are altered to extent that they permanently cease	High (3) Natural, cultural and social functions and processes are altered to extent that they temporarily cease	Moderate (2) Affected environment is altered, but natural, cultural and social functions and processes continue albeit in a modified way	Low (1) Impact affects the environment in such a way that natural, cultural and social functions and processes are not affected
Probability Of Occurrence	Definite (4) Impact will certainly occur	Highly Probable (3) Most likely that the impact will occur	Possible (2) The impact may occur	Improbable (1) Likelihood of the impact materialising is very low
Impact Reversal	Highly Impossible (4) Impact reversal will certainly be impossible	Moderate (3) Impact can be reversed to some extent with loss of natural resources	Possible (2) High possibility of impact reversal	Definite (1) Impact can be totally reversed
Loss of irreplaceable resources	Definite (4) Resources definitely be lost	Highly Probable (3) Most likely that resources will be lost	Possible (2) Resources may be lost	Improbable (1) Loss of resources is highly unlikely

Significance is determined through a synthesis of impact characteristics. Significance is also an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. The total number of points scored for each impact indicates the level of significance of the impact.

Table 3: Criteria for Rating of Classified Impacts

Low impact/ Minor (3 -10 points)	A low impact has no permanent impact of significance. Mitigation measures are feasible and are readily instituted as part of a standing design, construction or operating procedure.
Medium impact/ Moderate (11 -20 points)	Mitigation is possible with additional design and construction inputs.
High impact (21 -30 points)	The design of the site may be affected. Mitigation and possible remediation are needed during the construction and/or operational phases. The effects of the impact may affect the broader environment.
Very high impact/ Major (31 - 48 points)	Permanent and important impacts. The design of the site may be affected. Intensive remediation is needed during construction and/or operational phases. Any activity which results in a “very high impact” is likely to be a fatal flaw.
Status	Denotes the perceived effect of the impact on the affected area.
Positive (+)	Beneficial impact.
Negative (-)	Deleterious or adverse impact.
Neutral (/)	Impact is neither beneficial nor adverse.
It is important to note that the status of an impact is assigned based on the status quo – i.e. should the project not proceed. Therefore not all negative impacts are equally significant.	

The suitability and feasibility of all proposed mitigation measures is included in the assessment of significant impacts. This was achieved through the comparison of the significance of the impact before and after the proposed mitigation measure is implemented.

v) 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

POSITIVE IMPACTS

Creation of Employment Opportunities

- The prospecting activities will be undertaken over an extensive area and as such 3 crews made up of 5 to 10 people will be required, thus job will be created for general labours that would be sourced from the within community.
- While no significant short term positive impacts are associated with the prospecting activities, in the event that a viable reserve is confirmed, there would be high degree of positive impacts such as employment of large number of local residents, socio-economic balance of the local community and on the National and Provincial scale mining contribute highly to the Gross Domestic Product (GDP)

Negative Impacts

- Noise – The movement of the drilling vehicle and drilling activities generate noise although the noise is within tolerable range.
- Waste generation – Empty tins of oil, general wastes from the camping site and empty bags of cement.
- Littering – As already highlighted that the activities will generate wastes, poor or improper management of the wastes will create littering problems affecting the visual stance of the area.
- Criminal Activities – The equipment on site will attract criminal activity. The community and the site crew may clash over the loss or unauthorised access into the site camp.

vi) The possible mitigation measures that could be applied and the level of risk

Measures to manage Noise

- The Drilling activities and movement of vehicles into the site should be carried out during the day. The working hours should be between 7:00 a.m. to 17:00
- Directly affected, adjacent landowners in proximity to the site will be informed of the planned activities.

Heritage Impact Management

- Should any unknown heritage sites be identified during the drilling activities, all activities shall cease immediately and the SAHRA will be contacted and an appropriate Heritage Impact Assessment will be undertaken on the site.

Influx of Labour to site

- Casual labour will not be recruited at the site to eliminate the incentive for persons travelling to site seeking employment.
- If deemed necessary, the South African Police Service will be informed of unauthorised persons encountered on site.

Visual Impact

- Wet dust suppression will be undertaken to manage dust emissions from vehicle movement and other activities as and when needed.
- The portable ablution facilities, water tanks and any other infrastructure should be acquired with consideration for colour, natural earth, green and mat black options which will blend in with the surrounding area must be favoured.
- Waste management system will be implemented and sufficient waste bins will be provided for on-site.
- The site camp should be established away from the residential areas.

Water and Soil Impact Management

- Existing tracks and roads must be used as far as is practicable to minimize the potential for soil erosion. In instances where access to drill 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 practicable to minimize the potential for soil erosion.
- When establishing the drill pad, topsoil including the remaining vegetation, will be stripped and stockpiled up-slope of the pad. 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 activities.
- Topsoil will be stockpiled to a maximum height of 1.5m with a side slope of not more than 1:3.
- To reduce the potential for water pollution during the drilling activities, a sump will be constructed with sufficient capacity to receive drill fluids and allow for evaporation.
- The sump will be constructed to divert storm water away and/or around the sump to avoid storm water inflow.
- Oils and lubricant will be stored within secondary containment structures
- Mixing of concrete or cement should be done on an impermeable board.
- Topsoil should be handled only twice, when removing and during rehabilitation.

- The movement of the vehicles should be restricted to minimise soil compaction. In the morning all the equipment and materials to be exported should be delivered at once.
- In the event that vehicle maintenance is undertaken on site, drip trays and / or UPVC sheets will be used to prevent spills and leaks into the soil.
- Waste separation will be undertaken at source and separate receptacles will be provided (i.e. general wastes, recyclables and hazardous wastes).
- Receptacles will be closed (i.e. fitted with a lockable lid) to eliminate the possibility of access by animals overnight.
- Wastes will be removed and disposed of at an appropriately licensed landfill and recyclables will be taken to a licensed recycling facility.
- Drill holes must be permanently capped as soon as is practicable.

vii) Motivation where no alternative sites were considered

- The proposed prospecting area is targeted as the area lies over the mineral rich Geological Super groups that are Kalahari Manganese Fields.
- There is sufficient open area with no settlements or any economic activities that could possibly create conflicts with the land owners.
- There historical sites that may be affected by prospecting activities are known and secured and as such there will be no impact on the Heritage resources.

viii) Statement motivating the alternative development location within the overall site

As is clear from the information provided, each of the phases is dependent on the results and success of the preceding phase. The location and extent of soil sampling and possible drilling will be determined based on information derived from the geophysics surveys. Sampling and drill sites will be selected to avoid water courses where practicable.

The geological status of the neighbouring area is known to have the decided Manganese Ore commodities in them as mining is currently taking place with the area

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

In 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 to provide their views on the project and any potential concerns which they may have. All comments and concerns are 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;
 - Department of Water Affairs and Sanitation's information documents such as the ground water vulnerability report.
 - Municipal Integrated Development Plan
 - Municipal Strategic Development Framework
 - South African National Biodiversity Institute GIS Map
- A site visit was conducted. The site visit was to ensure that the information gathered as part of the Desktop investigation reflects the current status of the land.
- The ratings of the identified impacts were undertaken in a quantitative manner as provided in Impact Assessment Section. The ratings were 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 the actual views.
- The identification of management measures are done based on the significance of the impacts and measures that have been considered appropriate and successful, specifically as Best Practical and Economical Options.

j) Assessment of each identified potentially significant impact and risk

Table 4: Impact Assessment

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE <i>In which impact is anticipated</i>	SIGNIFICANCE <i>if not mitigated</i>	MITIGATION TYPE	SIGNIFICANCE <i>if mitigated</i>
Desktop Study	None Identified	N/A	Planning Phase	N/a	No mitigation Proposed	
Identification of legislative requirements	Commencement of activities without all the required licenses and permits	Policy and legal Requirements	Planning Phase	Low (-ve)	The applicant must ensure that all relevant legislations and regulations have been adhered to before commencement of the project.	Insignificant
Camp site camp establishment	Removal of vegetation at the camp site and the access roads	Flora and Fauna	Planning Phase	Medium (-ve)	<ul style="list-style-type: none"> ✓ The size of the construction camp should be kept to a minimum. ✓ The camp site must be established away from the natural drainage areas. ✓ The contractor must attend to the drainage of the camp site to avoid standing water and / or sheet erosion. ✓ Temporary chemical toilets must be provided by 	Low (-ve)
	Contamination of surface water from the site construction activities	Hydrology	Planning Phase	Medium (-ve)		Low (-ve)
	Compaction of soil at the camp site and the access roads	Geology and Soils	Planning Phase	Medium (-ve)		Low (-ve)

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE <i>In which impact is anticipated</i>	SIGNIFICANCE <i>if not mitigated</i>	MITIGATION TYPE	SIGNIFICANCE <i>if mitigated</i>
					<p>a company approved by the Engineer. These toilets must be made available for all site staff. The construction of “long drop” toilets is forbidden.</p> <ul style="list-style-type: none"> ✓ Under no circumstances may open areas or the surrounding bush be used as a toilet facility. ✓ Bins and / or skips shall be provided for disposal of waste within the construction camp. ✓ Bins should have liner bags for efficient control and safe disposal of waste. ✓ Recycling and the provision of separate waste receptacles for different types of waste should be encouraged. 	

