

# **Application for a Mining Right and Associated Integrated Environmental Authorisation and Waste Management Licence in Respect of Iron (Fe) and Manganese (Mn) Ore on the Remaining Extent and Portion 2 of Farm Langverwacht 432 in the ZF Mgcawu District Municipality, Northern Cape Province**

## **Draft Scoping Report**

**DMR Reference Number: NC 30/5/1/2/2/10225 MR**

**Report Prepared for**

**Manyeleti Consulting SA (Pty) Ltd**



**Report Prepared by**



**April 2023**

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# **Executive Summary**

## **Introduction**

Manyeleti Consulting SA (Pty) Ltd (Manyeleti) has applied for a Mining Right (MR) from the Northern Cape Regional Department of Mineral Resources (DMR) for the proposed mining of Manganese (Mn) and Iron (Fe) Ore to be undertaken on the Remaining Extent and Portion 2 of Farm Langverwacht 432 in the Tsantsabane Local Municipality (TLM) of the ZF Mgqawu District Municipality (ZFMMDM), in the Northern Cape Province. The proposed mining area has a Prospecting Right (PR) that was issued by the DMR (Ref NC 30/5/1/1/2/11950 PR).

The proposed mining project will cover an area of approximately 1 699.6179 ha and is located approximately 20km northwest of Postmasburg town. The property is accessible via the R90, a public untarred road, through Beeshoek Mine to Postmasburg town.

The existence of minerals (Mn and Fe Ore) on the affected property has been proven based on the applicant's assessments. Manyeleti is therefore applying for a MR in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) (MPRDA) from the DMR for Mn and Fe Ore mining on the Remaining Extent and Portion 2 of Farm Langverwacht 432. Before the MR will be granted, Manyeleti must also undertake the Environmental Authorisation (EA) and Waste Management Licence (WML) application processes in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) and the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) (NEM: WA).

The project triggers activities listed in terms of Listing Notice 1, 2 and 3 of the NEMA (as amended) and will require an EA from the DMR. The proposed Pollution Control Dam (PCD), waste rock dump, residue stockpiles/deposits and waste management facilities will trigger activities listed in GNR 921 (Category A and B) of the NEM: WA and will therefore require a WML from the DMR. An integrated application for an EA and WML will be conducted where a full Environmental Impact Assessment (EIA), including scoping and impact assessment will be followed as stipulated in GNR 326 of the NEMA and GNR921 of the NEM: WA.

## **Who is conducting the EIA?**

Ndi Geological Consulting Services (Pty) Ltd (Ndi Geological) has been appointed by Manyeleti as the independent Environmental Assessment Practitioner (EAP) to conduct the MR/EA/WML application process for the project.

The reports and documentation for the integrated EA/WML application process will be compiled and finalised for submission to the DMR for the EA/WML in terms of the NEMA for consideration and decision making. Where required, the DMR will consult with other government authorities as required in terms of Section 24(K) of the NEMA.

## **Who will evaluate the EIA?**

Before the proposed mining project can proceed, approval must be obtained from the Competent Authority (CA), the DMR. The Scoping Report and associated Plan of Study (PoS) will be submitted to the DMR for review. The DMR will then advise the project team as to how the project should proceed in the impact assessment phase of the project. The impact assessment phase will entail detailed specialist investigations, reporting and further stakeholder engagement. Only once a Final Environmental Impact Assessment and Environmental Management Programme (EIA/EMPr Report) have been submitted to DMR can a decision be taken by the Department as to whether the project may proceed or not.

## **Description of the Proposed Development**

The MR and EA/WML applications are for the proposed mining of Fe and Mn ore. The plan is to mine the resource areas by open pit mining method, where a box-cut will be established. Due to the proximity and the nature of the orebodies, mining will be conducted by conventional opencast mining method. Mining will be operated in operational pushbacks, where each mining area will be treated as a separate pit. Access to the opencast mining areas will be provided by a number of haul roads to the crushing, screening, and magnetic separation plants for the minerals.

The mining process will include drilling, blasting, loading, hauling and quality control. The Reverse Circulation (RC) drill machine will be utilized to drill holes for prospecting resources as well as blasting. Drilling depth of the hole will be determined by the thickness of the overburden and orebody.

After drilling, explosives provided by service providers are placed down the holes using trucks designed for such purposes. The quantities of explosives are determined by the purposes of the blasting and the nature of the materials to be blasted. Once the materials have been blasted, excavators and Front-End Loaders (FELs) will load the minerals onto the dump trucks and Articulated Dump Trucks (ADTs). Wastes and Run of Materials (RoMs) will be loaded separately onto different trucks and hauled to designated areas.

The processing of ore will result in screened out waste being dumped on a temporary tailings stockpile. The waste from the tailings stockpile will either be used for back-filling of excavations or hauled to the waste rock dump. Sampling is a process that is undertaken throughout the production process, and at various times during mining of the ore and from the stockpiles at the completion of the plant process. The samples are analysed to maintain the correct iron ore grade. The processing will include:

- **Crushing and Screening (-150+75mm):** The ROM from open-cast mining is fed to an inclined grizzly screen for preliminary separation of 150mm material in prior to a jaw crusher. Oversize material from the grizzly (+150mm) is transferred to a jaw crusher for size reduction. The crushed material (-150mm) from a jaw crusher combines with the undersized material from the grizzly screen and fed to a double-deck screen for separation of 75mm material. The oversize material (+75mm) from the screen is transferred to a secondary crusher for further reduction. The -75mm + 40mm could be sent to product stockpile as Direct Shipping Ore (DSO) provided the quality is within specification (>30%Mn). The -40 + 1mm material from the sizing screen is fed to Dense Medium Separation (DMS).
- **Dense Medium Separation (-40+1mm):** The feed to a DMS circuit is screened at 40mm where any oversize that may have been misplaced is sent to an impact crusher which is installed in a closed loop with the screen. The screen undersize is mixed with ferrosilicon medium and gravitate to the DMS cyclone at a head of 12D and medium to ore ratios of at least 5 to 1. The medium density ranges from 3.2 to 3.8t/m<sup>3</sup> RD depending on grade and densimetric characteristics of the feed. Both the floats and sinks (product) are fed to the drain & rinse screens for recovery of Fesi medium. The floats / waste combines with spiral tails as onto the final tails stockpile. The sinks stream is fed to an impact crusher for further reduction to -20mm before feeding to the sinter plant for removal of Sulphur.
- **Fines beneficiation (-1mm):** Fine materials are separated using gravity concentration which separates particles based on specific gravity. The feed to the spiral concentrator is pumped to a desliming cyclones for removal of -45µm. The cyclone overflow reports to the thickener and underflow fed to spirals circuit. the thickener underflow is fed to a filter where the filter cake combines with spiral tails and DMS tails as final tails. The product from the spirals is stored in washed product stockpile.

Infrastructure required for mining will be established on the NC 30/5/1/1/2/11950 PR Prospecting Area on Portion 2 and the Remainder of Langverwacht 432. Most services that will be required during mining are also available regionally. Mine infrastructure on the mining area will be required in order for full production to take place. Some of the infrastructure such as the offices and ablution facilities will not need to be constructed since they will be in the form of containers.

- *Roads: The proposed mining area already has existing roads through which it can be accessed. A secondary gravel road connecting from the R385 Road is currently being used to access the mining area. Other gravel roads in the area are also being used. The R385 Road will be used to transport the final iron ore product to Postmasburg Iron Ore Export Railway Siding, from which it will be railed or hauled to Saldanha Harbour.*
- *Rail: Once the mining right has been approved, the applicant will apply for a railway slot on Lohattha Railway Sliding. The loading station is approximately 26km away from the proposed mining property.*
- *Electricity: The mining project will make use of generators to supply power to the mine and plant areas. The upgrade of plants will make use of Eskom power, which will be applied for.*
- *Water: It is anticipated that 20 tons of water will be used for dust suppression and other non-production purposes. This water will either be obtained from the Tsantsabane Local Municipality or underground. The Department of Water and Sanitation (DWS) will be contacted to seek their recommendation on the use of water.*

*The life of mine has been estimated at 12 years, however, the required duration for the MR is 15 years to cater for any delays or market changes that may hamper production resulting in reductions of the mining rate.*

## **Motivation for the Proposed Project**

*The mining industry is of great importance to the South African economy. According to the DMR, South Africa hosts about 75 percent of the world's identified manganese resources. Over 90 percent of these reserves are found in the Kalahari Manganese Fields (KMF) located in the Northern Cape. Manganese (Mn) is the 4<sup>th</sup> most used metal globally in terms of tonnage after iron, aluminium and copper and it is the 12<sup>th</sup> most abundant element in the earth crust. Data by Research and Market and the Observatory of Economic Complexity placed South Africa as the world's largest producer and exporter of manganese ore in 2019, accounting for 30% of global production and almost 50% of global exports. In that year, South Africa exported approximately R3.297 billion in manganese ore (StatsSA, 2021). In 2021, South Africa's production of iron ore amounted to an estimated 61 million metric tons. South Africa is one of the world's largest producers of iron ore. As of 2021, South Africa was the ninth-largest iron ore producing country in the world R 9.409 billion (StatsSA, 2021).*

*The location of the proposed project components is constrained to the location of the existing and confirmed mineral resource (Mn and Fe Ore). Two types of iron ore mineralized deposits have been identified in the area, namely the laminated hematite ore, which forms part of the Manganore iron formation, and the conglomerate ore, which belongs to the Doornfontein Conglomerate Member at the base of the Gamagara Formation. The resources on the affected property have been estimated to be over 38 million tons of iron ore reserves.*

*The direct socio-economic benefits associated with the proposed project are as follows:*

- *Employment: Manyeleti intends to employ about 39 (28 males and 11 females) employees in total.*
- *Recruitment: Manyeleti's recruitment policies which promote the use of local labour by the mine and any appointed contractors will guide labour recruitment. In consultation with local authorities and representatives, a local employment procedure and recruitment process will be developed. Manyeleti will ensure that a transparent hiring process is followed to limit the possibility of conflict. Manyeleti will use recruitment to achieve the goals outlined in its Social and Labour Plan (SLP). Positions in mining will be reserved and earmarked for both Historically Disadvantaged Persons (HDPs) or Historically Disadvantaged People (HDP) (as per Mining Charter 2018) and women to ensure that the Mining Charter 2018 targets of women and HDSAs/HDPs at all management levels are met. The use of labour from outside the Local and District Municipalities (LDM) and province will be considered only if the required skill set cannot be met.*

- *Skills Development and Training: Manyeleti Consulting will implement a Skills Development Plan (SDP) that focuses on equipping employees with the skills to enhance their progression and development in the mining industry. A full and detailed SDP containing annual future targets, numbers, and programmes, will be compiled, and submitted to the DMR within six (6) months of receiving the MR. The compilation of this plan is dependent on the completion of individual assessments with each employee in order to determine their current and aspired levels of education and skills training, as well as their socio-economic backgrounds. To ensure that the objectives of the SDP are achieved, Manyeleti will submit a workforce skills plan and an annual training report as per the Mining Qualifications Authority Sector Education and Training Authority (MQA SETA) requirements for the mine project each year after granting of the MR.*
- *Illiteracy level and Adult Basic Education and Training (ABET) needs: Manyeleti will formulate and implement an SDP which will focus on the transfer of skills to employees, to further their capacity in the mining industry, and equip them with alternative skills for after mine closure. The illiteracy levels and ABET needs will be determined once the SDP has been developed and populated.*
- *Adult Educational and Training (AET) training: AET will be offered to employees and the community as part of the Manyeleti Human Resource Development (HRD). AET for the community prioritised by Manyeleti will ensure that the employees and communities are offered the opportunity to become functionally literate and numerate. It is anticipated that AET training for Manyeleti's employees will amount to R9 600 every year for five years (totalling R48 0000). The AET for the communities will also be R9 600 every year for five years (totalling R48 000).*
- *Core business training: The purpose of the core skills programme is to equip employees with the required skills and competencies to successfully implement their employment responsibilities. These programmes are also designed to equip employees with the required capacity and skills to progress to higher levels of employment within Manyeleti. Manyeleti will make provision of R 145 000 over a five-year period for core business training.*
- *Mentorship: It is the strategic intent of the mine management to achieve full performance of all employees throughout the organization and a mentorship programme is regarded as a key instrument. The proposed mentorship model is to have internal mentorship which refers to "in-house" mentorship whereby lower-level employees are paired with higher-level employees for a transfer of skills to take place and external mentorship where coaching is offered to outside Broad-Based Black Economic Empowerment (B-BBEE) companies who have an interest in being involved in mining.*
- *Bursaries: Manyeleti will assist its own employees with development opportunities but also members of the local community to access tertiary education (bursaries) and experiential work (internships). The company will sponsor two external persons who are interested in undertaking Environmental and Water Management Sciences studies. The bursaries to be awarded to external persons will be R320 000 over a 5-year period. In addition, Manyeleti will provide R 250 000 over a 5-year period to two internal persons for any mining related field of study.*
- *Internship plan: Internships will be offered to students who have completed their academic studies at higher education institutions. This applies to both bursary holders as well as individuals who did not receive Manyeleti bursaries. The current targets include a total of 5 persons in Admin/ Finance/Other and 6 persons in Machine operators/ Welders/ grinders/ Diesel mechanics/ Logistics/ Traffic Controller. Of the 11 internship targets, 6 have been earmarked for females. An estimated budget of R 90 000.00 has been allocated to internships.*

*It is also expected that the proposed mine will develop and implement a policy allowing for preferential procurement for the local businesses and training of local Small, Medium, and Micro-sized Enterprises (SMME) on procurement and business management.*

## Alternatives Considered

The alternatives considered were as follows:

- *Location: The location of the proposed project components is constrained to the location of the existing and confirmed mineral resource (Mn and Fe Ore). Two types of iron ore mineralized deposits have been identified in the area, namely the laminated hematite ore, which forms part of the Manganore iron formation, and the conglomerate ore, which belongs to the Doornfontein Conglomerate Member at the base of the Gamagara Formation. The resources on the property in application have been estimated to be over 38 million tons of iron ore reserves. As such, the site is regarded as the preferred site and alternatives are not considered.*
- *Type of Activity: An alternative to the type of activity would be leaving the project area as is (no-go option). The current landuse associated with the project area are mining related (prospecting) and agriculture. The Tsantsabane Local Municipality Integrated Development Plan (IDP) identified mining as the major contributor to the municipality's Gross Domestic Product (GDP). The land use alternatives will be investigated in more detail in the impact assessment phase of the process. In addition, a socio-economic impact assessment of the proposed Manyeleti project will be included in the impact assessment phase and the land use alternatives will also be investigated in more detail in the impact assessment phase once specialist investigations have been completed.*
- *Design or Layout of the Activity: The design or layout of a mining project is determined by the shape, position, and orientation of the mineral resource. Due to the proximity and the nature of the orebodies, mining will be conducted by conventional opencast mining method. Each mining area will be treated as a separate pit. Mining will be done on three ore bodies at most of the time. Access to the opencast mining areas will be provided by a number of haul roads to the crushing, screening, and magnetic separation plants for the minerals. It is expected that mining and rehabilitation will be undertaken in tandem to keep disturbed areas to a minimum. The scoping assessment that has been conducted for the project shows that there are no fatal flaws associated with the project location. However, should sensitive environments such as heritage resources, Species of Conservation Concern (SCC) etc be affected by the project layout, the site layout plan will be revised. The significance of the impacts will be investigated in depth during the impact assessment phase of the project.*
- *The Technology to be used in the Activity: The technology used in a mining project is determined by the shape, position, and orientation of the mineral resource. The mining process will include drilling, blasting, loading, hauling and quality control. The RC drill machine will be utilized to drill holes for prospecting resources as well as blasting. Drilling depth of the hole will be determined by the thickness of the overburden and orebody. After drilling, explosives provided by service providers are placed down the holes using trucks designed for such purposes. The quantities of explosives are determined by the purposes of the blasting and the nature of the materials to be blasted.*
- *The Operation Aspects of the Activity: The design, establishment, and operation of the mine will be in such a way that there will be no need for a lot of establishment capital as well as ensure that production is reached as soon as possible. No operation alternatives have been considered for the proposed project. The proposed mining area already has existing roads through which it can be accessed. A secondary gravel road connecting from the R385 Road is currently being used to access the mining area. Other gravel roads in the area are also being used. The R385 Road will be used to transport the final iron ore product to Postmasburg Iron Ore Export Railway Siding, from which it will be railed or hauled to Saldanha Harbour.*
- *No-go Option: The assessment of alternatives must at all times include the "no-go" option as a baseline against which all other alternatives must be measured. The "no go" alternative is therefore assessed together with the preferred alternative.*

*By not implementing this project the local economic and employment opportunities and revenue as well as the mined iron and manganese ore which could potentially have benefitted the economy would be lost. The Tsantsabane Local Municipality IDP identified mining as the major contributor to the municipality's GDP. The socio-economic impacts of not implementing the project include local, regional, and more than likely national impacts as follows:*

- o Local and regional: planned socio-economic initiatives within the surrounding communities would not be able to go ahead; and*
- o National: Loss opportunities in foreign exchange for South Africa will be incurred as the potential to sell the iron and manganese ore internationally will be lost.*

*The project site has been selected based on the results from prospecting, which showed that the proposed mining area has adequate Mn and Fe Ore to justify a mining project. The layout and technology of the has been determined by the shape, position, and orientation of the mineral resource. In summary therefore:*

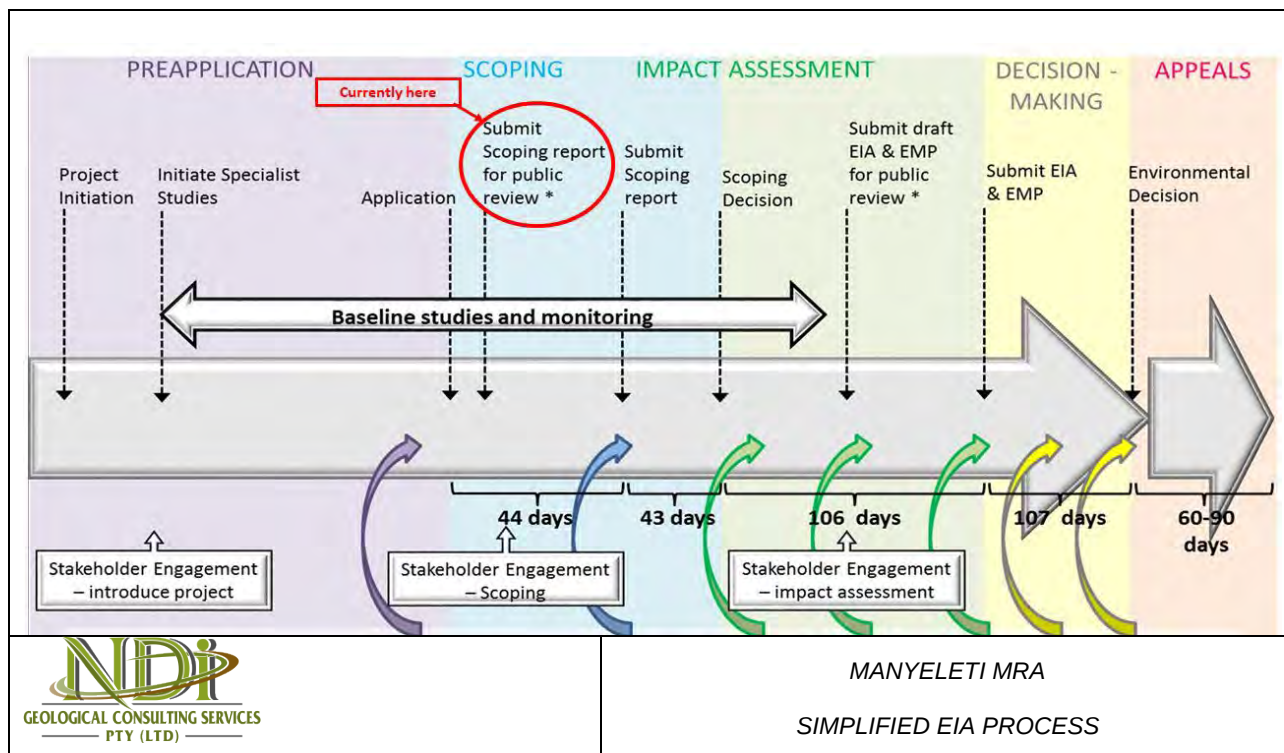
- o The preferred and only location of the Mn and Fe mining activity is on the project area shown in Figure 5-7.*
- o The preferred and only activity is the mining of Mn and Fe Ore for export.*
- o The preferred and only technology is the use of the mining process will include drilling, blasting, loading, hauling and quality control.*
- o The site plan or layout of the pit and required infrastructure within the project site is shown in Figure 5-7.*
- o Existing access road will be used for the mining project.*

*There are therefore no other reasonable or feasible sites, layouts, activities, or technologies for further consideration in the impact assessment component, other than the mandatory "no-go" alternative that must be assessed for comparison purposes as the environmental baseline. The environmental, social, and economic impacts will be assessed in detail during the impact assessment phase to identify and address all negative impacts, where possible.*

## **Environmental Impact Assessment Process**

*An EIA seeks to identify the environmental consequences of a proposed project from the beginning, and helps to ensure that the project, over its life cycle, will be environmentally acceptable, and integrated into the surrounding environment in a sustainable way. The project triggers activities listed in Listing Notice1, 2 and 3 of the NEMA and Category A and B of GNR921 of the NEM: WA and requires that a full EIA (scoping and impact assessment phases) be conducted.*

*Two parallel processes are followed during the scoping phase, being the environmental technical process and associated stakeholder engagement process. This report is the draft Scoping Report and forms one of the first steps in the scoping process after which the impact assessment phase will be initiated. A summary of this process is shown in Figure ES-1.*



**Figure ES-1: Illustration of the EIA process to be followed**

## Stakeholder Engagement Process

Activities that have been undertaken for the public involvement process during the scoping phase are:

- Identification of Interested and Affected Parties (I&APs) and development of a stakeholder database: I&APs were identified using GIS and cadastral information to identify affected and adjacent properties. The affected and adjacent property owners were identified using the surveyor general website, [www.deedsweb.gov.za](http://www.deedsweb.gov.za). In addition, registered I&AP's were also sourced from responses to the advertisements, site notices and written notification to I&AP's associated with the project. The I&APs register will be maintained for the duration of the study where the details of stakeholders are captured and automatically updated upon communication to the EAP. The identification, registration, and comments from I&APs will be an on-going activity.

The opportunity to participate in the EIA and to register as an I&AP was announced through the following means:

- Letter of invitations to register and background information documents;
- Newspaper advertisements;
- Site notices erected at several places in and around the proposed prospecting area;
- Collation of comments received into a Comments and Responses Register (CRR); and
- Obtaining and documenting registration and comment sheets.

The Draft Scoping Report will be made available for a 30-day commenting period. All issues, comments and suggestions received from stakeholders will be reviewed and collated into a CRR. Where necessary, comments from stakeholders will also be incorporated into the Final Scoping Report that will be submitted to the DMR for decision-making. Should it be required, a public meeting will be held during the scoping phase of the project.

Once the DMR has accepted the Final Scoping Report, the EAP will compile the EIA/ EMPr Report, which will also be made available to the stakeholders for a 30-day review and comment period. Where required, a public meeting to discuss the findings from the specialist studies and impact assessment phase will be held. Comments received from the I&APs will be incorporated into the Final EIA/EMPr Report which will be submitted to the DMR for decision making. The comments will also be collated into the CRR, which will form an Appendix to the EIA/EMPr Report.

The stakeholders will be notified of DMR's final decision on the project once it has been communicated to the EAP and applicant (Manyeleti).

## Profile of the receiving environment

The scoping report provides a general description of the status quo of the receiving environment in the project area. It serves to set the scene and provide context to the area within which the scoping exercise was conducted. This section also includes the main issues/impacts associated with each aspect and how the proposed project will affect the biophysical and social environment. The baseline characterisation will be updated with information from site-specific specialist studies once they have been finalised in the impact assessment phase of the process.

A summary of the main baseline aspects is included in Table ES-1, with more detail included in Section 11 of the report.

**Table ES-1: Summary of the Profile of the Receiving Environment**

| Aspect       | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Geographical | The proposed project area is situated in the Tsantsabane Local Municipality's area of jurisdiction, within the ZF Mgcawu District Municipality, Northern Cape Province. The project area is located some +-20km northwest of Postmasburg town and is accessible via the R90, a public untarred road, through Beeshoek Mine to Postmasburg town.                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Topography   | The topography around Postmasburg contains small variations in elevation, with a maximum elevation change of 80 metres and an average elevation above sea level of 1 327 meters above mean sea level (mamsl).<br>The topography map of the proposed mining area shows that the altitude of the site varies from approximately 1 260 mamsl to 1 340 mamsl.                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Climate      | Postmasburg has a Subtropical desert climate (Classification: BWh).<br>The average temperature data indicates that: <ul style="list-style-type: none"> <li>The highest maximum temperature is experienced during November, December, January, and February.</li> <li>The average maximum is around 31°C.</li> <li>The coldest months of the year are June and July, where the average temperature drops to below 20°C.</li> </ul> The average monthly rainfall data indicates that: <ul style="list-style-type: none"> <li>The highest rainfall months are November, December, January and February, March with an average well below 40mm;</li> <li>January has a higher peak with just over 45mm;</li> <li>While the dry months are May, June, July, August, and September with an average of below 10mm.</li> </ul> |
| Geology      | Two types of iron ore mineralized deposits have been identified in the area, namely the laminated hematite ore, which forms part of the Manganore iron formation, and the conglomerate ore, which belongs to the Doornfontein Conglomerate Member at the base of the Gamagara Formation.<br>The older laminated ore types occur in the upper portion of the Manganore Iron Formation as enriched high-grade hematite bodies. The boundaries of these ore bodies crosscut primary sedimentary bedding, indicating that secondary hematization of the iron formation took place. In all of these formations, some of the stratigraphic and sedimentological features of the original iron formation are preserved.                                                                                                       |

| Aspect                       | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                              | <p>The iron-rich conglomeratic ore is found in the Doornfontein Conglomerate Member of the Gamagara Formation (Carney and Mienie, 2002). The conglomeratic ore is dominated by large poorly sorted hematite and BIF clasts in a hematite and specularite matrix.</p> <p>A thin band of high-grade massive hematite has been noticed in the boreholes and is mostly found just above the dolomites. This is interpreted to be part of the Manganoire Fm and not currently considered an economic target.</p> <p>The resources on the property in application have been estimated to be over 38 million tons of iron reserves.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Land use and land capability | The current landuse associated with the project area are mining related (prospecting) and agriculture. It is expected that due to the low rainfall and high temperatures and evapotranspiration, the agriculture potential of the area is low.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Biodiversity                 | <p>The biodiversity associated with the project site is described as follows:</p> <ul style="list-style-type: none"> <li>The proposed mining project area is located in the Savanna Biome. The Savanna Biome is the largest Biome in Southern Africa, occupying 46% of its area, and over one-third the area of South Africa. It is well developed over the lowveld and Kalahari region of South Africa. It is characterized by a grassy ground layer and a distinct upper layer of woody plants. Where this upper layer is near the ground the vegetation may be referred to as Shrubveld, where it is dense as Woodland, and the intermediate stages are locally known as Bushveld.</li> <li>The proposed mining project area is located in the Eastern Kalahari Bushveld Bioregion. The Eastern Kalahari Bushveld Bioregion is the largest savanna bioregion and is on average at the highest altitude. It is roughly bounded by Mafikeng, Bloemhof, Kimberley, Groblershoop and Van Zylsrus.</li> <li>According to the South African National Biodiversity Institute (SANBI) remaining vegetation types database, there is no remaining natural vegetation on the affected area.</li> <li>The vegetation types associated with the site are the Kuruman Mountain Bushveld, Olifantshoek Plains and Postmasburg Thornveld. According to SANBI, all the ecosystems associated with the project area are classified as Least Threatened.</li> </ul> |
| Heritage Resources           | <p>There are a number of heritage and cultural resources in the Northern Cape Province.</p> <p>A site-specific Heritage Impact Assessment (HIA) will be conducted where potential impacts on heritage resources will be assessed in the impact assessment phase of the project and mitigation measures to be implemented in the event that heritage and cultural resources are encountered will be included in the EMPr</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Noise                        | The MRA is located in a rural area and the typical noise rating in the area is expected to be that for rural districts / suburban districts with little road traffic. According to SANS 10103:2008, the continuous noise rating level is thus likely between 35 dB(A) at night to 45 /50 dB(A) during the day.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Wetlands                     | <p>The National Freshwater Ecosystems Priority Areas (NFEPa) database indicates that there is an unchannelled valley bottom wetland and a depression wetland associated with the property area.</p> <p>The conservation status of the wetlands located on the project property are classified as AB (Present Ecological Status (PES) equivalent to natural or good and are described as having percentage natural land cover of ≥75%.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Conservation Plan            | The Northern Cape Provincial Biodiversity Conservation Plan shows that portions of the affected properties are in areas categorised as Other Natural Areas (ONAs), with other sections classified as Ecological Support Areas (ESAs) (areas not essential for meeting biodiversity targets but play an important role in supporting the ecological functioning of Critical Biodiversity Areas (CBAs) and/or in delivering ecosystem services). The areas running along the unnamed non-perennial river is classified as a CBA1 (features in the landscape that are critical for retaining biodiversity and supporting continued ecosystem functioning and service).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Protected Areas              | There are no protected areas or Important Bird Areas (IBAs) affected by the proposed mining activities.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Soils and Land Types         | The hydrological soils database shows that the project area is located in an area classified as having hydrological soils type B, which are soils with moderate infiltration rates, effective depth, and drainage. The permeability of the soils is slightly restricted.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

| Aspect        | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|               | <p>The land types in the project area are as follows:</p> <ul style="list-style-type: none"> <li>• <b>Ae7:</b> This land type consists of landscapes dominated by rock and shallow Hutton soils and others consisting of red Hutton soils of varying depth and as well as smaller sections of Oakleaf and Valsrivier forms. The geology underlying this land type is amygdaloidal andesitic lava with interbedded tuff, agglomerate, chert, and red jasper.</li> <li>• <b>Ae12:</b> The land type is dominated by red apedal Hutton soil of varying depth. The geology consists of red to flesh coloured wind-blown sand with outcrops of shale, flagstone, quartzite, and conglomerate.</li> <li>• <b>Ag110:</b> The soil forms in this land type mainly have high base status and are shallow, rocky and limestone rich red well drained soils. These soils in this area are derived from wind transported sands overlying hard rock. The geology underlying this land type is surface limestone, alluvium, and red wind-blown sand of Tertiary to Recent age with a few occurrences of amygdaloidal andesitic lava (Ongeluk Formation). The clay percentages of the A-horizon range between 2 and 15%.</li> <li>• <b>Ib238:</b> The soil forms in this land type mainly consist of rock and shallow Hutton and Mispah forms. The geology underlying this land type is flagstone, quartzite, conglomerate, and shale as well as outcrops of chert and chert breccia.</li> </ul> |
| Surface water | <p>The study area is located in quaternary catchment area D73A in the Vaal Water Management Area (WMA). The Vaal WMA is perceived to be one of the most important WMAs in South Africa because it houses the highest concentration of urban, industrial, agricultural, mining and power generation developments in South Africa.</p> <p>There are a number of unnamed non perennial rivers and drainage lines that traverse the project area. One of the perennial rivers that traverse the project site is classified as a NFEPA river, which is classified as a Class B River (largely natural).</p> <p>The catchment area where the proposed project will be located is classified as an AB catchment area, meaning that the river condition of the sub quaternary catchment is in an intact state.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Groundwater   | <p>According to the DWS National Groundwater Archives (NGAs) the groundwater in the area is classified as follows:</p> <ul style="list-style-type: none"> <li>• The proposed mining area is characterised by low yielding groundwater (intergranular aquifer with recharge 0.1l/s to 0.5l/s).</li> <li>• The aquifer in the area is classified as a minor aquifer which are aquifers that can be fractured or potentially fractured rocks which do not have a high primary permeability, or other formations of variable permeability. The aquifer extent may be limited and water quality variable.</li> <li>• Groundwater Recharge is considered low, between 0 and 1 000mm/yr., which is expected due to the dry and hot climate in the area.</li> <li>• The groundwater in the area is generally of good quality, with Electrical Conductivity (EC) levels between 70 and 300 mS/m.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

## Anticipated Impacts

Table ES-2 provides a high-level assessment of the potential impacts and associated mitigation measures which could result from the proposed mining project during construction, operation, and decommissioning/closure. These impacts will be further refined and assessed according to the impact assessment methodology in Section 14.

**Table ES – 2: Anticipated Impacts**

| Element of Environment                | Potential Impact Descriptions                                     |
|---------------------------------------|-------------------------------------------------------------------|
| Socio-Economic                        | Possible job opportunities during the construction and operation. |
| Hydrogeology                          | Possible groundwater contamination.                               |
| Surface water                         | Possible surface water contamination.                             |
| Aquatic ecosystems and riparian areas | Possible impacts on aquatic ecosystems and riparian areas         |

| <b>Element of Environment</b>         | <b>Potential Impact Descriptions</b>                                                      |
|---------------------------------------|-------------------------------------------------------------------------------------------|
| <i>Air Quality</i>                    | <i>Possible impact on Air Quality in the area.</i>                                        |
| <i>Climate Change</i>                 | <i>Possible contribution to climate change through emission of Green House Gases</i>      |
| <i>Vibrations</i>                     | <i>Possible impacts on private properties and fauna due to vibrations during drilling</i> |
| <i>Noise</i>                          | <i>Possible generation of noise during construction and operation.</i>                    |
| <i>Soils/Land Use/Land Capability</i> | <i>Loss of soil resource and change in land capability and land use.</i>                  |
| <i>Biodiversity</i>                   | <i>Disturbance and loss of biodiversity, especially SCC.</i>                              |
| <i>Aquatic ecology</i>                | <i>Possible loss, sedimentation, and contamination of aquatic resources</i>               |
| <i>Heritage</i>                       | <i>Possible impact on heritage and cultural resources (including graves) in the area.</i> |
| <i>Traffic</i>                        | <i>Potential safety issues due to the increased traffic.</i>                              |
| <i>Cumulative Impacts</i>             | <i>Cumulative Impacts</i>                                                                 |

## Specialist Studies

Based on the outcomes of the Department of Forestry, Fisheries, and the Environment (DFFE) screening tool and associated protocols for specialist assessment, specialist themes for which the site is rated as being of Low or Medium sensitivity generally require a "Compliance Statement" by the EAP or specialist. Those rated as High or Very High sensitivity will require detailed Specialist Impact Assessment to describe aspects of the baseline and assess potential impacts of the project. Based on the findings of the screening tool, the following specialist studies will be conducted:

The DFFE screening tool shows that the area is considered to be of very high aquatic biodiversity, and terrestrial biodiversity value and high palaeontology and heritage resources value. A copy of the screening report is attached as Appendix 6.

The following site-specific specialist studies will be conducted during the impact assessment phase:

- *Terrestrial Biodiversity Impact Assessment;*
- *Aquatic Biodiversity Impact Assessment;*
- *Archaeology and Cultural Heritage; and*
- *Palaeontology.*

However, due to the nature of the proposed project, the project site, and other required licences and permits, the following additional specialist studies will be undertaken:

- *Visual*
- *Noise;*
- *Closure and Rehabilitation;*
- *Air Quality;*
- *Groundwater*
- *Hydrology and Surface water; and*
- *Soil and Land Capability.*

The specific high-level Terms of Reference (ToR) for each specialist study are provided in Section 20.3.1 to Section 20.3.12. The generic ToR for each specialist study is to:

- Describe the existing baseline characteristics of the study area and place this in a regional context;
- Identify and assess potential impacts resulting from the project (including impacts associated with the construction and operation of the project);
- Identify and describe potential cumulative impacts resulting from the proposed development in relation to proposed and existing developments in the surrounding area;
- Recommend mitigation measures to avoid or minimise impacts and/or optimise benefits associated with the proposed project; and
- Recommend and draft a monitoring programme, if applicable.

Certain impacts that are anticipated to be of limited or lower significance, either by virtue of the scale of the impacts, their short duration (e.g., construction phase only), disturbed nature of the receiving environment and/or distance to communities, will be assessed by EAP Team and reported directly into the EIA/EMPr Report. The EAP will make use of the impact assessment methodology described in Section 14 and will ensure that the specialist studies reports comply with the requirements of Appendix 6 of the NEMA.

