

SOS LEGAL SERVICES (PTY) LTD



MYEZO ENVIRONMENTAL MANAGEMENT SERVICES

Environmental Stewardship

**ENVIRONMENTAL MANAGEMENT PLAN: JUNE 2012 | APPLICANT: SOS LEGAL SERVICES
(PTY) LTD**



Ref No: GP 30/5/1/1/10080 PR

SUBMITTED FOR PROSPECTING RIGHT

**IN TERMS OF SECTION 39 AND OF REGULATION 52 OF THE MINERAL AND PETROLEUM
RESOURCES DEVELOPMENT ACT, 2002 (ACT NO. 28 OF 2002) ON:
FARM MIDDELVLEI 255 IQ PORTION: 2 AND 63 WITHIN MAGESTERIAL DISTRICT OF
RANDFONTEIN.**

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mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

NAME OF APPLICANT: SOS Legal Services (Pty) Ltd

REFERENCE NUMBER: GP 30/5/1/1/10080PR

ENVIRONMENTAL MANAGEMENT PLAN

**SUBMITTED
IN TERMS OF SECTION 39 AND OF REGULATION 52
OF THE MINERAL AND PETROLEUM RESOURCES
DEVELOPMENT ACT, 2002,
(ACT NO. 28 OF 2002) (the Act)**

STANDARD DIRECTIVE

Applicants for prospecting rights or mining permits, are herewith, in terms of the provisions of Section 29 (a) and in terms of section 39 (5) of the Mineral and Petroleum Resources Development Act, directed to submit an Environmental Management Plan strictly in accordance with the subject headings herein, and to compile the content according to all the sub items to the said subject headings referred to in the guideline published on the Departments website, within 60 days of notification by the Regional Manager of the acceptance of such application. This document comprises the standard format provided by the Department in terms of Regulation 52 (2), and the standard environmental management plan which was in use prior to the year 2011, will no longer be accepted.

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IDENTIFICATION OF THE APPLICATION IN RESPECT OF WHICH THE ENVIRONMENTAL MANAGEMENT PLAN IS SUBMITTED.

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1. REGULATION 52 (2): Description of the environment likely to be affected by the proposed prospecting or mining operation

1.1 The environment on site relative to the environment in the surrounding area.

SOS Legal Services Pty Ltd is planning to conduct prospecting activities on .Farm Middelvlei 225 IQ (Middelvlei), which is located along the north-western margin of the Witwatersrand Basin in the Randfontein area, 35 km south-west of Johannesburg, Gauteng Province, South Africa. The company will be prospecting for Manganese. The local setting for the project is presented in Figure 1.1-1.

Figure 1.1-2: Regional setting

Myezo Environmental Management Services (Myezo) has thus been commissioned to undertake environmental studies and compile environmental management plan (EMP) for the proposed project. The location of the proposed prospecting manganese project in relation to existing residential communities is presented below.

- Bekkersdal: +- 4.78 km on the South Eastern side.
- Kocksoord: +- 1.10 km on Western side.
- Mahlakeng: +- 3.15 km on the Eastern side.
- Middelvlei AH: +- 1.73 km on the North Western side.
- Pelzvale: +- 375.56 metres (0.38 km) on the Eastern side.
- Randfontein South AH: +- 1.12 km on the East side.
- Randfontein: +- 4.95 km on the Northern side
- Tenacres AH: +- 3.55 km on the Western side.
- Toekomsrus: +- 3.86 km on the North Eastern side.
- Venterspos: +- 2.83 km on the South Western side.

Hydrogeology

According to Hydro-geological Map Series of the Republic of South Africa, 1999, this proposed prospecting for manganese project has the following geohydrological characteristics:

- The elevation ranges approximately between 1600 – 200 m
- Mean Annual precipitation ranges approximately between 600 – 800 m
- Groundwater quality ranges approximately between 0 – 70 m s/m
- Principal groundwater occurrence: ranges approximately between 2.0-50 borehole yield class median l/s excluding dry boreholes
- Aquifer type type(s): B3 fractured
- Surface lithology: argillaceous and arenaceous rocks (sandstones) approximately equal portions.

Drainage Region

According to Drainage Regions Map of South Africa Map which was approved by Department of Water Affairs and Forestry in 1999, this project falls within primary drainage region C and tertiary drainage region which is C23.

Rainfall

According to Vegetation of South Africa, Lesotho and Swaziland published by Department of Environmental Affairs and Tourism, 1998. Rainfall varies from 600 to 700 mm per year, occurring in summer. Temperatures vary from -11°C to 38°C, with an average of 17°C.

Hydrology

During site visit, it was discovered that there is a non-perennial river which is passing on the Northern side of the Silos and crossing through the Farm Middelvlei 255 IQ on the Northern Western side towards Eastern side of the proposed prospecting area in Farm Middelvlei 255 IQ. The non perennial river crosses within the application area in Farm Middelvlei and joins Middelvlei River on the Eastern side of the application area. Middelvlei River crosses the application area from the North, passing on the Eastern side of the proposed prospecting area towards South, where this river crosses 3rd Road, which crosses through the application area on the Eastern side towards West. Below is the **Photo 1-1** which shows Middelvlei River at where the river crosses an access road on the east bottom corner of proposed manganese prospecting project within Farm 255 IQ



Photo 1-1: Middelvlei River within Farm Middelvlei 255 IQ

Land use

It was observed during site visit that there land use within the application area is mining, cultivation of maize, grazing of cattle and sheep. Below is the **Photo 1-2** which shows cultivation of maize within the application area on the eastern side of Middelvlei River.

The active mining operation within the application area is shown on the Photo 1-3 below where there is a truck on the site. There are historical diggings on the application farm and these were reportedly excavated for gold.



Photo 1-2: Cultivated Land close to a Middelvlei River on the West side and Dam on the Northern side.



Photo 1-3: Middelvlei Mine operating on the site within the Farm Middelvlei 255 IQ

There are agricultural holdings observed on the eastern side and on Farm Middelvlei 255 IQ. There are also formal residential areas which surrounds the proposed application area on the east, west and south eastern side of the application area. Below is the **Photo 1-4** which shows the nearest resident approximately 62.38 metres on the eastern side of the prospecting application area.



Photo 1-4: Residential Area on the eastern Side of Farm Middelvlei 255 IQ

There are silos approximately 0.53km on the western side of the proposed application area and Lafarge Cement approximately 0.50km on the north western side of the application area. This is close to the railways lines which fall within the proposed Middelvlei Manganese project on Farm Middelvlei 255 IQ. Below is **Photo 1-5** which shows the Silos and railway line on the Western side of the proposed prospecting area. There is railway line which passes the Farm Middelvlei 255 IQ on the North Western side towards the Western side of the proposed Manganese Prospecting Project.



Photo 1-5: Silos and Railway line on the Western side of Farm Middelvlei 255 IQ

Soils and land capacity

The soil was observed during site inspection to have a reddish-brown colour. According to Soil Colour Chart compiled by the Soil and Irrigation research institute, 1985, this soil hue is classified as 2.5YR 3/6. The soil type according to Soil classification: a binomial system of South Africa, 1977, fall under Red apedal B horizon. The soil has structure that is weaker than moderate blocky or prismatic in the moist state, directly underlies a diagnostic topsoil horizon, a yellow-brown apedal B horizon and an E horizon. These soils are good for agronomy, and extensive areas are currently cultivated for maize and other crops. In its natural state, the area is grazed by cattle and sheep (Vegetation of South Africa, Lesotho and Swaziland published by Department of Environmental Affairs and Tourism, 1998).

Geology

The potential Manganese deposit on the farm Middelvlei 255 IQ falls in the category of Supergene manganese. The manganese is formed due the preferential weathering of the Manganese rich dolomites in the Oaktree Formation within the Malmani dolomites. This weathering generally occurs close to or on surface. Hence the Manganese deposits in this area will be found where the Chuniespoort Group outcrop on surface. In addition the manganese nodules are also found in the topsoil covering a large portion of the farm. These deposits are observed in the sidewalls of the historic pits.

The Manganese is contained in the weathered surface cover of the target area. The target resource is located in the first 0-3m of the overburden covering the prospecting area. The planned intrusive exploration will be done such that the full weathered profile of the area is extracted.

Topography

During site inspection, the topography was observed as flat land and the vegetation cover is grassland. According to Rebelo and Louw (1998) *Vegetation of South Africa, Lesotho and Swaziland* published by Department of Environmental Affairs and Tourism, 1998, the vegetation type is Moist Cool Highveld grassland (*Cymbopogon-Themeda Veld (A48): Themeda triandra-Eragrostis curvula* grassland). According to this author, this grassland is widespread, covering the central-eastern part of the Highveld in the Free State, as well as the southern and eastern parts of Gauteng. Altitude varies from 1 400 to 1 600 m. The Photo 1-2

Photo 1-6 below shows the topography of the area and *Themeda triandra-Eragrostis curvula* grassland.



Photo 1-6: Topography of the Farm Middelvlei 255 IQ and *Themeda triandra-Eragrostis curvula* grassland.

Vegetation

According to Biome units Map of the Republic South Africa, Lesotho and Swaziland, the proposed manganese prospecting project falls within Albany thicket (Gm8). The proposed prospecting of manganese project constitute Moist Cool Highveld Grassland, *Cymbopogon-Themeda Veld (A48); Themeda triandra-Eragrostis curvula* Grassland. In pristine condition Red grass *Themeda triandra* dominates entirely, and few other species occur, particularly dicotyledonous forbs. Other grasses often encountered include: Broom Needlegrass *Triraphis andropogonoides*, Sawtooth Lovegrass *Eragrostis superba*, Velvet Signalgrass *Brachiaria serrata*, *Elionurus muticus*, *Heteropogon contortus*, *Cymbopogon plurinodis* and *Setaria spaciolata*. Forbs include: Fishbean *Tephrosia semiglabra*, Wild Petunia *Ipomoea obscura*, Brown Saffronbush *Sutera atropurpurea*, *Deverra burchellii*, *Helichrysum rugulosum*, *H. caespitium*, *H. dregeanum*, *Crabbea acaulis*, *Hermannia depressa* and *Rhynchosia totta*. When overgrazed, Weeping Lovegrass *Eragrostis curvula* replaces Redgrass *Themeda triandra* and becomes dominant.

When in poor condition, other elements invade, including: karroid shrubs such as Bitterkaroo *Pentzia globosa*, Bankruptbush *Stoebe vulgaris*, Small Bietou *Osteospermum scariosum* and *Walafriida densiflora*;

woody dwarf shrubs such as Dwarf Buffalothorn *Ziziphus zeyheriana* and Elephant's Root *Elephantorrhiza elephantine*; pioneer grass species such as Tassel Bristlegrass *Aristida congesta*, Couchgrass *Cynodon dactylon*, *Eragrostis obtusa*, *Aristida canescens*, *Microchloa caffra* and *Tragus berteronianus*; and forbs such as *Chamaesyce prostrata*, *Bladderweed* *Hibiscus trionum* and Rattlebush *Blepharis integrifolia*.