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE <i>In which impact is anticipated</i>	SIGNIFICANCE <i>if not mitigated</i>	MITIGATION TYPE	SIGNIFICANCE <i>if mitigated</i>
					✓ The available borehole water must be tested before human consumption	
Site camp establishment	Conflicts with the locals	Socio-Economic Issues	Planning Phase	High (-ve)	The community must be briefed regarding the prospecting activities to be undertaken.	Low (-ve)
					The number of employees required and the employment methods should be communicated.	
	Creation of employment opportunities	Socio-Economic	Planning Phase	Medium (+ve)	The recruitment policy should be effectively communicated	High (+)
					Employment should not be done at the camp site or at the working sites. All the employments should be done through the Local Leaders	
	Conflicts over employment preferential and lack of support for the project from the locals	Socio-Economic	Planning Phase	Very High (-ve)	The number of employees required and the employment methods should be communicated.	Low (-ve)
					Employment should not be done at the camp site or at the working sites. All the	

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE <i>In which impact is anticipated</i>	SIGNIFICANCE <i>if not mitigated</i>	MITIGATION TYPE	SIGNIFICANCE <i>if mitigated</i>
					employments should be done through the Local Leaders	
Chipping of outcrops to obtain outcrop samples	Bodily injuries or death at a worst case	Health and Safety	Field Mapping	Medium Significance (Negative)	The Geologists conducting field mapping should wear protective clothing.	Insignificant
Encounter with dangerous wild animals	Bodily injuries or death at a worst case	Health and Safety	Field Mapping	Medium Significance (Negative)	Repellent for snakes should be spread on the path ways. All site personnel must have a working cell phone to communicate in case of emergency	Low (Negative)
Geologist trapped in the caves	Loss of life or serious Body injuries	Health and Safety	Field Mapping	Medium Significance (Negative)	Entrance into the caves must be communicated and planned before such action is taken. The stability of the cave walls must be known.	Insignificant
Flyover planes collecting data through remote sensing techniques	Generation of noise	Noise Impact	Geophysical Surveys	High (-ve)	The flyover times should be communicated with affected parties prior activity is undertaken The schools and Hospitals should be marked as No-Go areas.	Medium (-ve)

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE <i>In which impact is anticipated</i>	SIGNIFICANCE <i>if not mitigated</i>	MITIGATION TYPE	SIGNIFICANCE <i>if mitigated</i>
Use of Vibrators for seismic geophysical method	Tremor ground vibrations	Geology & Ground Stability	Geophysical Surveys	Low (-ve)	Residential and business areas should be marked as No-Go areas where seismic method is used.	Low (-ve)
Set-up of Geophysical Survey Equipment	Clearing of Vegetation	Flora and Fauna	Geophysical Survey	Medium (-ve)	Already cleared areas should be preferred over heavily dense areas	Low (-ve)
Set-up of Geophysical Survey Equipment	Theft	Socio-Economic	Geophysical Survey	Low (-ve)	The site camp must be secured and entrance into the site must be controlled	Low (-ve)
Preparation of drilling sites and access roads	Loss of Vegetation	Flora and Fauna	Drilling Phase	Medium (-ve)	Where possible existing access roads must be used	Low (-ve)
	Loss of micro animals	Flora and Fauna	Drilling Phase	Medium (-ve)	Search and rescue mission should be undertaken for species on drilling site	Low (-ve)
	Contamination of surface water	Hydrology	Drilling Phase	High (-ve)	Large machinery crossing the river should be given extra care such that no chemical and oil leaks occur	Medium (-ve)
Preparation of drilling sites and access roads	Soil contamination	Soil & Geology	Drilling Phase	Medium (-ve)	The equipment and machinery must be monitored for leaks	Low (-ve)
Drilling Activities	Ground & Surface Water contamination	Hydrology	Drilling Phase	High (-ve)	The drill bits must be maintained in good condition to prevent leakages of oil when in the underground.	Medium (-ve)

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE <i>In which impact is anticipated</i>	SIGNIFICANCE <i>if not mitigated</i>	MITIGATION TYPE	SIGNIFICANCE <i>if mitigated</i>	
					Aquifer detection methods should be applied before drilling can be undertaken.		
					Streams must be diverted where alluvial activities are taking place.		
Drilling Activities	Waste Generation	Waste Management	Drilling Phase	Very High (-ve)	The mud generated from the drilling activities must be contained, and contaminated mud must be handled separately, treated or disposed of at an appropriate landfill.	Medium (-ve)	
					Skips and marked bins must be provided at the site for waste separation.		
					Waste water must not be released into the natural streams prior treatment		
					The mechanical wastes must be stored separately from other areas in a waste skip and must be disposed of at an appropriate landfill site.		

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE <i>In which impact is anticipated</i>	SIGNIFICANCE <i>if not mitigated</i>	MITIGATION TYPE	SIGNIFICANCE <i>if mitigated</i>
					Equipment maintenance must be done off site, and where there is need to conduct it on site, it must be done on a bunded area. Cleaning of equipment must be done on a bunded area.	
Drilling Activities	Animals falling into drill holes	Health and Safety	Drilling Phase	Medium (-ve)	The drill holes must be capped overnight and when not in operation.	Low (-ve)
	Theft	Socio-economic	Drilling Phase	Medium (-ve)	Site Must be secured and Security personnel must be stationed at all points where there is equipment.	
Drilling Activities	Lowering of groundwater levels	Hydrology	Drilling Phase	Medium (-ve)	Areas with shallow aquifers must be avoided	Low (-ve)
Drilling Activities	Removal of topsoil	Geology & Soils	Drilling Phase	Medium (-ve)	Topsoil must be located away from the drainage lines	Low (-ve)
					Contaminated soil must not be mixed with clean stockpiles	
					No chemicals should be placed near the topsoil stockpiles.	
					The stockpiles must not be more than 1,5m high	

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE <i>In which impact is anticipated</i>	SIGNIFICANCE <i>if not mitigated</i>	MITIGATION TYPE	SIGNIFICANCE <i>if mitigated</i>
Drilling Activities	Spillages of hazardous chemicals	Soil & geology; Hydrology	Drilling Phase	Medium (-ve)	All substances required for vehicle maintenance and repair must be stored in sealed containers until they can be disposed of / removed from the site	Low (-ve)
					Hazardous substances / materials are to be transported in sealed containers or bags.	
					Spillages must be attended to as soon as they occur. Depending on the nature and extent of the spill, contaminated soil must be either excavated or treated on-site.	
Drilling Activities	Destruction of Heritage Resources	Socio-Economic	Drilling Phase	Medium	There are no historically or heritage resources known to be on site	Low (-ve)
					Should any paleontological or cultural artefacts be discovered work at the point of discovery must stop, the location be clearly demarcated and SAHRA contacted	

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE <i>In which impact is anticipated</i>	SIGNIFICANCE <i>if not mitigated</i>	MITIGATION TYPE	SIGNIFICANCE <i>if mitigated</i>
					immediately. Work at the discovery site may only be recommenced on instruction from SAHRA.	
Decommissioning of Site Camp	Waste generation	Waste management	Decommissioning Phase	Medium (-ve)	The uncontaminated stockpiled materials must be used for backfilling	Low (-ve)
Decommissioning of Site Camp	Contamination of the soil and water	Soil; Hydrology	Decommissioning	Medium (-ve)	The hazardous substances onsite must be stored in marked containers.	Low (-ve)
					All the equipment must be shipped out of the site	
					The compacted soils must be loosened and topsoil spread on top, and also spreading seeds of indigenous species.	

k) Summary of specialist reports

<p>LIST OF STUDIES UNDERTAKEN</p>	<p>RECOMMENDATIONS OF SPECIALIST REPORTS</p>	<p>SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT <i>(Mark with an X where applicable)</i></p>	<p>REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED.</p>
<p>No specialist studies have been undertaken</p>	<p>N/A</p>	<p>N/A</p>	<p>N/A</p>

I) Environmental impact statement

i) Summary of the key findings of the environmental impact assessment;

- The significance of potential environmental impacts can be reduced to **Medium – Low** with implementation of mitigation measures and monitoring.
- Cumulative noise and visual impacts are rated with a negligible significance.
- Potential impacts on the socio-economic environment and livelihoods can be mitigated to **Medium – Low** significance.
- The prospecting activities may lower the ground water levels thus reducing the surface water recharge.
- There is a need for proper waste management for mud and other wastes generated during drilling activities and such wastes must not flow into the natural streams.
- It is expected that cumulative impacts on surface and groundwater quality and biodiversity will be major prior to mitigation. Mitigation measures for these potential impacts include: Application of best-practice water management at the drill and camp site, rehabilitation of infrastructure after mine closure and continuous monitoring of surface and groundwater quality.

ii) Final Site Map

The exact location of drilling points cannot be pinpointed as the prospecting activities are conducted in phases, and each phase depends on the success of the previous phase. The drill points must be identified after the geophysical surveys have confirmed the presence of the ore body. The sensitive areas will be identified during the planning phase of the project and no activities will be undertaken at any sensitive area. A detailed map can be produced after the geophysical surveys has been undertaken, although the map will be subjected to changes depending on the results of the preliminary drilling and assaying.