## **Quantification of Impacts**

The anticipated impacts associated with the proposed project will be assessed according to a standardised impact assessment methodology which is presented Section 14. This methodology has been utilised for the assessment of environmental impacts where the consequence (severity of impact, spatial scope of impact and duration of impact) and likelihood (frequency of activity and frequency of impact) have been considered in parallel to provide an impact rating and hence an interpretation in terms of the level of environmental management required for each impact.

## **Plan of Study for the EIA**

The Scoping Report is concluded with a PoS for the EIA which explains how the impact assessment will be conducted for the project in accordance with the following:

- Key environmental issues identified during the scoping phase to be investigated further in the EIA phase;
- Specialist studies to be undertaken;
- Where applicable, feasible alternatives to be assessed further in the EIA phase;
- Development of a Waste Management Plan as part of the EMPr;
- The public participation process to be followed;
- Contents of the EIA/EMPr Report; and
- Consultation with the authorities.

## **Conclusion and Recommendation**

The aim of this Scoping Report is to provide an indication of the identified, positive, and negative environmental and socio-economic impacts associated with the proposed project activities. The stakeholder engagement in the scoping phase will play an important role in determining possible impacts and allowing the concerns by the stakeholders to be adequately addressed in the impact assessment phase of the EIA process. The Draft Scoping Report has presented:

- The environmental process undertaken so far;
- A brief description of the proposed project;

- *A baseline description of the current environment;*
- *The potential environmental and social impacts identified to date; and*
- *The recommended environmental process and associated PPP to be followed, to develop the EIA/EMPr Report.*

*A comprehensive public involvement process will be implemented throughout the scoping phase. The EIA process is; however, iterative, and therefore additional potential issues/impacts and alternatives may be identified during the impact assessment phase that may require further investigation/consideration. Once the Scoping Report review and comment period is concluded, the CRR will be updated with the additional issues and submitted to DMR. An EIA/ EMPr Report will be compiled and subjected to a round of public review and comment. The EIA will then be presented to the authorities for decision-making. On submission of the final EIA/ EMPr Report to the DMR, notification will be sent to registered I&AP's to inform them of the submission of the documents; and the opportunity to request copies of the Final reports.*

*No fatal flaws have been identified during the scoping Phase of this project. A comprehensive impact assessment will be undertaken and incorporated into the EIA/EMPr Report during the impact assessment phase. The proposed comprehensive stakeholder engagement process in the PoS will ensure that the stakeholders are involved in the process, from the conception of the EA/WML application process to the end.*

*It is anticipated that implementation of the PoS presented in this report will result in an adequate EIA process which will result in the formulation of a sound EMPr to be implemented throughout the mining activities by Manyeleti.*

*The process followed during the detailed impact assessment phase will meet the requirements of the legislation to ensure that the DMR receives enough information to enable informed decision-making.*

## YOUR COMMENT ON THE SCOPING REPORT

This Draft Scoping Report will be available for comment for a period of 30 days from 28 April 2023 to 29 May 2023. Copies of the Scoping Report have been made available at the following public places for review

| Public Place           | Locality                                                                        | Telephone    |
|------------------------|---------------------------------------------------------------------------------|--------------|
| Ndi Geological website | <a href="http://www.ndigeoservices.co.za/">http://www.ndigeoservices.co.za/</a> | 053 842 0687 |

An electronic copy will also be available on CD on request from the stakeholder engagement officers. I&APs are requested to provide comments and information on the following aspects of the proposed project:

1. Information on how I&APs consider that the proposed activities will impact on them or their socio-economic conditions;
2. Written responses stating their suggestions to mitigate the anticipated impacts of each activity;
3. Information on current land uses and their location within the area under consideration;
4. Information on the location of environmental features on site to make proposals as to how and to what standard the impacts on site can be remedied; and
5. How to mitigate the potential impacts on their socio-economic conditions and to make proposals as to how the potential impacts on their infrastructure can be managed avoided or remedied.

### DUE DATE FOR COMMENT

**29 May 2023**

**Please submit comments to the EAP:**

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## Disclaimer

The opinions expressed in this Report have been based on the information supplied to Ndi Geological Consulting Services (Pty) Ltd (Ndi Geological) by Manyeleti Consulting SA (Pty) Ltd (Manyeleti). The opinions in this Report are provided in response to a specific request from Manyeleti to do so. Ndi Geological has exercised all due care in reviewing the supplied information. Whilst Ndi Geological has compared key supplied data with expected values, the accuracy of the results and conclusions from the review are entirely reliant on the accuracy and completeness of the supplied data. Ndi Geological does not accept responsibility for any errors or omissions in the supplied information and does not accept any consequential liability arising from commercial decisions or actions resulting from them. Opinions presented in this report apply to the site conditions and features as they existed at the time of Ndi Geological's investigations, and those reasonably foreseeable. These opinions do not necessarily apply to conditions and features that may arise after the date of this Report, about which Ndi Geological had no prior knowledge nor had the opportunity to evaluate.

## List of abbreviations

|         |                                                                                  |
|---------|----------------------------------------------------------------------------------|
| ABET:   | Adult Basic Education and Training                                               |
| ADTs:   | Articulated Dump Trucks                                                          |
| AERMOD: | American Meteorological Society/Environmental Protection Agency Regulatory Model |
| AET:    | Adult Educational and Training                                                   |
| AIDS:   | Acquired Immunodeficiency Syndrome                                               |
| AQIA:   | Air Quality Impact Assessment                                                    |
| AQSRs:  | Air Quality Sensitive Receptors                                                  |
| B-BBEE: | Broad-Based Black Economic Empowerment                                           |
| C:      | Construction                                                                     |
| CA:     | Competent Authority                                                              |
| CARA:   | Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)            |
| CBAs:   | Critical Biodiversity Areas                                                      |
| CRR:    | Comments and Responses Register                                                  |
| D:      | Decommissioning/closure                                                          |
| DAFF:   | Department of Agriculture, Forestry and Fisheries                                |
| DEEEP:  | Direct Estimation of Ecological Effect Potential                                 |
| DENC:   | Northern Cape Department of Environment and Nature Conservation                  |
| DFFE:   | Department of Forestry, Fisheries, and the Environment                           |
| DMR:    | Department of Mineral Resources                                                  |
| DMS:    | Dense Medium Separation                                                          |
| DoH:    | Department of Health                                                             |
| DOT     | Department of Transport                                                          |
| DSO:    | Direct Shipping Ore                                                              |
| DSR:    | Draft Scoping Report                                                             |
| DWA:    | Department of Water Affairs                                                      |

|        |                                            |
|--------|--------------------------------------------|
| DWS:   | Department of Water and Sanitation         |
| EA:    | Environmental Authorisation                |
| EAP:   | Environmental Assessment Practitioner      |
| EC:    | Electrical Conductivity                    |
| EIA:   | Environmental Impact Assessment            |
| EIR    | Environmental Impact Report                |
| EIS:   | Ecological Importance and Sensitivity      |
| EMPr:  | Environmental Management Programme         |
| ESAs:  | Ecological Support Areas                   |
| FAO:   | Food and Agriculture Organisation          |
| FELs:  | Front-End Loaders                          |
| FRAI:  | Fish Response Assessment Index             |
| GDP:   | Gross Domestic Product                     |
| GIS:   | Geographic Information System              |
| GPS:   | Global Positioning System                  |
| HDP:   | Historically Disadvantaged People          |
| HDPs:  | Historically Disadvantaged Persons         |
| HIA:   | Heritage Impact Assessment                 |
| HIV:   | Human Immunodeficiency Virus               |
| HRD:   | Human Resource Development                 |
| HSS:   | Health Systems Strengthening               |
| I&APs: | Interested and Affected Parties            |
| IBAs:  | Important Bird Areas                       |
| IDP:   | Integrated Development Plan                |
| IFC:   | International Finance Corporation          |
| IHI:   | Index of Habitat Integrity                 |
| IWWMP: | Integrated Water and Waste Management Plan |

|           |                                                                                |
|-----------|--------------------------------------------------------------------------------|
| KII:      | Key Informant Interview                                                        |
| KMF:      | Kalahari Manganese Fields                                                      |
| LDMs:     | Local and District Municipalities                                              |
| mamsl:    | meters above mean sea level                                                    |
| MHSA:     | Mine Health Safety Act, 1996 (Act No. 29 of 1996)                              |
| MIRAI:    | Macro Invertebrate Response Assessment Index                                   |
| MPRDA:    | Minerals and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)    |
| MQA:      | Mining Qualifications Authority                                                |
| MR:       | Mining Right                                                                   |
| MRA:      | Mining Right Area                                                              |
| NAAQS:    | National Ambient Air Quality Standards                                         |
| NCNC:     | Northern Cape Nature Conversation Act, 2009 (Act No. 9 of 2009)                |
| NDCR:     | National Dust Control Regulations                                              |
| NDCRs:    | Non-Descript Sensitive Receptors                                               |
| NEM: AQA: | National Environmental Management Air Quality Act, 2004 (Act No. 39 of 2004)   |
| NEM: WA:  | National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)        |
| NEM:BA:   | National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) |
| NEMA:     | National Environmental Management Act, 1998 (Act No. 107 of 1998)              |
| NFA:      | National Forestry Act, 1998 (Act No. 84 of 1998)                               |
| NFEPA:    | National Freshwater Ecosystems Priority Areas                                  |
| NGAs;     | National Groundwater Archives                                                  |
| NHRA:     | National Heritage Resources Act, 1999 (Act No. 25 of 1999)                     |
| NWA:      | National Water Act, 1998 (Act No. 36 of 1998)                                  |
| O:        | Operation                                                                      |
| ONAs:     | Other Natural Areas                                                            |
| PAIA:     | Promotion of Access to Information Act , 2000 (Act No. 2 of 2000)              |
| PCD;      | Pollution Control Dam                                                          |

|          |                                                             |
|----------|-------------------------------------------------------------|
| PES:     | Present Ecological Status                                   |
| POPIA:   | Protection of Personal Information Act                      |
| PoS:     | Plan of Study                                               |
| PR:      | Prospecting Right                                           |
| PRA:     | Prospecting Right Area                                      |
| PRECIS:  | National Herbarium Pretoria Computerised Information System |
| PS4:     | Performance Standard 4                                      |
| QDS:     | Quarter Degree Square                                       |
| RC:      | Reverse Circulation                                         |
| RDL:     | Red Data Listed                                             |
| RoMs:    | Run of Materials                                            |
| SAAQIS:  | South African Air Quality Information System                |
| SABAP 2: | Southern African Bird Atlas Project 2                       |
| SAHRA:   | South African Heritage Resources Authority                  |
| SAHRIS:  | South Africa Heritage Resources Information Systems         |
| SANBI:   | South African National Biodiversity Institute               |
| SASS5:   | South African Scoring System version 5                      |
| SCC:     | Species of Conservation Concern                             |
| SDP:     | Skills Development Plan                                     |
| SETA:    | Sector Education and Training Authority                     |
| SIA:     | Social Impact Assessment                                    |
| SLP:     | Social and Labour Plan                                      |
| SMME;    | Small, Medium, and Micro-sized Enterprises                  |
| TB:      | Tuberculosis                                                |
| TIA:     | Traffic Impact Assessment                                   |
| TLM:     | Tsantsabane Local Municipality                              |
| ToR:     | Terms of Reference                                          |

|         |                                               |
|---------|-----------------------------------------------|
| US EPA: | United States Environmental Protection Agency |
| VEGRAI: | Vegetation Response Assessment Index          |
| VIA:    | Visual Impact Assessment                      |
| WMA:    | Water Management Area                         |
| WML:    | Waste Management Licence                      |
| WUA:    | Water Use Authorisation                       |
| ZFMDM:  | ZF Mgcawu District Municipality               |



**mineral resources**

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

## **SCOPING REPORT**

### **FOR LISTED ACTIVITIES ASSOCIATED WITH THE PROPOSED MINING OF IRON (Fe) AND MANGANESE (Mn) ORE ON THE REMAINING EXTENT AND PORTION 2 OF FARM LANGVERWACHT 432 IN THE ZF MGCAWU DISTRICT MUNICIPALITY, NORTHERN CAPE PROVINCE**

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

|                                     |                                                              |
|-------------------------------------|--------------------------------------------------------------|
| <b>NAME OF APPLICANT</b>            | Manyeleti Consulting SA (Pty) Ltd                            |
| <b>TEL NO</b>                       | 011 475 5863                                                 |
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| <b>PHYSICAL ADDRESS</b>             | 11 Kreupelhout Avenue, Weltevreden Park,<br>Roodepoort, 1709 |
| <b>FILE REFERENCE NUMBER SAMRAD</b> | NC 30/5/1/2/2/10225 MR                                       |

## IMPORTANT NOTICE

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

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

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

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

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

## OBJECTIVE OF THE SCOPING PROCESS

- 1) The objective of the scoping process is to, through a consultative process—
    - (a) identify the relevant policies and legislation relevant to the activity;
    - (b) motivate the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the preferred location;
    - (c) identify and confirm the preferred activity and technology alternative through an impact and risk assessment and ranking process;
    - (d) identify and confirm the preferred site, through a detailed site selection process, which includes an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified alternatives focusing on the geographical, physical, biological, social, economic, and cultural aspects of the environment;
    - (e) identify the key issues to be addressed in the assessment phase;
    - (f) agree on the level of assessment to be undertaken, including the methodology to be applied, the expertise required as well as the extent of further consultation to be undertaken to determine the impacts and risks the activity will impose on the preferred site through the life of the activity, including the nature, significance, consequence, extent, duration, and probability of the impacts to inform the location of the development footprint within the preferred site; and
    - (g) identify suitable measures to avoid, manage, or mitigate identified impacts and to determine the extent of the residual risks that need to be managed and monitored.
-

# 1 Project background

Manyeleti Consulting SA (Pty) Ltd (Manyeleti) has applied for a Mining Right (MR) from the Northern Cape Department of Mineral Resources (DMR) for the proposed mining of Manganese (Mn) and Iron (Fe) Ore to be undertaken on the Remaining Extent and Portion 2 of Farm Langverwacht 432 in the Tsantsabane Local Municipality (TLM) of the ZF Mgcawu District Municipality (ZFMDM), in the Northern Cape Province. The proposed mining area has a Prospecting Right (PR) that was issued by the DMR (Ref NC 30/5/1/1/2/11950 PR).

The proposed mining project will cover an area of approximately 1 699.6179 ha and is located approximately 20km northwest of Postmasburg town. The property is accessible via the R90, a public untarred road, through Beeshoek Mine to Postmasburg town.

The existence of minerals (Mn and Fe Ore) on the affected property has been proven based on the applicant's assessments. Manyeleti is therefore applying for a MR right in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) (MPRDA) from the DMR for Mn and Fe Ore mining on the Remaining Extent and Portion 2 of Farm Langverwacht 432. Before the MR will be granted, Manyeleti must also undertake the Environmental Authorisation (EA) and Waste Management Licence (WML) application processes in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) and the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) (NEM: WA).

The Department of Forestry, Fisheries, and the Environment (DFFE) has identified the need for the alignment of EA processes and has promulgated a single environmental management system under NEMA, whereby the DMR has become the Competent Authority (CA) for the authorisation of mining-related projects under the NEMA Environmental Impact Assessment (EIA) Regulations. This will result in simultaneous decisions in terms of NEMA and other environmental management Acts. The CA for the EA/WML process is the DMR.

Manyeleti appointed Ndi Geological Consulting Services (Pty) Ltd (Ndi Geological) as the independent Environmental Assessment Practitioner (EAP) to facilitate the MR/EA/WML process for the proposed Mn and Fe Ore mining project (Please refer to Appendix A for a copy of the EAP's Declaration of Interest).

Before an EAP submits a final report, they must have given registered Interested and Affected Parties (I&APs) access to, and an opportunity to comment on all the draft reports compiled prior to the submission of the final reports to the competent authority for approval. The registered I&APs will be provided with an opportunity to review and comment on this draft Scoping Report and the draft Environmental Impact Report (EIR) and associated Environmental Management Programme (EMPr) once the Scoping Report has been finalised and approved by the DMR.

The reports and documentation for the integrated EA/WML application process will be compiled and finalised for submission to the DMR for the EA/WML in terms of the NEMA for consideration and decision making. Where required, the DMR will consult with other government authorities as required in terms of Section 24(K) of the NEMA.

## 2 Purpose and context of this document

The project triggers activities listed in terms of Listing Notice 1, 2 and 3 of the NEMA (as amended) and will require an EA from the DMR. The proposed Pollution Control Dam (PCD) and waste management facilities will trigger activities listed in GNR 921 (Category A and B) of the NEM: WA and will therefore require a WML from the DMR. An integrated application and assessment process for an EA and WML will be conducted where a full Environmental Impact Assessment (EIA) including scoping and impact assessment will be followed as stipulated in GNR 326 of the NEMA and GNR921 of the NEM: WA.

This document serves as the draft Scoping Report for the first phase of the overall EIA process and includes the following objectives as a minimum:

- To establish the legal framework relevant to the proposed project;
- To identify and engage with I&APs and allow for adequate participation in the process;
- To assess the receiving environment in terms of current state and determine potential positive or negative impacts which may result due to the proposed development;
- To consider alternatives for achieving the project's objectives;
- To identify significant issues to be investigated further during the execution of the EIA phase; and
- To determine the scope of the EIA phase, specialist studies, public participation, assessment of impacts and alternatives; and allow for informed decision-making regarding the EIA process.

### 2.1 Environmental Authorisation Application Process

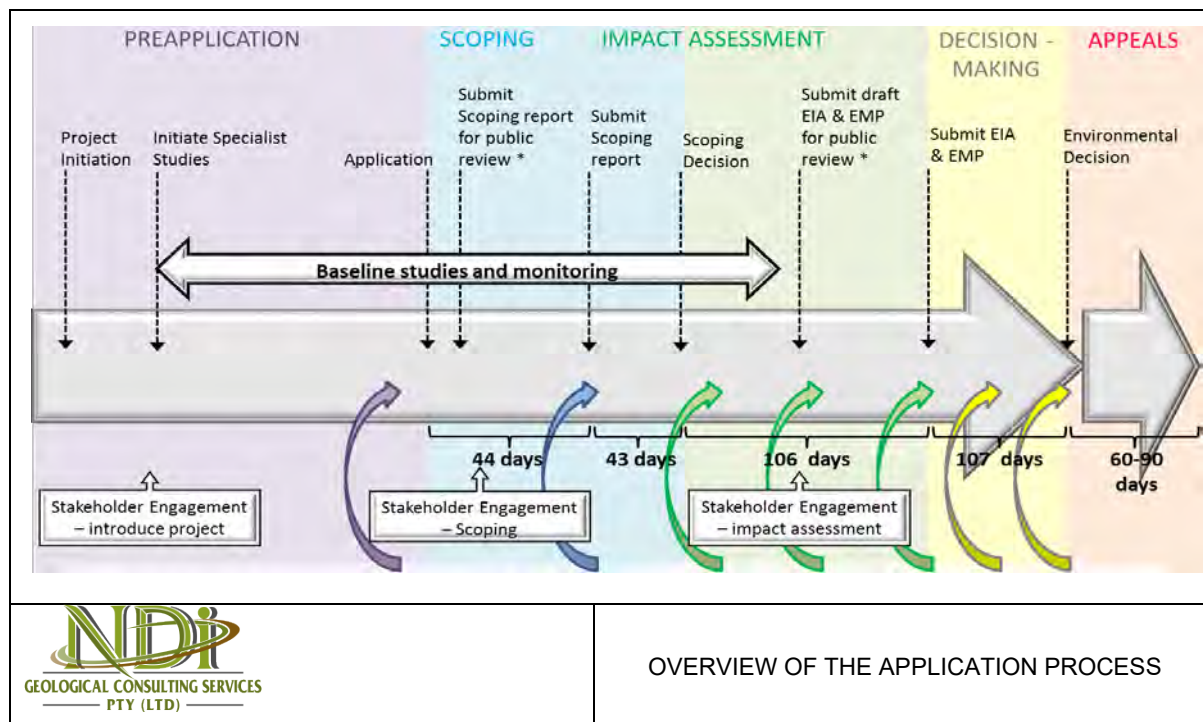
The first phase of the EA/WML application process is the scoping phase, which will inform the impact assessment phase. This phase provides I&APs an opportunity to provide the EAP with issues and concerns with respect to the proposed project in order to inform the technical studies so that they can evaluate these concerns during the impact assessment phase of the project.

This Scoping Report provides a description of the proposed project and sets out the proposed scope of the impact assessment phase that will be undertaken for the proposed project. This includes alternatives that will be evaluated for various aspects of the project, the anticipated potential environmental impacts, issues raised by stakeholders, the specialist studies that will be undertaken including the terms of reference of the specialist studies, and the qualifications and experience of the study team.

Stakeholder engagement is a key element of the environmental decision-making process, and forms part of the scoping phase as well as the impact assessment phase.

The Draft Scoping Report will be made available for public review prior to submission to DMR for decision making. All the comments received will be captured and addressed where feasible in the final Scoping Report as well as the EIA/EMPr Report.

Figure 2-1 provides an illustration of the proposed EIA process that will be followed.



**Figure 2-1: Overview the Environmental Impact Assessment Process**

## 2.2 Report Index in Relation to the NEMA Regulations

Regulation 2, Appendix 2 of GNR 982 (as amended), published in terms of NEMA stipulates the minimal requirements and issues that need to be addressed in the Scoping Report. This report strives to address all these requirements as per regulations. Table 2-1 indicates the regulations that have been addressed and the section of the Scoping Report where these requirements can be found.

**Table 2-1: Requirements of Regulation 2 of GNR 982 (as amended)**

| Section of the EIA Regulations, 2014 | Description of EIA Regulations Requirements for Scoping Reports                                                                                                                                                                                                                                                                                                               | Section                 |
|--------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| Appendix 2 (a)                       | Details of –<br>the EAP who prepared the report;<br>and the expertise of the EAP, including a curriculum vitae                                                                                                                                                                                                                                                                | Section 3               |
| Appendix 2 (b)                       | The location of the activity, including –<br>The 21-digit Surveyor General code of each cadastral land parcel;<br>Where available, the physical address and farm name;<br>Where the required information in items (i) and (ii) is not available, coordinates of the boundary of the property or properties.                                                                   | Section 4<br>Figure 4-1 |
| Appendix 2 (c)                       | A plan which locates the proposed activity or activities applied for at an appropriate scale, or, if it is –<br>A linear activity, a description, and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or<br>On land where the property has not been defined, the coordinates within which the activity is to be undertaken; or. | Figure 5-5              |
| Appendix 2 (d)                       | A description of the scope of the proposed activity, including –<br>All listed and specified activities triggered;<br>A description of the activities to be undertaken, including associated structures and infrastructure.                                                                                                                                                   | Section 5               |

| Section of the EIA Regulations, 2014 | Description of EIA Regulations Requirements for Scoping Reports                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Section    |
|--------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| Appendix 2 (e)                       | A description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Section 6  |
| Appendix 2 (f)                       | A motivation for the need and desirability for the proposed development including the need and desirability of the activity in the context of the preferred location.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Section 7  |
| Appendix 2 (g)                       | <p>A full description of the process followed to reach the proposed preferred activity, site, and location within the site, including-</p> <p>Details of all alternatives considered;</p> <p>Details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;</p> <p>A summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them;</p> <p>The environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;</p> <p>The impacts and risks identified for each alternative, including the nature, significance, consequence, extent, duration, and probability of the impacts, including the degree to which the impacts-</p> <p>(aa) can be reversed;</p> <p>(bb) may cause irreplaceable loss of resources; and</p> <p>(cc) can be avoided, managed, or mitigated.</p> <p>The methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives;</p> <p>Positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographic, physical, biological, social, economic, heritage and cultural aspects;</p> <p>The possible mitigation measures that could be applied and level of residual risk;</p> <p>The outcome of the site selection matrix;</p> <p>If no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such and;</p> <p>A concluding statement indicating the preferred alternatives, including preferred location of the activity.</p> | Section 9  |
|                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Section 10 |
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| Section of the EIA Regulations, 2014 | Description of EIA Regulations Requirements for Scoping Reports                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Section         |
|--------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| Appendix 2 (h)                       | <p>A plan of study for undertaking the environmental impact assessment process to be undertaken including-</p> <p>A description of the alternatives to be considered and assessed within the preferred site, including the option of not proceeding with the activity;</p> <p>A description of the aspects to be assessed as part of the environmental impact assessment process;</p> <p>Aspects to be assessed by specialists;</p> <p>A description of the proposed method of assessing the environmental aspects, including a description of the proposed method of assessing the environmental aspects including aspects to be assessed by specialists;</p> <p>A description of the proposed method of assessing duration and significance;</p> <p>An indication of the stages at which the competent authority will be consulted;</p> <p>Particulars of the public participation process that will be conducted during the environmental impact assessment process;</p> <p>A description of the tasks that will be undertaken as part of the environmental impact assessment process;</p> <p>Identify suitable measures to avoid, reverse, mitigate or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored.</p> | Section 20      |
| Appendix 2 (i)                       | <p>An undertaking under oath or affirmation by the EAP in relation to-</p> <p>The correctness of the information provided in the report;</p> <p>The inclusion of the comments and inputs from stakeholders and interested and affected parties; and</p> <p>Any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Section 21      |
| Appendix 2 (j)                       | <p>An undertaking under oath or affirmation by the EAP in relation to the level of agreement between the EAP and interested and affected parties on the plan of study for undertaking the environmental impact assessment.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Section 22      |
| Appendix 2 (k)                       | <p>Where applicable, any specific information required by the competent authority.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Section 20.10   |
| Appendix 2(l)                        | <p>Any other matter in terms of Section 24(4)(a) and (b) of the NEMA</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Section 20.10.3 |

### 3 Contact Person and Correspondence

Ndi Geological has been appointed by Manyeleti as the EAP to undertake the necessary integrated EA/WML process and associated stakeholder engagement process to meet the requirements of the MPRDA, NEMA and NEM: WA.

#### 3.1 Details of EAP who prepared the report

The EAP involved in the compilation of this Scoping Report and contact details are provided in Table 3-1.

**Table 3-1: EAP Contact Details**

| EAP Name               | Contact Number                | Fax Number   | Email Address                                                                                                                            |
|------------------------|-------------------------------|--------------|------------------------------------------------------------------------------------------------------------------------------------------|
| Ndivhudzannyi Mofokeng | 082 760 8420/<br>053 842 0687 | 086 538 1069 | <a href="mailto:atshidzaho@gmail.com">atshidzaho@gmail.com</a><br><a href="mailto:ndi@ndigeoservices.co.za">ndi@ndigeoservices.co.za</a> |

#### 3.2 Expertise of the EAP

##### 3.2.1 Qualifications of the EAP

The qualifications of the EAP are provided for in Table 3-2 below, and copies of the qualifications are provided in Appendix B.

**Table 3-2: EAP Qualifications**

| EAP Name               | Qualifications                                                | Professional registration                    | Years' Experience |
|------------------------|---------------------------------------------------------------|----------------------------------------------|-------------------|
| Ndivhudzannyi Mofokeng | BSc (Hons) Earth Sciences in Mining and Environmental Geology | EAPASA Reg Number 2020/1554<br>GSSA Prof Reg | 11                |

##### 3.2.2 Summary of EAP's past experience

The EAP, Mrs Ndivhudzannyi Mofokeng is a registered EAP (EAPASA Reg Number 2020/1554) with a BSc (Hons) Earth Sciences, majoring in Mining and Environmental Geology. She is a self-motivated and hardworking Geologist with 13 years of experience in environmental, mining exploration, open cast work and consulting in the mining industry. She has proven leadership skills from supervising exploration rigs (Reverse Circulation and Percussion Drilling). Proven field experience in exploration, i.e. mapping, borehole logging, borehole sampling, sample preparation for laboratory analysis, supervisory duties in the field. Her responsibilities involve but are not limited to managing all Environmental matters: Environmental Impact Assessment and Environmental Management Programme, Environmental Authorizations, Environmental Auditing & Risk Assessment, Mine Closure & Rehabilitation, and conducting & reviewing Environmental specialists' studies. Ndivhudzannyi also has experience in writing geological reports, including Prospecting Work Programmes and Mining Work Programmes Environmental Management Plans, handling Department of Mineral Resources and Energy documents in general like the submission of Mining & Prospecting Right Applications and Renewals.

Please refer to Appendix B for a copy of the EAP's Curriculum Vitae and Professional Registration Certificate.

## 4 Project Location

### 4.1 Property Description

The proposed mining will be undertaken on the Remaining Extent and Portion 2 of Farm Langverwacht 432. The footprint of the area is approximately 1 699.6179 ha. The description of the affected properties is provided in Table 4-1 and a map showing the affected property is provided in Figure 4-1.

**Table 4-1: Description of Properties affected by the Manyeleti MRA**

|                                                             |                                                                                                                                                                                                                                                                      |
|-------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Farm Name:</b>                                           | Remaining Extent and Portion 2 of Farm Langverwacht 432                                                                                                                                                                                                              |
| <b>Application area (Ha)</b>                                | 1 699.6179 ha                                                                                                                                                                                                                                                        |
| <b>Magisterial district:</b>                                | Hay                                                                                                                                                                                                                                                                  |
| <b>Distance and direction from nearest town</b>             | The project area is located some +-20km northwest of Postmasburg town in the Northern Cape Province. The Property falls within the ZF Mgcawu District Municipality. It is accessible via the R90, a public untarred road, through Beeshoek Mine to Postmasburg town. |
| <b>21-digit Surveyor General Code for each farm portion</b> | C03100000000043200002<br>C03100000000043200000                                                                                                                                                                                                                       |

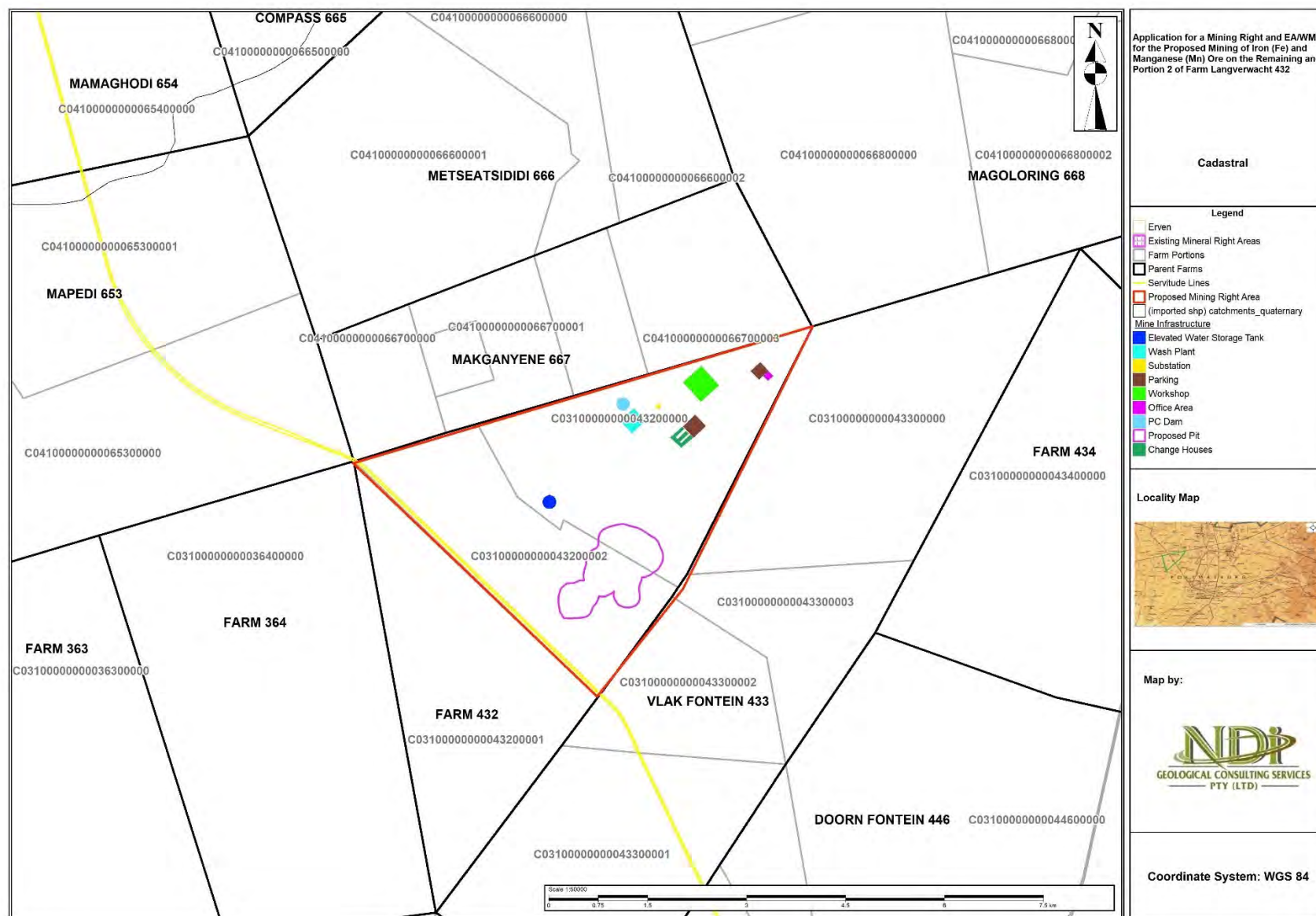


Figure 4-1: Cadastral Map

## 4.2 Locality map

The proposed mining project will be undertaken on the Remaining Extent and Portion 2 of Farm Langverwacht 432, located some +-20km northwest of Postmasburg town in the Northern Cape Province. The project area is accessible via the R90, a public untarred road, through Beeshoek Mine to Postmasburg town (Figure 4-2).

A copy of the locality map is provided in Appendix 3.