During site inspection, the species that was observed is *Acacia baileyana* F. Muell (**Photo1-7**). According to Alien weeds and invasive plants by Lesley Henderson (2001) from Plant Protection Research Institute Agricultural Research Council, The *Acacia baileyana* tree is small, unarmed, evergreen tree 3- 6 (-9) m high. Branchlets and foliage covered with a greyish or bluish powdery bloom. Leaves: Greyish or silvery-blue, sometimes tinged purple; spirally arranged around the branchlets, bipinnate, small 20-50 mm long, with 2-3 (-4) pairs of pinnae, a gland occurs at the junction of each pinnae pair or only the top few pinnae pairs (A). Flowers are bright yellow, globular flowerhead in large, showy sprays in July to September. Fruits: greyish-brown pods (B). Cultivated for Ornament, shade, honey source. The tree invades the Grassland, fynbos, roadsides, urban open space and watercourses. It originates from South East in Australia. Invasive States has potential transformer and declared as Invader category three (3).



Photo 1-7: *Acacia baileyana* F. Muell. (Declared Invader, Category 3).

Paraserianthes lophantha (Wild.) Nielsen has been observed during site inspection (**Photo 1-8**). It is evergreen shrub or a tree 4-6 (-15) m high, resembling a large leaved black wattle (*acacia mearnsii*). The leaves are dark green, paler below, up to 300mm or longer, golden-hairy, becoming +- glabrous; glands absent from rhachis a single gland occur towards the base of the petiole. The flowers are cream in dense bottlebrush-like heads occurs between June to August. The fruits are brown pods compressed with bulging seeds, edges raised and thickened; seeds emit a nauseating odour when crushed and moistened. This plant is cultivated for ornament, honey source. It originates from West and South West Australia. Invasive status is transformer, invades forest margins, riverbanks, moist

slope in fynbos, wooded kloofs (Alien weeds and invasive plants by Lesley Henderson from Plant Protection Research Institute Agricultural Research Council, 2001).



Photo 1-8: Paraserianthes lophantha (Wild.) Nielsen. Declared weed.

1.2 The specific environmental features on the site applied for which may require protection, remediation, management or avoidance.

There is a non-perennial river from the northern west side joining Middelvlei River towards Southern side within the proposed prospecting of manganese project and this stream will need to be avoided and protected when conducting prospecting activities. No development may be conducted within 100m of this stream. There is railway line (Photo 2-1) which is located on the Western side of Farm Middelvlei 255 IQ and moves towards the South Western side, which require avoidance and protection from prospecting activities. There is a dam which needs to be avoided and this dam is close to Middelvlei River on the Eastern side of the farm.



Photo 2-1: Railway Lines

1.3 Map showing the spatial locality of all environmental, cultural/heritage and current land use features identified on site.

The map which shows locality setting has been attached as Figure 1.1-1. There were no cultural/heritage site identified during site visit. The current land use features include Lafarge cement grinding station on the North Western side of the application area approximately 0.63 km (608.05 metres). Middelvlei Mine and Trollope Mining Services Mine and agricultural holdings are other features that were observed neighbouring the proposed site. Figure 1.3-1 also shows the land use features of the site. Photographic record is presented in Photographic record 1.

Figure 1.3-1: Aerial photograph

Photographic record 2: Photographic Record of the Proposed Middelvlei Manganese Project

1.4 Confirmation that the description of the environment has been compiled with the participation of the community, the landowner and interested and affected parties,

Interested and affected parties including land owners were personally visited by SOS Legal (Pty) Ltd consultants. They were shown a copy of the directive sent by Department of Mineral Resources (DMR) instructing SOS Legal (Pty) Ltd to perform consultations and a copy of the Prospecting Work Program.

The Prospecting Work Program was explained to the Surface land owners and Interested and Affected parties. After the explanation the interested and affected parties including land/surface owners were handed a comment sheet which they used to document their concerns. The concerns that were recorded are included in the impact analysis of this EMP.

These comments are included as Appendix 1. The Pamodzi operation was identified as being the closest operation to the area of interest. The consultants tried to contact the liquidators and get comments from them. The exercise was ineffective till to this date. In Appendix 2 is the communication between SOS Legal (Pty) Ltd and the liquidators.

Appendix 3: Comments and concerns raised by Interested and Affected Parties.

Appendix 4: Communication between SOS Legal (Pty) Ltd and the liquidators

2. REGULATION 52 (2) (b): Assessment of the potential impacts of the proposed prospecting or mining operation on the environment, socio- economic conditions and cultural heritage.

2.1 Description of the proposed prospecting or mining operation.

SOS Legal (Pty) Ltd has applied to conduct prospecting for Manganese on the Farm Middelvlei 225 IQ, along the north-western margin of the Witwatersrand Basin in the Randfontein Magisterial District, approximately 35 km South-West of Johannesburg, Gauteng Province, South Africa.

2.1.1 The main prospecting activities (e.g. access roads, topsoil storage sites and any other basic prospecting design features)

Surface infrastructure layout plan showing the structures that will be available on site is presented as Figure 2.1-1.

Access Roads

There will be no construction on access roads since existing access roads which is 3rd road from the Eastern side towards west and 7th road from the Western side and existing gravel road.

Toilet Facilities

Chemical toilet will be provided, emptied and removed on the site upon finishing of prospecting activities. The chemical toilets will be managed by an approved chemical toilet specialist. It will be re-filled with chemicals and re-used at the site.

Camp Sites

There will be no camp site as the prospecting will be done on site then leave after the activity.

Offices

There will be temporal mobile offices on the proposed prospecting site which will be removed as soon as the completion of the prospecting activities

Water

There will be water required for the bulk sampling and drinking water for the employees. Water will be provided from a tanker filled at a commercial source and it will be brought on site.

Waste Management

Oils spills from machinery will be collected and stored in waste collection bin. Contaminated soils will be treated with decontaminant. The treated soils will then be collected and tested for quality, after which depending on the results, they will be used in rehabilitation activities. Should the quality of the soils not permit rehabilitation use, these soils will be put in separate drums and will be taken to a registered waste disposal site.

The prospecting activities have been categorised into invasive and non-invasive activities.

A systematic and multidisciplinary phased exploration program will be conducted over the entire Prospecting Area. The objective of the program is to advance the project from the initial non invasive desktop and field work (Phase 1) to the invasive discovery stage (Phase 2) through to an advanced stage of mineral resource delineation (Phase 3) to a mineral metallurgy and process testing (Phase 4) through to project evaluation and feasibility (Phase 5), complying with all SAMREC standards. The program and technical work were structured to allow decision milestones on completion of each Phase that would either support each successive phase of exploration or demonstrate that additional exploration was not justified.

The planned of non invasive activities of the project are as follows as described below.

- Off site

Data Acquisition, Assay, Metallurgical Testing, Process testing, Planning and data Interpretation, Internal Planning and Strategy, Resource Model, Estimation, Mine design and planning, Process Design, Financial model,

- On -Site

Surface Mapping, Survey, Grab Samples.

The invasive activities planned for the prospecting of the area are described below.

- Pits

The pits will be excavated using a Tractor Loader Backhole. The excavations will be made from surface to the bottom of the target horizon, the channel bottom or contact with the underlying geology. The pit will be dug at the width of the Tractor Loader Backhole scoop creating an inclined area towards the mashing and 3 vertical sides towards the front and sides. Each pit will be mapped, sampled and surveyed prior to re filling the hole for rehabilitation.

- Trenches

The trenches will be dug using a Tractor Loader Backhole. The excavations will be made from surface to the bottom of the target horizon, the channel bottom or contact with the underlying geology and then extended to map out the geology and continuity. These trenches will typically be less than 20m in length with 3 vertical sides. Each trench will be mapped, sampled and surveyed prior to re filling the hole for rehabilitation.

- Bulk Samples

The trenches will be dug using a Tractor Loader Backhole. The bulk samples will be taken from an area of approximately 10m X 10m to an estimated depth of 2.5-3m. Each bulk sample area will be mapped, sampled and surveyed prior to re filling the hole for rehabilitation.

2.1.2 Plan of the main activities with dimensions

The bulk samples will be taken from the different lithologies expected on the area (Table 2-1).

Table 2-1: Bulk sample activities.

ACTIVITY		DETAILS		
Number of pits/trenches planned				
Dimensions of pits/trenches, per pit/trench	Number of pits/trenches	Length	Breadth	Depth
	1	10	10	3
	2	10	10	3
	3	10	10	3
	4	10	10	3
	5	10	10	3
Locality		Potential mining sites		
Volume Overburden (Waste)		0		
Volume Ore (m3)		1500		
Density Overburden (g/cm3)		0		
Density Ore (g/cm3)		1.2		
Phase(s) when bulk sampling will be required		Phase 3, Year 2		
Timeframe(s)		2 months		

The prospecting plan is shown as Figure 1.3-1.

Equipment

- The equipment to be used is outlined below:
- Tractor loader Backhole
- 6 -10m³ trucks for hauling material (approximately 5 trucks per day)
- Dozer for rehabilitation
- Water truck

2.1.3 Description of construction, operational, and decommissioning phases.

The activities that are expected during each of the project phases are indicated below.

Planning and Design Phase

- Development of drawings
- Infrastructure plans
- Consolidation of safety files and other regulatory operational manuals

The detailed explanation of what will be conducted during this phase is provided below.

1. Data Acquisition

- The data acquisition phase will be in the form of a desktop study. The study will focus on gathering all available data and information pertaining to the Prospecting and surrounding area. This will include, but not limited to, Geology, Hydrology, Mining, Settlements and Environmental issues and possible prospecting constraints.

2. Surface Mapping

- The surface within the Prospecting license will be systematically mapped using a GPS for reference. All outcrops and excavations will be mapped, capturing the geological information

as well as the volumetric information where available. The results will be captured on a plan for further use in the phases to follow

3. Survey

- A registered Surveyor will reference all the historic excavations and surface developments. The results will be plotted on a plan to be used during the planning phase to ensure all prospecting is within the prospecting area and that legislative guidelines are followed in planning the invasive target areas.

4. Grab Samples

- The results from the previous phases will form part of the initial grab sampling grid. The grid is to confirm the presence of manganese in the area and to obtain samples for initial analysis at the Assay Laboratory.
- The samples will be less than 1kg and bagged in separate sampling bags for analysis. Each sample will be clearly marked and cataloged for future reference. In addition each sampling point will be geo-referenced using a GPS. The samples will just be taken from surface and no intrusive technique will be followed.

5. Assay

- The samples obtained in the previous phase will be dispatched to an accredited Manganese Laboratory for analysis. Assays will be done to calculate the Manganese content (%) as well as a full spectrum analysis to establish the whole rock composition.

6. Planning and data interpretation

- All the data obtained in the previous phases will be compiled into a digital database. The database will also contain maps of the area to be used in further phases. Recommendation will be made in the form of a report to the shareholders.

7. Internal Planning and Strategy

- The company will make use of all the data obtained and captured in the previous phases to plan the way forward. This will include, but not limited to, establishing a sampling grid that is representative of the prospecting area while excluding areas where samples cannot be taken. A detailed plan of the proposed sampling positions will be compiled.