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

- Increased ambient noise levels resulting from geophysical surveys site fly-overs and increased traffic movement during all prospecting phases as well as drilling activities.
- Potential water and soil contamination from hydrocarbon spills and soil erosion which may impact on the environmental resources utilized by communities, landowners and other stakeholders.
- Potential water and soil pollution impacts resulting from hydrocarbon spills and soil erosion which may impact on ecosystem functioning.

- Increased vehicle activity within the area resulting in the possible destruction and disturbance of fauna and flora.
- Influx of persons (job seekers) to site as a result of increased activity and the possible resultant increase in opportunities of crime.
- Visual impacts created by drilling activities.
- Creation of employment opportunities.

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

Impact management objectives are described in terms of the Mitigation Hierarchy of the ERM Impact Assessment Standard. The mitigation hierarchy is as follows:

- **Avoid at Source:** Reduce at Source: avoiding or reducing at source through the design of the Project (e.g., avoiding by siting or re-routing activity away from sensitive areas or reducing by restricting the working area or changing the time of the activity).
- **Abate on Site:** add something to the design to abate the impact (e.g., pollution control equipment, traffic controls, perimeter screening and landscaping).
- **Abate at Receptor:** if an impact cannot be abated on-site then control measures can be implemented off-site (e.g., noise barriers to reduce noise impact at a nearby residence or fencing to prevent animals straying onto the site).
- **Repair or Remedy:** some impacts involve unavoidable damage to a resource (e.g. agricultural land and forestry due to creating access, work camps or materials storage areas) and these impacts can be addressed through repair, restoration or reinstatement measures.
- **Compensate in Kind; Compensate Through Other Means:** where other mitigation approaches are not possible or fully effective, then compensation for loss, damage and disturbance might be appropriate (e.g., planting to replace damaged vegetation, financial compensation for damaged crops or providing community facilities for loss of fisheries access, recreation and amenity space).

Impact management objectives:

- Provide sufficient information to strategically plan the prospecting activities as to avoid unnecessary social and environmental impacts
- Provide sufficient information and guidance to plan the prospecting activities in a manner that would reduce impacts (both social and Environmental) as far as practicable.
- 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

Through the implementation of the proposed mitigation measures, it is anticipated that the identified social and 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, minimising land clearing, restricting working hours (faunal disturbances) and rehabilitation.
- Concerns regarding access control to the farm 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.
- Visual impacts can be minimized through giving consideration to drill site, infrastructure placement and materials used.

n) Aspects for inclusion as conditions of Authorisation

- A map detailing the drilling locations should be submitted to the relevant landowners and the DWS and DMR prior to the commencement of these activities;
- No activities, with the exception of the soil sampling, may take place within 32m from any river;
- The drilling activities should be restricted to daytime;
- All wastes generated must be disposed of at an appropriate registered landfill and disposal certificate be kept on site.
- Clearing of vegetation should be limited to the working area only.

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

- Detailed site layout is not available due to the nature of the prospecting activities. The study is therefore undertaken as a holistic assessment of the overall site.

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

i) Reasons why the activity should be authorized or not

It is the opinion of the EAP that the activity be authorised.

- The desktop studies have proven that the site is located on a mineralised zone, prospecting activities must be undertaken to confirm the ore reserves

- It has also been noted that mining sector is the pillar of South African economy and also provides employment opportunities for many.
- The option of not approving the activities will result in a significant loss to valuable information regarding the status of the ore bodies present on these properties.
- In addition to this, should economical reserves be present and the applicant does not have the opportunity to prospect, the opportunity to utilize these reserves for future phases will be lost as well.

ii) Conditions that must be included in the authorisation

- A map detailing the drilling locations should be submitted to the relevant landowners and the DWS and DMR prior to the commencement of these activities;
- No activities, with the exception of the soil sampling, may take place within 32m from any river;
- The drilling activities should be restricted to daytime;
- All wastes generated must be disposed of at an appropriate registered landfill and disposal certificate be kept on site.

q) Period for which the Environmental Authorisation is required

The Prospecting Right has been applied for a period of five years. The Environmental Authorisation should therefore allow for the five years of prospecting and one year for decommissioning and rehabilitation.

r) Undertaking

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

s) Financial Provision

The site rehabilitation processes will require **R 37 085,28**

(i) Explain how the aforesaid amount was derived.

The aforesaid amount was derived using the department of mineral resource guideline document for the evaluation of the quantum of closure-related financial provision provided by a mine.

CALCULATION OF THE QUANTUM

Applicant:	Red Dust Trading (Pty) Ltd	Ref No.:	NC 30/5/1/1/2/ 12581 PR
Evaluators:	Mugagadeli Phathutshedzo	Date:	2020/04/06

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 powerlines)	m3	0	R 15,22	1	1	R	-
2 (A)	Demolition of steel buildings and structures	m2	0	R 221,99	1	1	R	-
2(B)	Demolition of reinforced concrete buildings and structures	m2	0	R 327,14	1	1	R	-
3	Rehabilitation of access roads	m2	100	R 39,72	1	1	R	3 972,00
4 (A)	Demolition and rehabilitation of electrified railway lines	m	0	R 385,55	1	1	R	-
4 (A)	Demolition and rehabilitation of non-electrified railway lines	m	0	R 210,30	1	1	R	-
5	Demolition of housing and/or administration facilities	m2	0	R 443,97	1	1	R	-
6	Opencast rehabilitation including final voids and ramps	ha	0	R205 242,16	1	1	R	-
7	Sealing of shafts adits and inclines	m3	0	R 119,17	1	1	R	-
8 (A)	Rehabilitation of overburden and spoils	ha	0,02	R136 828,10	1	1	R	2 736,56
8 (B)	Rehabilitation of processing waste deposits and evaporation ponds (non-polluting potential)	ha	0	R170 416,93	1	1	R	-
8 (C)	Rehabilitation of processing waste deposits and evaporation ponds (non-polluting potential)	ha	0	R494 971,55	1	1	R	-
9	Rehabilitation of subsided areas	ha	0	R114 572,93	1	1	R	-
10	General surface rehabilitation	ha	0,1	R108 390,94	1	1	R	10 839,09
11	River diversions	ha	0	R108 390,94	1	1	R	-
12	Fencing	m	20	R 140,40	1	1	R	2 808,00
13	Water management	ha	0,1	R 46 733,73	1	1	R	4 673,37
14	2 to 3 years of maintenance and aftercare	ha	0,1	R 16 356,80	1	1	R	1 635,68
15 (A)	Specialist study	Sum	0			1	R	-
15 (B)	Specialist study	Sum				1	R	-
Sub Total 1							R	26 664,71

1	Preliminary and General	3199,76508	weighting factor 2	R	3 199,77
			1		
2	Contingencies		R2 666,47	R	2 666,47
Subtotal 2				R	32 530,94
VAT (14%)				R	4 554,33
Grand Total				R	37 085,28

(ii) Confirm that this amount can be provided for from operating expenditure

It is hereby undertaken that the amount of R 37 085,28 in the form of a bank guarantee for rehabilitation purposes as required in terms of section 41 of the MPRDA as read with regulation 53 and 54 of the said Act., will be provided to the DMR upon granting of the requested prospecting right.

t) Specific Information required by the competent Authority

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

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

No specific report was generated for the purposes of the socio-economic conditions.