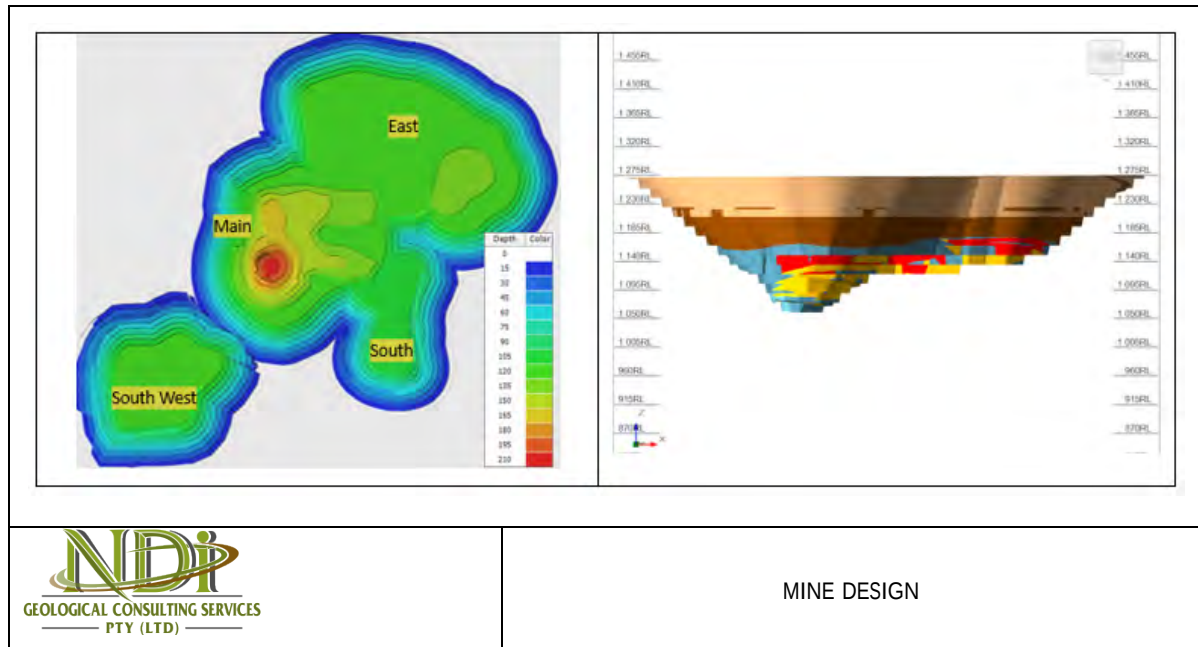


Figure 4-2: Locality Map

## 5 Project description

### 5.1 Mining

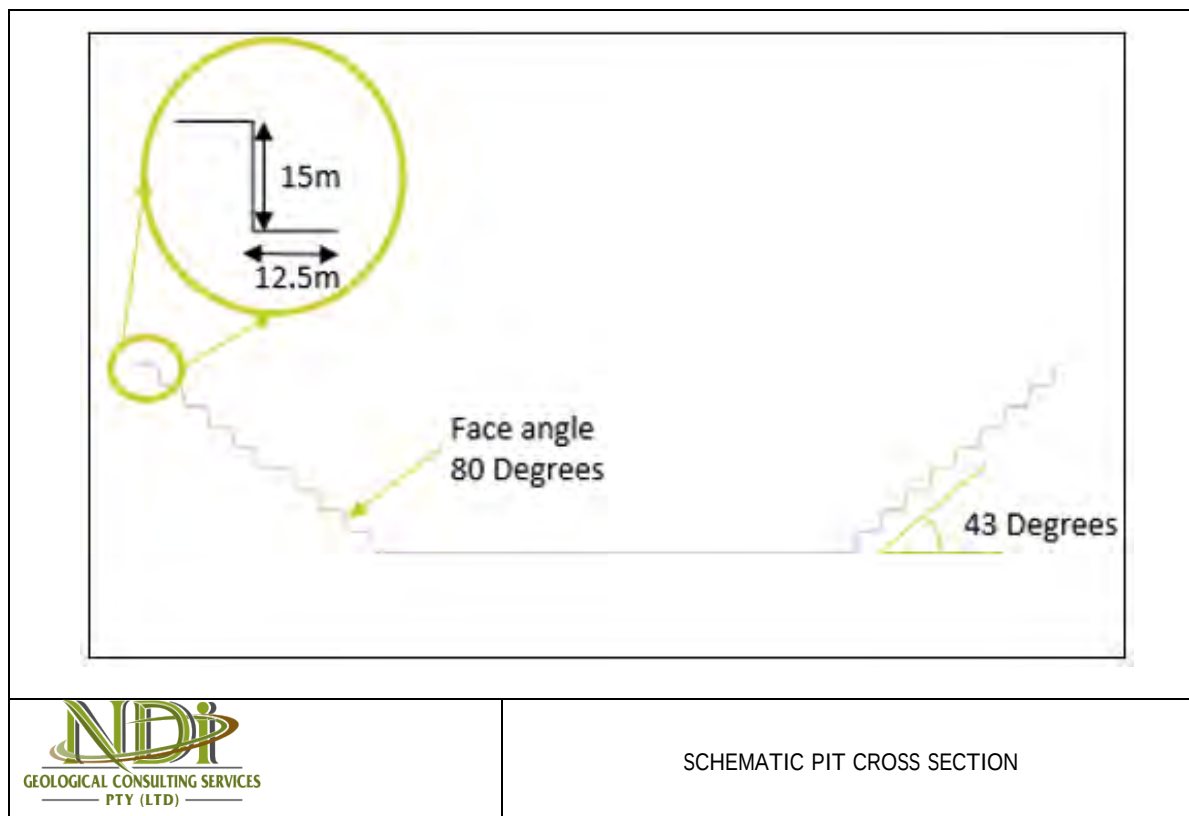
The plan is to mine the resource areas by open pit mining method where a box-cut will be established. Figure 5-1 provides the mine design maps for the proposed mine.



**Figure 5-1: Langverwacht Mine Design Map**

Mining will be operated in operational pushbacks. The pit design criteria are as follows and are illustrated in Figure 5-2:

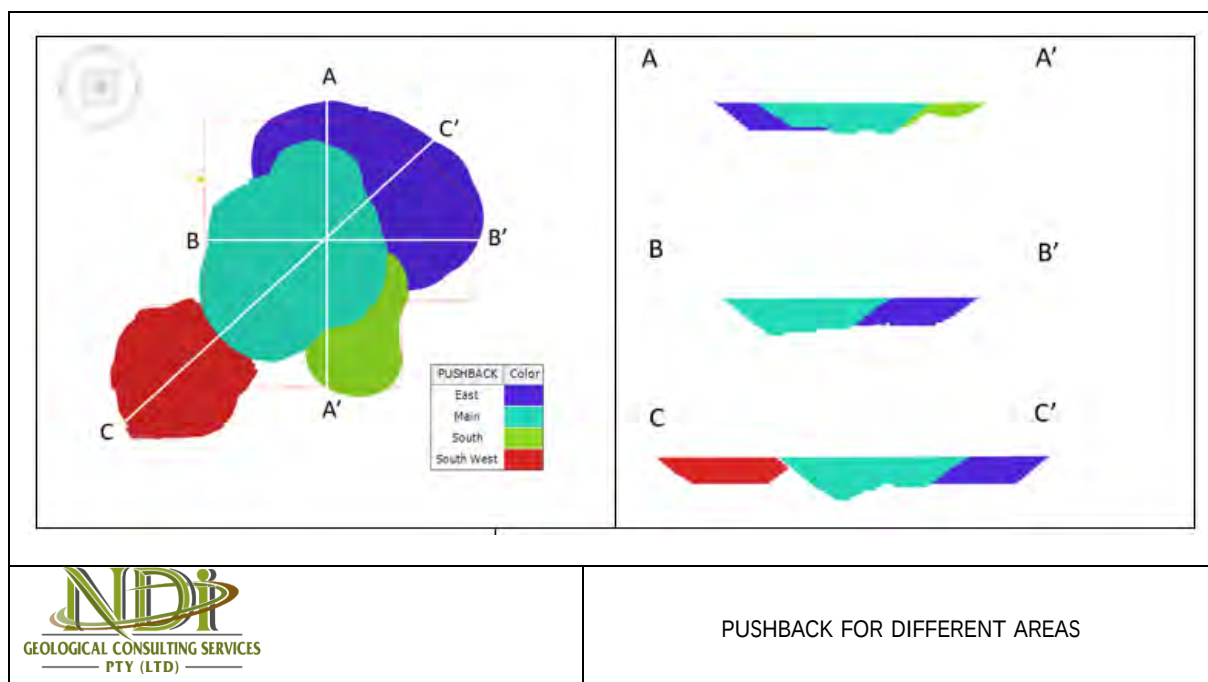
- Ramps designed at a gradient of a max of 10%;
- Overall pit slope angle is 43 degrees;
- Final pit shell at 12.5m bench width;
- Bench height is 15m; and
- Bench angle is 80 degrees.



**Figure 5-2: Schematic Cross-Section of the Pit**

The mining process will include drilling, blasting, loading, hauling and quality control. Due to the proximity and the nature of the orebodies, mining will be conducted by conventional opencast mining method. Each mining area will be treated as a separate pit and mining will be done on at most, three ore bodies at each time. Access to the opencast mining areas will be provided by a number of haul roads to the crushing, screening, and magnetic separation plants for the minerals.

Figure 5-3 illustrates that the pit will be divided into 4 main areas, namely Main, East, South and Southwest.



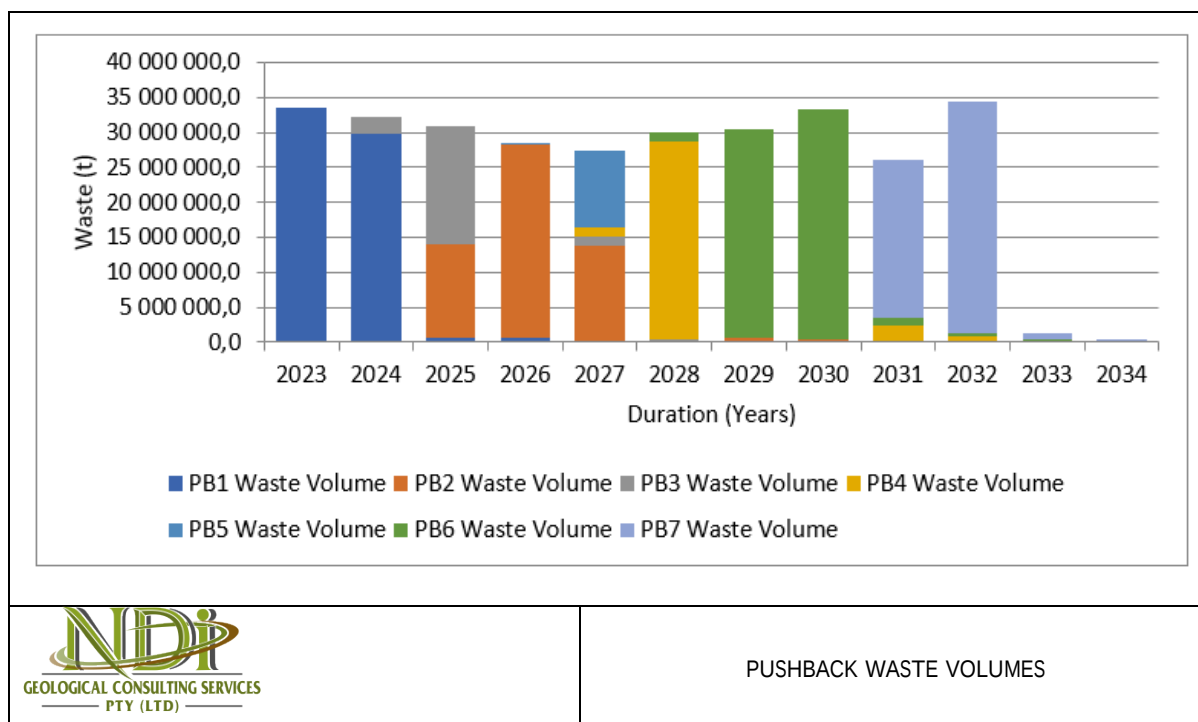
**Figure 5-3: Pushback for the Different Areas**

The Reverse Circulation (RC) drill machine will be utilized to drill holes for prospecting resources as well as blasting. Drilling depth of the hole will be determined by the thickness of the overburden and orebody.

After drilling, explosives provided by service providers are placed down the holes using trucks designed for such purposes. The quantities of explosives are determined by the purposes of the blasting and the nature of the materials to be blasted.

Once the materials have been blasted, excavators and Front-End Loaders (FELs) will load the minerals onto the dump trucks and Articulated Dump Trucks (ADTs). Wastes and Run of Materials (RoMs) will be loaded separately onto different trucks and hauled to designated areas.

The lowest volumes of waste to be produced during mining will be in the last two years of mining mine is presented in Figure 5-4.



**Figure 5-4: Pushback Waste Volumes Over the LOM**

## 5.2 Processing

The processing of ore will result in screened out waste being dumped on a temporary tailings stockpile. The waste from the tailings stockpile will either be used for back-filling of excavations or hauled to the waste rock dump. Sampling is a process that is undertaken throughout the production process, and at various times during mining of the ore and from the stockpiles at the completion of the plant process. The samples are analysed to maintain the correct iron ore grade.

The processing of ore will result in screened out waste being dumped on a temporary tailings stockpile. The waste from the tailings stockpile will either be used for back-filling of excavations or hauled to the waste rock dump. Sampling is a process that is undertaken throughout the production process, and at various times during mining of the ore and from the stockpiles at the completion of the plant process. The samples are analysed to maintain the correct iron ore grade.

Plant processing design: The basic plant design is provided in Figure 5-5.

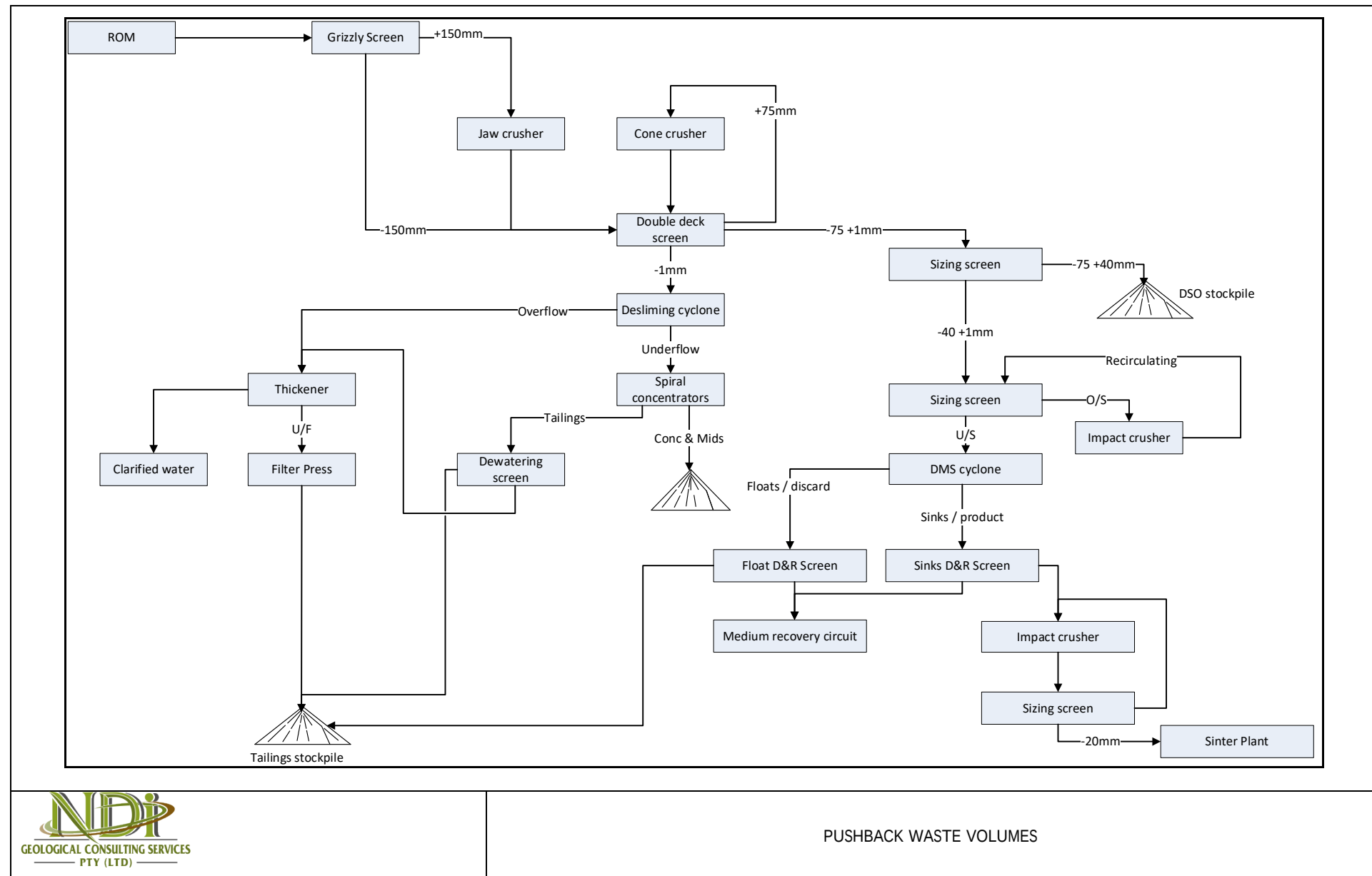


Figure 5-5: A Basic Plant Process Flow Diagram

The processing will include:

- **Crushing and Screening (-150+75mm):** The RoM from open-cast mining is fed to an inclined grizzly screen for preliminary separation of 150mm material in prior to a jaw crusher. Oversize material from the grizzly (+150mm) is transferred to a jaw crusher for size reduction. The crushed material (-150mm) from a jaw crusher combines with the undersized material from the grizzly screen and fed to a double-deck screen for separation of 75mm material. The oversize material (+75mm) from the screen is transferred to a secondary crusher for further reduction. The -75mm + 40mm could be sent to product stockpile as Direct Shipping Ore (DSO) provided the quality is within specification (>30%Mn). The – 40 + 1mm material from the sizing screen is fed to Dense Medium Separation (DMS).
- **Dense Medium Separation (-40+1mm):** The feed to a DMS circuit is screened at 40mm where any oversize that may have been misplaced is sent to an impact crusher which is installed in a closed loop with the screen. The screen undersize is mixed with ferrosilicon medium and gravitate to the DMS cyclone at a head of 12D and medium to ore ratios of at least 5 to 1. The medium density ranges from 3.2 to 3.8t/m<sup>3</sup> RD depending on grade and densimetric characteristics of the feed. Both the floats and sinks (product) are fed to the drain & rinse screens for recovery of Fesi medium. The floats / waste combines with spiral tails as onto the final tails stockpile. The sinks stream is fed to an impact crusher for further reduction to -20mm before feeding to the sinter plant for removal of Sulphur.
- **Fines beneficiation (-1mm):** Fine materials are separated using gravity concentration which separates particles based on specific gravity. The feed to the spiral concentrator is pumped to a desliming cyclones for removal of -45µm. The cyclone overflow reports to the thickener and underflow fed to spirals circuit. the thickener underflow is fed to a filter where the filter cake combines with spiral tails and DMS tails as final tails. The product from the spirals is stored in washed product stockpile.

### 5.3 Infrastructure Required

Infrastructure required for mining will be established on the NC 30/5/1/1/2/11950 PR Prospecting Area on Portion 2 and the Remainder of Langverwacht 432. Most services that will be required during mining are also available regionally. Mine infrastructure on the mining area will be required in order for full production to take place. Some of the infrastructure such as the offices and ablution facilities will not need to be constructed since they will be in the form of containers.

For full production of the mine to be realised, the infrastructure in Table 5-1 and Table 5-2 needs to be built on the mine. The mining area consists of four economically mineable blocks which will be mined by opencast method.

**Table 5-1: Buildings on the Mine**

| Infrastructure            | Specification |
|---------------------------|---------------|
| Change houses             | 15m x 15m     |
| Workshop                  | 50m x 50m     |
| Feeder bay and substation | 3MVA          |
| Offices                   | 30m X30m      |
| Parking                   | 50m x 3m      |

**Table 5-2: Other Infrastructure**

| Infrastructure | Specification |
|----------------|---------------|
| Wash plant     | 50m x 80m     |

| Infrastructure              | Specification                |
|-----------------------------|------------------------------|
| Substation                  | 5m x 5m                      |
| PCD                         | 1ha                          |
| Elevated Water Storage Tank | 5m x 5m Stand (10 000L Tank) |
| Entrance                    | 50m x 3m                     |

### 5.3.1 Access Roads

The proposed mining area already has existing roads through which it can be accessed. A secondary gravel road connecting from the R385 Road is currently being used to access the mining area. Other gravel roads in the area are also being used. The R385 Road will be used to transport the final iron ore product to Postmasburg Iron Ore Export Railway Siding, from which it will be railed or hauled to Saldanha Harbour.

### 5.3.2 Rail

Once the mining right has been approved, the applicant will apply for a railway slot on Lohatlha Railway Sliding. The loading station is approximately 26km away from the proposed mining property.

### 5.3.3 Power

The mining project will make use of generators to supply power to the mine and plant areas. Electricity will mostly be used for lighting purposes at the workshop and mining area as well as roadways. This will however result in minimal use electricity.

Diesel powered vehicles and machinery will be used for the proposed project.

### 5.3.4 Water Supply

It is anticipated that 20 tons of water will be used for dust suppression and other non-production purposes. This water will either be obtained from the Tsantsabane Local Municipality or underground. The Department of Water and Sanitation (DWS) will be contacted to seek their recommendation on the following potential water uses:

- Schedule 1 water use where no WUL is required;
- Section 21(a) WUL for the abstraction of groundwater;
- Section 21(b) WUL for the storage of water; and
- Section 21(g) WUL for the disposal of wastewater.

## 5.4 Listed and specified activities

Section 24 of the NEMA requires that listed activities, which may potentially affect the environment negatively, must obtain an EA from a relevant authority before the activities may commence. Such activities are listed under the EIA Regulations (2014) which have been amended in 2017 and 2021 and consist of:

- EIA Process (Government Notice Regulation (GNR) 982) as amended by GNR326;
- Listing Notice 1 GNR 983 (as amended by GNR327) – Basic Assessment process;
- Listing Notice 2 GNR 984 (as amended by GNR325) – Scoping and EIA process;
- Listing Notice 3 GNR 985 (as amended by GNR324) – Activities in specific identified geographical areas only (requires a Basic Assessment process).

The purpose of these regulations is to avoid negative impacts on the environment, and where these cannot be avoided, ensure the mitigation and management of the impacts to acceptable levels, while optimising positive environmental impacts.

The proposed mining project activity triggers activities listed in NEMA Listing Notices 1, 2 and 3. In addition, the proposed project triggers activities listed in the GNR921 of the NEM:WA, which provides a list of activities that require a WML from the DMR. Table 5-3 provides a summary of the identified NEMA and NEM:WA listed activities that will be triggered by the mining project.

**Table 5-3: Applicable Activities**

| NAME OF ACTIVITY                                                                                              | Aerial extent of the Activity (Ha or m <sup>2</sup> )   | APPLICABLE LISTING NOTICE (GNR 983, GNR 984 or GNR 985)                                                                                                                                                                                                                        | WASTE MANAGEMENT AUTHORIZATION (Mark with an X) |
|---------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|
| Mining Right Application                                                                                      | 1 699.6179 ha                                           | GNR 984 (as amended by GNR325) Activity 15<br>GNR 984 (as amended by GNR325) Activity 17<br>GNR 983 (as amended by GNR327) Activity 19<br>GNR 983(as amended by GNR327) Activity 27<br>GNR983 (as amended by GNR327) Activity 30<br>GNR 985 (as amended by GNR324) Activity 12 |                                                 |
| Buildings including change houses, workshops, and parking                                                     | 0.3775ha                                                |                                                                                                                                                                                                                                                                                |                                                 |
| Rapid Reloading Area for Explosives                                                                           | <0.1ha                                                  |                                                                                                                                                                                                                                                                                |                                                 |
| Rehabilitation                                                                                                | Rehabilitation will be required for all disturbed areas |                                                                                                                                                                                                                                                                                |                                                 |
| Explosive Magazine area for the storage of TS3 magazines                                                      | <0.1ha                                                  |                                                                                                                                                                                                                                                                                |                                                 |
| Safety Berms around the mining area to be used per the requirements of the Mine Health and Safety Act (MHSA). | <0.2ha                                                  |                                                                                                                                                                                                                                                                                |                                                 |
| Brake test ramp which will be used around the mine in compliance with the requirements of the MHSA            | <0.1ha                                                  |                                                                                                                                                                                                                                                                                |                                                 |
| Tyre Bay area                                                                                                 | <0.1 ha                                                 |                                                                                                                                                                                                                                                                                |                                                 |
| Fenced salvage yard                                                                                           | 0.1ha                                                   |                                                                                                                                                                                                                                                                                |                                                 |
| Weigh bridge                                                                                                  | >0.01ha                                                 |                                                                                                                                                                                                                                                                                |                                                 |
| Security access points where mobile containers will be used as security offices for access control.           | >0.01ha                                                 |                                                                                                                                                                                                                                                                                |                                                 |

| NAME OF ACTIVITY                                                                                                                                                                                                                                             | Aerial extent of the Activity (Ha or m <sup>2</sup> )           | APPLICABLE LISTING NOTICE (GNR 983, GNR 984 or GNR 985)                                                                                                                                                                                  | WASTE MANAGEMENT AUTHORISATION (Mark with an X)                                          |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| Wash Bay areas which will have a concrete floor.                                                                                                                                                                                                             | <0.1 ha                                                         |                                                                                                                                                                                                                                          |                                                                                          |
| Drilling: The Mine will utilize a RC drill for prospecting resources as well as blasting. A typical drilling pattern is a 4m x 4m grid, and the depth of the hole will be determined by the thickness of the overburden and orebody.                         | >1ha                                                            |                                                                                                                                                                                                                                          |                                                                                          |
| Blasting: The explosives provided by service providers will be placed down the holes using trucks designed for such purposes. The quantities of explosives will be determined by the purposes of the blasting and the nature of the materials to be blasted. | Bench heights of between 8 – 10m will be required for blasting. | GNR 984 (as amended by GNR325): Activity 17<br>GNR 983 (as amended by GNR327): Activity 27<br>GNR983 (as amended by GNR327): Activity 30<br>GNR 985 (as amended by GNR324): Activity 12                                                  |                                                                                          |
| Excavations, open pit mining.                                                                                                                                                                                                                                | 128.19ha                                                        | GN R 983 (as amended by GNR327): Activity 27<br>GNR 984 (as amended by GNR325): Activity 17<br>GNR 984 (as amended by GNR325): Activity 15<br>GNR 983 (as amended by GNR327): Activity 19<br>GNR 985 (as amended by GNR324): Activity 12 |                                                                                          |
| Water Provision: Elevated water storage tank will be applicable for the processing plant                                                                                                                                                                     | 10 000L Tank (vegetation clearance 25m2ha)                      | GNR 984 (as amended by GNR325): Activity 17<br>GNR 983 (as amended by GNR327): Activity 27<br>GNR983 (as amended by GNR327): Activity 12<br>GNR 985 (as amended by GNR324): Activity 12                                                  |                                                                                          |
| Waste Rock Dump Area: The waste that is not used for backfilling will be hauled to the waste rock dump.                                                                                                                                                      | <3 ha                                                           | GNR 983 (as amended by GNR327): Activity 27<br>GNR 984 (as amended by GNR325): Activity 17<br>GNR 985(as amended by GNR324): Activity 12                                                                                                 | GNR 921 Category A: Activity 10<br>GNR 921 Category A: Activity 12<br>GNR 921 Category C |

| NAME OF ACTIVITY                                                                                                                  | Aerial extent of the Activity (Ha or m <sup>2</sup> )                                                                | APPLICABLE LISTING NOTICE (GNR 983, GNR 984 or GNR 985)                                                                                                                                                                                 | WASTE MANAGEMENT AUTHORISATION (Mark with an X)                                         |
|-----------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| Tailings Stockpile Area which will be required from where waste will be used for back filling or hauled to waste rock dump areas. | <1 ha                                                                                                                | GNR 983 (as amended by GNR327): Activity 27<br>GNR 984 (as amended by GNR324): Activity 17<br>GNR 985(as amended by GNR324): Activity 12                                                                                                | GNR 633: Activity 11                                                                    |
| Pollution Control Dam                                                                                                             | 1 ha                                                                                                                 | GNR 983 (as amended by GNR327): Activity 27<br>GNR 984 (as amended by GNR325): Activity 17<br>GNR 985 (as amended by GNR324): Activity 12                                                                                               | GNR 921 Category B: Activity 1<br>GNR 921 Category B: Activity 10<br>GNR 921 Category C |
| Stormwater management infrastructure. Berms will be used for clean and water separation around the mining area.                   | The sizes will be dependent on the topography of the and will be determined by a hydrologist during the EIA process. | GNR 984 (as amended by GNR325): Activity 17<br>GNR 983 (as amended by GNR327): Activity 27<br>GNR 983 (as amended by GNR327): Activity 19<br>GNR 983 (as amended by GNR327): Activity 12<br>GNR 985 (as amended by GNR324): Activity 12 |                                                                                         |
| Control Room for the processing plant.                                                                                            | <200m <sup>2</sup>                                                                                                   | GNR 984 (as amended by GNR325): Activity 17<br>GNR 984 (as amended by GNR324): Activity 21                                                                                                                                              |                                                                                         |
| Diesel tanks: Sealed tanks will be required for the storage of diesel at the mine.                                                | More than 500m <sup>3</sup> of diesel will be stored on the site.                                                    | GNR 984 (as amended by GNR324): Activity 17<br>GNR 984(as amended by GNR325): Activity 4<br>GNR 985 (as amended by GNR324): Activity 10                                                                                                 |                                                                                         |
| Electricity: The upgrade of plants will make use of Eskom power, which will be applied for.                                       | N/A                                                                                                                  |                                                                                                                                                                                                                                         |                                                                                         |
| Generators: The mining project will make use of a generator to supply power to the mine and plant areas                           | >0.5ha (500kVA)                                                                                                      | GNR 984 (as amended by GNR325): Activity 17<br>GNR983 (as amended by GNR327): Activity 27                                                                                                                                               |                                                                                         |

| NAME OF ACTIVITY                                                                                                                                                        | Aerial extent of the Activity (Ha or m <sup>2</sup> ) | APPLICABLE LISTING NOTICE (GNR 983, GNR 984 or GNR 985)                                                                                                                                                                                | WASTE MANAGEMENT AUTHORISATION (Mark with an X) |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|
| Haul Roads: Access to the opencast mining areas will be provided by a number of haul roads to the crushing, screening, and magnetic separation plants for the minerals. | <2ha                                                  | GNR 984 (as amended by GNR325): Activity 17<br>GNR983 (as amended by GNR327): Activity 27<br>GNR983 (as amended by GNR327): Activity 56<br>GNR983 (as amended by GNR327) Activity 24<br>GNR984 (as amended by GNR325) Activity 27      |                                                 |
| Processing Plant for the processing of Iron and Manganese Ore: crushing and screening plant as well as dense medium separation process and fines beneficiation.         | <2 ha                                                 | GNR 984 (as amended by GNR325): Activity 15<br>GNR 984(as amended by GNR325): Activity 17<br>GNR 984 (as amended by GNR325): Activity 21<br>GNR 983 (as amended by GNR327): Activity 27<br>GNR 985 (as amended by GNR324): Activity 12 |                                                 |
| Topsoil stockpile areas for the temporary storage of topsoil which will be used for rehabilitation of disturbed areas.                                                  | <0.5ha                                                | GNR 984 (as amended by GNR325): Activity 17                                                                                                                                                                                            | GNR 633: Activity 11                            |
| Waste storage areas which will be bunded and have concrete floors for the temporary storage of waste.                                                                   | <50m <sup>2</sup> each                                | GNR 984 (as amended by GNR325): Activity 17                                                                                                                                                                                            | Category C: GNR921: Activity 1                  |
| Feeder Bay and substation                                                                                                                                               | 3MVA (>0.1ha vegetation clearance required)           | GNR 984 (as amended by GNR325): Activity 17<br>GNR 984 (as amended by GNR325): Activity 9                                                                                                                                              |                                                 |
| Contractors laydown areas                                                                                                                                               | <0.5 ha                                               | GNR 984 (as amended by GNR325): Activity 17<br>GN R 983 (as amended by GNR327): Activity 27                                                                                                                                            |                                                 |

| NAME OF ACTIVITY                                                                                                                                                                                                                                                                                                                                                                                          | Aerial extent of the Activity (Ha or m <sup>2</sup> ) | APPLICABLE LISTING NOTICE (GNR 983, GNR 984 or GNR 985)                                                                                                                                    | WASTE MANAGEMENT AUTHORISATION (Mark with an X) |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|
| Access Roads: Existing access roads will be utilised                                                                                                                                                                                                                                                                                                                                                      |                                                       |                                                                                                                                                                                            |                                                 |
| Ablution facilities: Ablution facilities will not need to be constructed as they will be in the form of containers                                                                                                                                                                                                                                                                                        |                                                       |                                                                                                                                                                                            |                                                 |
| Laboratory: As part of quality control, samples are taken at regular intervals from the iron ore that has been crushed and screened and chemically analysed at the onsite laboratory to ensure that the final product contains the correct silica, potassium oxide, phosphorus, sulphur, and alumina content. When the process is complete, a comprehensive record shall be kept of the samples analyses. | >200m <sup>2</sup>                                    | GNR 984 (as amended by GNR325): Activity 17<br>GN R 983 (as amended by GNR327): Activity 27                                                                                                |                                                 |
| Fencing                                                                                                                                                                                                                                                                                                                                                                                                   | <5ha                                                  | GN R 983 (as amended by GNR327): Activity 27<br>GNR 985 (as amended by GNR324): Activity 12<br>GN R 984 (as amended by GNR325): Activity 17                                                |                                                 |
| Vegetation clearance                                                                                                                                                                                                                                                                                                                                                                                      | 130 ha                                                | GN R 983 (as amended by GNR327): Activity 27<br>GN R 984 (as amended by GNR325): Activity 15<br>GNR 984 (as amended by GNR325): Activity 17<br>GNR 985 (as amended by GNR324): Activity 12 |                                                 |
| Dust Suppression                                                                                                                                                                                                                                                                                                                                                                                          |                                                       | Not Listed                                                                                                                                                                                 |                                                 |

Figure 5-6 shows the plan contemplated in Regulation 2(2) of the MPRDA, depicting the land to which application relates. The map also denotes the directly affected farms and the boundary coordinates of the application area.

The layout of the infrastructure is displayed in Figure 5-7.

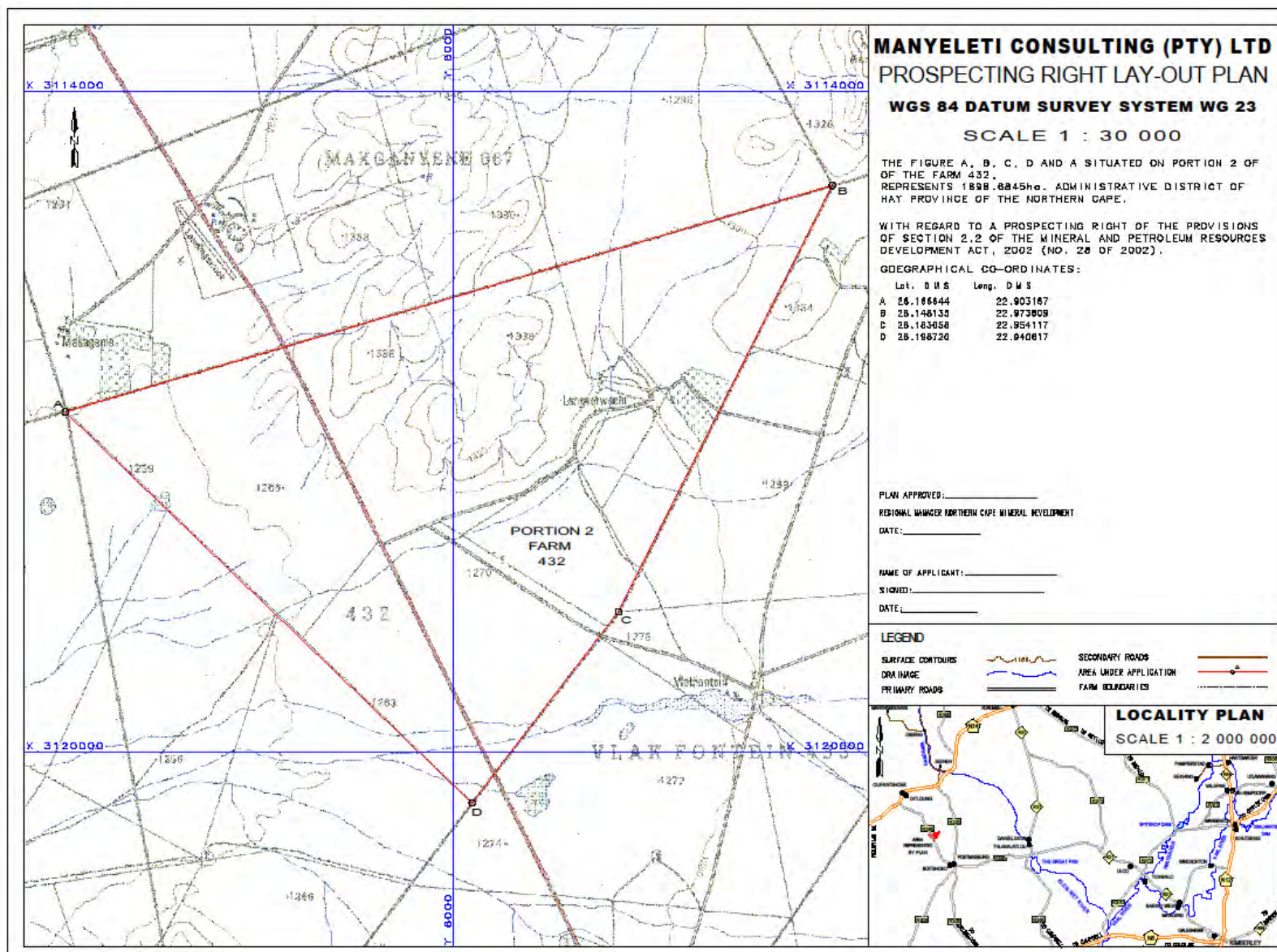


Figure 5-6: Mining Right Application Area

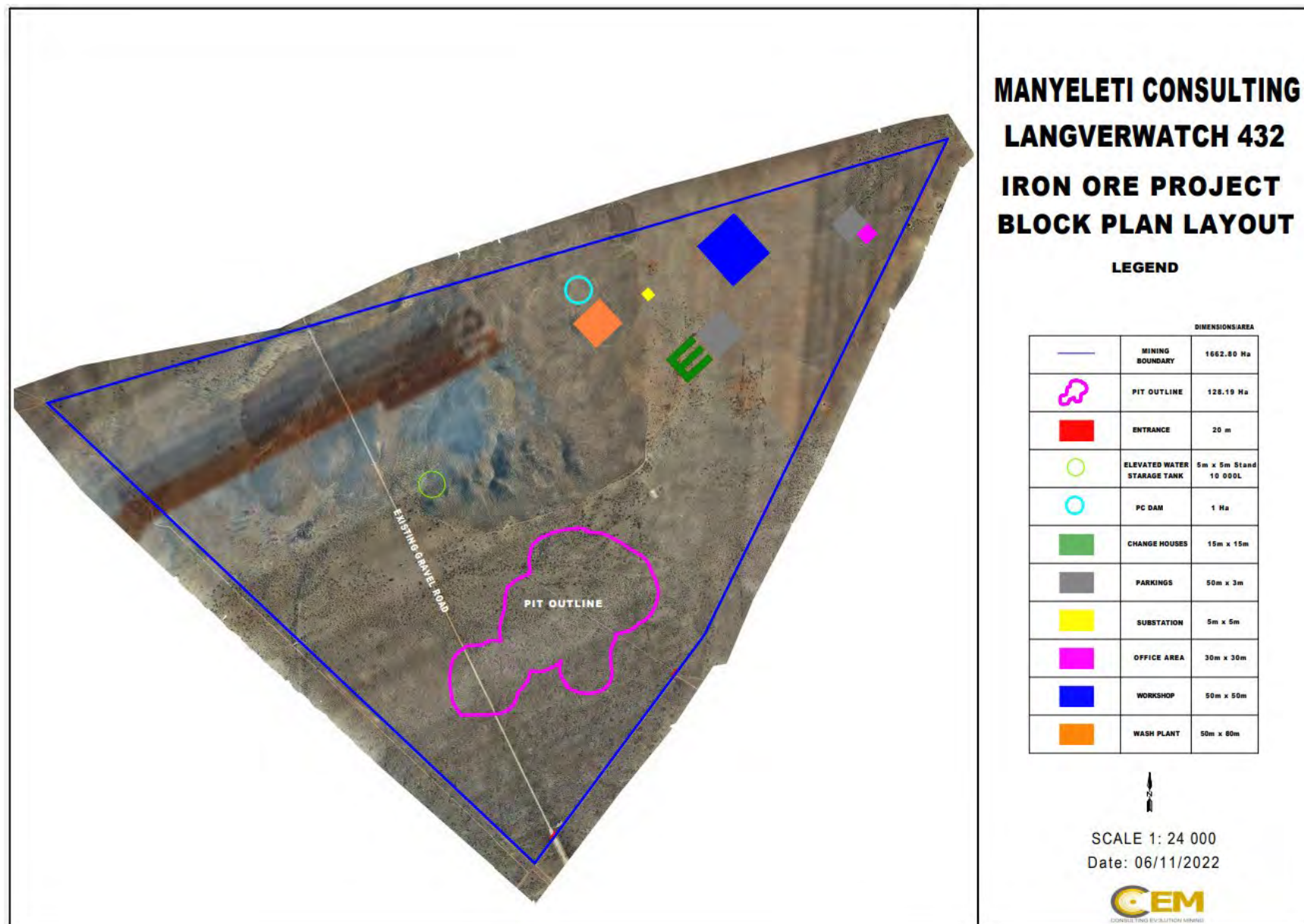


Figure 5-7: Mining Area Layout Plan

## 6 Policy and legislative context

Table 6-1 lists the applicable legislation, policies and guidelines identified as relevant to the proposed project. In addition, a description of how the proposed activity complies with and responds to the legislation and policy context, is provided. This list is not exhaustive but rather represents an indication of the most applicable pieces of legislation relevant to the project.