Construction Phase

- Mobilization and Site establishment
 - Mark and map physical features on a plan
 - Identify, peg, demarcate sites of historical, cultural and ecological significance
 - Transporting equipment, materials and personnel to site
 - Site clearing
 - Install storage and ablution facilities
 - Install waste collection points
 - Demarcate access roads and pathways
 - Putting up signage (health, safety and land use)
- Construction
 - Soil removal and stockpiling
 - Diesel storage and supply

Operation Phase

- Excavations and loading of materials into trucks
- Stockpiling of material

The section below describes the technical aspects of the planned prospecting activities during operational phase.

- **Phase 2 – Invasive**

1. **Pitting (200x200m)**

- Exploration pits will be dug using a Tractor Loader Backhole. The holes will be dug to the bottom contact of the Manganese bearing layer to expose the full profile. During this process a number of representative samples will be taken from the excavated material. Each sample will be placed in a separate plastic bag and assigned a unique number that will be added to the catalogue for sample tracking. The total depth of the profile will be measured along with the latitude and longitude of the hole. Once this process is complete, the hole will be filled back to ensure a process of immediate rehabilitation of the sample site.

2. **Assay**

- The samples obtained in the previous phase will be dispatched to an accredited Manganese Laboratory for analysis. Assays will be done to calculate the Manganese content (%) as well as a full spectrum analysis to establish the whole rock composition.

3. **Interpretation and Planning**

- All the data obtained during this phase will be compiled into a digital database. The database will also contain maps of the area to be used in further phases. Recommendation will be made in the form of a report to the shareholders. Some grade and channel width interpolation will also be completed for presentation.

4. **Internal Data review and Planning**

- The company will make use of all the data obtained and captured in the previous phases to plan the way forward. This will include, but not limited to, establishing a finer sampling grid and targets for Trenching and Bulk Sampling. A detailed plan of the proposed sampling positions will be compiled

- **Phase 3 – Invasive**

1. **Pitting (100X100m)**

- Exploration pits will be dug using a Tractor Loader Backhole. The holes will be dug to the bottom contact of the Manganese bearing layer to expose the full profile. During this process a number of representative samples will be taken from the excavated material. Each sample will be placed in a separate plastic bag and assigned a unique number that will be added to the catalogue for sample tracking. The total depth of the profile will be measured along with the latitude and longitude of the hole. Once this process is complete, the hole will be filled back to ensure a process of immediate rehabilitation of the sample site.

2. **Trenching**

- The Tractor Loader Backhole will be used to dig some exploration trenches to test the continuity of the geological features. Sampling procedures will be as with pitting, but more effort will be focused on the mapping of the trenches for geological and morphological information.

3. **Bulk Sampling**

- A total of 4 bulk samples are planned for the project. The size and dimensions are indicated in the Bulk Sampling section. The bulk samples are planned to be taken in such a manner that they are representative of the different deposition types on the area. It is currently expected that there will be at least 2 different geological environments to be sampled. The bulk sample will be used for metallurgical and processing test work.

4. **Assay**

- The samples obtained in the previous phase will be dispatched to an accredited Manganese Laboratory for analysis. Assays will be done to calculate the Manganese content (%) as well as a full spectrum analysis to establish the whole rock composition.

5. **Internal Data review and Planning**

- The company will make use of all the data obtained and captured to plan the way forward. A large number of additional tests are envisioned during this phase to test for example the size distribution of the manganese. Samples will also be prepared for the different labs and tests.

• **Phase 4 – Non-Invasive**

1. **Metallurgical Testing**

- The samples will be sent for metallurgical test work to establish the metallurgical characteristics of the ore. Results will be used for the Process test work phase.

2. **Process testing**

- The bulk samples will be sent for process testing to establish the best extraction methodology.

3. **Internal Data review and Planning**

- The results of all the work to this point will be used to make a decision on the way forward. Extra time is allocated to this section to ensure that the company can internally establish not only the viability of the project but also the potential markets for the product.

• **Phase 5 – Non-Invasive**

1. **Site Survey**

- The site will be surveyed by an external expert surveyor. The aim will be to ensure that not only the excavations, but also the topography is surveyed in detail. The surveyor will make use of a theodolite.

2. **Resource Model**

- A 3D geological resource model will be completed for the targeted mineral resource areas. The model will be constructed using all available data on the project area. The model will

contain both the ore and waste areas and will form the basis of the estimation model. The model will be constructed in Datamine Studio.

3. Estimation

- The estimation of the Resources will be done within the constructed resource model. Estimation of the grade, volume and density will be completed. The resource estimation will be done using an digital estimation software of the experts choice.

4. Mine design and planning

- The mine design and planning will be done digitally using the survey and estimation data. Included in the mine design will be the envisioned mining method, extraction rates, skills and equipment. Also included in the Planning will be the transport of the product to potential buyers or clients.

5. Process Design

- The process design will be completed using the results from the Mine Design and Planning phase. A system will be designed to process the ore that is being mined. The process will include the labour required to operate the processing plant and the volumes and grades to be produced.

6. Financial model

- The financial model will incorporate all the items completed during this phase. The aim of the model is to establish the financial viability of the project when taken forward. The model will form the basis of the decision to take the project forward or stop.

7. Internal Data review and Planning

- During this phase the shareholders will review all the available data and information to decide the way forward. A positive outcome will lead to additional fund raising and the application for mining rights. The remaining time of the prospecting license should allow the company to complete the rights application without seeking renewal of the license.

Decommissioning and rehabilitation

- Concurrent rehabilitation of disturbed surfaces as the work continues
- De-establishment and site clean up
- Decommissioning and final rehabilitation (outstanding surface disturbances)

2.1.4 Listed activities (in terms of the NEMA EIA regulations)

The activity triggers Activity 20 under R544 of National Environmental Management Act, 1988, (No. 107 of 1998). This activity has not come into effect and therefore, the basic assessment study will only be done once the Minister of Environment Affairs has affected this Activity.

2.2 Identification of potential impacts

- (Refer to the guideline)

2.2.1 Potential impacts per activity and listed activities.

The activities and their associated impacts are structured according to the project phases. The potential impacts per activity of the proposed project area listed in Table 2-2.

Table 2-2: Potential impacts for identified activities

Activity	Potential Impact
Design and planning phase	
Invasive Phases	
Data Acquisition	There are no expected impacts during data acquisition stage as this stage will be in the form of a desktop study conducted in the office. A site visit was only conducted for confirmation of coordinates. The study will focus on gathering all available data and information pertaining to the Prospecting and surrounding area. This will include, but not limited to, Geology, Hydrology, Mining, Settlements and Environmental issues and possible prospecting constraint.
Surface Mapping	There are likely disturbances of soil and vegetation during surface map. However, the surface mapping within the Prospecting license will be systematically mapped using a GPS for reference. All outcrops and excavations will be mapped, capturing the geological information as well as the volumetric information where available. The results will be captured on a plan for further use in the phases to follow.
Survey	There are no expected impacts, except the noise due to a vehicle that will be used and foot path that might be created on the vegetation. However, the results will be plotted on a plan to be used during the planning phase to ensure all prospecting is within the prospecting area and that legislative guidelines are followed in planning the invasive target areas.
Grab Samples	The loss of soil resource and lack of rehabilitation during taking of grab samples. The samples will just be taken from surface and no intrusive technique will be followed. The samples obtained in the previous phase will be dispatched to an accredited Manganese Laboratory for analysis so that will not impose impacts.
Planning and data interpretation	There are no potential impact on planning, data interpretation

Activity	Potential Impact
Internal Planning and Strategy	and strategy stages as all the data obtained in the previous phases will be compiled into a digital database. The database will also contain maps of the area to be used in further phases.
Construction phase	
Mobilization and Site establishment	Disturbance of vegetation and soil
	Disturbance of ecology
	Deterioration of ambient air due to dust emissions and release of carbon monoxide from construction vehicles
	Noise Increase in noise levels
	Noise Increase in noise levels
	Traffic increase in the area
	Soil erosion and water pollution
	Possible accidents
Soil removal and stockpiling	Loss of soil
	Pollution of local stream
Load material on to trucks	Release of particulate matters to the ambient air
	Increase in ambient noise levels
	Noise pollution
Operational Phase	
Pitting (200x200m) grid and (100X100m) grid	There are potential impacts which are associated to pitting as this will : <ul style="list-style-type: none"> • disturb vegetation, • cause pollution of the stream • disturb geological formation. • may remove surface soil which leads to migration of the soil.
Trenching	<ul style="list-style-type: none"> • The Tractor Loader Backhole Loader used for trenching may potential cause contaminate soils due to oil spillage. • Trenching may lead to migration of the surface soil and disturbance of the vegetation. There diesel tank used to refill the Tractor Loader Backhole may possible cause oil spills. • Loss of land use due to lack of rehabilitation of the trenches • Cleared areas might be compacted. The disturbance grassland vegetation of the site would cause moderate severity to the grazing animals and the impact would thus be

Activity	Potential Impact
	moderate
Bulk sampling	There may possible be surface soil migration and disturbance of vegetation. The loss of rehabilitation will exacerbate this impact.
Non- Invasive Phases	
Site Survey	Disturbance of vegetation and soil compaction Driving vehicles off access roads may disturb vegetation.
Resource Model	There will be no potential impacts at this stage as it will be done on a 3D geological resource model off-site.
Estimation	This will be performed off site using digital estimation software.
Mine design and planning	This will be conducted digitally off-site using estimated and surveyed data. Therefore, there will be no impacts on the site.
Process Design	This stages will be off-site from the results obtain from mine design and planning phase.
Financial model	
Internal Data review and Planning	
Decommissioning and closure phases	
Concurrent rehabilitation of disturbed surfaces as the work continues	There will be potential impacts associated with improper rehabilitation The may be spillage if the machinery used is not serviced and cleaned.
De-establishment and site clean up	During clean up, there may be vegetation disturbance and topsoil which may lead to migration of the topsoil.
Decommissioning and final rehabilitation (outstanding surface disturbances)	The topsoil and vegetation may potentially be disturbed due to equipment that will be used to rehabilitate the proposed prospecting site. This may lead to less or poor vegetation growth and alteration of the landscape on the area disturbed. <ul style="list-style-type: none"> • Loss of land resource due land degradation • Increase to ambient noise levels

2.2.2 Potential cumulative impacts.

Loss of Soil and alteration of the topography

The cumulative impacts are associated with the existing mining activities on the site. There has been soil removal and change of the site due existing mining activities. This prospecting will add on the disturbance of the soil when trenching, pitting and bulk sampling. The severity of the impact will be medium since the prospecting area will be rehabilitated after each and every activity done on the site.

Dust impacts

The dust generated by the trenching can be cumulatively viewed in association with other potential dust generators such as the cultivation on site. This will add to dust generated on the site by the active mining operation. The dust may negatively impact on the neighbouring communities which are in close proximity to the proposed prospecting site.