All findings are presented hereafter:

- Potential water and soil pollution resulting from hydrocarbon spill sand soil erosion;
- Noise due to the undertaking of the site fly-overs and drilling activities;
- Generation of waste that would be injected into the local waste stream;
- 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 result ant increase in opportunistic crime; and
- Visual Impact

Table 5: Impact Summary

Potential Impact	Significance Pre-Mitigation	Significance Post-Mitigation
Socio- Economic Environment and Livelihoods		
Creation of Employment opportunities	Minor (+)	Minor (+)
Loss of Productive land for Agricultural Purposes	Minor (-)	Insignificant (-)
Physical and Economic Impacts		

Water and Soil Pollution resulting from spillages of hydrocarbons	Moderate (-)	Minor (-)
Increased noise levels from the fly-overs planes and drilling activities	Major (-)	Moderate (-)
Generation of wastes that would be injected into local waste stream	Major (-)	Minor (-)
Legal and Legacy Issues		
Resentment and anger from unfulfilled expectations	Moderate (-)	Minor (-)
Influx of job seekers	Moderate (-)	Minor (-)
Criminal activities (Site Camp invasion)	Moderate (-)	Minor (-)

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

As outlined in Section d (ii), of this report, prospecting will be undertaken in phases; the first phase being a desktop assessment, followed by ground and/or aerial magnetic survey and soil sampling.

Based on the outcome of these activities, soil sampling and potential drill sites will be determined. Potential heritage impact may only occur once soil sampling and geophysics have been used to identify sites for drilling, and it is therefore recommended that any Heritage Artefacts that may be encountered should be reported to SAHRA and at the mean time all the activities should cease.

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

No alternatives of the site were considered based on the following:

- There is no perennial stream traversing the site that could create environmental concerns such as water contamination.
- There is sufficient open area with no settlements or any economic activities that could possibly create conflicts with the land owners.
- There are no historically or heritage resources known to be on site

PART B

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

1. Draft environmental management programme.

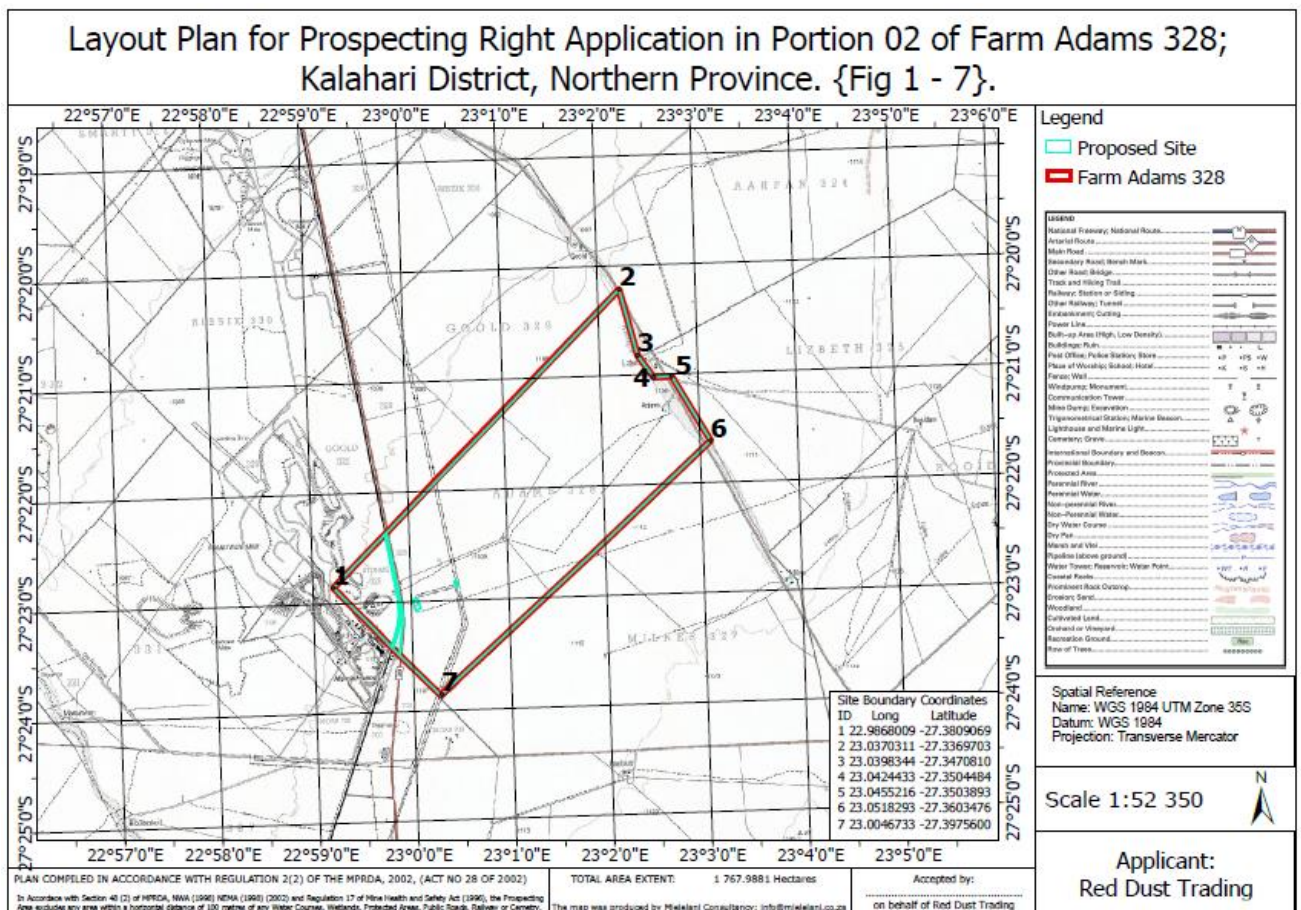
a) Details of the EAP,

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

b) 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).

c) Composite Map



d) Description of Impact management objectives including management statements

i) Determination of closure objectives

As previously mentioned, each phase of prospecting activities is dependent on the success of the previous phase. The location and extent of soil sampling and drill

sites can therefore not be determined at this stage. The closure objectives thus are as follows:

- Eliminate any safety risk associated with drill holes and sumps through adequate drill hole capping and backfilling.
- Remove and / or rehabilitate all pollution and pollution sources such as waste materials and spills;
- To loosen the hardened surfaces which were used temporary site camp or access roads and re-vegetate with indigenous species.
- Establish rehabilitated area which is not subjected to soil erosion which may result in the loss of soil, degradation of the environment and cause pollution of surface water resources;
- Restore disturbed area and re-vegetate these areas with indigenous vegetation to restore the ecological function of such areas as far as is practicable.

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

The quantities of water to be used are still to be determined but it is anticipated that should Red Dust Trading (Pty) Ltd will use groundwater from any boreholes on the farms and it will be done in consultation with the landowner.

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

A water use licence is not required for this project but should any NWA listings be triggered a water use license will be applied for.

iv) Impacts to be mitigated in their respective phases

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

Table 6: Impacts Mitigation

IMPACT ASSESSMENT FOR RED DUST TRADING (PTY) LTD PROSPECTING PROJECT									
Activities	Phase	Potential Impact	Size and Scale of Disturbance	Aspects Affected	Mitigation Type	Mitigation Measures	Standard to be Achieved	Compliance with Standards	Time Period for Implementation
Desktop Study	Planning	No Impact	None	None	None	None	Protect sensitive site	Locate sensitive and protected areas such as rivers)	N/A
Geophysical Surveys	Planning	Noise nuisance affecting local schools, hospitals and livestock farming	Approximately 497089496Ha	Noise generation	• Control Deviation from approved PWP.	• Notify directly affected parties of the planned date the fly-over activities will be	Remain within the Noise Regulation Standards	Locate sensitive and protected areas such as rivers.	Throughout Geophysical Survey Phase

IMPACT ASSESSMENT FOR RED DUST TRADING (PTY) LTD PROSPECTING PROJECT

Activities	Phase	Potential Impact	Size and Scale of Disturbance	Aspects Affected	Mitigation Type	Mitigation Measures	Standard to be Achieved	Compliance with Standards	Time Period for Implementation
					<ul style="list-style-type: none"> • Control through limiting activities to day time and an open and transparent channel of communication • Control of access into the prospecting site. 	<ul style="list-style-type: none"> • undertake • Access control measures must be agreed 			