**Table 6-1: Policy and Legislative Context of Proposed Project**

| Legislation                                                                          | Description and Relevance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Authority                                               |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|
| Constitution of the Republic of South Africa, (No. 108 of 1996)                      | <p>Chapter 2 – bill of rights</p> <p>Section 24 – Environmental Rights</p> <p>The proposed activities shall be conducted in such a manner that significant environmental impacts are avoided, where significant impacts cannot all together avoided be minimised and mitigated in order to protect the environmental rights of South Africans</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | N/A                                                     |
| Promotion of Access to Information Act , 2000 (Act No. 2 of 2000) (PAIA)             | <p>The Promotion of Access to Information Act (Act No. 2 of 2000) (PAIA) recognises that everyone has a right of access to any information held by the state and by another person when that information is required to exercise or protect any right. The purpose of the Act is to promote transparency and accountability in public and private bodies and to promote a society in which people have access to information that enables them to exercise and protect their right.</p> <p>The EIA/EMPr process to be undertaken in terms of the NEM: WA, NEMA and where required, the NWA, where the associated stakeholder consultation process will be aligned with the PAIA in the sense that all I&amp;APs will be given an opportunity to register as an I&amp;AP prior to the initiation of the project and all registered stakeholders will in turn be provided a fair opportunity to review and comment on any reports submitted to the competent authorities for decision making.</p> | N/A                                                     |
| Protection of Personal Information Act (POPIA) which came into effect on 1 July 2021 | <p>The new Protection of Personal Information Act (POPIA) which came into effect on 1 July 2021 aims to promote protection of personal information.</p> <p>The stakeholder engagement process was undertaken in a way that ensured that personal information is protected as far as possible and that I&amp;APs are provided an opportunity to choose how they prefer to have their personal information handled.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | N/A                                                     |
| Minerals and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) (MPRDA)  | <p>The Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002) (MPRDA) makes provision for equitable access to and sustainable development of South Africa's mineral resources. The MPRDA requires that the environmental management principles set out in NEMA shall apply to all mining operations and serves as a guideline for the interpretation, administration, and implementation of the environmental requirements of NEMA.</p> <p>The MPRDA requires that a reconnaissance permission, prospecting right, mining right, mining permit, retention permit, technical corporation permit, reconnaissance permit, exploration right, production right, prospecting work programme; exploration work programme, production work programme, mining work</p>                                                                                                                                                                                                                  | Department of Mineral Resources, Northern Cape Province |

| Legislation                                                                                                                                                                   | Description and Relevance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Authority |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
|                                                                                                                                                                               | <p>programme, environmental management programme, or an environmental authorization issued in terms of the National Environmental Management Act, 1998, as the case may be, may not be amended or varied (including by extension of the area covered by it or by the addition of minerals or a share or shares or seams, mineralized bodies, or strata, which are not at the time the subject thereof) without the written consent of the Minister.</p> <p>Section 22 of the MPRDA as amended by Section 18 of Act 49 of 2008</p> <p><a href="#">The proposed project requires a Mining Right from the DMR.</a></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |           |
| National Environmental Management Act, 1998 (No. 107 of 1998) (NEMA)                                                                                                          | <p>Section 24 – Environmental Authorisation (control of activities which may have a detrimental effect on the environment)</p> <p>Section 28 – Duty of care and remediation of environmental damage</p> <p><a href="#">Environmental management principles will be incorporated into the EIA and EMPr, which the applicant will be required to comply with to ensure that negative impacts on the environment are avoided or kept to a minimum and that positive impacts are enhanced.</a></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |           |
| National Environmental Management Act, 1998 (Act 107 of 1998) (NEMA) and the EIA Regulations 2014 (Government Notice (GN) 984), as amended                                    | <p>The EIA Regulations (GNR 982) were promulgated in terms of Sections 24 of the NEMA, to manage the process, methodologies, and requirements for the undertaking of an EIA. The GNR 982 stipulates that the applicant for activities listed under GNR 983, 984 or 985 must appoint an independent EAP to manage the EIA process. Listed Activities are activities identified in terms of Section 24 of the NEMA which are likely to have a detrimental impact on the environment, and which may not commence without an EA from the Competent Authority (CA). EA required for Listed Activities is subject to the completion of either a Basic Assessment (BA) process or full Scoping and Environmental Impact Assessment (S&amp;EIA) with applicable timeframes associated with each process. The EA must be obtained prior to the commencement of those listed activities.</p> <p><a href="#">The project triggers activities listed in Listing Notices 1, 2 and 3 and will require an EA from the DMR. According to GNR 326 of the NEMA, activities listed in Listing Notice 2 require that a full S&amp;EIA be undertaken. The applicable listed activities that will be triggered by the project is provided in Table 5-1.</a></p> |           |
| Department of Environmental Affairs (DEA) Integrated Environmental Management Guideline Series, Guideline 5: Assessment of the EIA Regulations, 2012 (Government Gazette 805) | <p><a href="#">Environmental impacts will be generated primarily in the construction phase of this project with associated operational phase impacts. These will be assessed as part of the EIA process.</a></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |           |

| Legislation                                                                                                                                                               | Description and Relevance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Authority                                               |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|
| Integrated Environmental Assessment Guideline Series 11, published by the DEA in 2004                                                                                     | A full EIA (scoping and impact assessment) is required for the proposed project as activities are triggered under Listing Notice 2.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                         |
| Review in Environmental Impact Assessment, Integrated Environmental Management, Information Series 13, Department of Environmental Affairs and Tourism (DEAT), Pretoria.  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                         |
| DEA Integrated Environmental Management Guideline Series, Guideline 7: Public Participation in the Environmental Impact Assessment Process, 2012 (Government Gazette 807) | Public participation is a requirement of the Scoping/EIA Process and will be conducted for the proposed project as stipulated in Chapter 6 of the NEMA.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                         |
| National Water Act, 1998 (Act No. 36 of 1998) (NWA)                                                                                                                       | <p>Section 21: Specifies a number of water uses that require Water Use Authorisation (WUA) in terms of Section 22(1) of the Act. A WUA process must be conducted to obtain authorisation for any of these activities unless the specific use is listed in Schedule 1 of the NWA or is an existing lawful use. Listed activities that require authorisation - a Water Use Licence (WUL) or General Authorisation (GA) (issued in terms of Section 39 of the NWA) through a registration and application process include: taking water from a water resource, impeding, or diverting the flow of water in a watercourse and altering the beds, banks, course, or characteristics of a watercourse. The competent authority for WUAs is the Department of Water and Sanitation (DWS).</p> <p>The proposed project infrastructure and activities constitute water uses as per Section 21 of the NWA. A Water Use Authorisation (WUA) will therefore be required as follows.</p> <ul style="list-style-type: none"> <li>• Schedule 1 water use where no WUL is required;</li> <li>• Section 21(a) WUL for the abstraction of groundwater;</li> <li>• Section 21(b) WUL for the storage of water; and</li> <li>• Section 21(g) WUL for the disposal of wastewater.</li> </ul> | Department of Water and Sanitation (DWS), Northern Cape |

| Legislation                                                                             | Description and Relevance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Authority                                                              |
|-----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|
| National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) (NEM: WA)       | <p>It is expected that activities listed in GNR921 (Category A and B) will be triggered for the waste rock dump, waste management facilities and PCD and will require a waste management licence.</p> <p>Table 5-1 provides a list of GNR921 activities triggered by the project.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | DMR and DWS, Northern Cape through the integrated application process  |
| National Environmental Management Air Quality Act, 2004 (Act No. 39 of 2004) (NEM: AQA) | <p>Air quality management</p> <p>Section 32 – Dust control.</p> <p>Section 34 – Noise control.</p> <p>Section 35 – Control of offensive odours.</p> <p>The principles of the NEM: AQA, focusing on minimisation of pollutant emissions will also be taken cognisance of in the development of the EMPr.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Department of Environmental Affairs and Tsantsabane Local Municipality |
| National Forestry Act, 1998 (Act No. 84 of 1998) (NFA)                                  | <p>The NFA protects against the cutting, disturbance, damage, destruction, or removal of protected trees.</p> <p>A biodiversity specialist study will be undertaken for the application. The study will include an assessment of the significance of biodiversity impacts and mitigation measures will be included in the EMPr. Should there be any protected trees that are affected by the project, Manyeleti will apply for the required permit for the removal and/or relocation of the trees.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Department of Agriculture, Forestry and Fisheries (DAFF)               |
| National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) (NEM:BA) | <p>The National Environmental Management: Biodiversity Act (Act No. 10 of 2004) (NEMBA) provides for the management and conservation of South Africa's biodiversity within the framework of NEMA, as well as the protection of species and ecosystems that warrant national protection and the sustainable use of indigenous biological resources. The Act provides for listing of threatened or protected ecosystems, in one of four categories: critically endangered, endangered, vulnerable, or protected</p> <p>During the EIA process, biodiversity hotspots and bioregions will be investigated during the biodiversity specialist study to determine the potential impacts that the project may have on the receiving environment. The management and control of alien invasive species on the impacted areas during all the phases of the project will be governed by the NEM: BA. The NEM: BA ensures that provision is made by the site developer to remove any alien species, which have been introduced to the site or are present on the site.</p> | Department of Environmental Affairs                                    |
| Northern Cape Nature Conservation Act, 2009 (Act No. 9 of 2009) (NCNC)                  | <p>This Act provides sustainable utilization of wild animals, aquatic biota, and plants to provide for them implementation of the convention on international trade in endangered species of wild fauna and flora. The Act provides for offenses and penalties of contravention Act, further provide for the appointment</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Northern Cape Department of Environment and                            |

| Legislation                                                                    | Description and Relevance                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Authority                                        |
|--------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|
|                                                                                | <p>nature conservator to implement the provision of the Act. It also provides the issuing of the permits and other authorisations and provides matters connected therewith.</p> <p>A biodiversity assessment will be undertaken. Should there be any protected trees that are affected by the project, Manyeleti will apply for the required permit for the removal and/or relocation of the trees.</p>                                                                        | Nature Conservation (DENC)                       |
| Mine Health Safety Act, 1996 (Act No. 29 of 1996) (MHSA)                       | <p>The Mine Health and Safety Act (Act No. 29 of 1996) (MHSA) aims to provide for protection of the health and safety of all employees and other personnel at the mines of South Africa.</p> <p>Manyeleti will need to ensure that employees, contractors, sub-contractors and visiting personnel, adhere to this Act and subsequent amendment regulations on site.</p>                                                                                                        | Department of Mineral Resources (Northern Cape)  |
| Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983) (CARA)   | <p>Control measures for erosion</p> <p>Control measures for alien and invasive plant species</p> <p>The EMPr will include measures to control and manage alien invasive plant species.</p>                                                                                                                                                                                                                                                                                     | Department of Agriculture Forestry and Fisheries |
| National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA)              | <p>Heritage Permit for structures 60 years or older.</p> <p>A site-specific Phase 1 heritage specialist study will be conducted for the project. The study will include an assessment of the significance of heritage impacts and mitigation measures will be included in the EMPr. Should there be any heritage and cultural resources that are affected by the project, Manyeleti will apply for the required permit for the destruction and/or relocation of the trees.</p> | Northern Cape Heritage Resource Authority        |
| Restitution of Land Rights Act, 1994 (Act No. 22 of 1994), as amended in 2014. | <p>Land Claims.</p> <p>There are no land claims associated with the affected property.</p>                                                                                                                                                                                                                                                                                                                                                                                     | Department of Rural Development and Land Reform  |

## 6.1 Municipal Plans and Policies: Tsantsabane Integrated Development Plan

According to the Integrated Development Plan (IDP) for the Tsantsabane Local Municipality (2021/22), there are opportunities in mining, which is currently the largest contributor to the municipality's Gross Domestic Product (GDP). There is therefore a need to put more efforts in the current performance plans that will develop the municipality in the areas of mining.

The mining project will have socio-economic impacts that have been described in detail in Section 7. The extent to which the project will contribute to the economy will be assessed during the impact assessment phase of the process.

## 6.2 Other guidelines

Other guidelines that were consulted include:

- Northern Cape Provincial Biodiversity Conservation Plan;
- DWS, 2010. Operational Guideline: Integrated Water and Waste Management Plan (IWWMP). Resource Protection and Waste;
- Department: Water Affairs and Forestry, 2007. Best Practice Guideline A2: Water Management for Mine Residue Deposits;
- Department: Water Affairs and Forestry, 2007. Best Practice Guideline A4: Pollution control dams;
- Department of Water Affairs and Forestry, 2008. Best Practice Guideline A6: Water Management for Underground Mines.
- White paper on Integrated Pollution and Waste Management in South Africa, 2000;
- Department of Water Affairs and Forestry, 2006. Best Practice Guideline G1 Storm Water Management;
- Department of Water Affairs and Forestry, 2006. Best Practice Guideline G2: Water and Salt Balances;
- Department of Water Affairs and Forestry, 2006. Best Practice Guideline G3. Water Monitoring Systems;
- Department of Water Affairs and Forestry, 2008. Best Practice Guideline G4: Impact Prediction;
- Department of Water Affairs and Forestry, 2008. Best Practice Guideline H1: Integrated Mine Water Management;
- Department of Water Affairs and Forestry, 2006. Best Practice Guideline H3: Water Reuse and Reclamation;
- DEAT. 2002. Integrated Environmental Management, Information series 2: Scoping. Department of Environmental Affairs and Tourism (DEAT. 2002);
- DEAT. 2002. Integrated Environmental Management, Information series 3: Stakeholder Engagement. Department of Environmental Affairs and Tourism (DEAT. 2002);
- DEAT. 2002. Integrated Environmental Management, Information series 4: Specialist Studies. Department of Environmental Affairs and Tourism (DEAT. 2002);
- DEAT. 2002. Integrated Environmental Management, Information series 12: Environmental Management Programmes. Department of Environmental Affairs and Tourism (DEAT. 2002);

- DEA. 2012. Companion to the EIA Regulations 2010, Integrated Environmental Management Guideline Series 7, Department of Environmental Affairs; and
- DEA. 2017. Guideline on Need and Desirability, Department of Environmental Affairs (DEA), Pretoria, South Africa.

## 7 Motivation

### 7.1 Benefits of Mining

The mining industry is of great importance to the South African economy. According to the DMR, South Africa hosts about 75 percent of the world's identified manganese resources. Over 90 percent of these reserves are found in the Kalahari Manganese Fields (KMF) located in the Northern Cape. Manganese (Mn) is the 4th most used metal globally in terms of tonnage after iron, aluminium and copper and it is the 12th most abundant element in the earth crust. However, the country has predominantly ranked second in the world's manganese ore production, contributing less than 20 percent per year, attributed by lack of capacity developments in the country's manganese industry. These conditions led to the country missing out on the commodity boom cycle between 2001 and 2007, which was mainly due to the rapid growth in the Chinese steel industry and other developing economies. Steel is said to be the key driver in the world's economy and during the past 10 years, the production of manganese ore and its alloys has been in tandem with that of global steel as over 90 percent of manganese consumed goes into steel making. Approximately 2-2.5 tons of manganese ore is consumed in order to produce 1 ton of manganese alloys. The apparent consumption of manganese is estimated at an average of 10 kg per ton of steel produced. The amount varies significantly from region to region with the differences related to the steel production process, the quality of raw materials used, such as iron ore grades and types of steel products produced.

Manganese ore is a key element in carbon steel production, while electrolytic manganese dioxide is an important ingredient in lithium-ion batteries for EVs and other applications, as well as alkaline and zinc-manganese batteries. Data by Research and Market and the Observatory of Economic Complexity placed South Africa as the world's largest producer and exporter of manganese ore in 2019, accounting for 30% of global production and almost 50% of global exports. In that year, South Africa exported approximately R3.297 billion in manganese ore (StatsSA, 2021). In 2021, South Africa's production of iron ore amounted to an estimated 61 million metric tons. South Africa is one of the world's largest producers of iron ore. As of 2021, South Africa was the ninth-largest iron ore producing country in the world R 9.409 billion (StatsSA, 2021).

Opportunities that exist within mining are as follows:

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

over 38 million tons of iron ore reserves

The markets for each product are as follows:

- Iron: According to Anglo American, out of all the metals that make modern life possible, steel is the most widely used – and iron ore is its main ingredient. Higher Iron ore grades are needed in improving Auto markets, Construction, and other demanding types of specialised infrastructure. This is a prime reason for the great demand from maturing economies such as

in China, Japan, and Europe, and now increasingly in the Middle East and India. Export sales to China accounted for 61% of the Company's total exports. Exports to the rest of Asia remained at around 19% of the total, while Europe is 12%. Iron ore is also used in medicine, cosmetics, engineering, construction, paint, and a whole range of other products we use in our daily lives. And technology is demanding increasingly sophisticated forms of steel.

- **Manganese:** Steel is not only made of iron but also made of manganese. Although the amount of manganese used to make a ton of steel is small, it is just as essential as iron to produce this fundamental building block of modern industrial societies. Put in simplest terms—one can't make steel without manganese. Domestic consumption of manganese is about 500,000 metric tons each year, predominantly by the steel industry. The United States is totally reliant on imports for this amount of manganese. Manganese is a common ferrous metal with atomic weight of 25 and the chemical symbol Mn. It constitutes roughly 0.1 percent of the Earth's crust, making it the 12th most abundant element. Its early uses were limited largely to pigments and oxidants in chemical processes and experiments, but the significance of manganese to human societies exploded with the development of modern steelmaking technology in the 1860s. Because manganese is essential and irreplaceable in steelmaking and its global mining industry is dominated by just a few nations, it is considered one of the most critical mineral commodities for the United States.

## 7.2 Environmental responsibility

It is expected that the mining activities will have negative environmental impacts, including, but not limited to the impacts that have been included in Section 13 of this report.

The impacts will be investigated in detail during the impact assessment phase of the project. Where possible, measures to mitigate the impacts of the project will be identified and will be finalised during the impact assessment phase of the project. The mitigation measures will include designs and management practices that will be embarked on, to prevent and/or minimise the identified impacts on the social, cultural, and environmental aspects. For each potential significant impact identified, mitigation measures will be specified. High level mitigation measures have been included in Section 13 of this report. These mitigation measures will be described in more detail in the EMPr that Manyeleti will be required to comply with throughout the mining period.

The EMPr to be compiled in the impact assessment phase will ensure that Manyeleti keeps track of the impacts of the project on the environment and where required, to take remedial action.

## 7.3 Socio-economic benefits

A Social and Labour Plan (SLP) has been developed for the proposed Manyeleti Mn and Fe Mining project. The SLP includes community development which will be implemented by Manyeleti as part of the social responsibility programme. Through the Human Resources Development Program, Manyeleti will ensure that communities and HDSA companies are offered an opportunity to develop educationally and economically.

Manyeleti proposes to undertake the following:

- **Employment:** Manyeleti intends to employ about 39 (28 males and 11 females) employees in total.
- **Recruitment:** Manyeleti's recruitment policies will guide labour recruitment, which promote the use of local labour by the mine and any appointed contractors. In consultation with local authorities and representatives, a local employment procedure and recruitment process will be developed. Manyeleti will ensure that a transparent hiring process is followed to limit the possibility of conflict. Manyeleti will use recruitment to achieve the goals outlined in this Social and Labour Plan. Positions in mining will be reserved and earmarked for both Historically

Disadvantaged Persons (HDPs) or Historically Disadvantaged People (HDP) (as per Mining Charter 2018) and women to ensure that the Mining Charter 2018 targets of women and HDSAs/HDPs at all management levels are met. The use of labour from outside the LDM and province will be considered only if the required skill set cannot be met.

- **Skills Development and Training:** Manyeleti Consulting will implement a Skills Development Plan that focuses on equipping employees with the skills to enhance their progression and development in the mining industry. A full and detailed Skills Development Plan (SDP) containing annual future targets, numbers, and programmes, will be compiled, and submitted to the DMR within six (6) months of receiving the Mining Right. The compilation of this plan is dependent on the completion of individual assessments with each employee in order to determine their current and aspired levels of education and skills training, as well as their socio-economic backgrounds. To ensure that the objectives of the SDP are achieved, Manyeleti will submit a workforce skills plan and an annual training report as per the MQA SETA requirements for the mine Project each year after granting of the mining right.
- **Illiteracy level and Adult Basic Education and Training (ABET) needs:** Manyeleti will formulate and implement a Skills Development Plan (SDP) which will focus on the transfer of skills to employees, to further their capacity in the mining industry, and equip them with alternative skills for after mine closure. The illiteracy levels and ABET needs will be determined once the SDP has been developed and populated.
- **Adult Educational and Training (AET) training:** AET will be offered to employees and the community as part of the Manyeleti Human Resource Development. AET for the community prioritised by Manyeleti will ensure that the employees and communities are offered the opportunity to become functionally literate and numerate. It is anticipated that AET training for Manyeleti's employees will amount to R9 600 every year for five years (totalling R48 000). The AET for the communities will also be R9 600 every year for five years (totalling R48 000).
- **Core business training:** The purpose of the core skills programme is to equip employees with the required skills and competencies to successfully implement their employment responsibilities. These Programmes are also designed to equip employees with the required capacity and skills to progress to higher levels of employment within Manyeleti. Manyeleti will make provision of R 145 000 over a five-year period for core business training.
- **Mentorship:** It is the strategic intent of the mine management to achieve full performance of all employees throughout the organization and a mentorship programme is regarded as a key instrument. The proposed mentorship model is to have internal mentorship which refers to "in-house" mentorship whereby lower-level employees are paired with higher-level employees for a transfer of skills to take place and external mentorship where coaching is offered to outside BEE companies who have an interest in being involved in mining.
- **Bursaries:** Manyeleti will assist its own employees with development opportunities but also members of the local community to access tertiary education (bursaries) and experiential work (internships). The company will sponsor two external persons who are interested in undertaking Environmental and Water Management Sciences studies. The bursaries to be awarded to external persons will R320 000 over a 5-year period. In addition, Manyeleti will provide R 250 000 over a 5-year period to two internal persons for any mining related field of study.
- **Internship plan:** Internships will be offered to students who have completed their academic studies at higher education institutions. This applies to both bursary holders as well as individuals who did not receive Manyeleti bursaries. The current targets include a total of 5 persons in Admin/ Finance/Other and 6 persons in Machine operators/ Welders/ grinders/ Diesel mechanics/ Logistics/ Traffic Controller. Of the 11 internship targets, 6 have been earmarked for females. An estimated budget of R 90 000.00 has been allocated to internships.

It is expected that the proposed mine will develop and implement a policy allowing for preferential procurement for the local businesses and training of local Small, Medium, and Micro-sized Enterprises (SMME) on procurement and business management.

The proposed mine is expected to have a positive socio-economic benefit through employment of locals. Recruitment of labour will be guided by Manyeleti's recruitment policies which are expected to promote the employment of local labour by the mine as well as by any appointed contractors. A local employment procedure and recruitment process will be developed in consultation with local authorities and their representatives. Manyeleti will ensure that a transparent process of employment will be followed to limit opportunities for conflict that may arise.

Manyeleti will use recruitment to meet the targets as set forth in the SLP. Positions will be reserved and earmarked for both HDSA's and women in mining to ensure that the targets of women in mining and HDSA in all management levels are met. Although specialist and skilled labour may be recruited outside the local boundaries due to the skills scarcity, local residents will benefit through on-the-job training, where possible.

## 7.4 Needs and Desirability as per Government Regulation Notice 792 of 2012

DEA (2017), Guideline on Need and Desirability, says that when evaluating project specific applications, the strategic context of such applications and the broader societal needs and the public interest should be considered. The contents of Municipal Integrated Development Plans (IDP), Strategic Development Frameworks (SDF), Environmental Management Frameworks (EMF) and other relevant plans frameworks and strategies must be considered. Whether a proposed activity will be in line with or deviate from the plan, framework, or strategy per se is not the issue, but rather the ecological, social, and economic impacts that will result because of the alignment or deviation". Where an application deviates from a plan, framework, or strategy the EIA must show why the deviation might be justifiable.

Considering the merits of a specific application in terms of the need and desirability consideration, it must be decided which alternative represents "the most practicable environmental option", which in terms of the definition in NEMA and the purpose of the EIA Regulations are "*that option that provides the most benefit and causes the least damage to the environment as a whole, at a cost acceptable to society, in the long-term as well as the short-term.*" This is the ultimate goal of the EIA process and has been fully addressed by the specialist studies that have been undertaken as well as the EIR and EMPr.

The DFFE 2017 Guideline on Need and Desirability says that during Scoping the questions presented in the guideline document should be used to identify issues to be addressed in the EIA process and alternatives that should be considered. In the EIR, the questions must again be considered, but for those questions for which the "scoping" found that no further information were required, it can simply be reported that the questions were dealt with during scoping, with the remaining questions having to be considered in terms of the additional information generated during the assessment stage. Table 7-1 presents the questions where responses emanate from additional information has been generated during the assessment stage.

**Table 7-1: Questions from DFFE 2017 Need and Desirability Guideline Document**

| Questions (DFFE, 2017) |                                                                                                | Response                                                                                                                                                                              |
|------------------------|------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>PART I: NEED</b>    |                                                                                                |                                                                                                                                                                                       |
| 1.                     | Is the land use associated with the activity being applied for considered within the timeframe | Yes. The location of the proposed project components is constrained to the location of the existing and confirmed mineral resource (Mn and Fe Ore). Two types of iron ore mineralized |

| Questions (DFFE, 2017) |                                                                                                                                                                         | Response                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                        | intended by the existing approved SDF agreed to be the relevant environmental authority?                                                                                | <p>deposits have been identified in the area, namely the laminated hematite ore, which forms part of the Manganore iron formation, and the conglomerate ore, which belongs to the Doornfontein Conglomerate Member at the base of the Gamagara Formation.</p> <p>The resources on the affected property have been estimated to be over 38 million tons of iron ore reserves. The proposed project will also contribute to the local, regional, and national economy as described in Section 7.3.</p> <p>In addition, the proposed project area and surroundings are currently being used for prospecting, mining, and agriculture. It is expected that due to the low rainfall and high temperatures and evapotranspiration, the agriculture potential of the area is low.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 2.                     | Should the development, or if applicable, expansion of the town/area concerned in terms of this land use occur here at this point in time?                              | Yes. The proposed project entails the mining of Mn and Fe in an area that is already impacted by historical prospecting activities. In addition, previous prospecting activities undertaken have estimated that the project site has potential to yield over 38 million tons of iron ore reserves                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 3.                     | Does the community/area need the activity and the associated land use concerned? This refers to the strategic as well as local level.                                   | <p>Yes. This project will enhance the local, regional, and national economy. The exporting of the ore has potential to earn foreign currency for South Africa. Data by Research and Market and the Observatory of Economic Complexity placed South Africa as the world's largest producer and exporter of manganese ore in 2019, accounting for 30% of global production and almost 50% of global exports. In that year, South Africa exported approximately R3.297 billion in manganese ore. In 2021, South Africa's production of iron ore amounted to an estimated 61 million metric tons. South Africa is one of the world's largest producers of iron ore. As of 2021, South Africa was the ninth-largest iron ore producing country in the world R 9.409 billion.</p> <p>In addition, the proposed project has direct benefits for the communities around the project area as described in Section 7.3.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 4.                     | Are the necessary services with adequate capacity currently available (at the time of application) or must additional capacity be created to cater for the development? | <p>All the required services with adequate capacity are currently available. The project will require the following services:</p> <ul style="list-style-type: none"> <li>• Roads: The proposed mining area already has existing roads through which it can be accessed. A secondary gravel road connecting from the R385 Road is currently being used to access the mining area. Other gravel roads in the area are also being used. The R385 Road will be used to transport the final iron ore product to Postmasburg Iron Ore Export Railway Siding, from which it will be railed or hauled to Saldanha Harbour.</li> <li>• Rail: Once the mining right has been approved, the applicant will apply for a railway slot on Lohattha Railway Sliding. The loading station is approximately 26km away from the proposed mining property.</li> <li>• Electricity: The mining project will make use of generators to supply power to the mine and plant areas. The upgrade of plants will make use of Eskom power, which will be applied for.</li> <li>• Water: It is anticipated that 20 tons of water will be used for dust suppression and other non-production purposes. This water will either be obtained from the Tsantsabane Local Municipality or underground. The Department of Water and Sanitation will be contacted to seek their recommendation on the use of water.</li> </ul> |
| 5.                     | Is this development provided for in the infrastructure planning of the municipality, and if not what will the implication be on the                                     | This specific development is not included in the IDP of the municipality, however, according to the Tsantsabane Local Municipality Integrated Development Plan (IDP) identified mining as the major contributor to the municipality's GDP. The                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

| Questions (DFFE, 2017)       |                                                                                                                                                                                                                                        | Response                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                              | infrastructure planning of the municipality (priority and placement of the services and opportunity cost)?                                                                                                                             | proposed project is therefore expected to contribute to the GDP of the LM.<br>The proposed project will not require the LM to make any changes to the placement of services and will therefore not have any implication on infrastructure planning.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 6.                           | Is the project part of a national programme to address an issue of national concern or importance?                                                                                                                                     | Yes, the mining sector has been identified as one of the most significant sectors to drive job creation. Mining is considered to be one of the most significant sectors of the South African economy, providing jobs, contributing 8.6% to gross domestic product (GDP) and building relations with international trading partners. It is critical that South Africa's mineral resources be directed to benefit key social and economic objectives for sustained growth and meaningful transformation.<br>There are three mining related Strategic Infrastructure Plans (SIPs) as follows: <ul style="list-style-type: none"> <li>• SIP 1: Unlocking the northern mineral belt with Waterberg as a catalyst</li> <li>• SIP 3: South-eastern node &amp; corridor development; and</li> <li>• SIP 5: Saldanha-Northern Cape development corridor</li> </ul> Although not specifically part of the SIPs, the proposed project will contribute to the expansion of iron ore mining production and beneficiation, which forms part of SIP 5 (Saldanha-Northern Cape development corridor (SIP 5)). |
| <b>PART II: DESIRABILITY</b> |                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 7.                           | Is the development the best practicable environmental option for this land/site?                                                                                                                                                       | Yes. The proposed project entails the mining of Mn and Fe Ore. The area where the mining project is proposed is already affected by historical prospecting activities.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 8.                           | Would the approval of this application compromise the integrity of the existing approved and credible IDP, and SDF as agreed to by the relevant authorities?                                                                           | No. The proposed project entails the mining of Mn and Fe Ore. The Tsantsabane Local Municipality Integrated Development Plan (IDP) identified mining as the major contributor to the municipality's GDP.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 9.                           | Would the approval of this application compromise the integrity of the existing environmental management priorities for the area (e.g., as defined in EMFs), and if so, can it be justified in terms of sustainability considerations? | No. There is currently no EMF available for the project area, however, it is expected that the project will not compromise the integrity of any environmental management priorities for the area. The proposed project will result in negative environmental impacts that have been highlighted in Section 13. The impact assessment will be finalised during the impact assessment phase, in consultation with the relevant specialists. Mitigation measures will be identified, which Manyeleti will be required to implement to avoid and/or minimise the impacts.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 10.                          | Do location factors favour this land use at this place? (This relates to the contextualization of the proposed land use on this site within its broader context).                                                                      | Yes. The proposed project entails the mining of Mn and Fe Ore. The area where the mining project is proposed is already affected by historical prospecting activities.<br>In addition, the majority of the required services are already available, including access roads, which will minimise the potential impacts associated with the project.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 11.                          | How will the activity of the land use be associated with the activity being applied for, impact on sensitive natural and cultural areas (built and rural/natural environment)?                                                         | A biodiversity specialist study will be undertaken as part of the impact assessment phase. It is expected that the proposed project will result in clearance of vegetation, which will result in localised loss in vegetation, particularly around the proposed pit area. The biodiversity assessment will include a biodiversity management plan that will be incorporated into the project EMPr.<br>A Phase 1 heritage impact assessment will also be undertaken to identify any heritage and cultural areas that may be located on the project site. The study will also include mitigation measures that Manyeleti will be required to implement to minimize any potential impacts on any identified heritage and                                                                                                                                                                                                                                                                                                                                                                         |

| Questions (DFFE, 2017) |                                                                                                                                                  | Response                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                        |                                                                                                                                                  | <p>cultural resources of importance. In addition, Manyeleti will be on the lookout for grave around the site and should any graves be found; the chance find protocol that the heritage specialist will compile will be implemented.</p> <p>According to the NFEPA, there is an unchannelled valley bottom wetland and a depression wetland associated with the property area. This will be verified through a wetlands delineation specialist study that will be undertaken during the impact assessment phase of the process. Should any wetlands be delineated on the property, the wetlands specialist will be required to identify mitigation measure that Manyeleti will be required to implement to avoid and/or minimise wetlands impacts.</p> <p>In addition, the proposed project has potential to impact on water resources (surface and groundwater) as provided in Section 13. Groundwater and surface water specialist studies will also be undertaken as part of the impact assessment phase. The specialists will identify mitigation measures to be implemented to avoid and/or minimise impacts from the project.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 12.                    | How will the development impact on people's health and well-being? (E.g., In terms of noise, odours, visual character and sense of place, etc.)? | <p>Full details on the socio-economic conditions will be made available during the EIA phase after the specialist studies have been conducted and consultation with the community, stakeholders and other I&amp;APs has been concluded.</p> <p>The proposed project will provide employment opportunities, skills development, social development programmes, community upliftment and economic injection to the local area. Furthermore, negative impacts including visual, traffic, service delivery, land use changes and security and safety will be assessed and discussed during the EIA phase. Preliminary socio-economic impacts that may occur include:</p> <ul style="list-style-type: none"> <li>• Nuisance noise due to mining activities and drilling;</li> <li>• Nuisance air emissions from mining activities and movement of vehicles which will result in nuisance dust generation;</li> <li>• Safety concerns as a result of movement of additional traffic on the roads, transporting ore and material to and from the mine;</li> <li>• Influx of jobseekers to site, which may result in an increase in opportunistic crime;</li> <li>• Uncontrolled access to private property outside of the demarcated boundaries; and</li> <li>• Visual impact as a result of the vegetation clearance.</li> </ul> <p>Management and mitigation measures must be implemented to prevent environmental pollution which may impact on environmental resources utilised by communities, landowners, and other stakeholders. Measures to manage the potential impacts on communities, individuals or competing land uses in close proximity have been included in Section 13. These issues will be assessed and discussed in detail during the impact assessment phase.</p> |
| 13.                    | Will the proposed activity or the land use associated with the activity being applied for, result in unacceptable opportunity costs?             | <p>No. The location of the proposed project components is constrained to the location of the existing and confirmed mineral resource (Mn and Fe Ore). Two types of iron ore mineralized deposits have been identified in the area, namely the laminated hematite ore, which forms part of the Mangano ore formation, and the conglomerate ore, which belongs to the Doornfontein Conglomerate Member at the base of the Gamagara Formation.</p> <p>The resources on the affected property have been estimated to be over 38 million tons of iron ore reserves. The proposed project will also contribute to the local, regional, and national economy as described in Section 7.3.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

| Questions (DFFE, 2017) |                                                                       | Response                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|------------------------|-----------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                        |                                                                       | In addition, the proposed project area and surroundings are currently being used for prospecting, mining, and agriculture. It is expected that due to the low rainfall and high temperatures and evapotranspiration, the agriculture potential of the area is low. A soils and land capability and agriculture potential specialist assessment will be undertaken during the impact assessment phase to ascertain if the project will not results in an opportunity cost.                                        |
| 14.                    | Will the proposed land use result in unacceptable cumulative impacts? | No. It is expected that the project may result in low cumulative impacts on the environment. A cumulative impact assessment will be undertaken as part of the impact assessment phase of the process and mitigation measures will be identified by the specialists and EAP team. A site specific EMPr will be compiled for the project. It is expected that implementation of the mitigation measures included in the EMPr will reduce the significance of the impact during all phases of the proposed project. |

## 7.5 No-go option

The no-go alternative would entail not mining the Mn and Fe ore. By not implementing this project the local economic and employment opportunities and revenue as well as the mined Mn and Fe Ore which could potentially have benefitted the economy would be lost.