Visual impacts

The proposed prospecting project will contribute to visual impacts caused by mining operation on the site. Due to the use of big Tractor Loader Backhole and machinery that is going to be used on the site for pitting and trenching. The impact will however be low since the machinery might not be consistently viewed from all main points where the potential viewers travel.

Noise impacts

Due to the fact that there are already mining active on the site which generate noise pollution, this prospecting will also add some noise due to pitting machinery and Tractor Loader Backhole to the pitting, trenching and bulk sample station.

Traffic impacts

The traffic flow will also be impacted as there will be more or increase of traffics/ vehicles on the site. The existing traffic on the site are vehicles from existing or active mining vehicles from Middelvlei mine and Trollope mining services.

Water and Land Pollution impacts

The runoff from existing activities and the planned mining activities will cumulatively impact on the streams. There will be possible oil spillage runoff to the stream from prospecting stations and machinery. The land may be degraded by oil spillage and that may result to impacts on vegetation growth.

2.2.3 Potential impact on heritage resources

There were no heritage resources that were identified on the site during site inspection.

2.2.4 Potential impacts on communities, individuals or competing land uses in close proximity.

- (If no such impacts are identified this must be specifically stated together with a clear explanation why this is not the case.)

There are negative impacts from existing mining operating on the site, agricultural holdings, existing farming of cattle and sheep. The nearby communities will be impacted on by the visual, noise and dust generated from the proposed prospecting of manganese project.

There are potential impacts on competing land uses since the Farm is currently also used for agricultural purposes. Nevertheless, the historical trend shows that this actual site is being used for mine diggings.

There were neighbouring residents observed during site inspection, which uses water from the river to wash their clothes and cattle drink the water (see Photo 1.1-3). There water for agricultural holding may be impacted if water is contaminated due to prospecting activities on the site.

2.2.5 Confirmation that the list of potential impacts has been compiled with the participation of the landowner and interested and affected parties,

The probability of impacts occurring due to the proposed activity has been compiled with the assistance of the identified interested and affected parties and the liquidators. The communication has been attached as Appendix 1 and 2.

2.2.6 Confirmation of specialist report appended.

- (Refer to guideline)

It was deemed not necessary for the specialist impact assessment investigation to be conducted. Probability of the impacts described in Table 3-2 have less detrimental impact on the environment and can be mitigated during implementation phase. Mitigation measures for such impacts are shown in Table 3-4. (environmental management plan). REGULATION 52 (2) (c): Summary of the assessment of the significance of the potential impacts and the proposed mitigation measures to minimise adverse impacts.

3. Assessment of the significance of the potential impacts

The impact assessment criteria used to assign the significance of potential impacts is attached as Table 3.1-1 below.

3.1 Criteria of assigning significance to potential impacts

Table 3-1: Impact Assessment Criteria

<p>Criteria below were used to assess the significance of the impacts. The cut-off points have been defined in relation to characteristics of mining, but those for Probability, Intensity/Severity and Significance are subjective, based on rule-of-thumb and experience. In assessing the significance of the impact, natural and existing mitigation measures will be considered. These natural mitigation measures will be defined as natural conditions, conditions inherent in the project design and existing management measures that alleviate (control, moderate and curb) impacts.</p> <p>The assessment procedure described below will make use of:</p> <ul style="list-style-type: none"> • Predictive methods: the magnitude of the impact will be predicted. • Evaluation methods: the significance of the impacts will be assessed. 		
<p>TIMING Immediate Construction/operation Rehabilitation</p>	<p>DURATION Short term = 0-2 years Long term: 2 years -onwards</p>	<p>EXTENT On-site Local = 0 – 40 km radius District, Regional, National</p>
<p>PROBABILITY Definite: 100% probability of occurrence High: 99 - 50% probability of occurrence Moderate: 49 - 15% chance of occurrence Low: <15% probability of occurrence</p>	<p>INTENSITY/ SEVERITY High: 100 – 50% degree of change in area of direct effect/ impact Medium: 50-15% change in the area of effect Low: <15% change in area of effect</p>	
<p>SIGNIFICANCE The significance of the unmanaged and managed impacts has been assessed through consideration of the probability of the impact occurring, the extent over which the impact will be experienced, and the intensity/severity of the impacts</p> <ul style="list-style-type: none"> • Negligible: the impact is non-existent or insubstantial, is of no or little importance to any stakeholders and can be ignored. • Low: the impact is limited in extent, has low to medium intensity; whatever its probability of occurrence is, the impact will not have a material effect on the decision and is unlikely to require management intervention carrying significant costs. • Moderate: the impact is of importance to one or more stakeholders, and its intensity will be medium or high; therefore, the impact may materially affect the decision, and 		

management intervention will be required.

- **High:** the impact could render development options controversial or the entire project unacceptable if it cannot be reduced to acceptable levels; and/or the cost of management intervention will be a significant factor in project decision-making.

3.1-1 Potential impact of each main activity in each phase, and corresponding significance assessment

Potential impacts are discussed under Table 3-2.

Table 3-2: Potential impacts

Activity	Potential Impact	Significant Impacts on any Element of the Environment Regulation 52 (2)(c)
DESIGNING AND PLANNING PHASE		
Development of drawing, infrastructure, plans and consolidation of safety files and other regulatory operational manuals	There are no anticipated impacts during planning and designing phase, because all work for this phase was compiled in the office. A site visit was only conducted for verification of coordinates during development of the site layout.	<p>The physical features on the project application area were mapped as shown in the Figure 1.1-1. There were no changes done on the environment to obtain the information. Site visit was undertaken to validate the information contained on the map, to whether it correspond to the information on the actual ground by plotting coordinates system to those features. Therefore the severity of impacts of the impact was insignificant and had no deplorable effect on the environment.</p> <p>The severity of the impact is insignificant and will only occur on site within a short period and the rating is thus insignificant.</p> <p>Rating: Insignificant</p>
CONSTRUCTION PHASE		
Mobilization and site establishment Mark and map	Disturbance of vegetation and soil	Same as described in 1

Activity	Potential Impact	Significant Impacts on any Element of the Environment Regulation 52 (2)(c)
physical features on a plan		
Identify, peg, demarcate sites of historical, cultural and ecological significance	<p>Disturbance of vegetation</p> <p>Deterioration of ambient air due to dust emissions and release of carbon monoxide from construction vehicles</p>	<p>Nature preservation will be encouraged during the development of this project. Proper mitigation strategies will be developed to avoid negative effect that might occur. The project will have minimal impact on the loss of vegetation since rehabilitation is planned. The severity will be minimal and will occur within the site and will have medium impact.</p> <p>Impact rating: Medium</p> <p>Impacts on air pollution may arise from the release of carbon monoxide caused by un-serviced construction vehicles. Dust nuisance may occur as a result of using the haul road to gain access to the site. However, the length of the haul road to access the site is very short and therefore dust nuisance due to the proposed activity will have a medium impact on the environment. The impact maybe of a short term duration and might be experience outside and inside of the mining fence during construction.</p>
Transporting	Noise increase in ambient noise	Company transportation vehicles may contribute to the source of noise in the area. The impact will affect the immediate surroundings, because there are nearest residents to the

Activity	Potential Impact	Significant Impacts on any Element of the Environment Regulation 52 (2)(c)
equipment, materials and personnel to site	levels	road. Impact rating : High
	Traffic increase in the area	The traffic is expected to increase on the road, since it is also used by other users in the area. The increase of traffic on the road may result in possible accidents. Therefore, the severity of impact will be high during construction and operational stage of the project. The extent of the impact may happen within the local extent of the project area. Road signs as part of mitigation measures will be put in place to warn motorists and pedestrians about hazardous risk areas. Impact rating: Medium
Site clearing	Soil erosion and water pollution	Clearing of land for prospecting trenches and infrastructure during construction phase may result in high impact by causing soil erosion during windy or rainy periods. Unvegetated soil may cause high runoff process during rain seasons, which will cause pollution of water and impact on the nearest stream. The company plans to rehabilitate the land after extracting samples to ensure that any impacts on the project area are mitigated or minimized. Therefore, the project will have minimal effect on the environment, due to the fact that rehabilitation process is also planned. Impact rating: Medium
Install storage and ablution	Loss of top soil due to clearing	The installation of ablution facilities will require clearing of vegetation in the demarcated space for storage or ablution area. Due to the fact that no permanent structures will be

Activity	Potential Impact	Significant Impacts on any Element of the Environment Regulation 52 (2)(c)
facilities	vegetation	<p>created on site, a simple plan for rehabilitation of the disturbed area/ land reserved for ablution facilities and storage will only be required. The ablution and storage facilities will be provided during development of the project and be removed on mine closure. To avoid the impact enough space for storage or ablution facilities will be cleared, it will be possible to experience loss of topsoil due to soil erosion process.</p> <p>Impact rating: Low</p>
Install waste collection points		Same as above
Demarcate access roads and pathways		The construction of road signs or pathways will not have negative impact on the environment. Instead, it is a positive option to be used to avoid the probability of accidents.
Putting up signage (Health, Safety and Land use)	Possible accidents	<p>A working environment without any warning sign of hazardous zones or information can potentially cause accidents, warning sign will be in place during the construction and operational phase to avoid loss of life or possible impacts that might occur. There project will therefore have no harmful impact in the cause of accidents. The scope of impact could be local.</p> <p>Impact rating : Low</p>
OPERATIONAL PHASE		
Soil removal and stockpiling	Loss of soil	The removal of topsoil and stockpiling may lead to land degradation due high soil erosion. Therefore, the activity may have high severity impact on soil. Reasonable rehabilitation process will be introduced during the decommissioning phase of the project to minimize any impacts.