Site Camp Establishment	Planning	<ul style="list-style-type: none"> • Loss of Vegetation when clearing for site camp area • Soil contamination from possible chemicals and oil spills. • Soil Compaction from the movement of vehicles into the site • Water contamination when effluents flow from 	Less than 1,5 ha	<ul style="list-style-type: none"> • Loss of Biodiversity • Soil Contamination • Soil Contamination • Water Contamination • Loss of Biodiversity 	<ul style="list-style-type: none"> • Control of waste disposal • Storm water control • Alien vegetation control • Monitoring of fauna movement • Rehabilitation of the site at closure • Control of sewage handling 	<ul style="list-style-type: none"> • Site camp must be demarcated before any activity can be undertaken. • Site Camp should be located more than 100 m away from protected sites. • Vegetation clearing must be limited to demarcated areas only • The site camp must 	<ul style="list-style-type: none"> • Remain within the approved PWP. • Identify and Protect sensitive areas. • Maintain communication with affected and Interested parties 	<ul style="list-style-type: none"> • Identified protected and sensitive areas will be protected. • No activity is to be undertaken within 32 metres of any natural rivers. • Protected trees will not 	Throughout the project.
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		<p>the site into natural water streams</p> <ul style="list-style-type: none"> • Spread of alien vegetation across the proposed site • Loss of fauna during site clearing and vehicle movement. • Restricted fauna movement by the camp site fence. • The use of bushes as 				<p>be located more than 100 m away from any water drainage.</p> <ul style="list-style-type: none"> • Removed topsoil must be stockpiled for rehabilitation purpose. • Search and rescue should be conducted to save fauna • Existing access roads must be used as 		<p>be removed.</p>	
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		toilets by employees				far as possible. <ul style="list-style-type: none">• Alien vegetation must be given extra care to prevent spread.• Site camp must not be established such that it does not impede storm-water flow• Marked waste bins must be provided for safe disposal of waste			
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						<ul style="list-style-type: none">• Chemical toilets must be provided at a ratio of 1:15 people and should be emptied regularly by certified sewage handling company.			
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IMPACT ASSESSMENT FOR RED DUST TRADING (PTY) LTD PROSPECTING PROJECT

Activities	Phase	Potential Impact	Size and Scale of Disturbance	Aspects Affected	Mitigation Type	Mitigation Measures	Standard to be Achieved	Compliance with Standards	Time Period for Implementation
Drill site Preparation	Drilling Phase	<ul style="list-style-type: none"> Removal of protected and indigenous trees. Contamination of surface water. Restricted movement of livestock Damage of pipelines Generation of dust from clearing activities Soil contamination from 	Less than 20 ha	<ul style="list-style-type: none"> Water contamination Soil contamination Air quality deterioration Visual disturbances Health and Safety Loss of vegetation Soil erosion 	<ul style="list-style-type: none"> Water quality monitoring Control of vegetation clearing Controlling access into the site. 	<ul style="list-style-type: none"> Protected areas must be marked Oil and Fuel Spills must be attended to as soon as they occur. Removed topsoil must be stockpiled for rehabilitation purpose. Consultation with local farmers to 	<ul style="list-style-type: none"> Remain within the approved Prospecting Work programme Protect sensitive areas Prevent contamination of environmental elements. Creates risk and hazards free 	<ul style="list-style-type: none"> Protected areas will be clearly marked on a sensitivity map Health and Safety standards will be maintained Spillage kit control will be 	

IMPACT ASSESSMENT FOR RED DUST TRADING (PTY) LTD PROSPECTING PROJECT

Activities	Phase	Potential Impact	Size and Scale of Disturbance	Aspects Affected	Mitigation Type	Mitigation Measures	Standard to be Achieved	Compliance with Standards	Time Period for Implementation
		spillages of oils and fuel <ul style="list-style-type: none"> • Soil compacted by heavy trucks transporting equipment to site • Site littering by generated wastes from clearing activities. • Accidents and injuries when trucks 		<ul style="list-style-type: none"> • Stream sedimentation 		communicate possible barricaded areas preventing cattle grazing. <ul style="list-style-type: none"> • Buried pipelines positions must be clearly marked on the sensitivity map. • Vehicle movement should be restricted to provided 	environment	availability on site	

IMPACT ASSESSMENT FOR RED DUST TRADING (PTY) LTD PROSPECTING PROJECT

Activities	Phase	Potential Impact	Size and Scale of Disturbance	Aspects Affected	Mitigation Type	Mitigation Measures	Standard to be Achieved	Compliance with Standards	Time Period for Implementation
		transporting equipment slides or sinks on poorly compacted soils. • Soil erosion where vegetation has been cleared.				access roads. • The transported load must be safely secured to prevent accidental load falls. • Waste bins must be provided and clearly marked to promote waste separation. • The working			

IMPACT ASSESSMENT FOR RED DUST TRADING (PTY) LTD PROSPECTING PROJECT

Activities	Phase	Potential Impact	Size and Scale of Disturbance	Aspects Affected	Mitigation Type	Mitigation Measures	Standard to be Achieved	Compliance with Standards	Time Period for Implementation
						<p>area must be watered regularly to prevent dust generation</p> <ul style="list-style-type: none"> • Storm water channels must be directed away from erosion prone areas • Waste water must be contained in site, 			

IMPACT ASSESSMENT FOR RED DUST TRADING (PTY) LTD PROSPECTING PROJECT

Activities	Phase	Potential Impact	Size and Scale of Disturbance	Aspects Affected	Mitigation Type	Mitigation Measures	Standard to be Achieved	Compliance with Standards	Time Period for Implementation
						treated and released.			
Drilling activities	Drilling phase	<ul style="list-style-type: none"> Ground water contamination when aquifers are disturbed Liquid waste flowing down the hole to contaminate ground water Soil contamination from 	Less than 20 ha	<ul style="list-style-type: none"> Water contamination. Air Pollution Stream sedimentation Increased surface flows. Health and Safety risks. 	<ul style="list-style-type: none"> Controlling of access to the site Controlling flow of storm water Controlling dust generation Rehabilitation of the site Monitoring of water quality 	<ul style="list-style-type: none"> Geophysical methods should be used to detect positions of aquifers to avoid ground water contamination. The drill bits and equipment must be in good working condition 	<ul style="list-style-type: none"> Remain within the Prospecting Work Programme Protect sensitive areas Maintain consultation with land owners Prevent contamination of natural elements 	<ul style="list-style-type: none"> Protected trees will be marked by tapes Sensitive areas will be clearly marked on a scaled map Storm water control 	The mitigation will be implemented before the commencement of drilling activities and be continuous thereafter.

IMPACT ASSESSMENT FOR RED DUST TRADING (PTY) LTD PROSPECTING PROJECT

Activities	Phase	Potential Impact	Size and Scale of Disturbance	Aspects Affected	Mitigation Type	Mitigation Measures	Standard to be Achieved	Compliance with Standards	Time Period for Implementation
		drilling effluents <ul style="list-style-type: none"> • Generation of muddy flows that may contaminate surface waters • Generation of dust from drilling activities and ground disturbances • Noise nuisance from drilling equipment. 				to prevent leakages of oils in the underground. <ul style="list-style-type: none"> • The drill holes must be capped when not in use to prevent debris flow of wastes and topsoil • The drill holes must also be capped to eliminate health hazards. 	<ul style="list-style-type: none"> • Eliminates health hazards 	channels will be developed <ul style="list-style-type: none"> • Waste management strategies will be implemented • An open register for interested and affected parties 	

IMPACT ASSESSMENT FOR RED DUST TRADING (PTY) LTD PROSPECTING PROJECT

Activities	Phase	Potential Impact	Size and Scale of Disturbance	Aspects Affected	Mitigation Type	Mitigation Measures	Standard to be Achieved	Compliance with Standards	Time Period for Implementation
		<ul style="list-style-type: none"> • Hardening of surfaces when the mud from the drilling site dries up. • Loss of soil fertility as topsoil gets covered up by mud from the drilling site. • Wild animals and livestock may be trapped by the mud. 				<ul style="list-style-type: none"> • Access by wild animals and livestock into the site must be limited. • The drill site must be regularly watered to prevent dust generation. • There should be a periodic checking of 		<ul style="list-style-type: none"> • will be maintained • Noise will be limited within accepted threshold. • Drilling activities will be conducted within demarcated 	

IMPACT ASSESSMENT FOR RED DUST TRADING (PTY) LTD PROSPECTING PROJECT

Activities	Phase	Potential Impact	Size and Scale of Disturbance	Aspects Affected	Mitigation Type	Mitigation Measures	Standard to be Achieved	Compliance with Standards	Time Period for Implementation
		<ul style="list-style-type: none"> • Disruption of essential services such as access roads when covered by the mud from the drilling site. • Poor housekeeping could result in littering which could lead to river contamination and health hazards to the cattle. 				<ul style="list-style-type: none"> the site's drainage system to ensure that the water flow is unobstructed. • Drilling activities should be conducted during day time to avoid noise during late hours. • Storm water channels must be developed 		<p>areas only.</p>	