The socio-economic impacts of no implementing the project include local, regional, and more than likely national impacts:

- Local and regional: planned socio-economic initiatives within the surrounding communities (refer Section 7.3 above) would not be able to go ahead; and
- National: Loss opportunities in foreign exchange for South Africa will be incurred as the potential to sell the Mn and Fe Ore internationally will be lost.

Although not fully assessed at this time, the additional potential negative impacts on the environment associated with Mn and Fe Ore mining would not exist should the project not be implemented. The environmental, social, and economic impacts will be assessed in detail during the impact assessment phase to identify and address all negative impacts, where possible.

## **8 Period for which the Environmental Authorisation is required**

The life of mine has been estimated at 12 years, however, the required duration for the Mining Right is 15 years so as to cater for any delays or market changes that may hamper production resulting in reductions of the mining rate.

## 9 Details of all Alternatives Considered

The identification and investigation of alternatives is a key aspect during the S&EIA process. All reasonable and feasible alternatives must be identified and assessed during the scoping phase to determine the most suitable alternatives to consider and assess during the impact assessment phase. There are however some significant constraints that have to be taken into account when identifying alternatives for a project of this scope. Such constraints include social, financial, and environmental issues, which will be discussed in the evaluation of the alternatives. The preferred option is to be highlighted and presented to the authorities.

Alternatives can typically be identified according to:

- Location alternatives;
- Process alternatives;
- Technological alternatives; and
- Activity alternatives (including the No-go option).

For any alternative to be considered feasible, such an alternative must meet the need and purpose of the development proposal without presenting significantly high associated impacts. The alternatives are described, and the advantages and disadvantages are presented. It is further indicated which alternatives are considered feasible from a technical as well as environmental perspective.

Incremental alternatives typically arise during the impact assessment process and are usually included as a means of addressing identified impacts. These alternatives are closely linked to the identification of mitigation measures and are not specifically identified as distinct alternatives. This section provides information on the development footprint alternatives, the properties considered, as well as the type of activity, activity layout, technological and operational aspects of the activity.

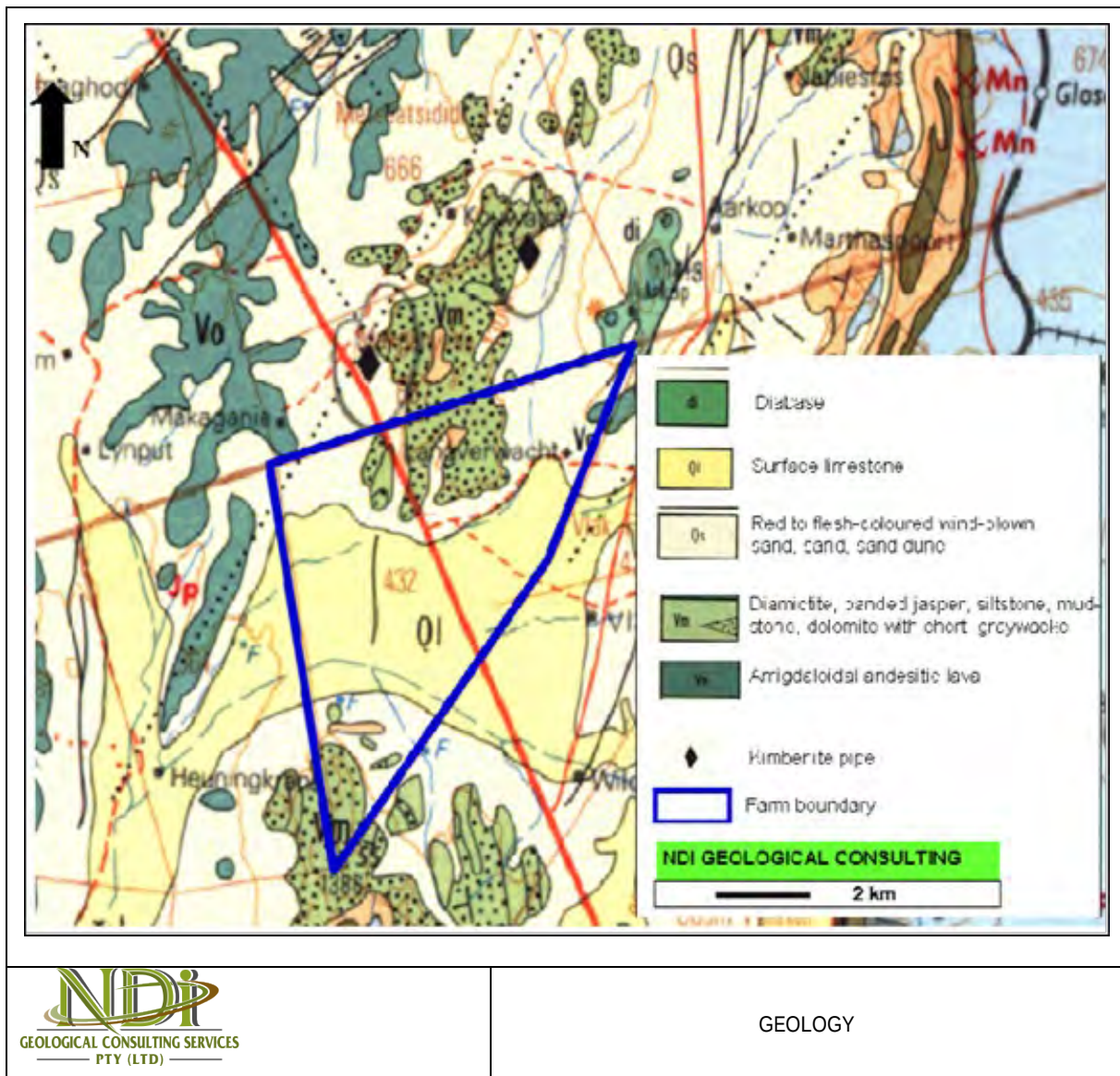
### 9.1 The property on which or location where it is proposed to undertake the activity

The location of the proposed project components is constrained to the location of the existing and confirmed mineral resource (Mn and Fe Ore). Two types of iron ore mineralized deposits have been identified in the area, namely the laminated hematite ore, which forms part of the Manganore iron formation, and the conglomerate ore, which belongs to the Doornfontein Conglomerate Member at the base of the Gamagara Formation.

The older laminated ore types occur in the upper portion of the Manganore Iron Formation as enriched high-grade hematite bodies. The boundaries of these ore bodies crosscut primary sedimentary bedding, indicating that secondary hematisation of the iron formation took place. In all of these formations, some of the stratigraphic and sedimentological features of the original iron formation are preserved.

The iron-rich conglomeratic ore is found in the Doornfontein Conglomerate Member of the Gamagara Formation (Carney and Mienie, 2002). The conglomeratic ore is dominated by large poorly sorted hematite and BIF clasts in a hematite and specularite matrix.

A thin band of high-grade massive hematite has been noticed in the boreholes and is mostly found just above the dolomites. This is interpreted to be part of the Manganore Fm and not currently considered an economic target.



**Figure 9-1: Geology of the proposed mining area**

The resources on the property in application have been estimated to be over 38 million tons of iron ore reserves (Table 9-1).

**Table 9-1: Reserves of the Mining Right Area**

|              | Resources to Reserves |                   |                   |                   |                   |                  |                   |                   | Reserves     |                   |
|--------------|-----------------------|-------------------|-------------------|-------------------|-------------------|------------------|-------------------|-------------------|--------------|-------------------|
|              | Block Model           | Pit Shell Cut-off | Var (BM - PS)     | FE > 40%          | Var (PS - FE)     | (-) Geo Losses   | (+) Contamination | (-) Mining Losses |              |                   |
| Upper Ore    | 6 209 636             | 8 221 103         | -2 011 467        | 7 942 007         | 279 096           | 423 986          | 241 672           | 165 948           | Upper Ore    | 7 615 829         |
| Main Ore     | 24 976 720            | 12 371 318        | 12 605 403        | 11 530 171        | 841 147           | 627 090          | 357 441           | 245 443           | Main Ore     | 11 056 627        |
| Lower Ore    | 11 170 914            | 10 788 090        | 382 824           | 10 171 339        | 616 751           | 546 474          | 311 490           | 213 890           | Lower Ore    | 9 753 602         |
| Manganaore   | 25 379 535            | 24 795 856        | 583 680           | 10 435 604        | 14 360 252        | 1 645 915        | 938 171           | 644 211           | Manganaore   | 10 007 014        |
| <b>Total</b> | <b>67 736 806</b>     | <b>56 176 366</b> | <b>11 560 440</b> | <b>40 079 121</b> | <b>16 097 245</b> | <b>3 243 464</b> | <b>1 848 775</b>  | <b>1 269 492</b>  | <b>Total</b> | <b>38 433 072</b> |

As such, no property alternatives were considered for the location of the mining area.

## 9.2 Type of Activity

An alternative to the type of activity would be leaving the project area as is (no go option). The current landuses associated with the project area are mining related (prospecting) and agriculture.

The Tsantsabane Local Municipality Integrated Development Plan (IDP) identified mining as the major contributor to the municipality's GDP. The land use alternatives will be investigated in more detail in the impact assessment phase of the process. In addition, a socio-economic impact assessment of the proposed Manyeleti project will be included in the impact assessment phase and the land use alternatives will also be investigated in more detail in the impact assessment phase once specialist investigations have been completed.

### **9.3 Design or Layout of the Activity**

The design or layout of a mining project is determined by the shape, position, and orientation of the mineral resource. Due to the proximity and the nature of the orebodies, mining will be conducted by conventional opencast mining method. Each mining area will be treated as a separate pit. Mining will be done on three ore bodies at most of the time. Access to the opencast mining areas will be provided by a number of haul roads to the crushing, screening, and magnetic separation plants for the minerals.

It is expected that mining and rehabilitation will be undertaken sequentially to keep disturbed areas to a minimum. The scoping assessment that has been conducted for the project shows that there are no fatal flaws associated with the project location. However, should sensitive environments such as heritage resources, Species of Conservation Concern (SCC) etc be affected by the project layout, the site layout plan will be revised.

The significance of the impacts will be investigated in depth during the impact assessment phase of the project.

### **9.4 The Technology to be used in the Activity**

The technology used in a mining project is determined by the shape, position, and orientation of the mineral resource. The mining process will include drilling, blasting, loading, hauling and quality control. The RC drill machine will be utilized to drill holes for prospecting resources as well as blasting. Drilling depth of the hole will be determined by the thickness of the overburden and orebody.

After drilling, explosives provided by service providers are placed down the holes using trucks designed for such purposes. The quantities of explosives are determined by the purposes of the blasting and the nature of the materials to be blasted.

### **9.5 The Operational Aspects of the Activity**

The design, establishment, and operation of the mine will be in such a way that there will be no need for a lot of establishment capital as well as ensure that production is reached as soon as possible. No operation alternatives have been considered for the proposed project.

The proposed mining area already has existing roads through which it can be accessed. A secondary gravel road connecting from the R385 Road is currently being used to access the mining area. Other gravel roads in the area are also being used. The R385 Road will be used to transport the final iron ore product to Postmasburg Iron Ore Export Railway Siding, from which it will be railed or hauled to Saldanha Harbour.

### **9.6 The Option of Not Implementing the activity**

The assessment of alternatives must at all times include the "no-go" option as a baseline against which all other alternatives must be measured. The "no go" alternative is therefore assessed together with the preferred alternative.

By not implementing this project the local economic and employment opportunities and revenue as well as the mined iron and manganese ore which could potentially have benefitted the economy would be lost. The Tsantsabane Local Municipality IDP identified mining as the major contributor to the municipality's GDP. The socio-economic impacts of not implementing the project include local, regional, and more than likely national impacts:

- Local and regional: planned socio-economic initiatives within the surrounding communities (refer Section 7.3 above) would not be able to go ahead; and
- National: Loss opportunities in foreign exchange for South Africa will be incurred as the potential to sell the iron and manganese ore internationally will be lost.

The project site has been selected based on the results from prospecting, which showed that the proposed mining area has adequate Mn and Fe Ore to justify a mining project. The layout and technology of the has been determined by the shape, position, and orientation of the mineral resource. In summary therefore:

- The preferred and only location of the Mn and Fe mining activity is on the project area shown in Figure 5-7.
- The preferred and only activity is the mining of Mn and Fe Ore for domestic sales and export.
- The preferred and only technology is the use of the mining process will include drilling, blasting, loading, hauling and quality control.
- The Site Plan or layout of the pit and required infrastructure within the project site is shown in Figure 5-7.
- Existing access road will be used for the mining project.

There are therefore no other reasonable or feasible sites, layouts, activities, or technologies for further consideration in the impact assessment component, other than the mandatory “no-go” alternative that must be assessed for comparison purposes as the environmental baseline. The environmental, social, and economic impacts will be assessed in detail during the impact assessment phase to identify and address all negative impacts, where possible.

## 10 Public Participation Process

Stakeholder engagement is a key element of the environmental decision-making process, and stakeholder engagement forms part of the scoping phase as well as the impact assessment phase. The process is primarily aimed at affording I&AP's the opportunity to gain an understanding of the proposed project. In addition, the purpose of consultation with the landowners, key stakeholders, and I&AP's is to provide them with the necessary information about the proposed project so that they can make informed decisions as to whether the project will affect them and provide the EIA team with local knowledge of the area and raise concerns relating to the biophysical, socio-economic, and cultural impacts that may arise.

The stakeholder engagement process will be conducted in terms of NEMA, which provides clear guidelines for stakeholder engagement during an EIA as summarised in Table 10-1.

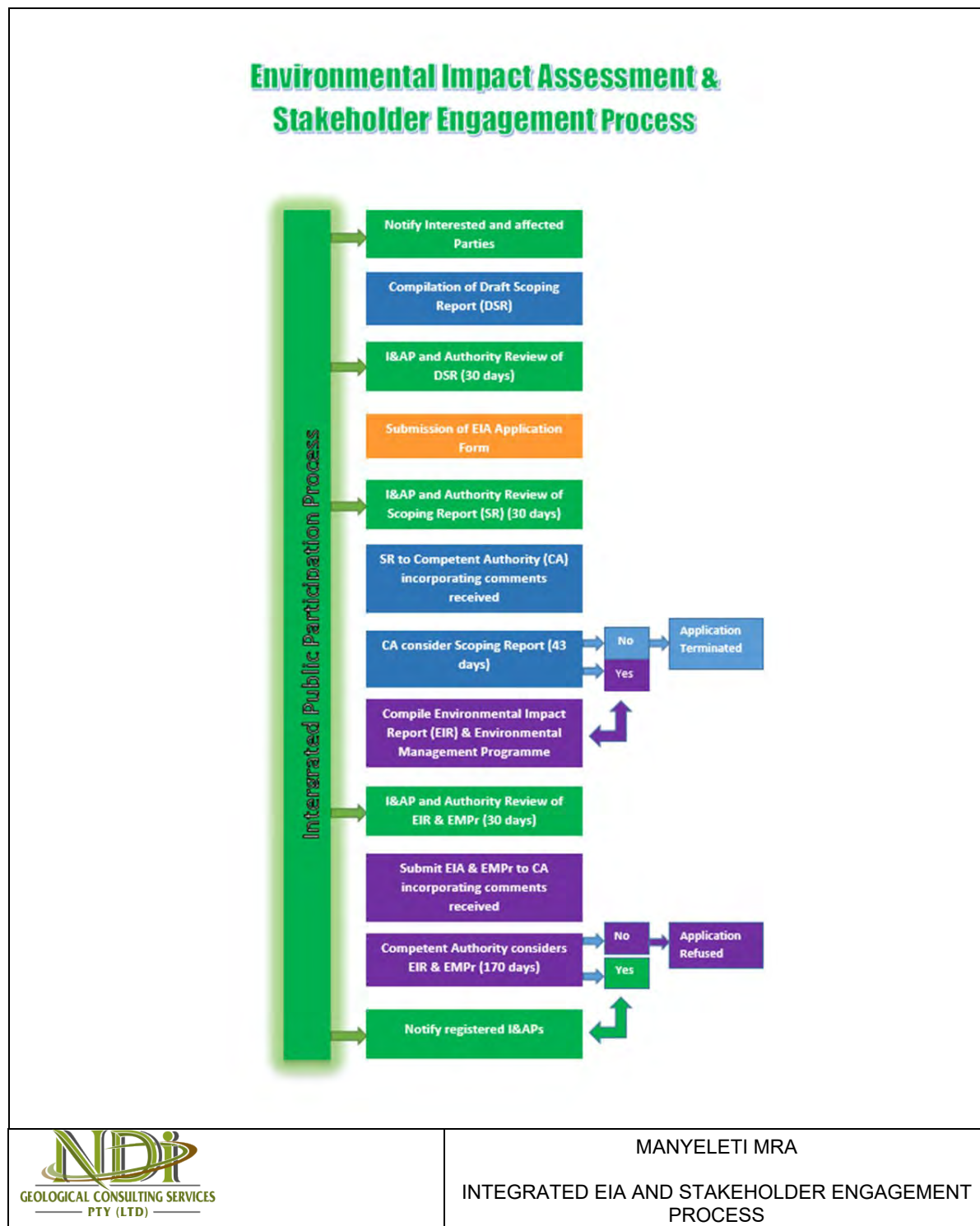
**Table 10-1: NEMA Stakeholder Guidelines**

| <b>NEMA Section</b>            | <b>Applicability to Stakeholder Engagement</b>                                                                                                                                                                                                            |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Chapter 1</b>               | Outlines the principles of environmental management, several pertaining to public consultation (e.g. Chapter 1, subsections (2), (3), (4) (f), (g), (h), (k), (q) and (r).                                                                                |
| <b>Chapter 6,</b>              | Regulations 39 – 44 of the amended EIA Regulations (GNR) 326, promulgated on 8 December 2014, specify the minimum requirements for stakeholder engagement in an EIA process conducted under the NEMA.                                                     |
| <b>Section 24J of the NEMA</b> | In 2017, the Minister of Environmental Affairs published, Section 24J of the NEMA in terms of, Public Participation Guidelines which guide the Public Participation Process in order to give effect to Section (2)(4)(f), (o) and 24 (1A)(C) of the NEMA. |

The application process will commence with a scoping phase which will inform the impact assessment phase. This scoping phase will provide Interested and Affected Parties (I&AP's) an opportunity to provide the EAP with issues and concerns with respect to the proposed project in order to inform the technical studies so that they can evaluate these concerns during the EIA phase of the project.

The draft Scoping and EIA Reports will be made available for public review prior to submission to the DMR for authorisation. All the comments received will be captured and addressed where feasible in the Scoping and EIA Reports.

Figure 10-1 provides a diagram of an Integrated Stakeholder Engagement Process for the proposed project.



**Figure 10-1: Integrated EIA and Stakeholder Engagement Process**

All the above-mentioned guidelines have been incorporated into this stakeholder engagement process. Identified commenting authorities on this application include:

- DWS – Regional Office;
- Tsantsabane Local Municipality;
- ZF Mgcawu District Municipality;
- Department of Agriculture, Forestry and Fisheries (DAFF);
- Department of Transport (DOT);

- South Africa Heritage Resources Authority (SAHRA): Northern Cape Province through the South Africa Heritage Resources Information Systems (SAHRIS); and
- Northern Cape Department of Environment and Nature Conservation (DENC).

## 10.1 Details of the Public Participation Process Followed

### 10.1.1 Stakeholder Identification Interested and Affected Parties

The I&APs were identified using a Geographic Information System (GIS) and cadastral information to identify affected and adjacent properties. The affected and adjacent property owners were identified using the surveyor general website, [www.deedsweb.gov.za](http://www.deedsweb.gov.za). In addition, registered I&AP's were also sourced from responses to the advertisements, site notices and written notification to I&AP's associated with the project.

The I&AP's register will be maintained for the duration of the study where the details of stakeholders are captured and automatically updated upon communication to the EAP. The identification, registration, and comments from I&AP's will be an on-going activity.

The details of affected property are provided in Table 10-2.

**Table 10-2: List of Affected Properties**

| Farm             | Portions  | 21 Digit Survey General Code |
|------------------|-----------|------------------------------|
| Langverwacht 432 | Remainder | C04100000000056000000        |
|                  | Portion 2 | C03100000000043200000        |

Table 10-3 provides a list of the adjacent farms and farm portions.

**Table 10-3: List of Adjacent Farms and Farm Portions**

| Farm             | Portions  | 21 Digit Survey General Code |
|------------------|-----------|------------------------------|
| Farm 364         | Remainder | C03100000000036400000        |
| Langverwacht 432 | Portion 1 | C03100000000043200001        |
| Magoroling 668   | Remainder | C04100000000066800000        |
| Makganyene 667   | Remainder | C04100000000066700000        |
| Makganyene 667   | Portion 2 | C04100000000066700002        |
| Makganyene 667   | Portion 3 | C04100000000066700003        |
| Makganyene 667   | Portion 1 | C04100000000066700001        |
| Makganyene 667   | Remainder | C04100000000066700000        |
| Mapedi 653       | Remainder | C04100000000065300000        |
| Vlakfontein 433  | Remainder | C03100000000043300000        |
| Vlakfontein 433  | Portion 3 | C03100000000043300003        |
| Vlakfontein 433  | Portion 1 | C03100000000043300001        |

| <b>Farm</b>     | <b>Portions</b> | <b>21 Digit Survey General Code</b> |
|-----------------|-----------------|-------------------------------------|
| Vlakfontein 433 | Portion 2       | C03100000000043300002               |

A map of the affected and adjacent farm properties is provided in Figure 10-2.

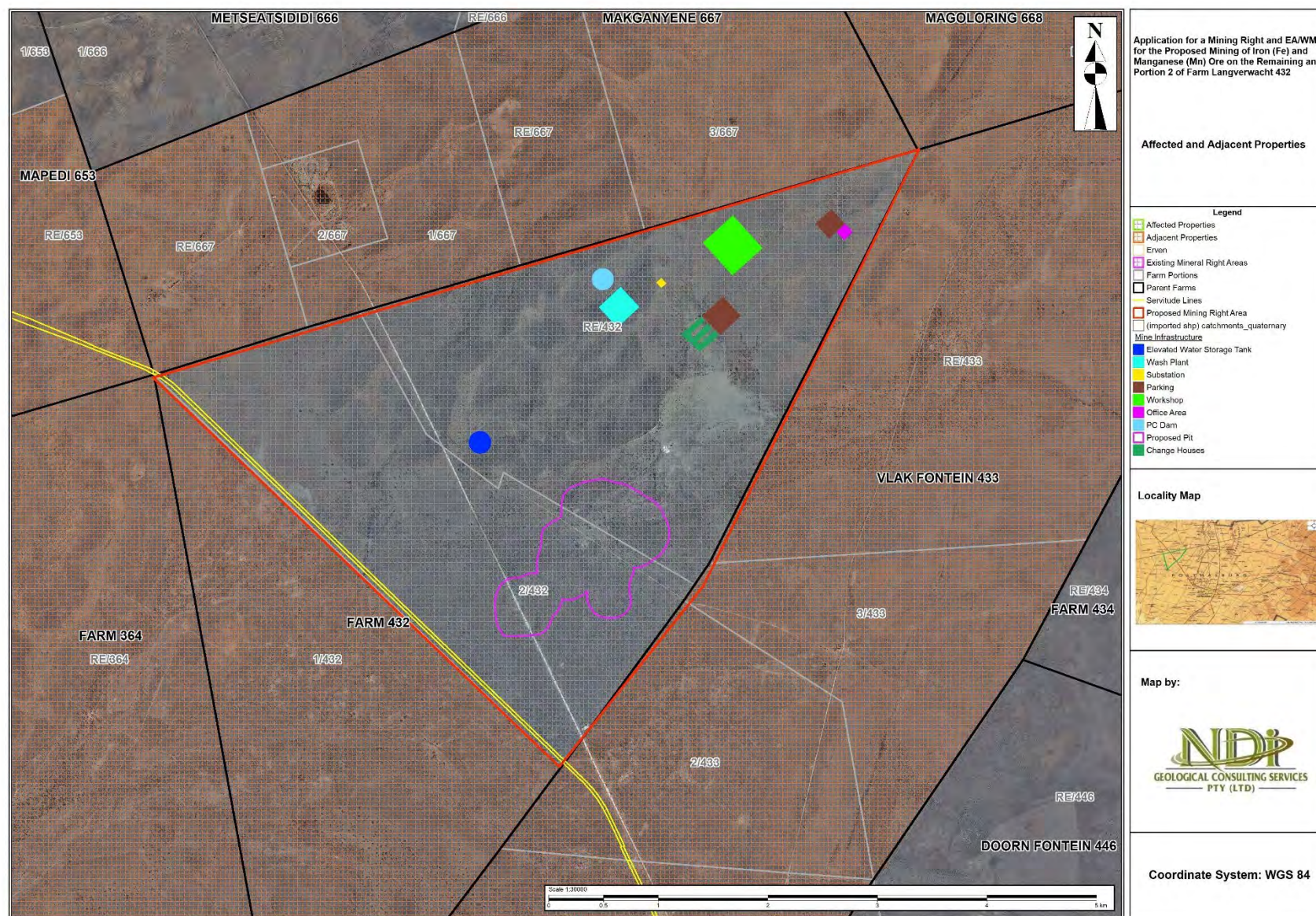


Figure 10-2: Affected and Adjacent Properties

### **10.1.2 Notification and Registration of the I&APs**

Ndi Geological made use of various methods to inform stakeholders of Manyeleti's intention to undertake the required EA/WML process. Stakeholders were provided with the opportunity to participate and register as I&AP's during the announcement phase of the project.

#### **Distribution of Notification Letters**

Notification letters were sent to identified I&AP's, informing them of the proposed project.

#### **Site Notice Placements**

Sites notice boards (Size A2: 600 mm X 420 mm) notifying stakeholders and I&AP's of the proposed activity were placed at conspicuous places in the project area. These areas of placement were determined according to the quantity of potential I&AP's that may pass by.

#### **Newspaper Advertisements**

Newspaper advertisements (English and vernacular) notifying stakeholders about the proposed project and the opportunity to participate in the EIA process were placed in the newspapers.

### **10.1.3 Notification of the Availability of the Draft Scoping Report**

The availability of the Draft Scoping Report (DSR) was announced by means of SMS, letters, and emails to registered I&APs. The DSR, announcement letters and comment forms were made available for public viewing and comment in the same public places as for the project announcement phase.

### **10.1.4 Stakeholder commenting period**

The Scoping Report will be made available for a 30-day commenting period between 28 April 2023 and 29 May 2023. The Scoping Report will also be made available to the competent and commenting authorities during the 30-day stakeholder review and commenting period. Stakeholders are encouraged to submit their written comments to the EIA team through the contact details provided. Stakeholders could also fill in comment forms at one of the public places and/or contact the EAP via telephone, email, or fax to submit comments and to discuss any issues of concern.

All comments received thus far have been incorporated into the Scoping Report. All comments raised by stakeholders will be recorded and will be included in the Final Scoping Report. The comments will also be collated into the Comments and Responses Register (CRR) which will form an Appendix to the final Scoping Report.

### **10.1.5 Public Meeting**

Where required, a public meeting may be held during the scoping phase of the project. The stakeholders will have the opportunity to comment on and discuss the report and plan of study and raise issues that may need to be included in the impact assessment phase.

All comments received will be incorporated into the final Scoping Report.

### **10.1.6 Comment and Response Report**

A summary of comments received will be included in the CRR, which will form an Appendix to the Final Scoping Report to be submitted to the DMR however comments received to date from pre-application consultations are included in Section 10.1.7.

### **10.1.7 Summary of Issues Raised by I&APs**

There are no comments that have been received from the stakeholders during the project notification process.

**Table 10-4: Summary of the Issues Raised by the I&APs**

| Interested and Affected Parties                                                                                                  |  | Date<br>Comments<br>Received | Issues raised | EAPs response to issues as mandated by the<br>applicant | Consultation<br>Status<br>(Consensus<br>dispute, not<br>finalised, etc) |
|----------------------------------------------------------------------------------------------------------------------------------|--|------------------------------|---------------|---------------------------------------------------------|-------------------------------------------------------------------------|
| List the names of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted. |  |                              |               |                                                         |                                                                         |
| <u>AFFECTED PARTIES</u>                                                                                                          |  |                              |               |                                                         |                                                                         |
| Landowner/s                                                                                                                      |  |                              |               |                                                         |                                                                         |
|                                                                                                                                  |  |                              |               |                                                         |                                                                         |
| Lawful occupier/s of the land                                                                                                    |  |                              |               |                                                         |                                                                         |
| Landowners or lawful occupiers on adjacent properties                                                                            |  |                              |               |                                                         |                                                                         |
|                                                                                                                                  |  |                              |               |                                                         |                                                                         |
| Municipal councillor                                                                                                             |  |                              |               |                                                         |                                                                         |
| Municipality                                                                                                                     |  |                              |               |                                                         |                                                                         |
| Organs of state (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWA)                       |  |                              |               |                                                         |                                                                         |
|                                                                                                                                  |  |                              |               |                                                         |                                                                         |
|                                                                                                                                  |  |                              |               |                                                         |                                                                         |
| Communities                                                                                                                      |  |                              |               |                                                         |                                                                         |
|                                                                                                                                  |  |                              |               |                                                         |                                                                         |
| Dept. Land Affairs                                                                                                               |  |                              |               |                                                         |                                                                         |
|                                                                                                                                  |  |                              |               |                                                         |                                                                         |
| Traditional Leaders                                                                                                              |  |                              |               |                                                         |                                                                         |
| Dept. Environmental Affairs                                                                                                      |  |                              |               |                                                         |                                                                         |
| Other Competent Authorities affected                                                                                             |  |                              |               |                                                         |                                                                         |

**No comments received to date**

| Interested and Affected Parties                                                                                                              |          | Date<br>Comments<br>Received | Issues raised | EAPs response to issues as mandated by the<br>applicant | Consultation<br>Status<br>(Consensus<br>dispute, not<br>finalised, etc) |
|----------------------------------------------------------------------------------------------------------------------------------------------|----------|------------------------------|---------------|---------------------------------------------------------|-------------------------------------------------------------------------|
| List the names of persons<br>consulted in this column, and<br>Mark with an X where those who<br>must be consulted were in fact<br>consulted. |          |                              |               |                                                         |                                                                         |
| OTHER<br>PARTIES                                                                                                                             | AFFECTED |                              |               |                                                         |                                                                         |
|                                                                                                                                              |          |                              |               |                                                         |                                                                         |
| INTERESTED PARTIES                                                                                                                           |          |                              |               |                                                         |                                                                         |
|                                                                                                                                              |          |                              |               |                                                         |                                                                         |

## 10.2 Public Participation process going forward

The Public Participation Process will be ongoing throughout all the project phases. The stakeholder engagement proposed for the Impact Assessment Phase is presented below.

### 10.2.1 Stakeholder engagement during impact Assessment phase

Stakeholders will be informed once the competent authority (DMR) has accepted the Scoping Report and granted permission for the commencement of the impact assessment phase of the process.

Stakeholder engagement during the Impact Assessment will focus on providing information and opportunity for public comment on the findings and recommendations of the impact assessment and management programme/plan. The draft findings will be presented in the Draft EIA / EMPr Report to be reviewed and commented on by the public.

The availability of the Draft EIA and EMPr Report for public comment will be announced in the same newspaper as for project announcement.

Registered I&AP's will be informed through SMSes, and letters distributed by email in advance of the report being made available. Stakeholders will be invited to a public meeting where the contents of the Draft EIA/EMPr Report will be presented, and stakeholders will have the opportunity to comment. Stakeholders will be invited to comment on the Draft EIA/EMPr Report in any of the following ways:

- By raising comments during meetings where the content of the Draft EIA/EMPr Report will be presented;
- By completing comments forms available with the report at public places, and by submitting additional written comments, by email or fax, or by telephone, to EAP; and
- The draft EIA/EMPr Report will be available for comment for a period of 30 days at public places in the project area as per the announcement and scoping phase and placed on the Ndi Geological website.

Depending on the responses received during the registration period and scoping phase, and where requested by the stakeholders, a public meeting may be held during the impact assessment phase of the project.

The comments and issues raised by I&AP's during the commenting period will be consolidated into the Final EIA/EMPr Report with the relevant response issued by the EAP. The Final EIA/EMPr Report will then be submitted to the DMR for decision making. The comments will also be collated into the CRR that will form an Appendix to the Final EIA/EMPr Report.