Activity	Potential Impact	Significant Impacts on any Element of the Environment Regulation 52 (2)(c)
	Potential loss of land of agricultural potential.	<p>There is potential for disturbance of grazing and agricultural land. Only a limited extent of land will be disturbed at any one time and the duration of disturbance will be minimal. After each prospecting or pitting, each pit will be backfilled such that grazing and cultivation can continue if no further prospecting is carried out on the farm.</p> <p>Impact rating: Low</p>
	Potential contamination of water resources (especially the river crossing the site) due to suspended solids and oil spillages,	<p>The oil spillages as well as suspended solids during trenching can be washed into the pans within the application area as well as streams and ultimately runoff into the streams that are traversing the application area and be transported into the river and this will cause sedimentation. Sedimentation will increase turbidity of the water and reduces oxygen.</p> <p>However, there is no planned prospecting within 100m next to the watercourse.</p> <p>Vegetation will assist in ensuring that run-off does not gravitate towards the river and hence facilitate the avoidance of its disturbance.</p> <p>The impact will have a low probability of occurrence and limited duration prospecting.</p> <p>Impact rating: Low</p>
	Noise disturbance	<p>The operation might generate noise due to operation of the drill rig. The extent of the noise generation will be restricted to on-site activities and is therefore considered low.</p> <p>The closest distance between the proposed pitting/trenching site and the nearest community is about 1 km depending on the targeted outcrop area. The duration of the impact will be about 40 days which is the extent of the time of trenching in the farm. The intensity will also be minimal since the employees will be wearing protective clothing and ear plugs and the community is not in the immediate 100 m radius and the fact that noise will only be limited</p>

Activity	Potential Impact	Significant Impacts on any Element of the Environment Regulation 52 (2)(c)
		during the day. The trees found around the site are expected to also act as a buffer to noise. Impact rating : Low
Bulk sampling and Grab Samples	The potential impact will loss of vegetation and landscape	The landscape may be modified when rehabilitating the bulk sample stations and surface soil migration with water used on bulk sampling station.
	Potential spillages and discard of samples	The samples potential containing manganese and other elements might contaminate the soils and be washed into the streams if they are not properly handled. This is unlikely to happen since the samples are of economic value to the company and will be handled with care. Impact rating: low
	Release of particulate matters to the ambient air	There is a probability of dust emission due to the digging, crushing and loading of gravel in to the trucks. This could have a negative impact on the environment by reducing the visibility on the area. The dust may also block the stomatal pore which will inhibit the normal respiration and photosynthesis mechanisms within the leaves of the trees and thus affecting the plant growth. The extent of impact will then be on site and outside the mining area and will be short term. Impact rating: Low
	Increase in ambient noise	The traffic is expected to increase on the road, since it is also used by public taxis, private cars users and other industrial vehicles in the area. The increase of traffic on the road may result in possible accidents. Therefore, the severity of impact will be high during construction

Activity	Potential Impact	Significant Impacts on any Element of the Environment Regulation 52 (2)(c)
	levels	<p>and operational stage of the project. The extent of the impact may happen within the local of the project area. Road signs as part of mitigation measures will be put in place to warn motorists and pedestrians about hazardous risk areas.</p> <p>Impact rating: Medium</p>
Mine operations (on-going supervision and monitoring)	Noise pollution	<p>The operation might generate noise due to trucks. The extent of the noise generation will be restricted to on-site activities. However since there are communities at about 642 m from the application area possible noise disturbance may be experienced from the proposed activity. The severity of the impact is slightly harmful due to the distance from the application area to the nearest community. There are activities such as road and mining operation next to the application area which may cumulatively increase the ambient noise.</p> <p>Impact rating Medium</p>
DECOMMISSIONING PHASE		
Decommissioning and rehabilitation	<p>Loss of land resource due to land degradation</p> <p>Degradation of surrounding landscape due to abandoned</p>	<p>There is a possibility of land degradation due to lack of rehabilitation during mine closure. Topsoil has enough natural nutrients to grow different kinds of vegetation. The company plans to practice extensive rehabilitation method first by stockpiling the removed topsoil, creating storm water trenches for future rehabilitation. Thus leading the proposed project to have medium impact on the environment. The land will be levelled to the required or reasonable standard and revegetated again to limit impacts.</p> <p>Impact rating: Medium</p> <p>Any abandonment of particle or disposal of packaging material and general waste (cement packaging) will result in degradation of the landscape and impact on the attractive view of the area. The impact will be severe even though there is low probability of occurrence since ongoing rehabilitation is planned as part of the prospecting activities.</p>

Activity	Potential Impact	Significant Impacts on any Element of the Environment Regulation 52 (2)(c)
	material and non-backfilled and re-vegetated trenches and pits.	Topsoil has enough natural nutrients to grow different kinds of vegetation. SOS Legal Services plans to practice rehabilitation method first by stockpiling the removed topsoil, creating storm water trenches for future rehabilitation. Impact rating: Medium
	Increase in ambient noise levels	The traffic is expected to increase on the road, since it is also used by public taxis, private cars users and other industrial vehicles in the area. The increase of traffic on the road may result in possible accidents. Therefore, the severity of impact will be high The extent of the impact may happen within the local extent of the project area. Road signs will as part of mitigation measures be put in place to warn motorists and pedestrians about hazardous risk areas. Impact rating: Medium
		SOCIO-ECONOMIC IMPACTS
	Potential damage to structures do to blasting	The community was concerned about blasting vibrations. However, the target mineral is within 0-3 m depths and not blasting will be undertaken.
	Lack of opportunities for the locals due to unavailability of skills Improper selection criteria	The community would feel displaced should there be lack of involvement and transparency in current developments. This feeling of being ignored results would result mistrust and would therefore be a significant impact. The project is still at prospecting phase and will as such not be able to address broader social and labour issues concerns. These concerns will be addressed during the next application phase, mining right application. The company will nevertheless have to consider the local in job opportunities and continual update them in the project developments. Aspects related to skills transfer would have to be considered at this

Activity	Potential Impact	Significant Impacts on any Element of the Environment Regulation 52 (2)(c)
	<p>for the labour resulting in lack of trust</p> <p>Improper selection criteria for the students for skills development</p> <p>Enterprise development</p> <p>Inconsideration of the local enterprises during prospecting.</p> <p>Lack of continual communication with the local</p>	<p>stage of prospecting and the selecting criteria will need to be finalised with selected community representatives.</p> <p>Impact rating : high</p>

3.1-2 Assessment of potential cumulative impacts.

Dust nuisance

The dust generated by the pit and trench can be cumulatively examined in relation with other potential dust generators used on the site such as a trucks and tractor loader basehole used for pitting and trenching in the proposed prospecting of manganese in Farm Middelvlei 255IQ. There was noticeable dust during site inspection from the existing mining operation on the site. The dust receptors on the eastern side of farm Middelvlei 255 IQ such as existing resident housing are shielded by existing vegetation from the site. However, the Middelvlei River on the eastern side and the non-perennial river may be impacted by dust nuisance from existing operation. The proposed prospecting manganese project will add minimal dust generation by the trucks and prospecting equipments such as tractor loader basehole.

Impact rating: Medium

Migration of the topsoil and modification of the landscape

The cumulative impacts are associated with the historical diggings on this site and current mining operation which is happening on the farm. There has been soil removal and change of the landscape. The proposed prospecting of manganese project mining will add to this impact and will change the landscape of the surroundings. The severity of the impact will be medium since the area generally has vegetation and is not high since the same vegetation will monitor the disturbance from the main road uses.

Impact rating : Medium

Visual Impact

The cumulative impacts associated with this proposed manganese project are the impacts on the view of the farm which is currently caused by existing mine dumps on the site. The proposed project will add on visual impacts due to the dust generation and traffic flow increase from the pitting and trucks moving on the site.

Impact rating: High

Noise Impacts

Due to the fact that there are already mining activities on the site which generate noise pollution, this prospecting will also add to noise due to pitting machinery and Tractor Loader Backhole as well as trenching and bulk sample station.

Impact rating: Medium

Water and Land Pollution impacts

There are likely impacts to the stream as there is a stream which passes the application area. There will be possible oil spillage runoff to the stream from prospecting stations and machinery. The land may be degraded due to oil spillage and that may result to impacts on vegetation growth.

3.1-3 Proposed mitigation measures to minimise adverse impacts.

Mitigation measures for the proposed Manganese project are described in Table 3.-3.

Table 3-3: Mitigation measures

The ratings column provides assessments of the impacts post mitigation. The ratings are provided as a first letter of the rating as described in the criteria table 3.1. e.g. S for short term and M for Medium and for Definite.

Activity	Potential Impact	Objective	Mitigation Measures	Ratings post mitigation				
MANAGEMENT OF ENVIRONMENTAL IMPACTS FOR DESIGN AND PLANNING PHASE								
Development of drawings, infrastructure plans and consolidation of safety files and other regulatory operational manuals	There are no anticipated impacts during planning and designing phase, because all work for this phase was compiled in the office. A site visit was only conducted for verification of coordinates, during the development of the site layout			Timing/ Duration:	Extent:	Probability/ intensity:	Rating:	
				Immediate/ Short term	Onsite	Low/Low	Low	
MANAGEMENT OF ENVIRONMENTAL IMPACTS FOR CONSTRUCTION PHASE								

Activity	Potential Impact	Objective	Mitigation Measures	Ratings post mitigation			
<p>Mobilization and site establishment</p> <p>Mark and map physical features on a plan</p>	<p>There are no anticipated impacts for this activity, because all work for this was compiled in the office. A site visit was only conducted for verification of coordinates during the development of this site layout.</p>			<p>Timing/ Duration: Immediate/ Short term</p>	<p>Extent: On-site</p>	<p>Probability/ Intensity: Low/Low</p>	<p>Rating Low</p>
<p>Identify, peg, demarcate sites of historical, cultural and ecological significance</p>	<p>Disturbance of ecology</p>	<p>Sustain the heritage of the area</p>	<p>a) Any heritage site identified by the specialist, proper mitigation measures will be designed to limit the impacts.</p>	<p>Timing/ Duration: Immediate/ Short term</p>	<p>Extent: On-site</p>	<p>Probability/ Intensity: Low/Low</p>	<p>Rating: Low</p>
<p>Transporting equipment, materials and personnel to site</p>	<p>Deterioration of ambient air due to dust emissions and release of carbon monoxide from construction vehicles</p>	<p>Avoid the increase of dust emission in the ambient air</p>	<p>a) Additional measures such as water spraying of the road will be considered should there be enormous dust generation causing a dust nuisance. b) Suitable Personal Protective Equipment (PPE) and protective clothing will be provided to the employees. c) The water to be used for</p>	<p>Timing/ Duration: Construction/ Short term</p>	<p>Extent: On-site</p>	<p>Probability/ Intensity: Moderate/ Low</p>	<p>Rating Low</p>

Activity	Potential Impact	Objective	Mitigation Measures	Ratings post mitigation
			<p>dust suppression will be from the water which will be bought from the Municipality.</p> <p>d) A water cut will be available on site on a daily basis and will spray the work area on a need basis (when there is dust being generated to prevent the dust from being a nuisance and from disturbing the health and safety of employees as well as the general air quality from 08h00 to 17h00.</p> <p>e) The capacity of the water tank is about 10 000 litres. It is envisaged that about 100 litres of water will be used in the spraying per day, since there will be no gravel haul roads to be sprayed and only the immediate work areas such as cleared areas and loading areas.</p>	

Activity	Potential Impact	Objective	Mitigation Measures	Ratings post mitigation
			f) However should there be a requirement for more water, the capacity of the tank is such that such volumes are able to be provided.	
	Noise increase in ambient noise levels	To minimize increases in ambient noise levels	<ul style="list-style-type: none"> a) Service construction vehicles and equipment on a regular basis to ensure noise suppression mechanisms are functioning. b) Switch equipment off when not in use. c) Adhere to occupation health and safety noise limits. d) Maintain occupational noise to determine noise levels from equipment as increased noise may indicate other issues. e) A noise monitoring program and grievance procedure must be implemented before construction begins and should be continued throughout the 	

Activity	Potential Impact	Objective	Mitigation Measures	Ratings post mitigation			
			construction, operation and closure.				
	Traffic increase in the area	To reduce negative impacts of increased traffic on and around the site	<ul style="list-style-type: none"> a) Allocate and adhere to speed limits. b) Public to be given right of way on public roads and truck contractors shall make use of approved methods to control the movement of vehicles so as not to constitute a road hazard. c) Erect safety signs in the local languages to warn people of the danger on the roads. d) Ensure that site access points are clearly visible from the main road. e) Ensure that all vehicles entering and leaving the site use demarcated routes. 	Timing/ Duration: Operation and Construction/ Long term	Extent: Local	Probability/intensity: Moderate /Low	Rating: Moderate

Activity	Potential Impact	Objective	Mitigation Measures	Ratings post mitigation			
Site clearing	Loss of top-soil due to clearing vegetation	Avoid contamination of underground water resources	a) Ensure that vegetation is not unnecessarily removed. b) Minimize the removal of vegetation in order to reduce the possibility of dust pollution. c) Rehabilitate areas once operations cease in a manner that promotes the recovery of a broad range of biodiversity.	Timing/ Duration: Construction/ Long term	Extent: On-site	Probability/intensity: Low/Low	Rating: Low
Install storage and ablution facilities	Loss of top soil due to clearing vegetation	Avoid contamination of underground water resources.	a) Handle and store chemicals and hydrocarbons in accordance with applicable legislation and the relevant SANS codes, thereby minimizing the risk of leakages and spillages. b) No permanent structures will be created on site c) The ablution and storage facilities will be rendered during development of the project and be removed on mine closure. d) Enough space for storage	Timing/ Duration: Operation/ Long term	Extent: On-site	Probability/intensity: low	Rating: Low
				High /	Local	Construction	Low

Activity	Potential Impact	Objective	Mitigation Measures	Ratings post mitigation
			or ablution facilities will be cleared.	