IMPACT ASSESSMENT FOR RED DUST TRADING (PTY) LTD PROSPECTING PROJECT

Activities	Phase	Potential Impact	Size and Scale of Disturbance	Aspects Affected	Mitigation Type	Mitigation Measures	Standard to be Achieved	Compliance with Standards	Time Period for Implementation
		<ul style="list-style-type: none"> Health and safety hazards to humans, livestock and wild animals. 				<p>which drains water away from erosion prone areas.</p> <ul style="list-style-type: none"> The muddy water from the drilling activities must be contained on site. Where muddy water has flown over access roads, the mud must 			

IMPACT ASSESSMENT FOR RED DUST TRADING (PTY) LTD PROSPECTING PROJECT

Activities	Phase	Potential Impact	Size and Scale of Disturbance	Aspects Affected	Mitigation Type	Mitigation Measures	Standard to be Achieved	Compliance with Standards	Time Period for Implementation
						be scrapped to prevent slippery road conditions. <ul style="list-style-type: none"> • The flow of muddy water should not be allowed to enter agricultural land as it will affect soil fertility. • Use existing track and roads in all instances as far as is 			

IMPACT ASSESSMENT FOR RED DUST TRADING (PTY) LTD PROSPECTING PROJECT

Activities	Phase	Potential Impact	Size and Scale of Disturbance	Aspects Affected	Mitigation Type	Mitigation Measures	Standard to be Achieved	Compliance with Standards	Time Period for Implementation
						practicable . • A waste management system should be implemented and sufficient waste bins will be provided for onsite. A fine system will be implemented to further prohibit littering			

IMPACT ASSESSMENT FOR RED DUST TRADING (PTY) LTD PROSPECTING PROJECT

Activities	Phase	Potential Impact	Size and Scale of Disturbance	Aspects Affected	Mitigation Type	Mitigation Measures	Standard to be Achieved	Compliance with Standards	Time Period for Implementation
						and poor housekeeping practices.			
Chemical and Fuel storage	Drilling activities	<ul style="list-style-type: none"> Spillages and leaks contaminating water and soil. Spread of pathogens affecting both humans and livestock. Improper sewage removal methods resulting in 	Less than 1 ha	<ul style="list-style-type: none"> Soil Contamination Water contamination Health and Safety risks 	<ul style="list-style-type: none"> Control chemical storage Control chemical spillages and leaks 	<ul style="list-style-type: none"> The fuel stored on site should be placed on a raised bunded wall The chemical toilets must be emptied regularly by a certified company. All hazardous 	<ul style="list-style-type: none"> Protect water resources Create a health hazard free environment. 	Fuel and chemicals will be stored according to storage specifications	During drilling activities.

IMPACT ASSESSMENT FOR RED DUST TRADING (PTY) LTD PROSPECTING PROJECT

Activities	Phase	Potential Impact	Size and Scale of Disturbance	Aspects Affected	Mitigation Type	Mitigation Measures	Standard to be Achieved	Compliance with Standards	Time Period for Implementation
		contamination of soil and water.				<p>wastes must be disposed of at an appropriate landfill and a certificate of disposal must be filed on site.</p> <ul style="list-style-type: none"> All general wastes must be disposed of at a registered general waste landfill site 			

IMPACT ASSESSMENT FOR RED DUST TRADING (PTY) LTD PROSPECTING PROJECT

Activities	Phase	Potential Impact	Size and Scale of Disturbance	Aspects Affected	Mitigation Type	Mitigation Measures	Standard to be Achieved	Compliance with Standards	Time Period for Implementation
						and disposal certificate must be filed on site. <ul style="list-style-type: none"> • All chemical storage containers must be clearly marked and material handling sheet be provided. • The chemicals should be stored in 			

IMPACT ASSESSMENT FOR RED DUST TRADING (PTY) LTD PROSPECTING PROJECT

Activities	Phase	Potential Impact	Size and Scale of Disturbance	Aspects Affected	Mitigation Type	Mitigation Measures	Standard to be Achieved	Compliance with Standards	Time Period for Implementation
						sealed containers on a bunded surface. • Appropriate Personal Protective Equipment must be provided to staff working with hazardous chemicals. • Spillages must be attended to as soon as they occur.			

IMPACT ASSESSMENT FOR RED DUST TRADING (PTY) LTD PROSPECTING PROJECT

Activities	Phase	Potential Impact	Size and Scale of Disturbance	Aspects Affected	Mitigation Type	Mitigation Measures	Standard to be Achieved	Compliance with Standards	Time Period for Implementation
						<ul style="list-style-type: none"> • Depending on the nature and extent of the spill, contaminated soil must be either excavated or treated on-site. • The HSE must determine the precise method of treatment of polluted soil. • This could involve the 			

IMPACT ASSESSMENT FOR RED DUST TRADING (PTY) LTD PROSPECTING PROJECT

Activities	Phase	Potential Impact	Size and Scale of Disturbance	Aspects Affected	Mitigation Type	Mitigation Measures	Standard to be Achieved	Compliance with Standards	Time Period for Implementation
						application of soil absorbent materials or oil-digestive powders to the contaminated soil. • If a spill occurs on an impermeable surface such as cement or concrete, the surface spill must be			

IMPACT ASSESSMENT FOR RED DUST TRADING (PTY) LTD PROSPECTING PROJECT

Activities	Phase	Potential Impact	Size and Scale of Disturbance	Aspects Affected	Mitigation Type	Mitigation Measures	Standard to be Achieved	Compliance with Standards	Time Period for Implementation
						contained using oil absorbent materials. • Contaminated remediation materials must be carefully removed from the area of the spill so as to prevent further release of petrochemicals to the environment, and stored in			

IMPACT ASSESSMENT FOR RED DUST TRADING (PTY) LTD PROSPECTING PROJECT

Activities	Phase	Potential Impact	Size and Scale of Disturbance	Aspects Affected	Mitigation Type	Mitigation Measures	Standard to be Achieved	Compliance with Standards	Time Period for Implementation
						adequate containers until appropriate disposal.			
Transporting equipment out of site	Closure Phase	<ul style="list-style-type: none"> • Soil compaction during movement of heavy trucks. • Oil and fuel leaks from heavy trucks transporting drilling equipment. • Water contamination from 	Less than 20 ha	<ul style="list-style-type: none"> • Health and Safety Hazards • Soil Compaction • Water Contamination • Air Pollution • Control traffic 	<ul style="list-style-type: none"> • Site rehabilitation • Pollution Control • Traffic movement control • Monitoring of implemented control strategies 	<ul style="list-style-type: none"> • Vehicle movement should be properly planned and communicated with other road users. • Local farmers must be alerted of trucks movement 	<ul style="list-style-type: none"> • Remain within prospecting work programme . • Remain within noise control standards. • Remain within pollution control standards 	<ul style="list-style-type: none"> • The prospecting work will be completed within a specified period of 5 years. • Pollution control 	During site closure when equipment are shipped out of site.

IMPACT ASSESSMENT FOR RED DUST TRADING (PTY) LTD PROSPECTING PROJECT

Activities	Phase	Potential Impact	Size and Scale of Disturbance	Aspects Affected	Mitigation Type	Mitigation Measures	Standard to be Achieved	Compliance with Standards	Time Period for Implementation
		water flowing from contaminated site. <ul style="list-style-type: none"> • Loss of soil fertility. • Health hazards during loading of the equipment on transporting trucks. • Road accidents with other motorists, or hitting livestock on 		movement <ul style="list-style-type: none"> • Site rehabilitation. 		<ul style="list-style-type: none"> • The dust roads must be watered prior movement of heavy trucks. • Existing access roads must be used. • Where large trucks have to pass across a river, it should be ensured that they have no 		measures will be implemented <ul style="list-style-type: none"> • Consultation with affected parties and land owners will remain continuous. 	