### 10.2.2 Notification of authority decision

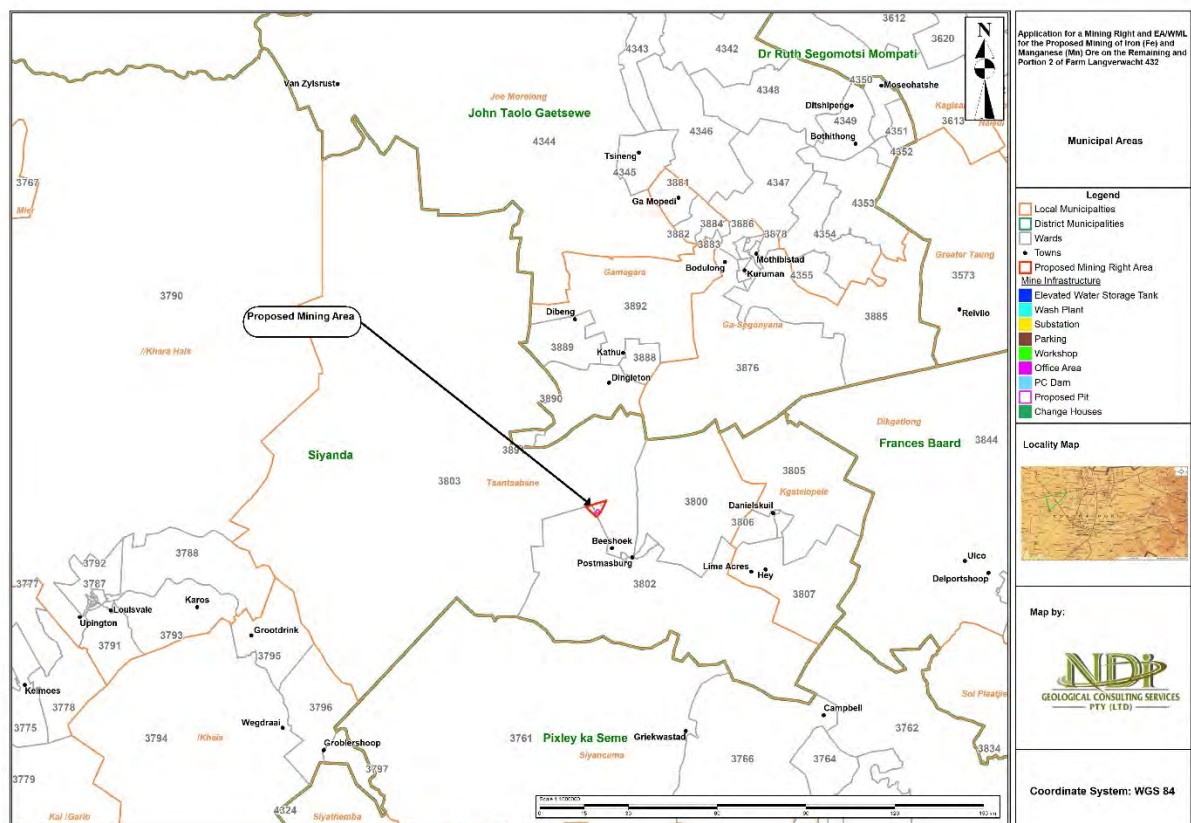
Registered stakeholders will be advised in writing (mail, email, fax, and SMS) of the authority decision on the EIA /EMPr Report, and details on the procedure to appeal the decision. Notification to registered stakeholders will summarise the authorities' decision and provide information according to legal requirements on how to lodge an appeal should they so wish.

# 11 Baseline Characterisation

This section provides a general overview of the status quo of the environmental and social context within which the proposed project is located. All of the proposed activities will take place within the affected properties. While most of the descriptions below are focused on the site itself, where necessary the regional context of the environmental features is also explained. More detail on certain aspects of this environment will be included in the impact assessment phase once the specialist investigations have been completed and inputs from I&APs have been considered during the public participation process. For each environmental aspect discussed below, proposed environmental issues/impacts have been highlighted qualitatively where applicable. The impact assessment phase will explore these issues on a quantitative level.

## 11.1 Regional Setting

The proposed mining project will be located within the Tsantsabane Local Municipality which is situated in the ZF Mgcawu District Municipality of the Northern Cape Province.



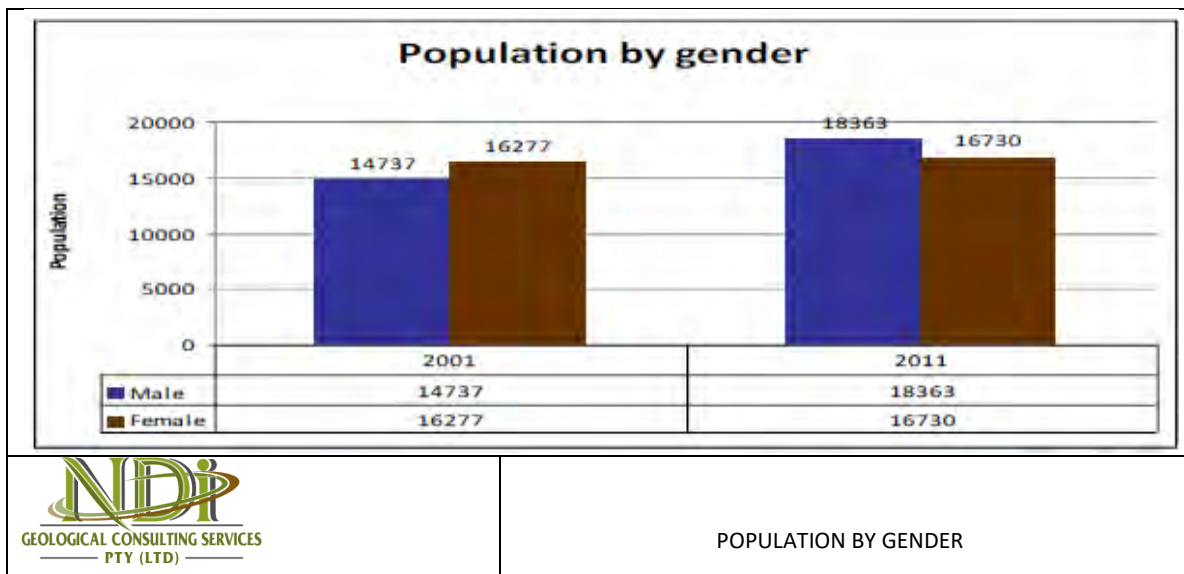
**Figure 11-1: Location of the Project Area within the Northern Cape Province**

### 11.1.1 Population

Census 2011 the population figures for Tsantsabane Local Municipality is 35 093, this indicates a population growth of 4 079, from population size of 31 014 (Census 2001) as shown in Figure 11-2. The municipality has a total of 9 839 households. According to the IDP, the population increase is due to immigration of people coming to the municipal area in search for better living conditions or jobs in the mining and solar industrial sectors.

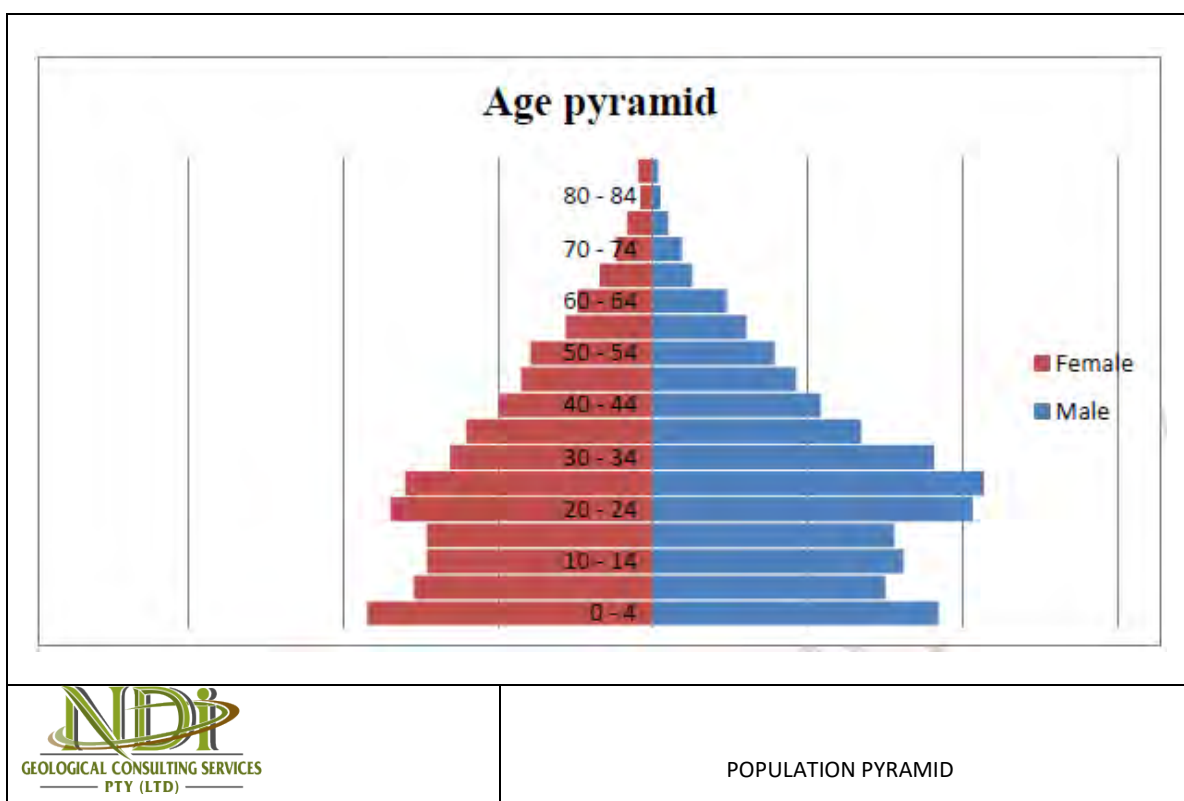
The male population has increased by 24% while the female population has increased with only 2.7% since 2001. The municipality has more males than females and the reason could be derived from the male dominated employment industry as there are a lot of mines in the area. Out of the whole

population 54% are black male followed by 36% coloured males then 8% white and lastly 1% Indians. For females there are 51% black Africans followed by 40% coloured females then lastly 9% of whites in the municipal area.



**Figure 11-2: Population by Gender**

Figure 11-3 provides the age pyramid of Tsantsabane Local Municipality, which indicates that the population of Tsantsabane is predominantly young people. There is a small percentage of people older than 60 years. The age pyramid further indicates that approximately 31% of the population is under 14 years and approximately 33% is between 15 and 34 years.



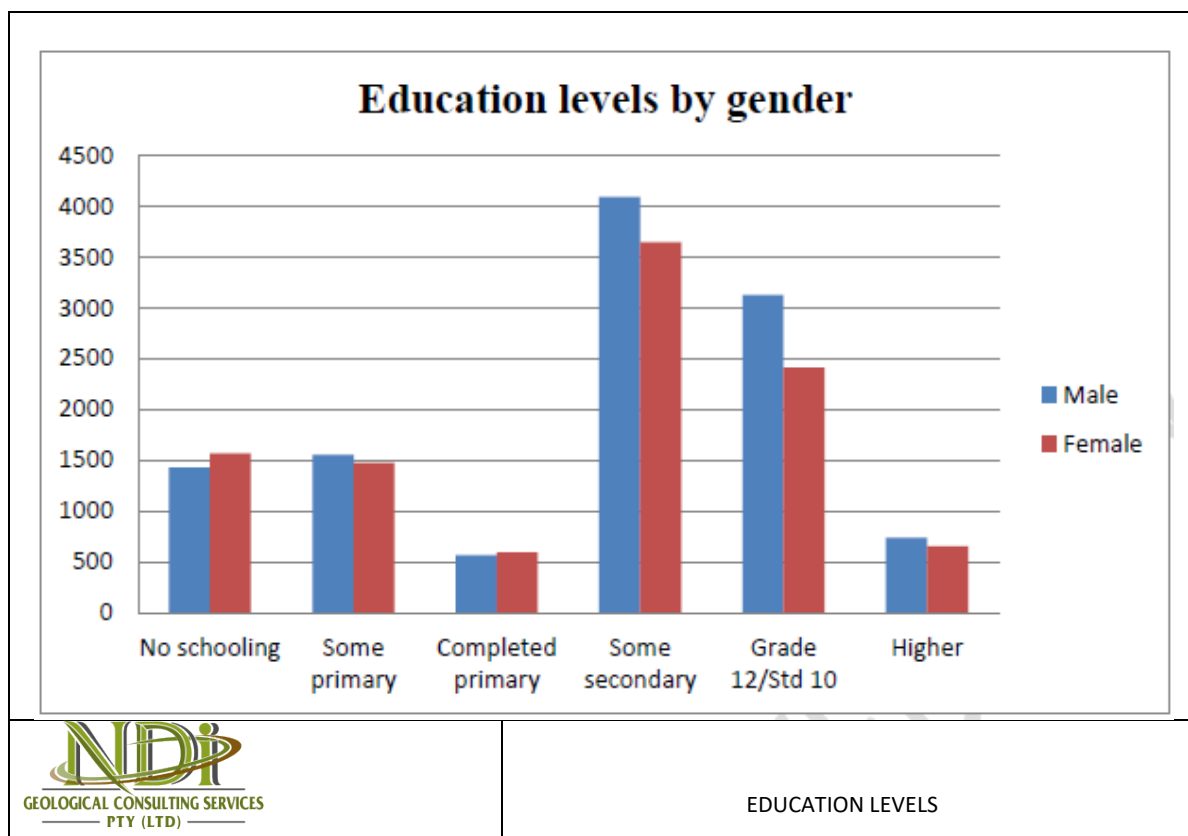
**Figure 11-3: Population pyramid of Tsantsabane Local Municipality**

### 11.1.2 Level of Education

From a statistical analysis it is clear that there has been an increase of people obtaining Matric since 2001. There has also been an increase in the number of people with higher education.

The statistics indicate that although a high number of students enrolling for primary school a very low number of students complete grade 12. This has resulted in a very low probability for employment. Only 5% of those who enrolled for grade 1 make it into tertiary. Less than 15% of the population has a tertiary qualification or have completed Grade 12. It must, however, be mentioned that the education level is affected negatively by the urbanization process, in the past since it mostly involves matriculates and those with a better qualification, due to the local lack of job opportunities. This can also be attributed to the fact that the nearest University of Technology (Central University of Technology, in Bloemfontein) is almost 400km away and the Sol Plaatje University has recently started a limited offering of some courses.

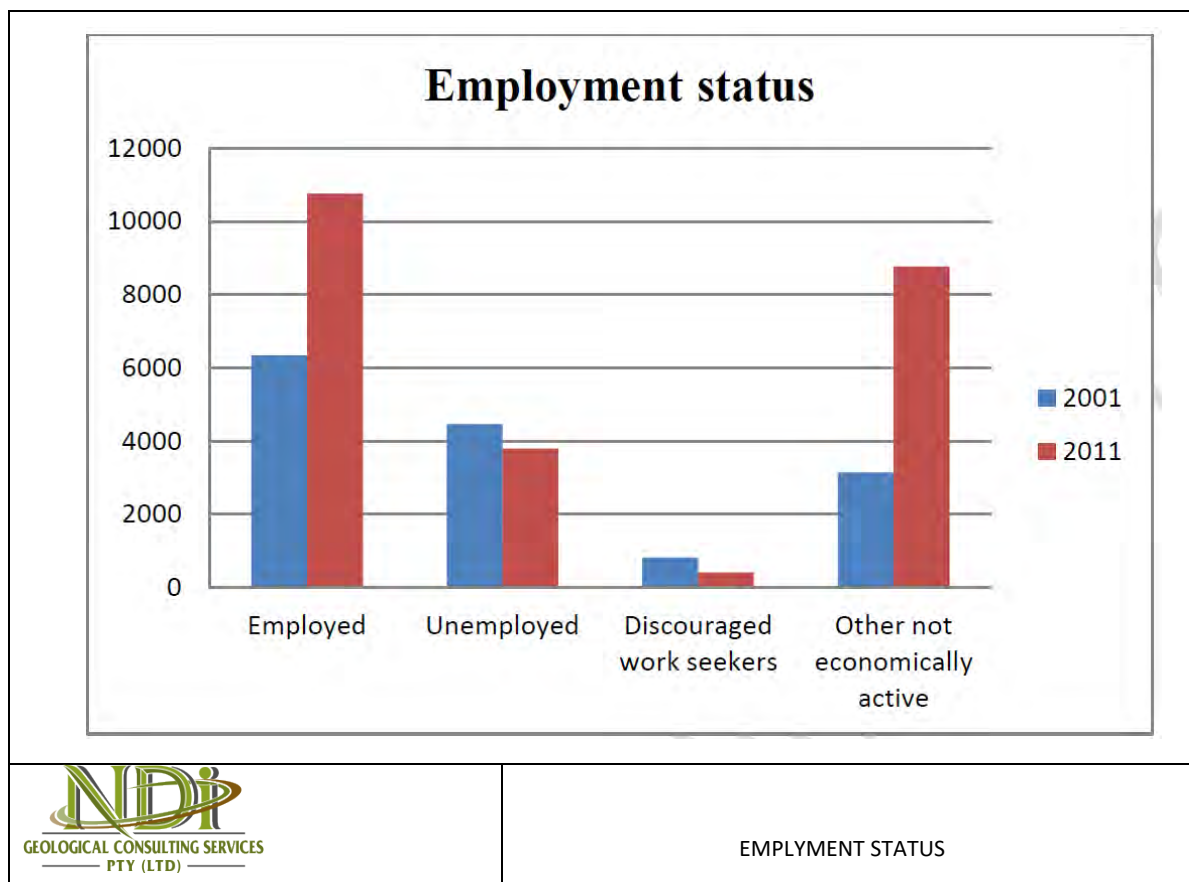
Males seems to be doing much better when it comes to education levels, as more men have some secondary education, grade 12 and higher education than their female counterparts as demonstrated in Figure 11-4.



**Figure 11-4: Education Levels by Gender**

### 11.1.3 Employment Levels

According to StatisticsSA (StatsSA), the unemployment figure has reduced from 4 466 in 2001 to 3 795 in 2011 this shows a decrease of 15% (Figure 11-5). Employment has increased by 69% in 2011, this clearly indicates that there are more people working in 2011 than in 2001.



### 11.1.4 Economic Statistics

The Draft Spatial Development Framework (SDF) indicates that “during 2012 the primary sector contributed 76% of all the sectors’ contribution to the GDP of Tsantsabane LM. Mining is the single biggest contributor of all industries to the GDP, contributing 74% (R 3.9 billion), and the secondary and tertiary sectors contributed 4% and 20% respectively”.

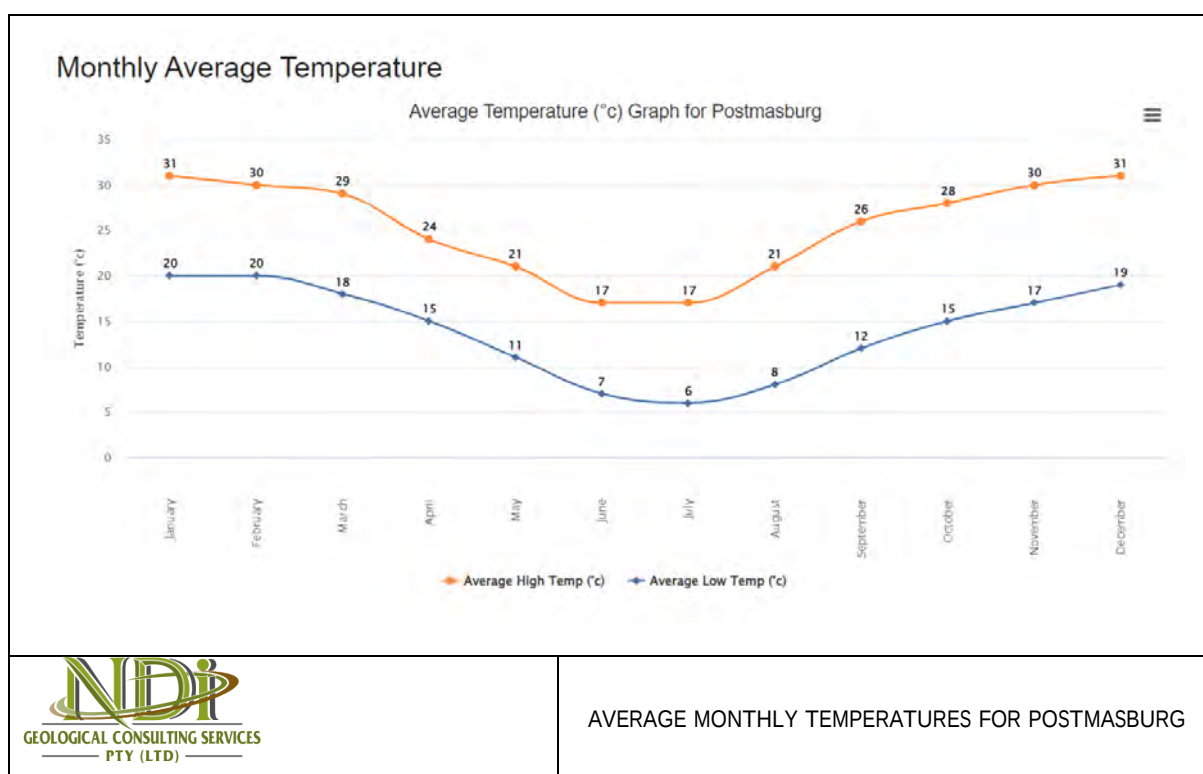
## 11.2 Climatic Conditions

### 11.2.1 Regional

The climate of the Northern Cape province is semi-arid, characterised by a summer-autumn rainfall regime and very dry winters. Postmasburg has a Subtropical desert climate (Classification: BWh).

### 11.2.2 Average Monthly Temperatures

Figure 11-7 indicates the average monthly temperature for Postmasburg.



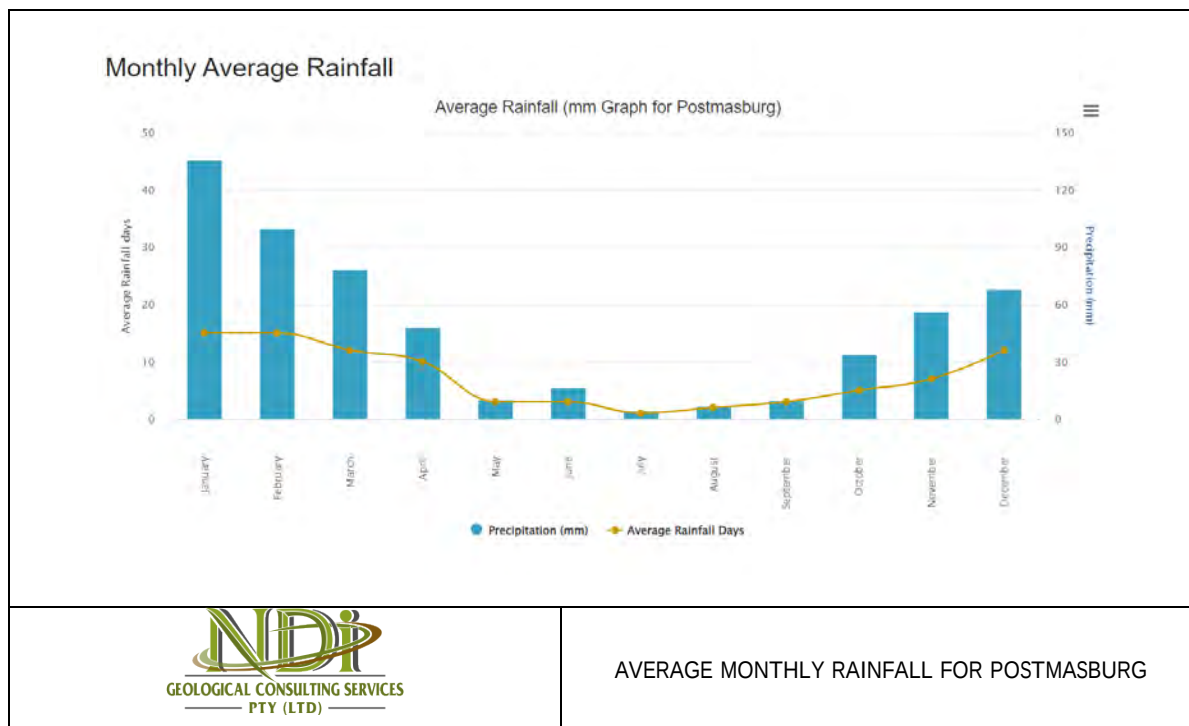
**Figure 11-7: Average Monthly Temperatures for Postmasburg (Source: Weather SA)**

The figure shows that:

- The highest maximum temperature is experienced during November, December, January, and February.
- The average maximum is around 31°C.
- The coldest months of the year are June and July, where the average temperature drops to below 20°C.

### 11.2.3 Average Monthly Temperatures

Figure 11-8 indicates the average monthly rainfall for the area.



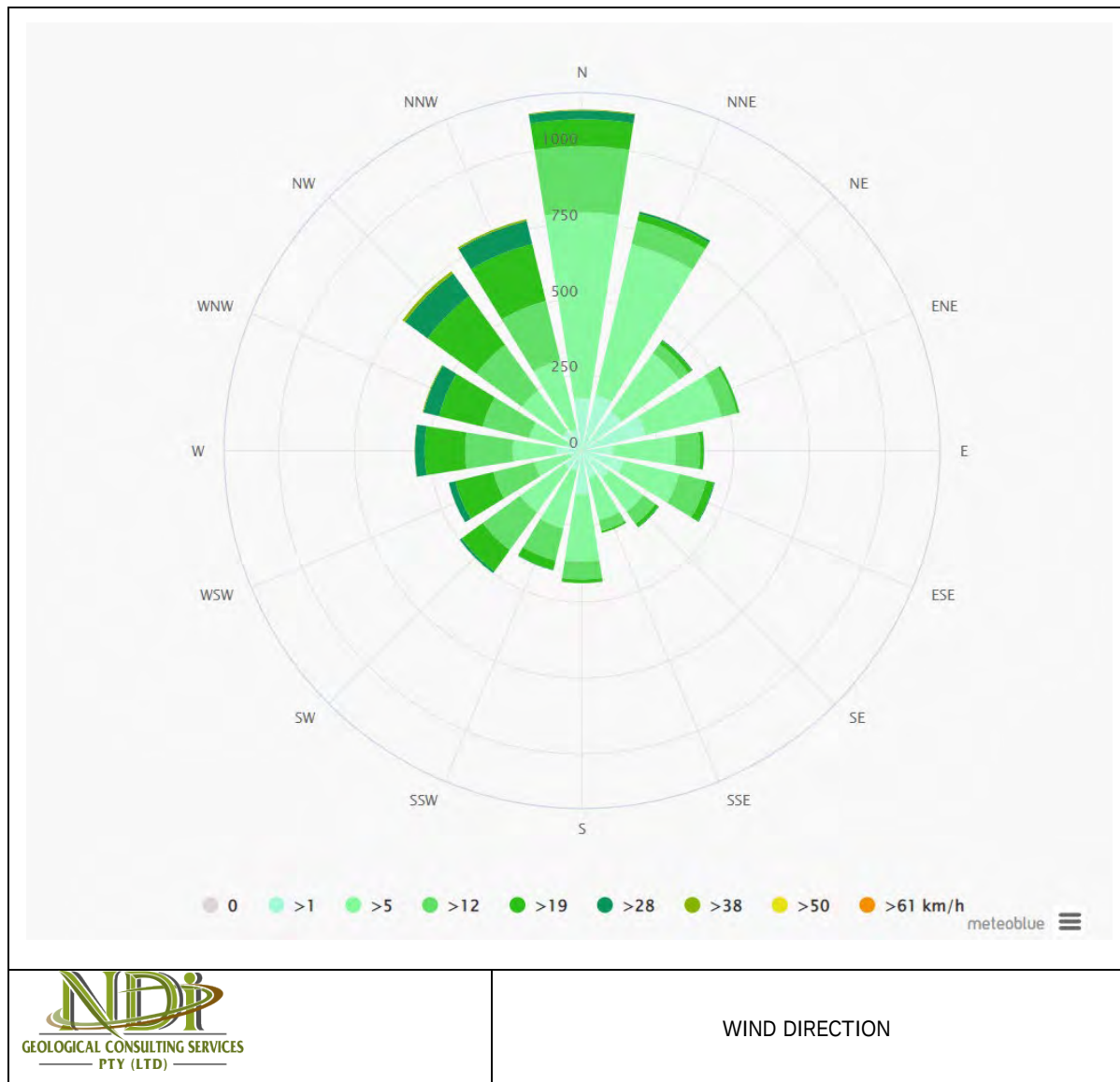
**Figure 11-8: Average Monthly Rainfall for Postmasburg (Source: Weather SA.)**

The average monthly rainfall data indicates that:

- The highest rainfall months are November, December, January and February, March with an average well below 40mm;
- January has a higher peak with just over 45mm;
- While the dry months are May, June, July, August September and with an average of below 10mm.

#### 11.2.4 Wind Direction

The wind rose for Postmasburg shows that the predominant average hourly wind direction in Postmasburg varies throughout the year. The wind is most often from the north from January to September, with a peak in July (Figure 11-9).

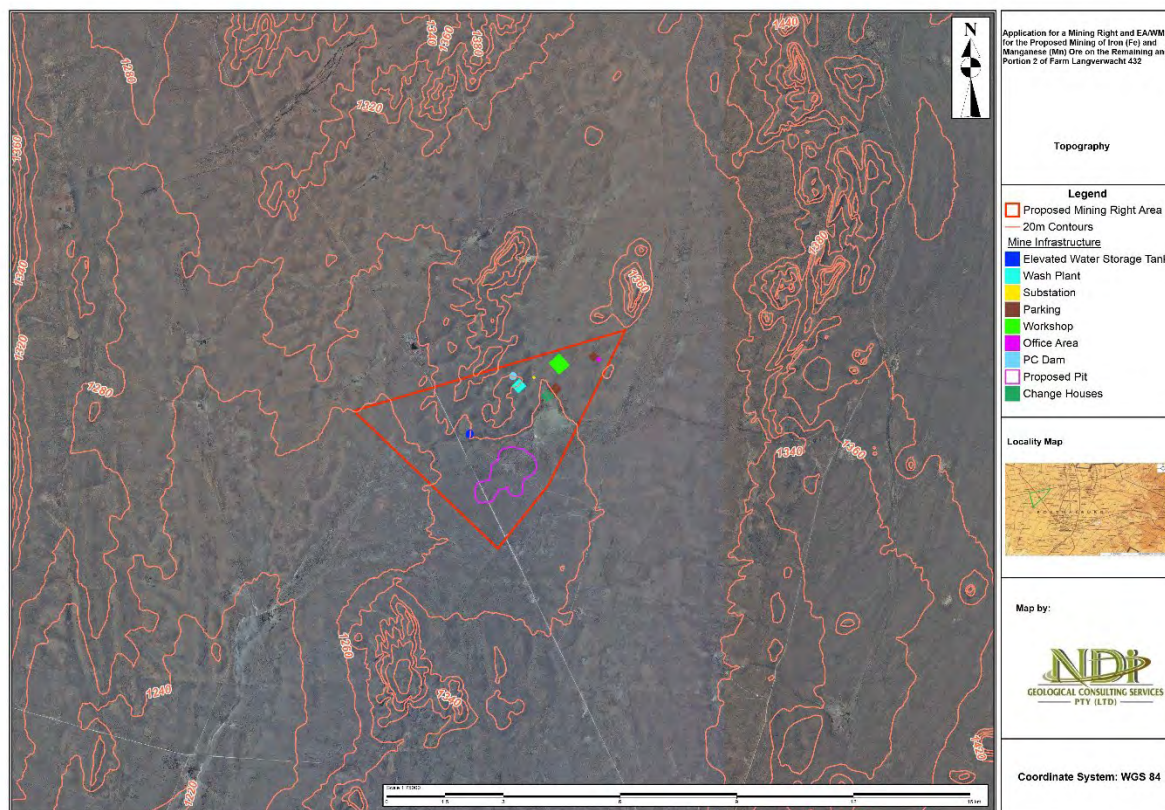


**Figure 11-9: Wind Direction for Postmasburg (Source: Weather SA)**

### 11.3 Topography and drainage

The topography around Postmasburg contains small variations in elevation, with a maximum elevation change of 80 metres and an average elevation above sea level of 1 327 meters above mean sea level (mamsl).

The topography map of the proposed mining area shows that the altitude of the site varies from approximately 1 260 mamsl to 1 340 mamsl (Figure 11-10).



**Figure 11-10: Topography**

## 11.4 Geology

### 11.4.1 Regional geology

The geology of the Postmasburg area form part of the Transvaal Supergroup. The strata developed within two related basins of which the westernmost (the Griqualand Westbasin) is preserved in the Northern Cape Province. The Transvaal Supergroup, as preserved within the Griqualand West basin, comprises an extensive, basal carbonate platform sequence (the Campbell Rand Subgroup) conformably overlain by iron-formations of the Asbestos Hills Subgroup. South of Postmasburg, the BIF of the Asbestos Hills Subgroup are in turn overlain by a mixed chemical and clastic unit termed the Koegas Subgroup.

The Koegas Subgroup is conformably overlain by diamictite of the Makganyene Formation upon which lavas belonging to the Ongeluk Formation have been sub aqueously extruded. North of the Sishen Mine area, the Ongeluk lava is in turn conformably overlain by BIF with interbedded manganese (Hotazel Formation) and carbonates of the Mooidraai Formation. The latter formations constitute the Vöelwater Group. At the Sishen Mine deposit, the upper parts of the Asbestos Hills Subgroup have been ferruginized to ore grade. These stratiform, laminated and massive ores constitute the bulk of the resource. They are unconformably overlain by a thick package of sedimentary rocks (conglomerates, shales, flagstone, and quartzite) termed the Gamagara Subgroup. Tillites of the Dwyka Group and pebble beds, clay, and calcrete of the Kalahari Group, have been deposited on these erosional unconformities.

### 11.4.2 Deposit types

Most of the world's mined iron ore is associated with Superior-type banded iron-formations." Superior type" is a general term used to describe cherty iron-formations which form along stable continental shelves by sedimentary processes.

The early Proterozoic from 2500 to 1900 Ma marked a period in the earth's history when the bulk of these very large Superior-type iron-formations developed. James and Trendall (1982) estimate that iron-formations of this type and age period account for over 90 percent of the volume of total iron-formation in the world. Examples include the Hamersley basin of Western Australia, Minas Gerais in Brazil, the Transvaal basin of South Africa, the Lake Superior-Labrador regions of North America, and the Krivoy Rog deposit of the Ukraine. One giant-and two medium-sized manganese districts are also associated with these iron formations in South Africa, Brazil, and India. These include the giant Kalahari field of South Africa which contains over 75 percent of the world's manganese resources.

The early Proterozoic was characterized by the growth of several stable continental nuclei with thick and flat-lying sedimentary assemblages of basal conglomerates, other clastic rocks, and platform carbonates.

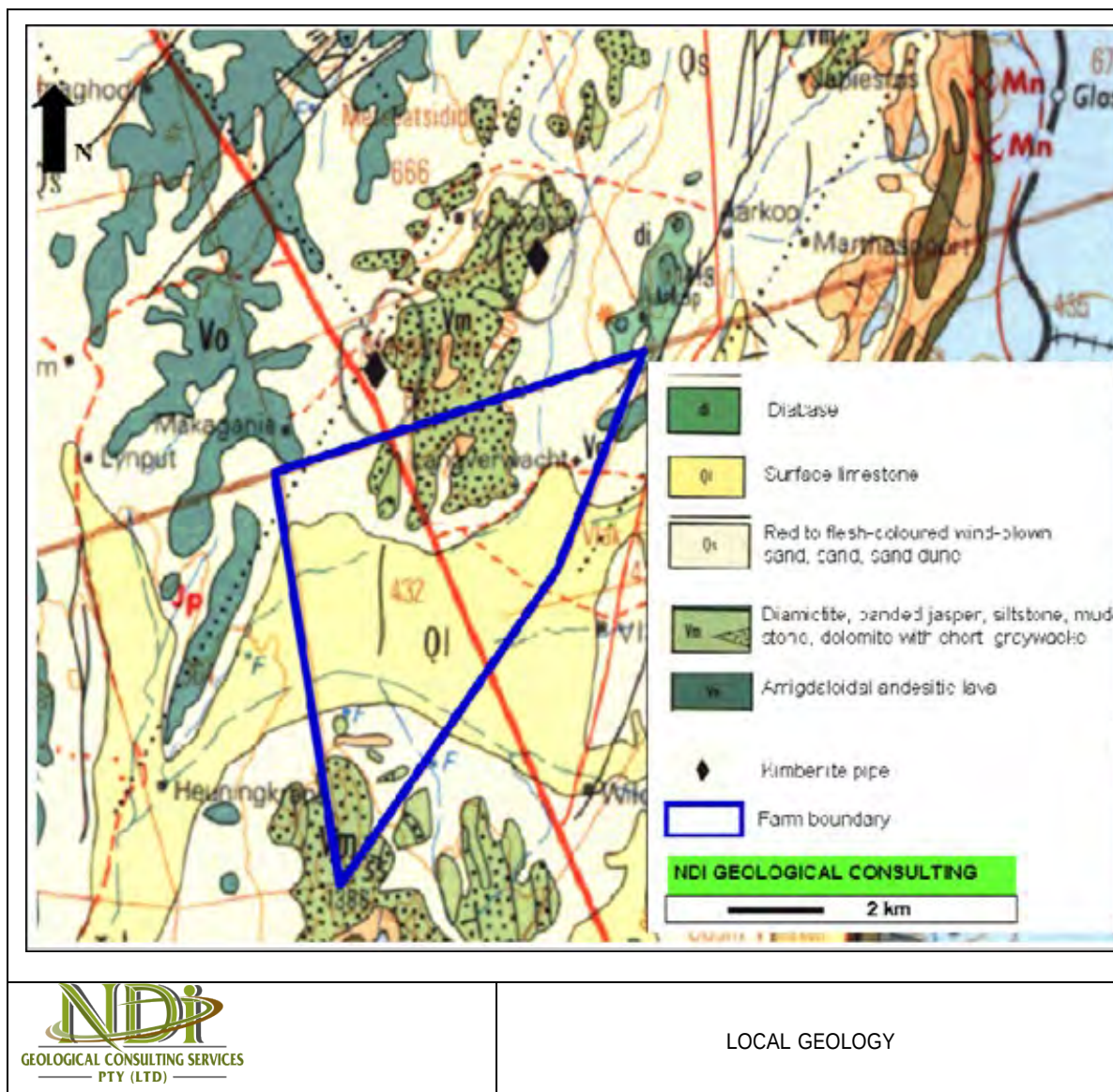
### 11.4.3 Local geology

Two types of iron ore mineralized deposits have been identified in the area, namely the laminated hematite ore, which forms part of the Manganore iron formation, and the conglomerate ore, which belongs to the Doornfontein Conglomerate Member at the base of the Gamagara Formation (Beukes, 1983).