Activity	Potential Impact	Objective	Mitigation Measures	Ratings post mitigation			
Install waste collection points	Possible loss of land resource or top soil fertility due to chemical and soil spillages	Prevent loss of land resources	a) Develop an emergency spill response plan and train all construction contractors in the emergency spill response procedure. b) Implement waste management plan for handling hazardous waste. c)	Timing/ Duration: Immediate/ Short term	Extent: On-site	Probability/intensity: Low/Low	Rating: Low
Demarcate access roads and pathways			a) Pathways will be constructed on the road to the project site and within the proposed application area to alert motorist and pedestrians about the operations in the area to avoid the probability of accidents from occurring.	Timing/ Duration: Construction/ Short term	Extent: On-site	Probability/intensity: Low/Low	Rating: Low
Putting up signage (Health, Safety and Land Use)	Possible accidents	Avoid loss of life or possible injuries	a) Erect safety signs in the local languages to warn people of the hazardous chemicals. b) Ensure that all employees wear safety clothes such as proper work suits, respirators to areas exposed to dust. As such	Timing/ Duration: Immediate/ Short term	Extent: On-site	Probability/intensity: Low/Low	Rating: Low

Activity	Potential Impact	Objective	Mitigation Measures	Ratings post mitigation			
			the operation shall comply with the provisions of Regulatory 17(16) (a) of the Mine Health and Safety Act, 1996 (Act 29 of 1996) as well as other applicable law regarding noise control.				
MANAGEMENT OF ENVIRONMENTAL IMPACTS FOR OPERATIONAL PHASE							
Soil removal and stockpiling	Loss of soil	Topsoil will be stockpiled for future rehabilitation.	a) Top soil will be stockpiled for future rehabilitation. b) Locate top soils stockpiles in order to reduce its exposure to wind, thereby reducing the likelihood of particle entrainment. c) Topsoil will be stripped before any construction on site. The soil will be stripped only on areas which will be disturbed by activities. The topsoil will be stripped to a depth of about 300 mm or more depending on available depths on the areas to be	Timing/ Duration: Operation/ Short term	Extent: On-site	Probabilit y/ intensity: Medium/ Low	Rating: Medium

Activity	Potential Impact	Objective	Mitigation Measures	Ratings post mitigation
			<p>disturbed. The soil will be placed such that machinery does not drive over it.</p> <p>After extraction activities are finished, the excavation will be filled up and topsoil will be replaced to act as a growth medium thus facilitating revegetation.</p> <p>d) Mining will be done in sequence, opening one block at a time and then closing it, while moving to the next block.</p> <p>e) This facilitates progressive rehabilitation and ensures that the excavations are filled up at the end of mining. The material to fill up the excavations will be sourced from the road works in town.</p> <p>f) This road material does not meet the grade as borrow material, but will be suitable for filling up mined excavations. The G5</p>	

Activity	Potential Impact	Objective	Mitigation Measures	Ratings post mitigation			
			gravels removed from the mining site will be used as road borrow material.				
	Pollution of local stream	Avoid run-off system	a) Storm water trenches will be introduced during operation to preserve soil for future rehabilitation and to ensure that run-off does not gravitate towards the river. The storm water trenches must be regularly inspected for the adequate functioning plan.	Timing/ Duration: Immediate/ Short term	Extent: On-site	Probability/intensity: Low/Low	Rating: Low
Load material on to trucks	Release the particular matters to the ambient air	To reduce deterioration of ambient air quality	a) Experienced loader will be employed to avoid releasing of to the ambient air, while trying to load gravel in the tipper trucks.	Timing/ Duration: Operation/ Short term	Extent: On-site	Probability/intensity: Low/Low	Rating: Low
Mine operations (on-going supervision and monitoring)	Loss of soil Loss of vegetation Noise increase and dust emissions in the ambient air	Prevention of environmental degradation	a) Top-soil will be removed and stockpiled separately prior to any extraction of gravel b) After mining activity is finished, top soil will be replaced and backfilling will be done to ensure that the mine hole is rehabilitated	Timing/ Duration: Immediate/ short term	Extent: On-Site	Probability/intensity: Low/Low	Rating: Low

Activity	Potential Impact	Objective	Mitigation Measures	Ratings post mitigation
			<p>and leveled to meet the required slope. All top soil stockpile areas will be mapped and volume of stored material will be recorded.</p> <p>c) Top soil stockpiles will be located away from 100m of any stream or water course and will be located such that they are not sterilized or windblown. The height will thus be kept less than 2m with wind direction considerations. Top-soils storage will be adjacent to the mine hole.</p> <p>d) The noise impact will be mitigated by the fact that the mining operation will only occur during the day.</p> <p>e) Workers will use safety earplugs where dB levels are found higher than regulated. Therefore noise measurements will be recorded.</p>	

Activity	Potential Impact	Objective	Mitigation Measures	Ratings post mitigation
			<p>f) As such the operation shall comply with the provisions of Regulation 17 (16) (a) of the Mine Health and Safety Act, 1996 (Act 29 of 1996) as well as other applicable laws regarding noise control.</p> <p>g) The oil spillage impact on the soils will be mitigated by ensuring that pans are placed under the machinery while they are stationary.</p> <p>h) The spills will be collected and placed on a waste bin, which will then be transported away from the site to a designated or a hazardous waste disposal site.</p>	
	Increase of job scarcity and booming of poverty in the area.	To minimize negative and enhance positive impacts on employment.	a) Where possible local workers will be recruited from the local area to increase employment opportunities during the construction phase and	

Activity	Potential Impact	Objective	Mitigation Measures	Ratings post mitigation			
			operation phase	Timing/ Duration: Immediate/ Short term	Extent: onsite	Probability/i ntensity: Medium/Lo w	Rating: Low
DECOMMISSIONING PHASE							
Decommissioning and rehabilitation	Loss of land due to land degradation		a) Practice rehabilitation method first by stockpiling the removed topsoil, and filling the excavation. b) Backfill the holes with the stockpiled topsoil, level the hole to a required standard slope and re-vegetated the land with the type of vegetation that used to grow in the area before the development of the project	Timing/ Duration: Rehabilitatio n/ Short term	Extent: On- site	Probability/ intensity: Low/Low	Rating: Low

Management measures for cumulative impacts

Dust nuisance

- Dust suppression measures will be employed.

Rating post mitigation: Low

Migration of the topsoil and modification of the landscape

- The proposed prospecting trenches will be rehabilitated
- The applicant will participate in any forum that aim to address the rehabilitation issues in the area and provide any required rehabilitation data.

Rating post mitigation: Low

Visual Impact

- Rehabilitation will be conducted to remove all potentially visually intrusive structures.

Rating post mitigation: Low

Noise Impacts

- Neighbours will be informed about noise generating activities and a latform will be created for them to submit complaints should these activities be too noisy.

Rating post mitigation: Low

Water and Land Pollution impacts

- Any development within 100 m will stream will be avoided
- Any excavations will be filled as soon as they are opened

3.1-4 List of actions, activities, or processes that have sufficiently significant impacts to require mitigation.

- Transporting equipment, materials and personnel to site
- Soil removal and stockpiling
- Installation of waste storage and toilet facilities
- Pitting
- Trenching
- Bulk sampling

3.1-5 Concomitant list of appropriate technical or management options

(Chosen to modify, remedy, control or stop any action, activity, or process which will cause significant impacts on the environment, socio-economic conditions and historical and cultural aspects as identified. Attach detail of each technical or management option as appendices)

The management measures for the identified impacts are provided in Table 3.3

3.1-6 Review the significance of the identified impacts

- (After bringing the proposed mitigation measures into consideration).

The significances of the impacts post mitigation are provided in Table 3.3.

4. REGULATION 52 (2) (d): Financial provision. The applicant is required to-

3.2 Plans for quantum calculation purposes.

- (Show the location and aerial extent of the aforesaid main mining actions, activities, or processes, for each of the construction operational and closure phases of the operation).

The surface infrastructure showing the position of the activities on site is presented in Figure 2.1 -1.

3.3 Alignment of rehabilitation with the closure objectives

- (Describe and ensure that the rehabilitation plan is compatible with the closure objectives determined in accordance with the baseline study as prescribed).

The principal objectives to achieve successful closure are to:

- Rehabilitate disturbed land to a state that is suitable for its agreed post closure uses.
- The site is currently used for grazing and agriculture and upon completion of the prospecting; the land will again be used for agriculture and grazing.
- Rehabilitate disturbed land and to a state that:
 - Facilitates compliance with applicable environmental quality objectives (air quality and water quality guidelines);
 - Reduces visual impact of the disturbed land;
 - Limits post closure management.
- To ensure that all areas are successfully rehabilitated and free draining.

- Rehabilitate the drill hole and prospecting trenches to a condition that access would not pose a safety, health or environmental hazard.
- To keep Photographs of the sites, before and during the prospecting operation and after rehabilitation.
- This photographic record will be used to monitor rehabilitation success.
- To provide financial provision for rehabilitation

3.4 Quantum calculations.

- (Provide a calculation of the quantum of the financial provision required to manage and rehabilitate the environment, in accordance with the guideline prescribed in terms of regulation 54 (1) in respect of each of the phases referred to).

The financial provision calculation is provided in Table 9-1.

The following specifications are indicated for the rehabilitation of the prospecting right area:

- Renovate all hardened surfaces and vegetate
- Backfill all the prospecting hole with topsoil to the standard slope and vegetate
- Cost determination regarding the rehabilitation
- Remove all foreign material from the site.
- Backfill all the pits, trench and bulk sampling stations

Ripping of Surfaces

The temporal surface infrastructure areas will be removed, send back where they were hired and re-vegetate the area to shape the slope and avoid possible soil erosion.