IMPACT ASSESSMENT FOR RED DUST TRADING (PTY) LTD PROSPECTING PROJECT

Activities	Phase	Potential Impact	Size and Scale of Disturbance	Aspects Affected	Mitigation Type	Mitigation Measures	Standard to be Achieved	Compliance with Standards	Time Period for Implementation
		the access road. • Noise nuisance from the movement of heavy trucks				leaks that could potentially contaminate the water.			
Decommissioning of camp site	Site Closure	• Contamination of stockpiles. • Generation of wastes from old and worn out equipment and also empty tins. • Noise nuisance	Less than 1,5 ha	• Water contamination • Air pollution • Noise pollution • Health and Safety	• General wastes must be collected and stored separately for disposal at a registered landfill. • Workers should	• Control of waste handling • Consultation with affected parties • Rehabilitation of affected land	• Ensure that the site is restored to its original state as far as practicable. • Remain within noise control standards • Remain with	• Measures will be taken to inform affected parties of noisy activities to be	

IMPACT ASSESSMENT FOR RED DUST TRADING (PTY) LTD PROSPECTING PROJECT

Activities	Phase	Potential Impact	Size and Scale of Disturbance	Aspects Affected	Mitigation Type	Mitigation Measures	Standard to be Achieved	Compliance with Standards	Time Period for Implementation
		from demolition activities. <ul style="list-style-type: none"> • Dust Pollution from demolition activities. • Debris flow of general wastes into natural water drainages. • Health and safety hazards 		Hazard s	wear protective clothing when performing demolition activities. <ul style="list-style-type: none"> • Where possible surfaces should be watered to prevent dust prevention . • Demolition activities should be communicated with directly 		pollution control standards	undertaken. <ul style="list-style-type: none"> • The site will be restored to its original state as far as practicable. 	

IMPACT ASSESSMENT FOR RED DUST TRADING (PTY) LTD PROSPECTING PROJECT

Activities	Phase	Potential Impact	Size and Scale of Disturbance	Aspects Affected	Mitigation Type	Mitigation Measures	Standard to be Achieved	Compliance with Standards	Time Period for Implementation
					<p>affected parties to alert them of noisy activities.</p> <ul style="list-style-type: none"> • All equipment should be shipped out of site. • The temporary structures must be demolished and resulting wastes be removed from site. 				

e) 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	MITIGATIONTYPE	STANDARD TO BE ACHIEVED
Impact management outcomes have been addressed in Table 8 above					

f) Impact Management Actions

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

ACTIVITY (whether listed or not listed)	POTENTIAL IMPACT	MITIGATIONTYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
Impact management Actions have been addressed in Table 8 above				

(i) Financial Provision

1. Determination of the amount of Financial Provision

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

Prospecting activities are to be undertaken in a manner which facilitates site rehabilitation and the restoration of existing land capabilities. The primary objectives for rehabilitation include:

- a) The facilitation of the re-establishment of the land use and capability to as close as reasonable to the original conditions.
- b) Removal of all infrastructure and material introduced to site,
- c) Removal of all wastes and their disposal
- d) Promotion of the rapid re-establishment of the natural vegetation and the restoration of the site ecology.

The disturbed areas shall be rehabilitated to ensure that:

- ✓ The biodiversity habitat is encouraging the new land use after the prospecting
- ✓ Eliminate any safety risk associated with drill holes and sumps through adequate drill hole capping and backfilling.
- ✓ Environment and resources are not subjected to physical and chemical deterioration,
- ✓ The site is reversed to almost its original state
- ✓ The after-use of the site is beneficial and sustainable in a long term
- ✓ All socio-economic benefits are maximized

The rehabilitation plan shall entail removal of all generated wastes, infrastructure and materials, re-vegetation of disturbed and cleared areas, rehabilitation of access roads, ensuring the growth of the existing grasses and plants species and cleaning of spillages.

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

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

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

As previously mentioned, each phase of the prospecting activities is dependent on the success of the previous. Depending on the outcome of the Phase 1 assessment and airborne/ ground geophysics survey programme will be initiated. Targets that have been prioritized through detailed anomaly will be tested by initial drilling.

The location and extent drill sites can therefore not be determined at this stage. Mapping of the prospecting activities could thus not be undertaken. Due to the nature of the activities, the impacts will be very limited and of short duration. The management plan is provided in such a manner as to ensure concurrent rehabilitation. The areas for drilling purposes will be the main area experiencing impacts. 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. The only rehabilitation that will specifically be required is borehole capping and re-vegetation:

- **Borehole capping**

Drill holes must be permanently capped as soon as is practicable. Figure below provides the prepared procedure for the secure plugging of exploration drill holes.

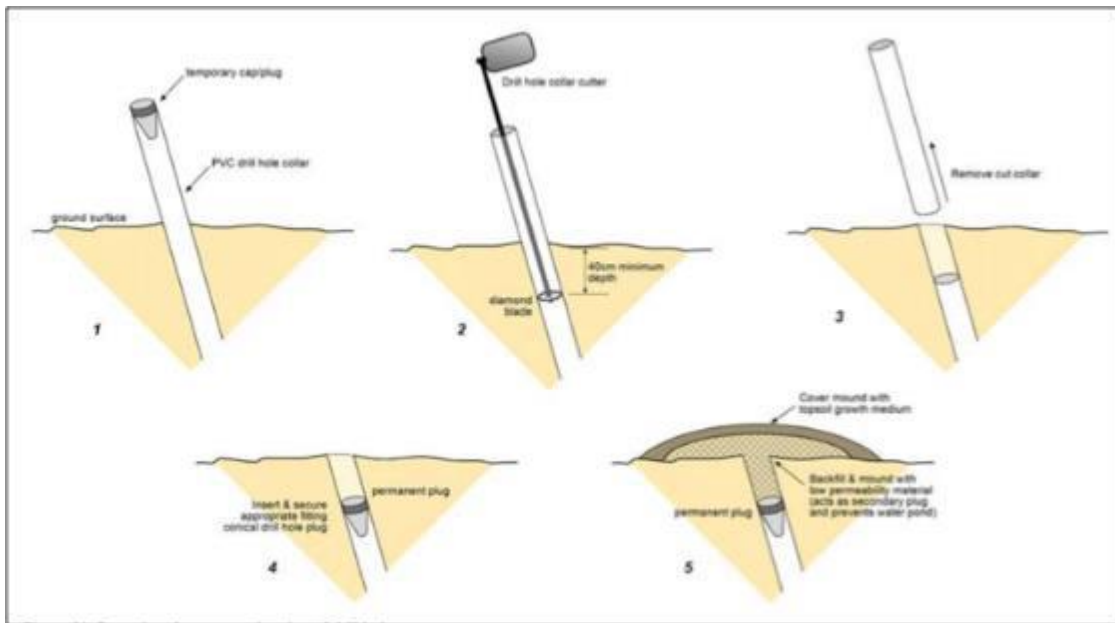


Figure 19: Capping of Boreholes

- **Re-vegetation**

It is recommended that a standard commercial fertilizer high in the standard elements is added to the soil before re-vegetation, at a rate of 10 -20k g/ha (application rate to be confirmed based on input from a suitably qualified specialist). The fertilizer should be added to the soil in a slow release granular form. A suitably qualified ecologist will be appointed to determine the appropriate veld grass mix for hand seeding.

Re-vegetation efforts will be monitored every second month for a period of six months after initial seeding. An effective vegetation cover of 45% must be achieved. Re-seeding will be undertaken if this cover has not been achieved after six months.

d) 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 and of short duration. The management plan is provided in such a manner as to ensure concurrent rehabilitation. The areas for drilling purposes will be the main area experiencing impacts. 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.

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

Quantum Calculation

CALCULATION OF THE QUANTUM								
Applicant:		Red Dust Trading (Pty) Ltd			Ref No.:		NC 30/5/1/1/2/ 12581 PR	
Evaluators:		Mugagadeli Phathutshedzo			Date:		2020/04/06	
No.	Description	Unit	A Quantity	B Master Rate	C Multiplication factor	D Weighting factor 1	E=A*B*C*D Amount (Rands)	
1	Dismantling of processing plant and related structures (including overland conveyors and powerlines)	m3	0	R 15,22	1	1	R	-
2 (A)	Demolition of steel buildings and structures	m2	0	R 221,99	1	1	R	-
2(B)	Demolition of reinforced concrete buildings and structures	m2	0	R 327,14	1	1	R	-
3	Rehabilitation of access roads	m2	100	R 39,72	1	1	R	3 972,00
4 (A)	Demolition and rehabilitation of electrified railway lines	m	0	R 385,55	1	1	R	-
4 (A)	Demolition and rehabilitation of non-electrified railway lines	m	0	R 210,30	1	1	R	-
5	Demolition of housing and/or administration facilities	m2	0	R 443,97	1	1	R	-
6	Opencast rehabilitation including final voids and ramps	ha	0	R205 242,16	1	1	R	-
7	Sealing of shafts adits and inclines	m3	0	R 119,17	1	1	R	-
8 (A)	Rehabilitation of overburden and spoils	ha	0,02	R136 828,10	1	1	R	2 736,56
8 (B)	Rehabilitation of processing waste deposits and evaporation ponds (non-polluting potential)	ha	0	R170 416,93	1	1	R	-
8 (C)	Rehabilitation of processing waste deposits and evaporation ponds (non-polluting potential)	ha	0	R494 971,55	1	1	R	-
9	Rehabilitation of subsided areas	ha	0	R114 572,93	1	1	R	-
10	General surface rehabilitation	ha	0,1	R108 390,94	1	1	R	10 839,09
11	River diversions	ha	0	R108 390,94	1	1	R	-
12	Fencing	m	20	R 140,40	1	1	R	2 808,00
13	Water management	ha	0,1	R 46 733,73	1	1	R	4 673,37
14	2 to 3 years of maintenance and aftercare	ha	0,1	R 16 356,80	1	1	R	1 635,68
15 (A)	Specialist study	Sum	0			1	R	-
15 (B)	Specialist study	Sum				1	R	-
Sub Total 1							R	26 664,71
1	Preliminary and General		3199,76508		weighting factor 2 1		R	3 199,77
2	Contingencies				R2 666,47		R	2 666,47
Subtotal 2							R	32 530,94
VAT (14%)							R	4 554,33
Grand Total							R	37 085,28

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

It is hereby undertaken that the amount of R 37 085,28 in the form of a bank guarantee for rehabilitation purposes as required in terms of section 41 of the MPRDA as read with regulation 53 and 54 of the said Act., will be provided to the DMR upon granting of the requested prospecting right.