The older laminated ore types occur in the upper portion of the Manganore Iron Formation as enriched high-grade hematite bodies. The boundaries of these ore bodies crosscut primary sedimentary bedding, indicating that secondary hematisation of the iron formation took place. In all of these formations, some of the stratigraphic and sedimentological features of the original iron formation are preserved. The thickness of the Manganore Formation at the Project area varies significantly from 0m – 160m thick and is mainly composed of BIF, Hematite, manganese, chert breccia, conglomerates etc. Iron Ores of the formation are generally less than 40%Fe and are not considered to be of economic interest at Langverwacht.

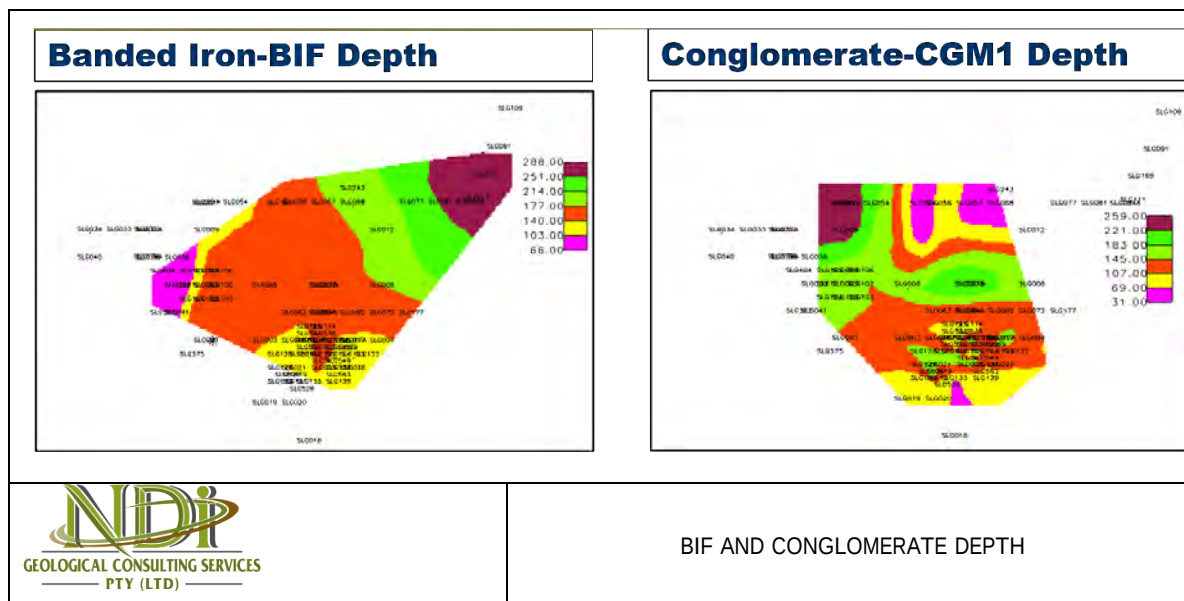
The iron-rich conglomeratic ore is found in the Doornfontein Conglomerate Member of the Gamagara Formation (Carney and Mienie, 2002). The conglomeratic ore is dominated by large poorly sorted hematite and BIF clasts in a hematite and specularite matrix. Clast size is variable - up to 5cm. Hematite clasts display more rounding than the more angular BIF clasts likely due to being transported over longer distance prior to deposition. It consists of stacked, upward fining cycles of sediment conglomerate-grit stone shale sedimentary cycles.

Figure 11-11 provides the local geological map of the project site.



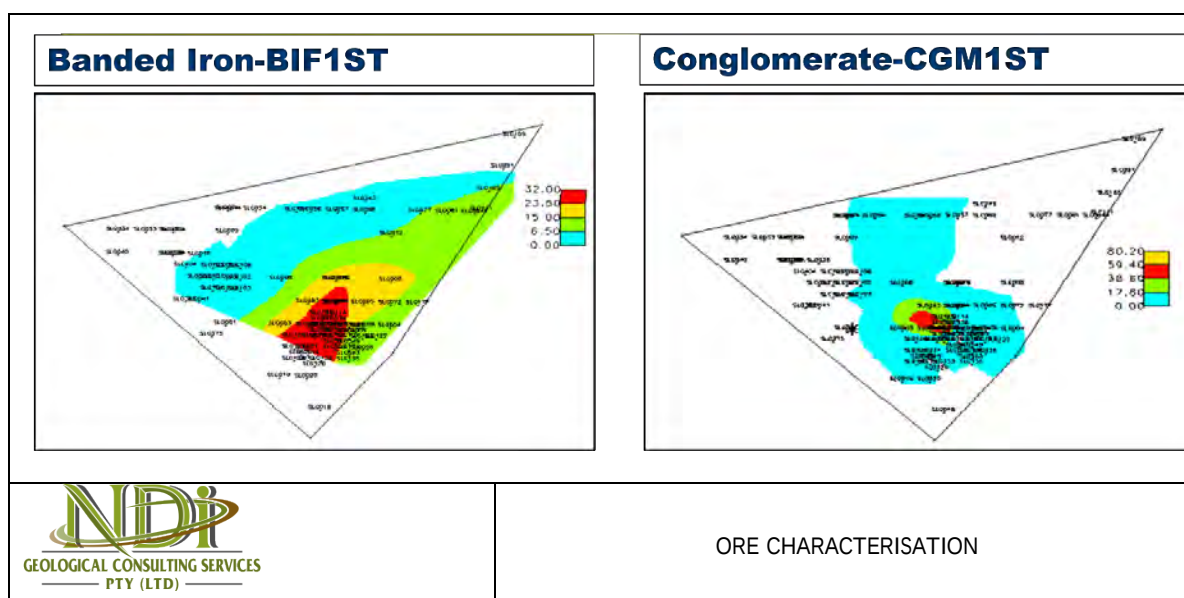
**Figure 11-11: Geological Map of the Project Area**

The lowest conglomerates and grit stones tend to be rich in subrounded to rounded hematite ore pebbles and granules and form the main ore bodies. The amount of iron ore pebbles decreases upwards in the sequence so that upper conglomerates normally consist of poorly sorted, angular to rounded chert and banded iron formation pebbles and all these features are evidence of braided alluvial fan deposition occurrence in this area (Gutzmer and Beukes, 1986). The Banded Iron Formation and Conglomerate bands depths are displayed in Figure 11-12.



**Figure 11-12: Depth of the BIF and Conglomerate**

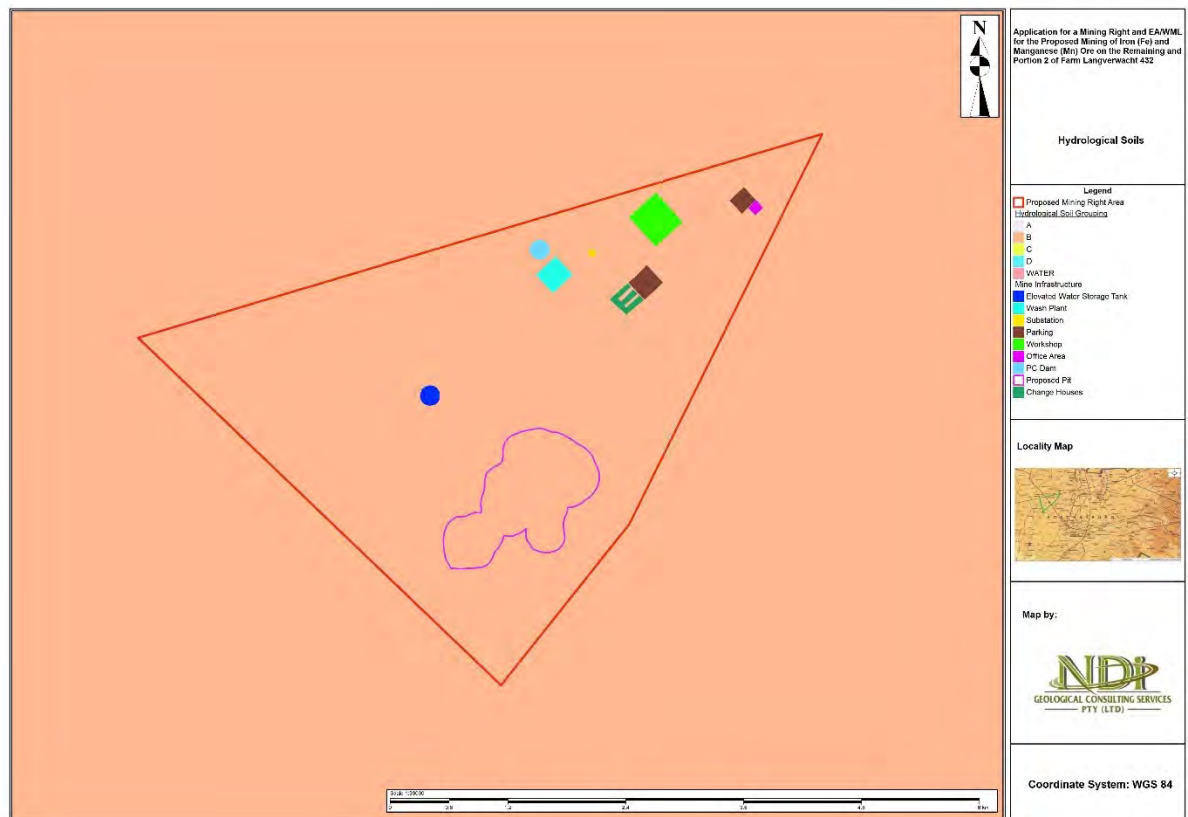
The grades of the bands are also shown in Figure 11-13.



**Figure 11-13: Ore Characterisation**

## 11.5 Soils and Land types

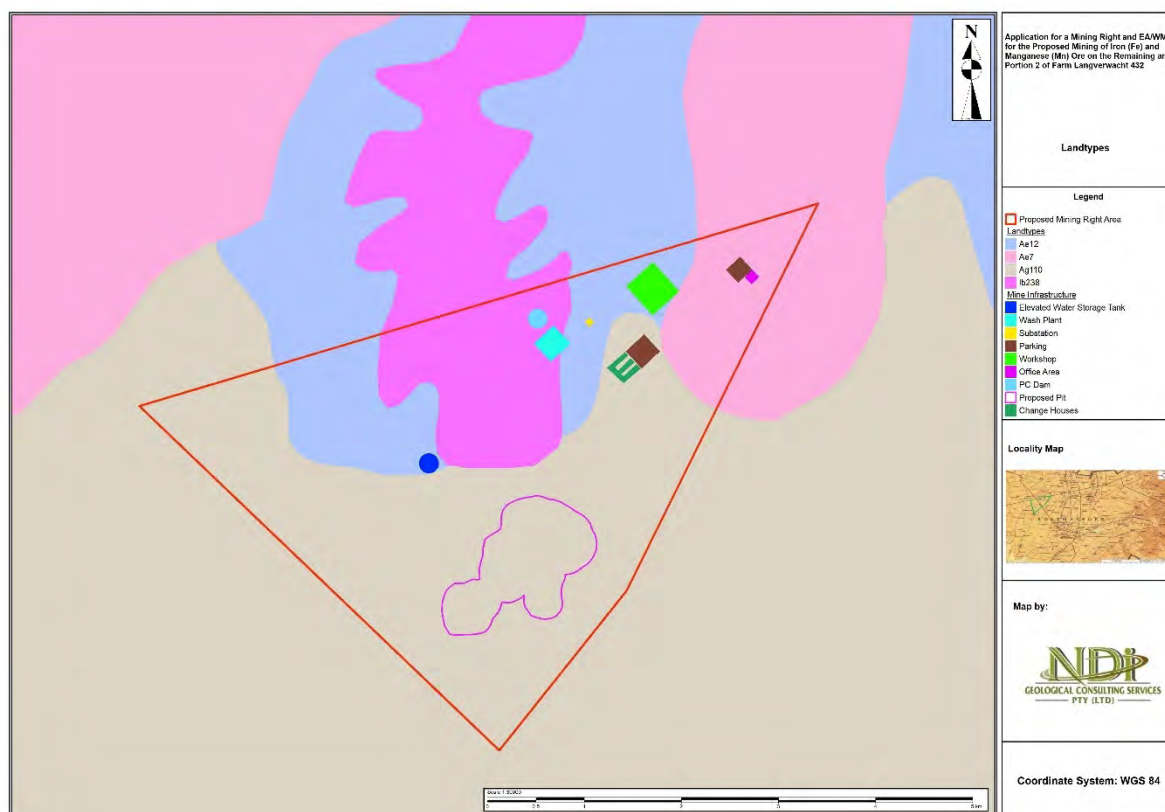
The hydrological soils database shows that the project area is located in an area classified as having hydrological soils type B (Figure 11-14), which are soils with moderate infiltration rates, effective depth, and drainage. The permeability of the soils is slightly restricted.



**Figure 11-14: Hydrological Soils**

The land types in the project area are as follows:

- **Ae7:** This land type consists of landscapes dominated by rock and shallow Hutton soils and others consisting of red Hutton soils of varying depth and as well as smaller sections of Oakleaf and Valsrivier forms. The geology underlying this land type is amygdaloidal andesitic lava with interbedded tuff, agglomerate, chert, and red jasper.
- **Ae12:** The land type is dominated by red apedal Hutton soil of varying depth. The geology consists of red to flesh coloured wind-blown sand with outcrops of shale, flagstone, quartzite, and conglomerate.
- **Ag110:** The soil forms in this land type mainly have high base status and are shallow, rocky and limestone rich red well drained soils. These soils in this area are derived from wind transported sands overlying hard rock. The geology underlying this land type is surface limestone, alluvium, and red wind-blown sand of Tertiary to Recent age with a few occurrences of amygdaloidal andesitic lava (Ongeluk Formation). The clay percentages of the A-horizon range between 2 and 15%.
- **Ib238:** The soil forms in this land type mainly consist of rock and shallow Hutton and Mispah forms. The geology underlying this land type is flagstone, quartzite, conglomerate, and shale as well as outcrops of chert and chert breccia.



**Figure 11-15: Land types**

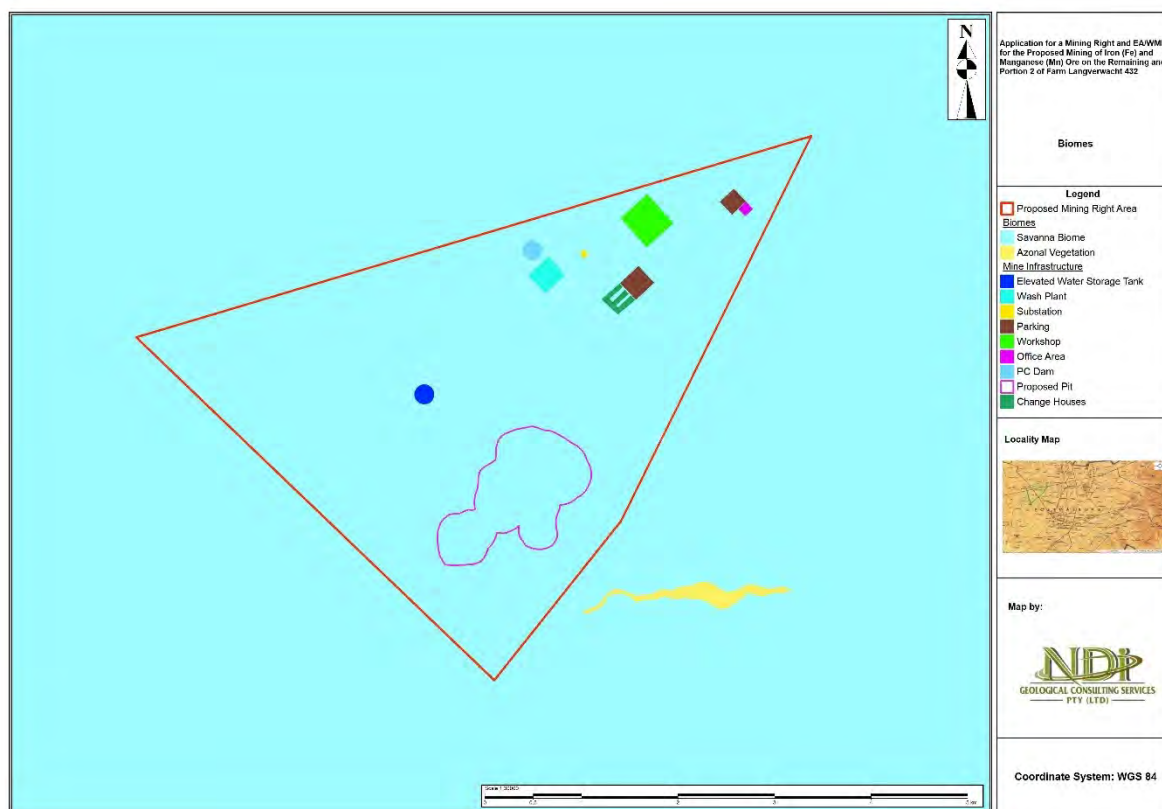
## 11.6 Current Land Use and land capability

The majority of the affected area and surroundings are currently being used for prospecting, mining and agriculture. It is expected that due to the low rainfall and high temperatures and evapotranspiration, the agriculture potential of the area is low.

## 11.7 Biodiversity

### 11.7.1 Biomes

The proposed mining project area is located in the Savanna Biome (Figure 11-16). The Savanna Biome is the largest Biome in southern Africa, occupying 46% of its area, and over one-third the area of South Africa. It is well developed over the lowveld and Kalahari region of South Africa. It is characterized by a grassy ground layer and a distinct upper layer of woody plants. Where this upper layer is near the ground the vegetation may be referred to as Shrubveld, where it is dense as Woodland, and the intermediate stages are locally known as Bushveld.

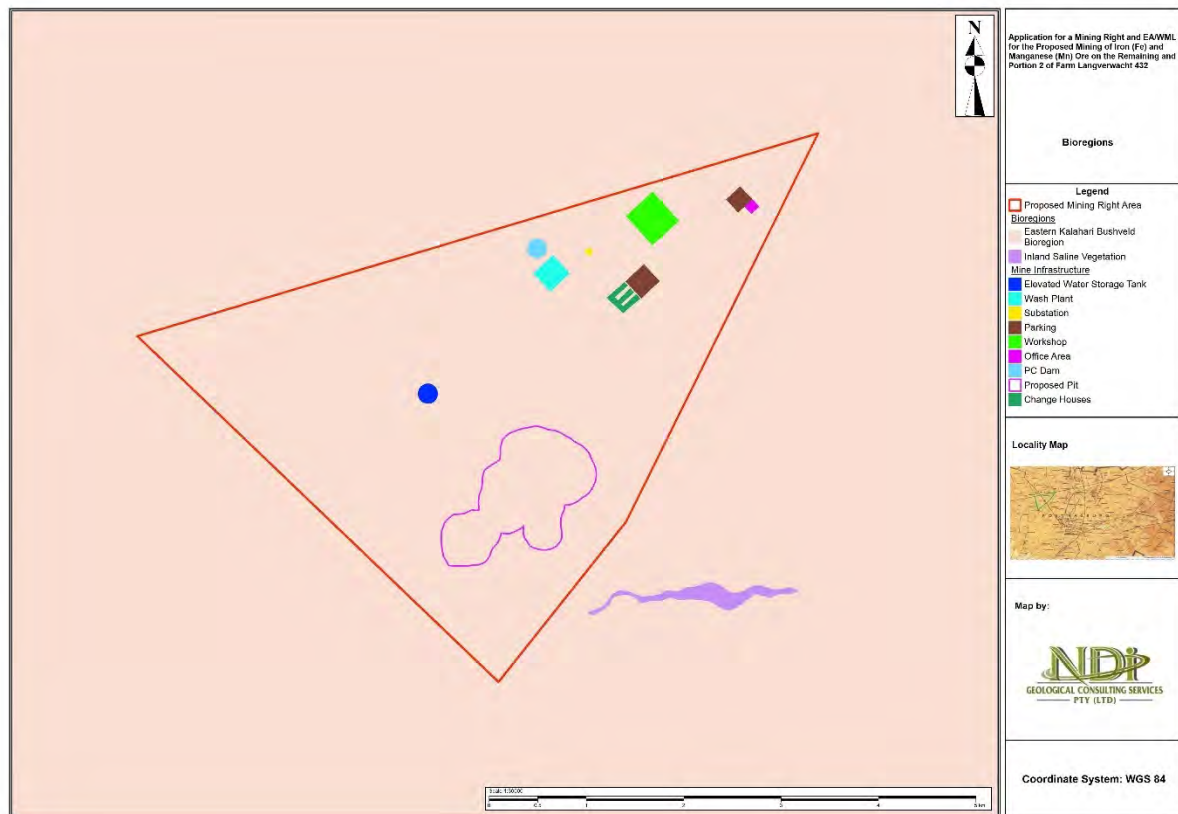


**Figure 11-16: Biomes**

Most of the savanna vegetation types are used for grazing, mainly by cattle or game. In the southernmost savanna types, goats are the major stock. In some areas crops and subtropical fruit are cultivated. These mainly include the Clay Thorn Bushveld, parts of Mixed Bushveld, and Sweet Lowveld Bushveld.

### 11.7.2 Bioregions

The proposed mining project area is located in the Eastern Kalahari Bushveld Bioregion as shown in Figure 11-17. The Eastern Kalahari Bushveld Bioregion is the largest savanna bioregion and is on average at the highest altitude. It is roughly bounded by Mafikeng, Bloemhof, Kimberley, Groblershoop and Van Zylsrus.



**Figure 11-17: Bioregions**

### 11.7.3 Threatened Ecosystems and Natural Vegetation

According to the SANBI remaining vegetation types database, there is no remaining natural vegetation on the affected area. The vegetation types associated with the site are the Kuruman Mountain Bushveld, Olifantshoek Plains and Postmasburg Thornveld (Figure 11-18). According to SANBI, all the ecosystems associated with the project area are classified at Least Threatened (Figure 11-19).

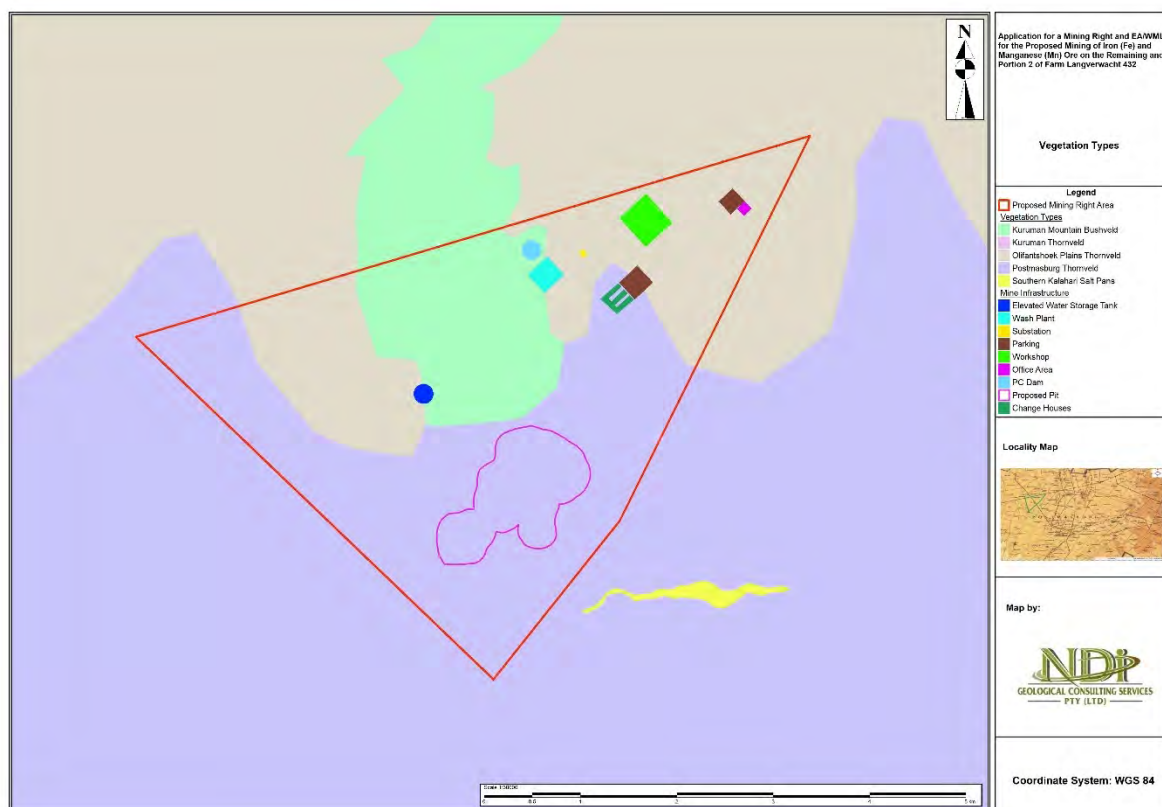


Figure 11-18: Vegetation with Threatened Ecosystems

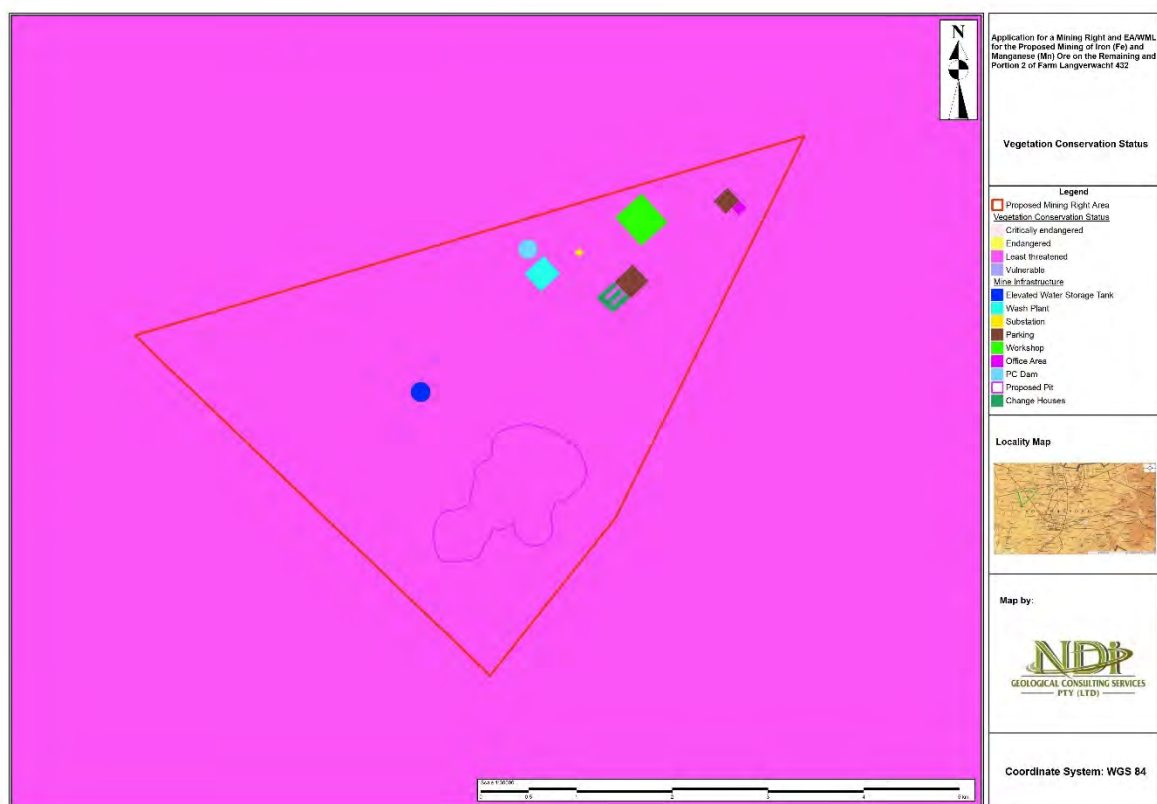
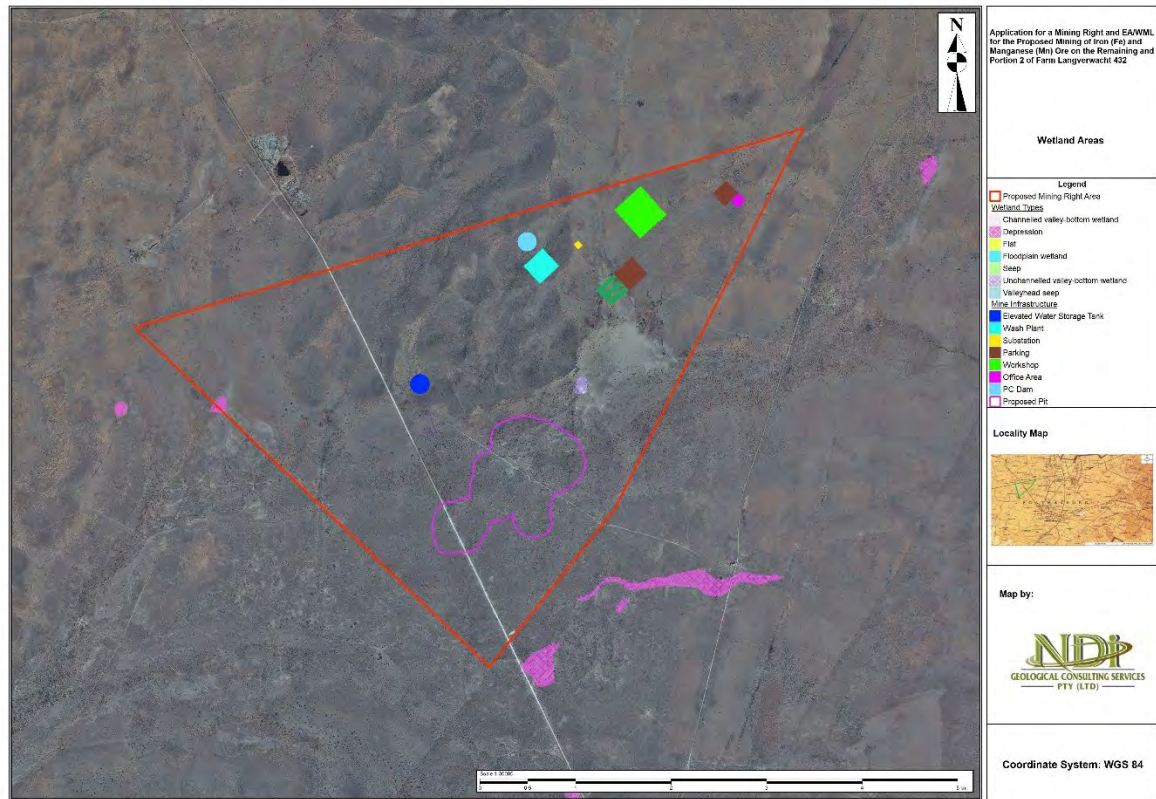


Figure 11-19: Vegetation with Threatened Ecosystems Status

## 11.8 Areas of Conservation Importance

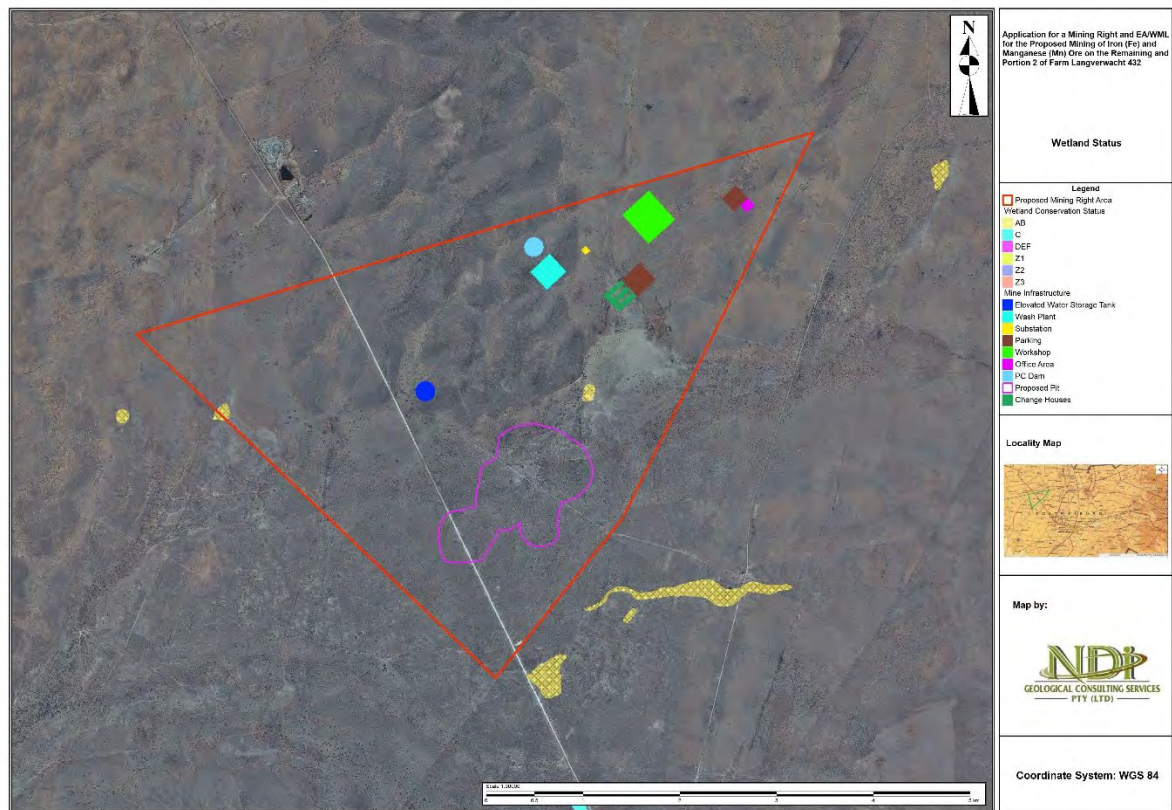
### 11.8.1 Wetlands

The National Freshwater Ecosystems Priority Areas (NFEPA) database indicates that there is an unchannelled valley bottom wetland and a depression wetland associated with the property area (Figure 11-20).