- Re-vegetation with the type of species that use to grow in the area will then be introduced.
- Seeding
- Cost based on purchase of seed and labour to disperse the seed.
- Maintenance
- This includes the cost for erosion control and follow up seeding.

3.5 Undertaking to provide financial provision

- (Indicate that the required amount will be provided should the right be granted).

Financial Provision

The financial provision amount will be paid in the form of bank guarantee should the proposed prospecting operation be granted.

Another implementation amount has been budgeted for to the costs related to the implementation of the EMP. A total amount of **R 67 026.30** will be provided as a financial quantum.

5. REGULATION 52 (2) (e): Planned monitoring and performance assessment of the environmental management plan.

5.1 List of identified impacts requiring monitoring programmes.

The impact that require monitoring programmes are indicated in the tale below and the associated aspect that will need to be monitored are provided under each identified impact.

Action
<ul style="list-style-type: none"> • Lack of revegetation • Monitoring of revegetation of rehabilitated areas • Check progress with vegetation covered and provide remedial action if not successful
<ul style="list-style-type: none"> • Loss of a soil resource • Monitoring of erosion • Pumps and pipelines • All cleared areas
<ul style="list-style-type: none"> • Proliferation of alien invasive species • Monitoring of alien plants over the whole site.
<ul style="list-style-type: none"> • Deterioration of water quality • Monitoring of water quality from the evaporation pond
<ul style="list-style-type: none"> • Instability and failure of storm water control structures • Monitoring of stability of the storm water settlement ponds and drainage and diversion canals
<ul style="list-style-type: none"> • Indiscriminate dumping of water • Monitoring of maintenance of general waste disposal
<ul style="list-style-type: none"> • Waste of water • Monitoring of water use

5.2 Functional requirements for monitoring programmes

5.2.1 Monitoring Plan

Monitoring plan is presented in Table 5.-1

Table 5-1: Monitoring programmes

Monitoring			
Responsibility	Safety Health and environmental Manager	Implementation date	As presented on Table 5-2.
	Environmental control officer		
	Site Manager		

Table 5-2: Monitoring plan

Action	Frequency	Method	Period
Monitoring of re-vegetation on rehabilitated areas Check progress with vegetation covered and provide remedial action if not successful	Every six (6) months	Map all rehabilitated areas Determine extent of the treated areas Foot inspection Photographs every two weeks for the first month and thereafter every month Keep photographs with detailed record of vegetation establishment	Until closure
Monitoring of erosion All cleared areas	Every six (6) months and following any heavy rainfall	Visual inspection Walk over landscaped areas Check pipelines and pumps Record and Photograph	Until closure
Monitoring of stability of the storm water settlement ponds and drainage and diversion canals	Monthly and summarize every three (3) months	Follow specifications in dam plan.	Until closure
Monitoring of maintenance of general waste disposal	All loads of waste to be recorded and quantity also recorded	Running total of loads of waste taken.	Until closure

5.3 Roles and responsibilities for the execution of the programme

Roles and responsibilities for the execution of monitoring programmes are captured in Table 5.-3.

Table 5-3: Roles and responsibilities for the execution of monitoring programmes

Environmental Element Affected	Responsibility
Topography	Site Manager
Soils (pollution) and/ or Erosion	Site Manager, earth moving manager, plant and maintenance superintendent and mechanics
Land Capability and Land Use	Site Manager
Ecology	Site Manager and manager Engineering services
Surface water	Site Manager : Water supply, Manager: Engineering services.
Ground water	
Air Quality	Site Manager Process engineer
Noise	Site Manager ,Engineering services
Visual	<input checked="" type="checkbox"/> Site Manager
Archaeology	Site Manager
Socio-economic	Site Manager, Human Resources Manager, Stake holder Liaison Manager

5.4 Committed time frames for monitoring and reporting

Table 5-4: Committed time frames for monitoring reporting

Environmental Element Affected	Responsibility	Time Frames and Phases of implementation
Topography	Site Manager	Operation and decommissioning
Soils (pollution) and/ or Erosion	Site Manager, earth moving manager, plant and maintenance superintendent and mechanics	On-going
Land Capability and Land Use	Site Manager	Operation, Decommissioning
Ecology	Site Manager and manager Engineering services	Construction, Operation, Decommissioning
Surface water	Site Manager : Water supply, Manager: Engineering services.	On-going
Ground water		On-going

Environmental Element Affected	Responsibility	Time Frames and Phases of implementation
Air Quality	Site Manager Process engineer	On-going
Noise	Site Manager, Engineering services	On-going
Visual	Site Manager	Operation and Decommissioning
Archaeology	Site Manager	On-going
Socio-economic	Site Manager, Human Resources Manager, Stake holder Liaison Manager	On-going

6. REGULATION 52 (2) (f): Closure and environmental objectives.

6.1 Rehabilitation plan

- (Show the areas and aerial extent of the main prospecting activities, including the anticipated prospected area at the time of closure).

The rehabilitation plan for the closure of the proposed project is described below. The areas and aerial extent of the mining areas is shown in Figure 6.1-1.

Figure 6.1 - 1: Rehabilitation Plan

6.2 Closure objectives and their extent of alignment to the pre-mining environment.

Objectives

- To ensure that budgeting for achieving of set environmental management measures to be incorporated at planning stage or as part of Environmental Management Programme Report Implementation.
- To provide land capability that will be utilized by the community post the chrome processing activities and to create a self-sustaining land surface
- To ensure the successful re-establishment of a range of indigenous species.
- To manage the natural and rehabilitated vegetation so as to avoid the loss of species diversity and habitats within the stipulated infrastructural areas
- To ensure that rehabilitated land is stable in the long term, both from the point of view of soil erosion and self-sustaining vegetation cover.
- Plan with closure in mind, by designing and operating to minimize environmental damage and factoring post-mining land use into decision making.

Mitigation measures

- Resources to be provided to ensure ongoing rehabilitation, environmental management and closure
- Financial planning to be extended to included financial costs of implementation rather than just rehabilitation obligations
- Develop procedures to stipulate equipment and personnel requirements for all management measures
- Review existing procedures and resource requirements and update and allocate environmental implementation financial costs
- Design a closure planning schedule
- Update closure plans annually and update financial provision accordingly
- Any top-soils or sub-soils that have been compacted will be scarified
- All land exposed by the demolition of infrastructure and other land disturbed by the processing activities to be rehabilitated by replacing the stored and ameliorated topsoil, which was stripped during the construction phase
- Disturbed areas to be profiled to be free draining through landscaping topsoil replacement and the establishment of natural vegetation, as far as possible.
- All access road surfaces to be ripped and rehabilitated
- Disturbed areas to be profiled to be free draining landscaping topsoil replacement and the establishment of natural vegetation, as far as possible.
- The correct order of replacement of the soils and the preparation of an adequate planting medium be done to facilitate the re-vegetation program and to help to limit the potential for erosion.

Vegetation Rehabilitation plan

- Disturbance of large footprint areas will be avoided.
- Clearance activities will be limited only to the area to be used for the plan and associated structures.

- All cleared area will be rehabilitated and re-vegetated.
- Clearance activities will be limited only to the area to be used for the plan and other associated infrastructure.
- The existing trees will not be disturbed so that they can act as a visual screen.
- There will be eradication of alien invasive species prior to any landscaping activities.
- All retained trees that might be potentially disturbed during construction will be covered by wire fence and red tape around the tree trunk/stem to ensure that disturbance is avoided.
- Should there be a requirement to cut listed trees, a special permit should be sourced from the Department of Forestry.

Rehabilitation strategies to be used in all mine structures established during construction and operational phase.

The rehabilitation strategies are for ensuring that the visual character of the area is not compromised and that the post mining land use is beneficial to the land owners will be developed. The procedures to rehabilitate all established structures during construction and operation phases are as follows:

- **Haul roads**

Haul roads will be ripped, soil will be prepared using and re-vegetated with the kind of vegetation type that was there before.

- **Trenches**

The trenches will be levelled using scrapers, reshape area to standard, re-vegetate the area with same vegetation that used to grow in the area before the development of trenches. It is planned that planted vegetation will be irrigated once as the current vegetation type in the area depends on the rain water for growth.

- **Mobile offices and workshops**

Hired mobile offices will be returned back to the suppliers as part of recycling process; soil will be prepared or soften using scrapers and bulldozer to allow the growing of vegetation that used to be in the area even before the implementation of the project. It is also believed that faunal species that might have immigrated to certain areas during construction and operational will immigrate to their native area after decommission phase. Hired workshops structure will be returned back to the owner and left over chemicals will be sold to recycling company.

- **Waste bins and chemical toilets**

Waste collection bins and toilets will be emptied and cleaned by hired waste collection company and sold to the recycling company. At chemical toilets site and parking areas, soil will be prepared using scrapers and re-vegetated.

- **Pits**

Disturbed areas will be rehabilitated through landscaping, topsoil replacement and the establishment of vegetation in these areas using loader trucks and tipper trucks.

Rehabilitation will take place during the life of the mine (operational and rehabilitation phases). Landscaping will be undertaken to resemble the natural topography of the areas that have been disturbed. On closure, all disturbed areas will have been rehabilitated. Vegetation establishment in disturbed areas will be undertaken as soon as is practical, with growing season and water availability being the primary time constraints.

The principal objectives to achieve successful closure are to:

- Rehabilitate disturbed land to a state that is suitable for wilderness potential
- There are historical diggings on the site and it is currently not used. The land is characterised by vegetation.
- Rehabilitate disturbed land to a state that:-
- Facilitates compliance with applicable environmental quality objectives
- Reduces visual impact of the disturbed land and Limits post closure management
- To ensure that all areas are successfully, rehabilitated and free draining.
- Rehabilitate the pits, bulk sampling stations and prospecting trenches to a condition that access would not pose a safety, health or environmental hazard. To keep photographs of the work area, before and during the operation and after rehabilitation.
- The previous photographic record will be use to monitor closure rehabilitation.

6.3 Confirmation of consultation

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

The interested and affected parties were informed about the proposed plans and they had input discussions regarding this application. The consultation and comments from interested and affected parties is attached on Appendix 1 and 2 of this report.

7. REGULATION 52 (2) (g): Record of the public participation and the results thereof.

7.2 Identification of interested and affected parties.

- (Provide the information referred to in the guideline)

The interested and affected parties were consulted by Smart Geoscience and had input on discussion regarding this proposed manganese project. The liquidators have also been consulted regarding this project (see Appendix 1 and 2). The EMP was also distributed to stakeholders on the day of submission of this EMP to DMR. The letter of submission is attached as Appendix 4.

7.3 The details of the engagement process.

7.3.1 Description of the information provided to the community, landowners, and interested and affected parties.

The description of information provided to IAPs is attached in Appendix 3.