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

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

Table 7: Compliance Monitoring and Frequency

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
Data Acquisition and Desktop Study	None identified	None	N/A	N/A
Target generation and ground truthing	Noise impacts resulting from site fly-over affecting schools and hospital operation and also affecting livestock.	Landowners and directly affected parties will be informed of the planned dates of the airborne survey and grievance mechanism will be made available.	Prospecting Manager	Once-off upfront consultation with affected parties. As required as grievances are received.

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
Ground Geophysical surveys and Soil Sampling	Access into private properties	<p>As soon as the extent of site activities are known. These must be communicated with directly affected landowners. The following procedures must be developed in conjunction with these landowners:</p> <ul style="list-style-type: none"> ✓ Emergency Preparedness and Response Plan; and ✓ Access control procedures and requirements. 	Prospecting Manager	<ul style="list-style-type: none"> ✓ As soon as the extent of site activities are known, confirmation of the extent of site activities must be sent to Department of Mineral Resource before such activities can be undertaken. ✓ Proof of consultation with directly affected landowners and the outcome of such consultation to be submitted to the Department of Mineral Resources. ✓ Continuous monitoring of compliance with the access control procedure will be undertaken.

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
Exploratory Drilling	Visual inspection of soil erosion and / or compaction	All exposed areas, access roads, the drill pad and soil stockpiles must be monitored for erosion on a regular basis and specifically after rain events.	Prospecting Manager Contractor	Weekly and after rain events
Exploratory Drilling	Dust generated will be assessed through visual observation	If dust outfall is excessive and regarded to affect any sensitive receptors a monitoring programme must be initiated based on the input of a suitably qualified air quality specialist.	Contractor	<ul style="list-style-type: none"> ✓ Monthly monitoring reports to be signed-off by the Environmental Manager. ✓ Corrective action to be confirmed and signed-off by the Environmental Manager. ✓ Consolidated monthly monitoring reports (including the corrective action taken) to be submitted to the Department of Mineral Resources.
Exploratory Drilling	Visual inspection of biodiversity impacts	Visual inspection of clearing activities and other possible	Prospecting Manager Contractor	✓ Once-off during clearing activities

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
	and the occurrence of invader species	secondary impact on biodiversity will be under taken. The introduction of alien invasive vegetation species will be determined.		<p>✓ Weekly inspection of secondary impacts</p> <ol style="list-style-type: none"> 1. Monthly monitoring reports to be signed-off by the Environmental Manager. 2. Corrective action to be confirmed and signed-off by the Environmental Manager. 3. Consolidated monthly monitoring reports (including the corrective action taken) to be submitted to the Department of Mineral Resources.
Exploratory Drilling	Visual inspection of pollution incidents,	✓ All secondary containment structure will be inspected on a	Prospecting Manager Contractor	Daily

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
	the integrity of secondary containment structures and waste management	<p>regular basis to confirm the integrity thereof and to identify potential leaks.</p> <ul style="list-style-type: none"> ✓ All spill incidents will be identified and corrective action taken in accordance with an established spill response procedure. ✓ Waste management practices will be monitored to prevent contamination and littering. 		<ul style="list-style-type: none"> ✓ Monthly monitoring reports to be signed-off by the Environmental Manager. ✓ Corrective action to be confirmed and signed-off by the Environmental Manager. ✓ Consolidated monthly monitoring reports (including the corrective action taken) to be submitted to the Department of Mineral Resources. ✓ Incident reporting will be undertaken as required in terms of the relevant legislation including, but not limited to, the:

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
				a) Mineral and Petroleum Resources Development Act 28 of 2002; and b) National Water Act 36 of 1998.
Post Closure Monitoring	Follow up inspections and monitoring of rehabilitation	<ul style="list-style-type: none"> ✓ Inspection of all rehabilitated areas to assess whether any soil erosion is occurring and implement corrective action where required. ✓ Confirm that the set target cover for all re-vegetated areas have been achieved after a period of 6 months and re-seed where required. ✓ Identify any areas of subsidence around drill holes and undertake additional backfilling if required 	Prospecting Manager	Monthly for a period of 6 months after rehabilitation activities are concluded. <ul style="list-style-type: none"> ✓ Monthly monitoring reports to be signed-off by the Environmental Manager. ✓ Corrective action to be confirmed and signed-off by the Environmental Manager. ✓ Consolidated monthly monitoring reports (including the corrective action taken) to be submitted to the

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
				<p>Department of Mineral Resources.</p> <p>✓ Final impact and risk assessment report for site closure to be submitted to the Department of Mineral Resources for approval.</p>

l) 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 provision. The reports should be submitted to the DMR.

m) Environmental Awareness Plan

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

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

Table 8: Environmental Awareness and Risk Assessment

Frequency	Time Allocation	Objective
Induction (all staff and workers)	1 hour training on environmental awareness training as part of site induction	<ul style="list-style-type: none"> • 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. • Establish a basic knowledge of the environmental legal framework and consequences of non-compliance. • Clarify the content and required actions for the implementation of the Environmental Management Plan. • Confirm the spatial extent of areas regarded as sensitive and clarify restrictions. • Provide a detailed understanding of the definition, the method for identification and required response to emergency incidents.
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.
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(2) Manner in which risks will be dealt with in order to avoid pollution or the degradation of the environment

As prescribed in above table, Task/Issue Based Risk Assessments must be undertaken 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 prospecting activities.

- ✓ Description of the approved prospecting activities and content of the prospecting right;
- ✓ 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
 - ❖ The Appropriate Remediation Strategies & Deteriorated Water Resources
 - ❖ Biodiversity
 - ❖ Weeds and Invader Plants
 - ❖ Rehabilitation
 - ❖ Contractors and Tenants
 - ❖ Energy & Conservation
 - ❖ Heritage Resources
 - ❖ General Health and Safety Matters
 - ❖ Basic Conditions of Employment
 - ❖ Compensation for Occupational Injuries and Diseases
 - ❖ General Mine Health and Safety Matters
 - ❖ Smoking in the Workplace
 - ❖ Noise & Hearing Conservation
 - ❖ Handling, Storage and use of Hazardous Substances
 - ❖ Weapons and Firearms
- ✓ Content and implementation of the approved Environmental Management Plan

- ❖ All located responsibilities and functions
- ❖ Management and Mitigation Measures
- ❖ Identification of risks and requirements adaptation
- ✓ Sensitive environments and features
 - ❖ Description of environmentally sensitive areas and features
 - ❖ Prohibitions as it relates to activities in or in proximity to such areas
- ✓ Emergency Situations and Remediation
 - ❖ Methodology to the identify areas where accidents and emergency situations may occur, communities and individuals that may be impacted
 - ❖ An over view 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 procedure will specifically include spill and fire risk, preparedness and response measures. The appropriate emergency control centers (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 land owners.

In the event that risks are identified which may have affected adjacent landowners (or other persons), the procedure will include the appropriate communication strategy to inform such persons and provide response measures to minimize the 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 the incident; (ii) owns any hazardous substance involved in the incident; or (iii) was in control when the incident occurred;
- ✓ Provide details of the incident (time, date, location);
- ✓ The details of the cause of the incident;
- ✓ Identify the aspects of the environment 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.

(3) Specific information required by the Competent Authority

No specific information was required by the Competent Authority.

2. UNDERTAKING

The EAP herewith confirms

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

Mugagadeli Phathutshedzo

Signature of the environmental assessment practitioner:

Mielelani Consultancy

Name of company:

04/ 06/ 2020

Date:

-END-