7.3.2 List of which parties identified in 7.1 above that were in fact consulted, and which were not consulted.

The Interested and Affected parties identified were the neighbouring community and mining companies which are operating in the proposed prospecting Farm Middelvlei 255 IQ.

7.3.3 List of views raised by consulted parties regarding the existing cultural, socio-economic or biophysical environment.

- Beauty from Mohlakeng was concern about job opportunities for the local community;
- Aaron from Mohlakeng was worried about blasting activities; employment opportunities and water pollution;
- Mr. H J V Vuuren was worried about environmental impact the prospecting will have on the surrounding area. He also asked for employment opportunities as well;
- Mr. C J Poeter asked that only locals be employed for any activities to take place, if the dust should arise from the prospecting then he would expect dust suppression measures be used;
- Judy was concern about job creation;
- Amemanie was concerned about jobs being available for people with mining experience that no longer have jobs due to maybe being retrenched and etc;
- Simon Maucel asked that the community be included for any activities to take place;
- Janelle had no comment nor was she against the proposed prospecting work to be carried out.
- Ethel Helmine Kotze was pleased with the proposal and thought it would benefit the community in terms of Job creation.

7.3.4 List of views raised by consulted parties on how their existing cultural, socio-economic or biophysical environment potentially will be impacted on by the proposed prospecting or mining operation.

The impacts that were raised by stakeholders were assessed under Section 3-2 and mitigation measures were provided in Section 3-3. These mitigation measures for all probable impacts listed by consulted IAPs and those described under Section 3, were developed to ensure enhancement of positive impacts and minimization of detrimental effects due to the development of the proposed project..

7.3.5 Other concerns raised by the aforesaid parties.

There were no other concerns raised by aforesaid parties. Liquidators for the operating mine where consulted by they were never available for comments

7.3.6 Confirmation that minutes and records of the consultations are appended.

The communications with interested and affected parties, including email conversation with liquidators have been attached as Appendices 1 and 2. The interest and affected parties register is attached as Appendix 5.

7.3.7 Information regarding objections received.

No objections of the proposed development were received. The consulted IAPS such as adjacent land users encouraged the development activities because they welcome potential job opportunity provision in their area.

7.3.8 The manner in which the issues raised were addressed.

For issues raised by IAPs, responses were provided in such a manner that it can be understood by both parties. Concerns raised during meeting were responded to immediately. E-mail was used to contact liquidators. Responses to IAPs on the issues raised on the proposed project are provided as Appendix 1 and 2.

8. SECTION 39 (3) (c) of the Act: Environmental awareness plan.

8.1 Employee communication

The applicant/SOS will ensure that potential employees and contractors receive an environmental safety induction and site orientation before they are given full duties on site. In addition, through education and awareness campaigns, staff, contractors and stakeholders will be provided the opportunity to learn more about health and safety related issues at work. This will prevent the squalid conditions at work place and avoid possibility of probable impacts.

Environmental awareness will focus on means on enhancing ability of personnel to ensure compliance with environmental requirements.

Warning and safety signs will be placed at various areas on site, depending on the kind of work performed at specific area and hazardous conditions of the chemicals and equipments to be used. These will also assist in facilitating the induction and site orientation. An induction process is the primary opportunity for environmental training and awareness and must cover a range of issues relating to the environment.

Aspects covered within this process include:

- The definition of Environmental Management and the impacts humans have on the environment;
- How mining relies on the environment and its resources. This addresses what resources the mine uses;
- Sustainability - Responsibility Mining with regard to issues such as:
- Water, soil and air pollution prevention;
- Prevention of water and electricity wastage;
- Waste and water recycling;
- Land rehabilitation; and
- The impacts to biodiversity and how these impacts can be reduced or avoided.
- Environmental policies will be availed to contractors;
- Environmental inductions will be conducted for contractors and employees;

8.2 Description of solutions to risks

The description of solution to risks to avoid pollution or environmental degradation is being planned as outlined below.

SOS is committed to establishing and maintaining procedures to identify potential risks situations, to respond to risks/emergencies and to mitigate any resulting safety, health and environmental impacts. In addition, the organization will review its risks/emergency procedures (particularly after emergency situations) and periodical test such procedures where practicable.

- Spillages will be cleaned immediately
- Any hazards regarding potential accidents will be identified
- There will be urgent response o accidents and risk/emergency situations
- Mitigation measures will be implemented to avoid any emergency situations. Prevent and mitigate environmental impacts.

Risk/emergency is defined in this plan as an unplanned situation or event resulting in involvement of the emergency services, police, fire, paramedic or the regulatory authorities. Risks/emergencies include accidents and emergency incidents.

Objectives

- To ensure that all environmental emergency situations are identified and are linked to the identified significant risks, made known to employees and surrounding communities that proper response action are in place and are communicated to those who might encounter such emergency situations.

8.2.1 Identification of potential environmental emergencies

Significant environmental aspects and their associated environmental impacts will be identified for all SOS's operational areas. In formulating the risk/emergency plan the following factors were taken into consideration:

- All significant environmental aspects likely to result to emergency conditions;
- Historic risks/emergency events of activities, products and services on/off the site;
- Chemicals, oils and other materials used on site;
- Activities of contractors;
- Concerns of communities and authorities where submitted;
- Proximity to sensitive area such as residential areas, schools, rivers;
- Availability of local emergency services;
- Availability of trained, on-site personnel for risks/emergency situations.

Potential emergency situations identified for SOS will include petrochemical/chemical spillages, hazardous material spillages, fires, untreated effluent spillages, natural disasters, and mechanical failure. A risk assessment was undertaken to identify such potential emergency risk situations. Emergency plan will be documented for each of these stipulated emergencies, which include responsibilities in emergency situations, corrective and preventative actions and the reporting of such emergencies.

- Identification of evacuation routes;
- Identification of safety wash basins and eye-wash stations;
- Identification of fire extinguishers;
- Identification of spill containment equipment;
- Storm water channels and other water systems;
- Site infra-structure such as bulk storage facilities.

8.2.2 Roles and responsibilities

All SOS's employees and contractors working for SOS are responsible for reporting any accident/emergency to their supervisor immediately, The Operations Manager is responsible for the monthly testing and review of the applicable emergency response procedures in conjunction with the Rescue Team. The rescue team will be identified.

8.2.3 Risk/emergency plan

Risk/ emergency plan will be developed for each potential emergency situation. Each plan provides easy reference to relevant basic information for handling the situation. The risk/emergency plan is not intended to be a comprehensive instruction for handling the emergency. This can only be achieved through training. Actual emergencies will be reported and followed up by the Safety, Health and Environment Management Officer/ Operation Manager. Relevant government authorities will be contacted by the in case of the occurrence of an emergency as per legislative requirement.

Risk/Emergency plan including:

- Description of the emergency;
- Reference to relevant material safety data sheets;
- Responsibilities for management of emergencies;
- Contact telephone numbers (on-site and off-site);
- Equipment required (including locations); and
- Site plan where applicable

8.2.4 Risk/emergency response team

Personnel nominated as response team members receive appropriate training to manage risks/emergencies. All other personnel are made aware of potential emergencies and trained in evacuation and call out procedures.

8.2.5 Provision of Equipment and Facilities

The equipment associated with the identification of risks/emergencies and the maintenances to be adopted are shown in Table 8-1.

Table 8-1: Equipment associated with the identified emergencies

Equipment	Responsibility
Fire extinguishers Fire hydrants First aid boxes	Each working area is responsible for the maintenance of their fire equipment
Front end loader Excavator	Individual sites maintain vehicles as required.
Emergency equipment	Emergency response team

8.2.6 Notifying the Relevant Government Authorities

Emergencies will be reported within 24 hours by telephone or fax to the relevant government authorities.

The information reported will include:

- Contact person and contact details;
- Date and time of incident;
- Reference to:
 - Sections 28 and 30 of the National Environmental Management Act (Act 107 of 1998);
 - Section 20 of the National Water Act (Act 36 of 1998);
- The nature of the incident;
- The substance involved and an estimation of the quantity released and the possible acute effect on persons and the environment and dates needed to assess these effects;
- Initial measures taken to minimize impacts;
- Causes of the incident, whether direct or indirect, including equipment, technology, system or management failure; and
- Measures taken and to be taken to avoid a recurrence of such incidents
- A report, including the above-mentioned information, is to be submitted to the director-General of Environmental Affairs within 14 days.

- Review of Procedures
- The emergency procedures must be reviewed after each incident or annually during EMS meetings

8.3 Environmental awareness training

Environmental awareness will commence with the development of an environmental awareness plan to ensure that:

- Training needs are identified and all personnel whose work may create a significant impact upon the environment have received appropriate training;
- All employees are aware of the impact of their activities (activities and the environmental components they are likely to impact on are shown in Table 3.1-2.
- Procedures are established and maintained to make appropriate employees aware of:
 - The significant environmental impacts, actual or potential, of their work activities and environmental benefits of improved personal performance
 - Their roles and responsibilities in achieving conformance with environmental policy, procedures and any implementation measures
 - The potential consequences of departure from specified operating procedures
 - Personnel performing tasks, which can cause significant environmental impacts, are competent in terms of appropriate education, training and /or experience

8.3.1 Responsibilities and frequency of training

The responsibilities in terms of environmental awareness training lie with SOS's human resources Department, which handles overall training for the company. The SOS's Training Division, which still falls under Human Resources Department will undertake the generalized environmental awareness training such as inductions which are done on a continuous basis (at least weekly). Specialists may be contracted in by SOS where required for specialized environmental training. Training records will be held by SOS (quarterly).

8.3.2 Identification of training needs

The identification of environmental training and development needs will be derived from the analysis of role descriptions. The role description is used to confirm the category of occupation as per SOS's structure templates. Descriptions of activities, aspects and impacts will be sourced from the Environmental Implementation Plan. Section/ department. Derived from this information, a training and development needs matrix will then be compiled displaying the Environmental responsibility/role, required knowledge and outputs, intervention required and interval of intervention.

9. SECTION 39 (4) (a) (iii) of the Act: Capacity to rehabilitate and manage negative impacts on the environment.

9.1 The annual amount required to manage and rehabilitate the environment.

- (Provide a detailed explanation as to how the amount was derived)

The calculation of the financial provision amount is provided Table 9 -1.

The actions that were considered for providing the calculation are provided below.

9.2 Confirmation that the stated amount correctly reflected in the Prospecting Work Programme as required.

The prospecting works programme has been attached as Appendix 4.

Table 9-1: Financial provision calculation

10. REGULATION 52 (2) (h): Undertaking to execute the environmental management plan.

Herewith I, the person whose name and identity number is stated below, confirm that I am the person authorised to act as representative of the applicant in terms of the resolution submitted with the application, and confirm that the above report comprises EIA and EMP compiled in accordance with the guideline on the Departments official website and the directive in terms of sections 29 and 39 (5) in that regard, and the applicant undertakes to execute the Environmental management plan as proposed.

Full Names and Surname	Mr Corne Fourie
Identity Number	740823 5061 080

-END-

Appendix 3: Letter of EMP submission to stakeholders

Appendix 4: Prospecting works programme

Appendix 5: IAP Register