**Figure 11-20: NFEPA Wetlands**

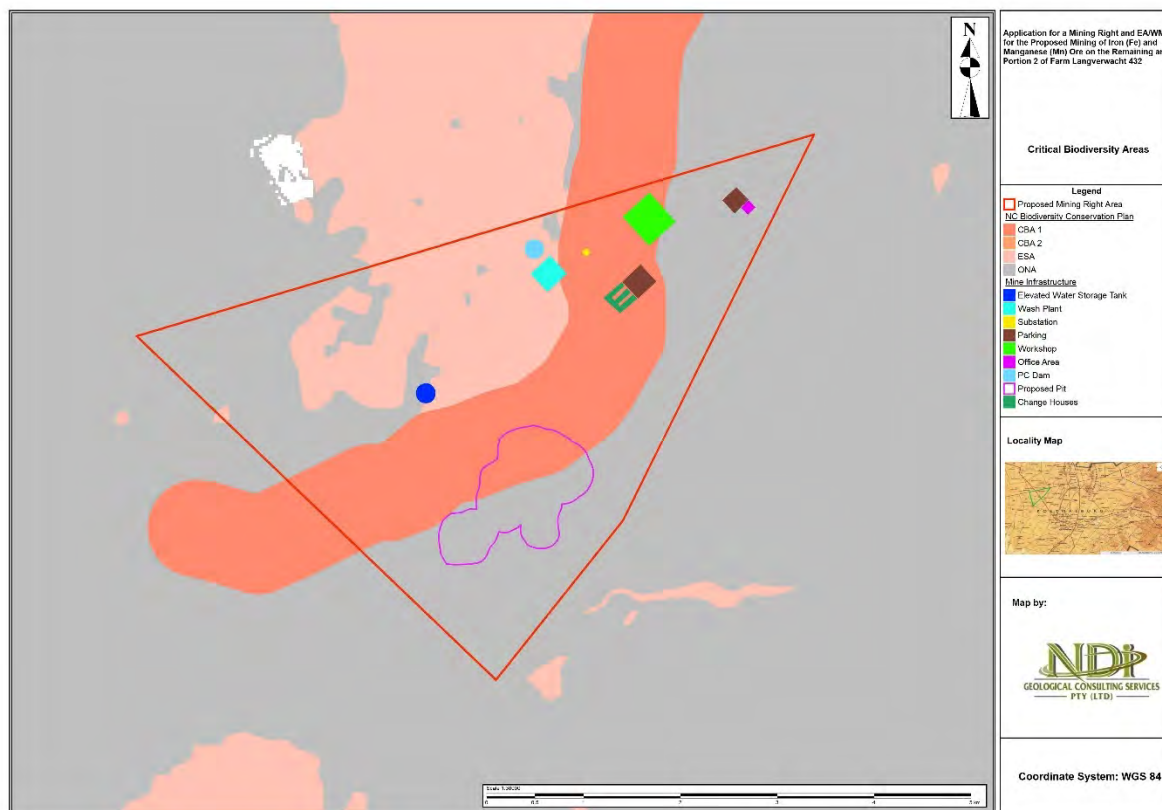
The conservation status of the wetlands located on the project property are classified as AB (Figure 11-21). According to the NFEPA data, wetlands classified as having conservation level AB are considered to have a Present Ecological Status (PES) equivalent to natural or good and are described as having percentage natural land cover of  $\geq 75\%$ .



**Figure 11-21: Wetlands Status**

### 11.8.2 C-Plan

The Northern Cape Provincial Biodiversity Conservation Plan shows that portions of the affected properties are in areas categorised as Other Natural Areas (ONAs) (areas of natural or near-natural vegetation whose safeguarding is not required in order to meet national thresholds), with other sections classified as Ecological Support Areas (ESAs) (areas not essential for meeting biodiversity targets but play an important role in supporting the ecological functioning of Critical Biodiversity Areas (CBAs) and/or in delivering ecosystem services). The areas running along the unnamed non-perennial river is classified as a CBA 1 (features in the landscape that are critical for retaining biodiversity and supporting continued ecosystem functioning and service). Figure 11-22 provides a map of the Northern Cape Provincial Biodiversity Conservation Plan.



**Figure 11-22: Critical Biodiversity Areas (CBAs)**

### 11.8.3 Protected Areas

There are no protected areas or Important Bird Areas (IBAs) affected by or in close proximity of the proposed mining area.

## 11.9 Noise

The MRA area is located in a rural area and the typical noise rating in the area is expected to be that for rural districts with little road traffic. According to SANS 10103:2008, the continuous noise rating level is thus likely between 35 dB(A) at night to 45 /50 dB(A) during the day.

## 11.10 Heritage Resources

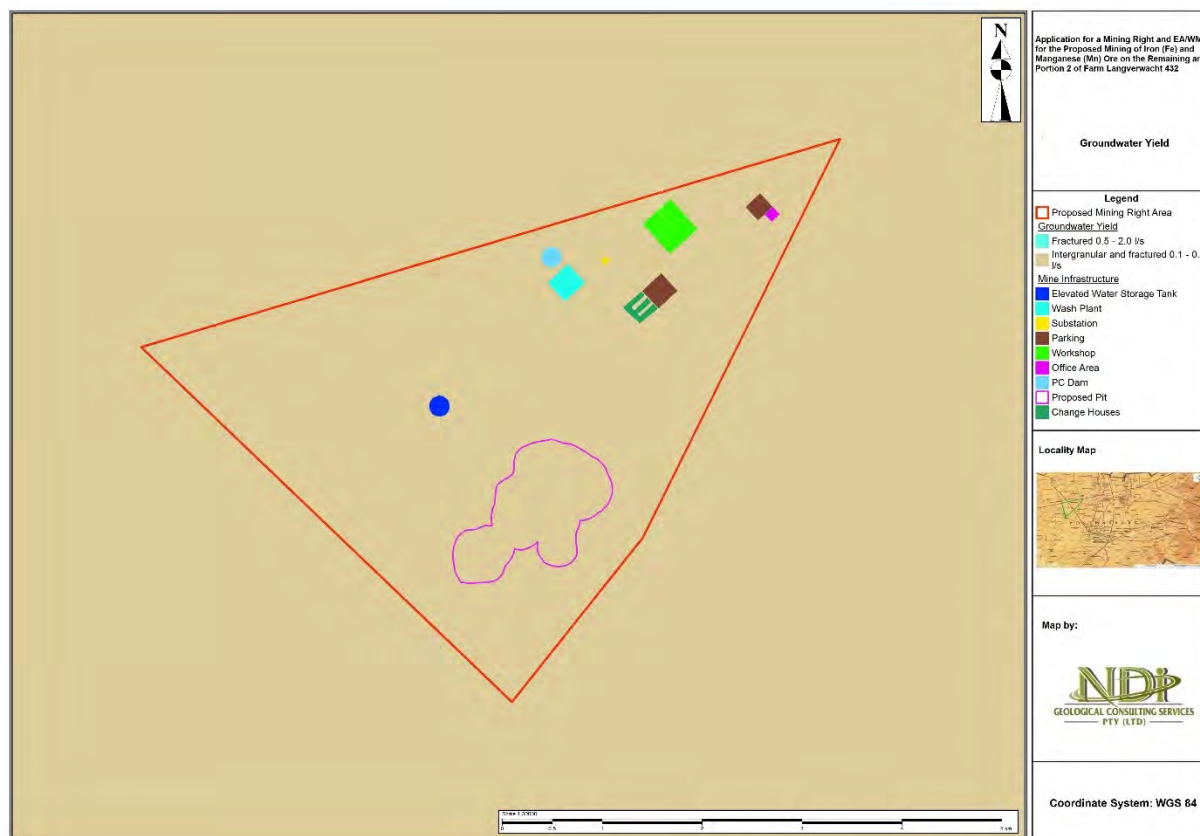
Heritage resources may be tangible, such as buildings and archaeological artefacts or intangible such as landscapes and living heritage. Their significance is based upon their aesthetic, architectural, historical scientific, social, spiritual, linguistic economic or technological values; their representation of a particular period; their rarity and their sphere of influence. There are a number of heritage and cultural resources in the Northern Cape Province.

A site-specific Phase 1 Heritage Impact Assessment (HIA) will be conducted where potential impacts on heritage resources will be assessed in the impact assessment phase of the project and mitigation measures to be implemented in the event that heritage and cultural resources are encountered will be included in the EMP.

## 11.11 Geohydrology

### 11.11.1 Aquifers and Groundwater Yield

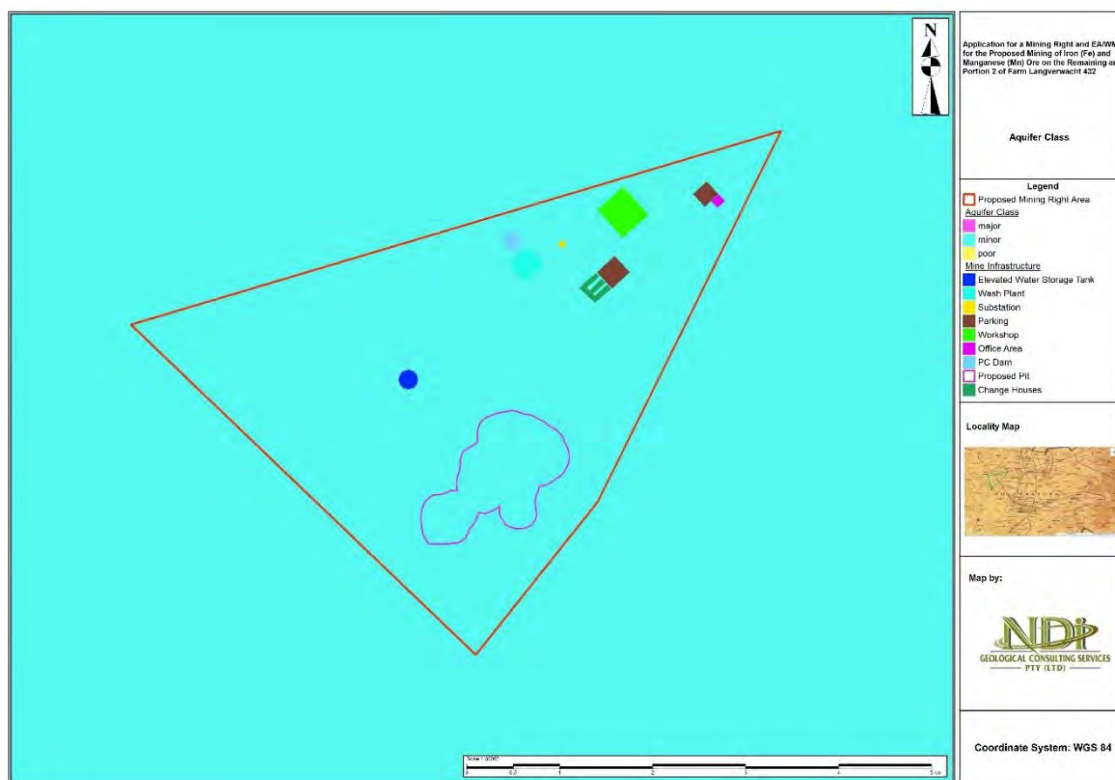
The proposed mining area is characterised by low yielding groundwater (intergranular aquifer with recharge 0.1l/s to 0.5l/s) (Figure 11-23).



**Figure 11-23: Groundwater Yield**

### 11.11.2 Aquifer Classification

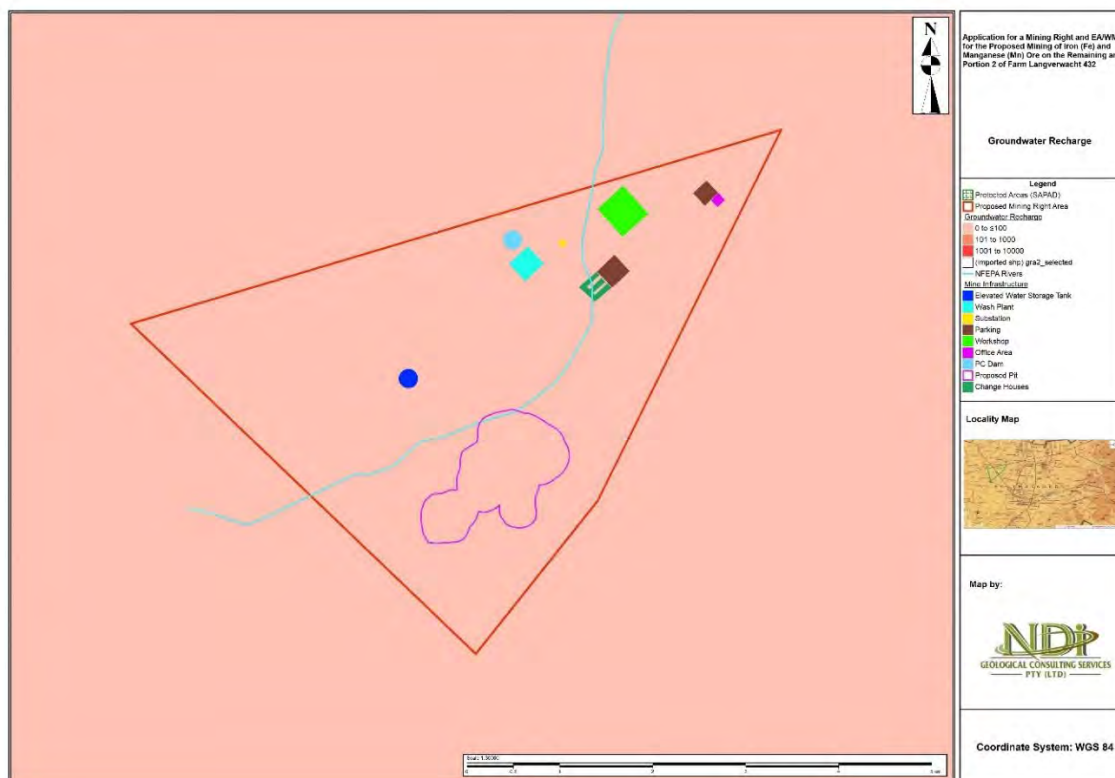
According to the DWS Aquifers data, the aquifer in the area is classified as a minor aquifer (Figure 11-24). According to the DWS, minor aquifers can be fractured or potentially fractured rocks which do not have a high primary permeability, or other formations of variable permeability. The aquifer extent may be limited and water quality variable.



**Figure 11-24: Aquifer Classification**

### 11.11.3 Groundwater Recharge

The groundwater recharge in the area is considered low, between 0 and 100mm/yr. (Figure 11-25). This is expected due to the dry and hot climate in the area.



**Figure 11-25: Groundwater Recharge**

### 11.11.4 Groundwater Quality

The groundwater in the area is generally of good quality, with Electrical Conductivity (EC) levels between 70 and 300 mS/m as shown in Figure 11-26.

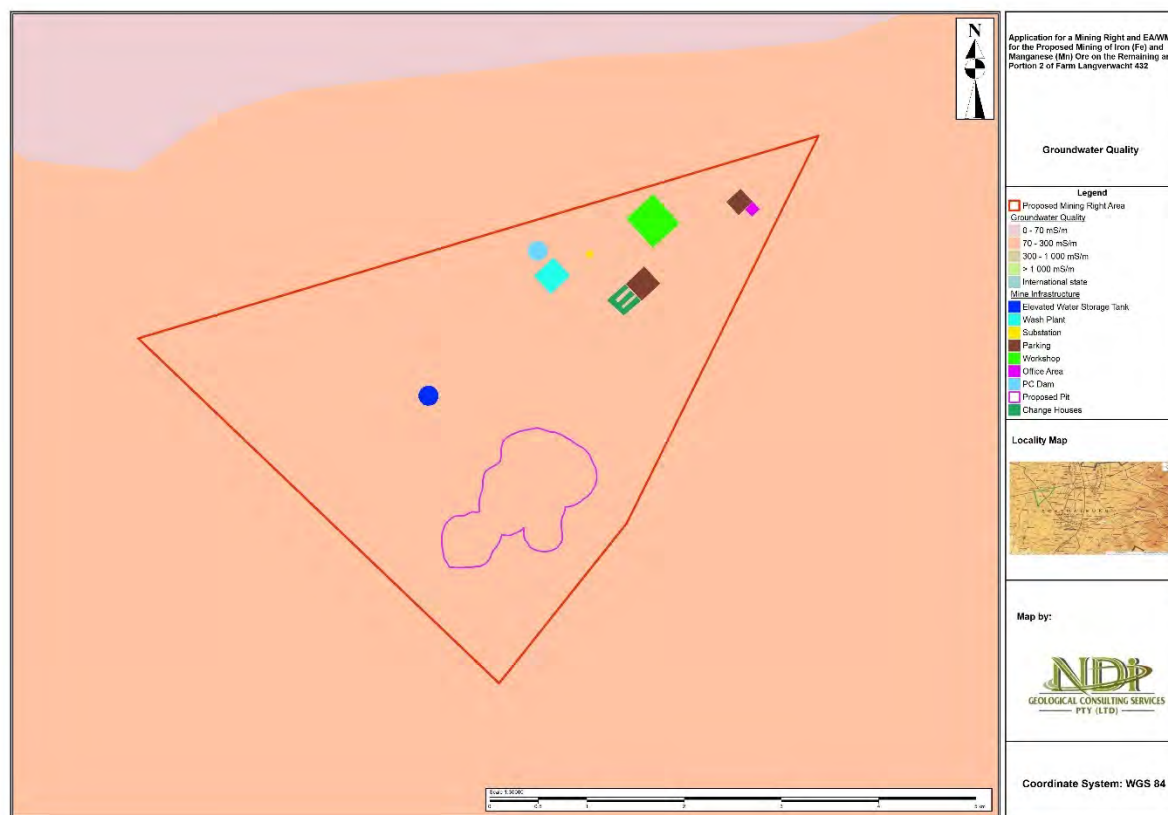


Figure 11-26: Groundwater Quality

## 11.12 Surface Water

### 11.12.1 Rivers and Catchment Areas

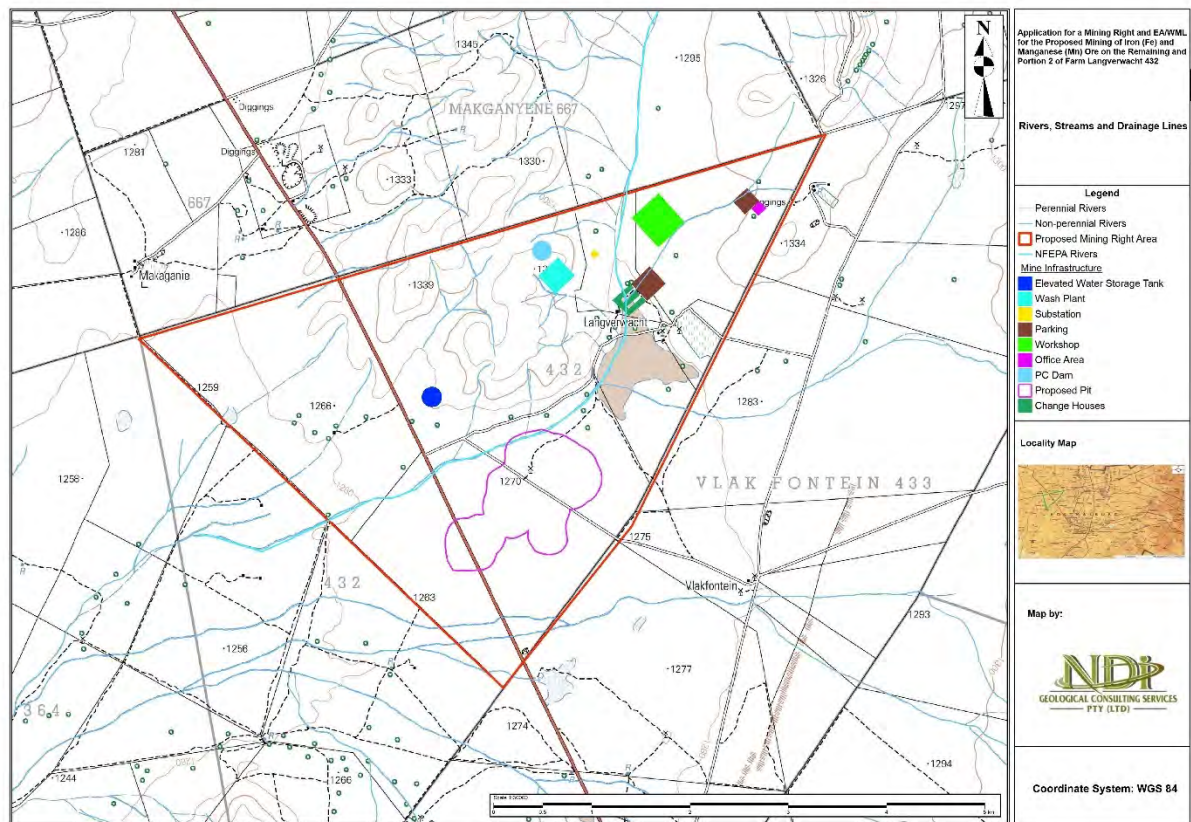
The proposed mining area is located in quaternary catchment area D73A in the Vaal Water Management Area (WMA) (Figure 11-27). The Vaal WMA is perceived to be one of the most important WMAs in South Africa because it houses the highest concentration of urban, industrial, agricultural, mining and power generation developments in South Africa. The water management area in its entirety contributes approximately 24% to the country's GDP, indicating its importance in the country's economy. The strategic importance of the catchment is accentuated by the fact that it is also a hub for several Interbasin transfers. Water demand, however, significantly exceeds the available yield in the Vaal catchment. The catchment is overburdened and requires seasonal augmentation through transboundary inter-basin transfers as its natural yield is insufficient to meet its supply requirements. Changes in the intra-annual water availability in the catchment are expected to significantly impact the various sectoral water users such as agriculture, municipal water users, mining and industry, menacing food security and economic expansion. Monthly water requirements and availability is not homogenous; water demand by the different sectors peaks during different months based on socioeconomic and climatic factors.

There are a number of unnamed non perennial rivers and drainage lines that traverse the project area as shown in Figure 11-28.



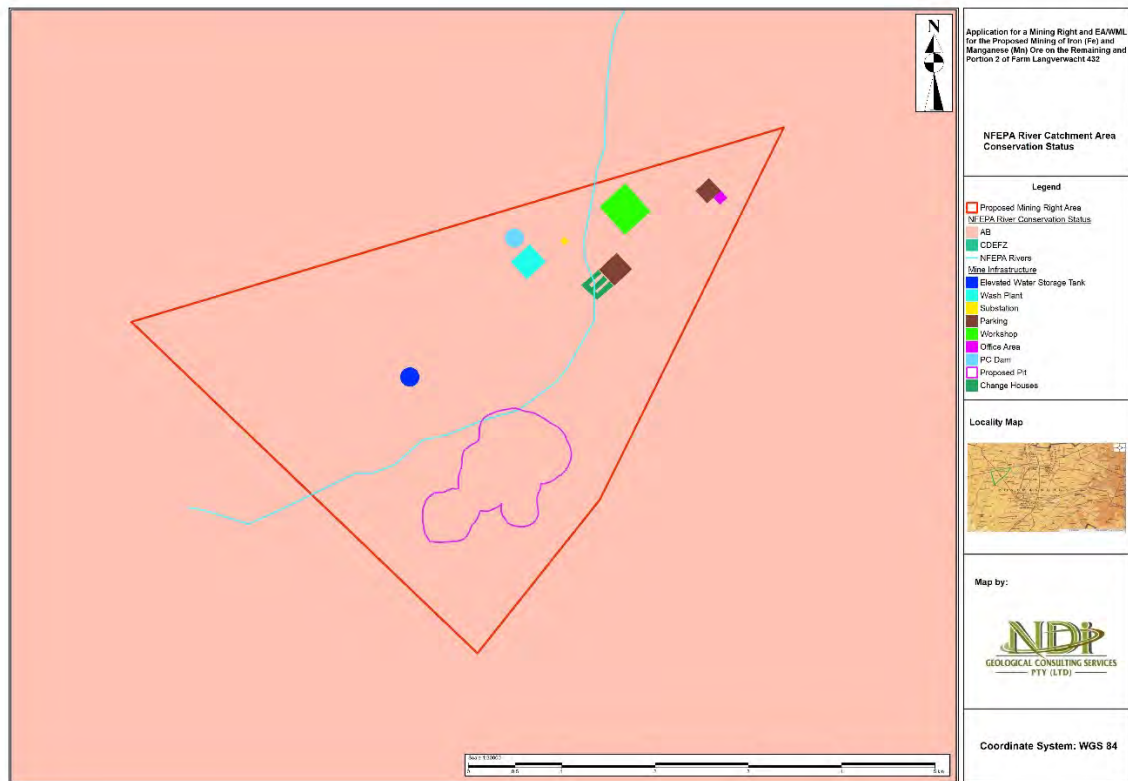
### 11.12.2 NFEPA Rivers

According to the NFEPA Rivers Database, one of the non-perennial rivers passing through the proposed mining area is classified as a NFEPA river, which is classified as a Class B River (largely natural) (Figure 11-24).



**Figure 11-29: NFEPA Rivers**

The catchment area where the proposed project will be located is classified as an AB catchment area (Figure 11-25), meaning that the river condition of the sub quaternary catchment is in an intact state.

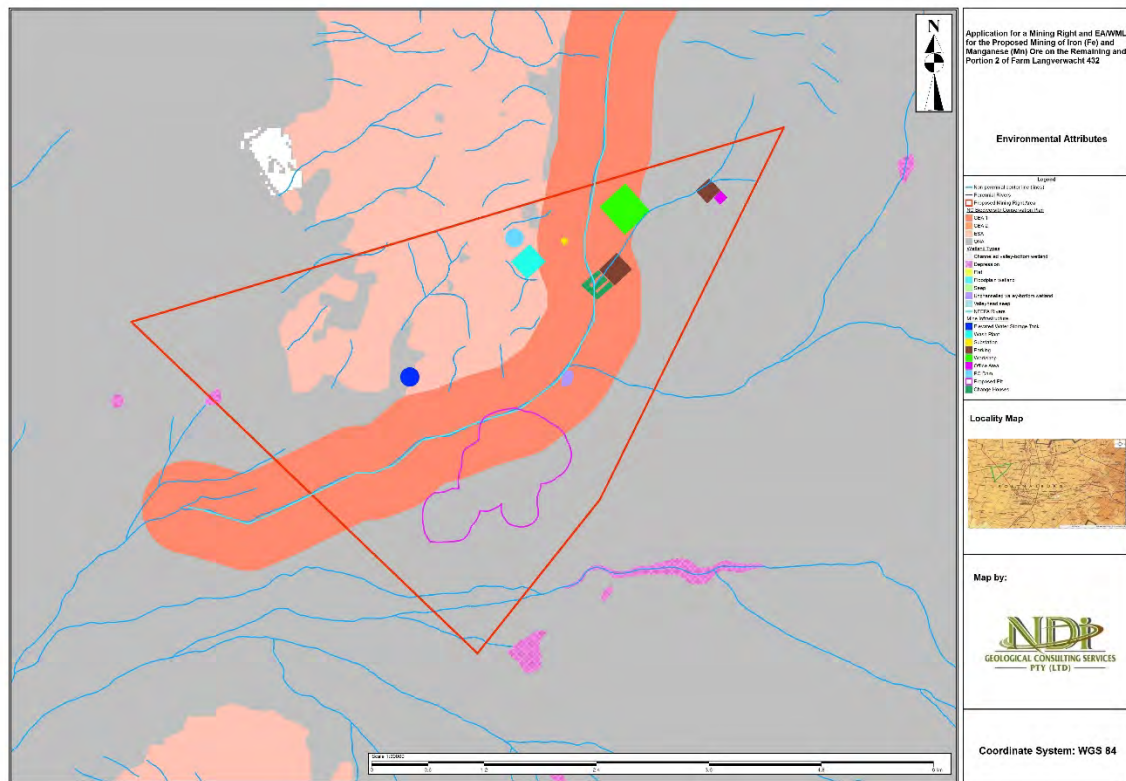


**Figure 11-30: NFEPA River Catchment Area Classification**

### 11.13 Environmental Attributes and Sensitivity

To date, no fatal flaws have been identified for the proposed project through the desktop scoping assessment and stakeholder engagement process specialist studies. Site specific specialist studies will be undertaken for the proposed project.

The site map is provided in Figure 11-31 provides a consolidated map of all the sensitive environments that are associated with the proposed project area.



**Figure 11-31: Current Environmental Attributes**

## 11.14 Preliminary Composite Map

A preliminary composite map showing areas of high sensitivity which are regulated through different legislation is provided in Figure 11-32. No specific heritage sites have been identified and therefore have not been included in the preliminary composite map. The composite map will be updated once all the sensitive environmental sites have been verified through specialist studies and other areas of environmental importance are identified such as areas of heritage importance.

The current composite map includes red flag areas which include the following:

- Water courses and 100m regulated buffer area (regulated by the NWA);
- Wetlands and 500m regulated buffer area (regulated by the NWA); and
- CBAs (regulated by Listing Notice 3 of the NEMA).



Figure 11-32: Preliminary Composite Map

## 12 Assumptions and limitations

In accordance with the purpose of scoping, this report does not include detailed investigations on the receiving environment, which will only form part of the impact assessment phase. The project area environment was assessed through site visits, desktop screening, incorporating existing information from previous studies and databases as well as input received from authorities and I&APs to date.

A detailed description of the site-specific environmental attributes will be updated during the impact assessment phase once all the specialist studies have been concluded.

## 13 Anticipated Environmental, Social and Cultural Impacts

The scoping phase aims to identify the potential positive and negative biophysical, socio-economic, and cultural impacts that the proposed project. Anticipated impacts that have been identified by the project team are summarised in Table 13-1.

All impacts in terms of construction, operation and decommissioning together with their recommended mitigation measures will be and addressed in detail during the impact assessment phase of the project.

**Table 13-1: Summary of Potential Environmental Impacts Associated with the Proposed Project**

| Element of Environment                | Potential Impact Descriptions                                                      |
|---------------------------------------|------------------------------------------------------------------------------------|
| Socio-Economic                        | Possible job opportunities during the construction and operation.                  |
| Hydrogeology                          | Possible groundwater contamination.                                                |
| Surface water                         | Possible surface water contamination.                                              |
| Aquatic ecosystems and riparian areas | Possible impacts on aquatic ecosystems and riparian areas                          |
| Air Quality                           | Possible impact on Air Quality in the area.                                        |
| Climate Change                        | Possible contribution to climate change through emission of Green House Gases      |
| Vibrations                            | Possible impacts on private properties and fauna due to vibrations during drilling |
| Noise                                 | Possible generation of noise during construction and operation.                    |
| Soils/Land Use/Land Capability        | Loss of soil resource and change in land capability and land use.                  |
| Biodiversity                          | Disturbance and loss of biodiversity, especially SCC.                              |
| Aquatic ecology                       | Possible loss, sedimentation, and contamination of aquatic resources               |
| Heritage                              | Possible impact on heritage and cultural resources (including graves) in the area. |
| Community Health                      | Potential community health issues as a result of the project                       |
| Traffic                               | Potential safety issues due to the increased traffic.                              |
| Cumulative Impacts                    | Cumulative Impacts                                                                 |

Table 13-2 provide a high-level assessment of the potential impacts and associated mitigation measures which could result from the proposed mine during construction (C), operation (O) and decommissioning/closure (D). These impacts will be further refined and assessed according to the impact assessment methodology in Section 14 during the impact assessment phase of the study.

**Table 13-2: Anticipated impacts for the proposed Manyeleti MRA**

| Aspect         | Impact                                                                                                                                                            | Mitigation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Phase |   |   |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|---|---|
|                |                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | C     | O | D |
| Socio-economic | Influx of job seekers will have a negative social impact on the landowners and land occupiers.                                                                    | Security and safety should be emphasised;<br>Recruitment will not be undertaken on site;<br>Recruitment practises will favour locals;<br>Implement effective crime prevention strategies; and<br>No construction workers shall be allowed to access private properties without the owner's knowledge and consent.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | X     | X | X |
|                | Unauthorised access to private property outside of the demarcated areas will result in conflict with landowners.                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |       |   |   |
|                | Possible boost in local small business opportunities.                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |       |   |   |
|                | Possible creation of employment for locals                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |       |   |   |
| Geology        | Loss of mineral resources                                                                                                                                         | Due to the nature of mining, very limited mitigation measures can be implemented to limit the loss of geological resources, as vast quantities of rock as ore will be removed as well as overburden.<br>The pit areas will be kept to a minimum.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | X     | X |   |
|                | Stability of geological structures                                                                                                                                | Ensure safe operation of the overburden and waste rock dumps.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | X     | X |   |
| Topography     | Impact of the mining related infrastructure on the topography                                                                                                     | Indigenous trees may be planted at strategic locations to act as a visual screen<br>Re-vegetation of the slopes of overburden stockpiles will be carried out concurrently with the mining operation, as and when suitable areas become available.<br>All areas cleared of surface infrastructure will be rehabilitated and re-vegetated.<br>Re-vegetated areas will be monitored and maintained until such time as a vegetation cover has been established which can be shown to be self-sustaining.                                                                                                                                                                                                                                                                                                                                                                    | X     | X | X |
| Air Quality    | Dust pollution emanating from the waste rock dumps, primary blasting operations and other mine related sources, i.e., movement of vehicles on unpaved haul roads. | The waste dumps will be re-vegetated to stabilise the soils and fine materials, thereby limiting the potential wind-blown dust that may be generated at these facilities.<br>Where practical rehabilitation should be undertaken in tandem with the construction activities.<br>All aspects of the re-vegetation programme will be monitored, and corrective action will be taken, if and when necessary.<br>Dust suppression measures must be implemented to minimise nuisance.<br>Transportation of dust raising material without covering should be restricted to an appropriate speed level (roughly 30 km/h) if dispersion of particulates and fugitive dust are observed leaving the transportation vehicles.<br>Good housekeeping practices are to be implemented with respect to dust control in operational areas to reduce fugitive dust emissions and odour. | X     | X | X |
|                | Increase in fugitive dust due to construction work and movement of material.                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | X     | X | X |
|                |                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | X     |   |   |
|                | Increase in carbon emissions and ambient air pollutants (NO <sub>2</sub> and SO <sub>2</sub> ) as a result of movement of                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | X     | X | X |

| Aspect                               | Impact                                                                                     | Mitigation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Phase |   |   |
|--------------------------------------|--------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|---|---|
|                                      |                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | C     | O | D |
|                                      | vehicles and operation of machinery/equipment.                                             | Where required, transported material must be covered to reduce fugitive dust.<br>All construction equipment must be scheduled for preventative maintenance to ensure the functioning of the exhaust systems to reduce excessive emissions and limit air pollution.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |       |   |   |
| Surface Water                        | Water that is adversely impacted contaminating the environment                             | Stormwater Management infrastructure that separates clean and dirty water will be installed and maintained at all mining related infrastructure as required by Regulation 704 of NWA.<br>Clean stormwater will be diverted around potential pollution sources and released into the environment. Dirty stormwater runoff shall be contained, re-used, evaporated, or treated<br>Stormwater runoff from stockpiles should be controlled so that it does not enter existing surface water courses.<br>Regular monitoring and maintenance of mine infrastructure shall be undertaken regularly to ensure that there are no undue leakages or spillage occurrence which will result in contamination of water resources. Where required, remedial work will be undertaken as soon as practically possible | X     | X | X |
|                                      |                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | X     | X |   |
|                                      |                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | X     | X | X |
| Groundwater                          | Impacts on groundwater quality due to infiltration of contaminated water                   | A groundwater monitoring programme will be developed and implemented.<br>Where there is evidence of groundwater contamination, the mine will investigate the source of contamination, implement remedial measures to reduce the impact to an acceptable level as well as identify measures for the control and minimisation of potential future contamination in both the short and long term.<br>Where required, PDC shall be lined to avoid infiltration of contaminated water groundwater system.<br>Should it be proven that groundwater quality in the surrounding area has been affected by the mine, an alternative water supply or equal or better quality will be identified and provided to the directly affected groundwater user(s).                                                      | X     | X | X |
|                                      | Reduction in groundwater available to surrounding groundwater users.                       | The mine shall minimise the abstraction of groundwater by recycling water and using process water as far as is possible.<br>Groundwater level monitoring shall be undertaken throughout the life of mine.<br>No abstraction of borehole water may be undertaken without a licence from the DWS.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | X     | X | X |
| Heritage and Palaeontology Resources | The proposed project has the potential to impact on local graves within the area.          | No heritage and/or cultural sites shall be destroyed and/or relocated without the approval of SAHRA;<br>If archaeological sites or graves are exposed during mining activities, it should immediately be reported to a heritage practitioner who will advise on the steps to be taken to manage any potential impacts.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | X     | X | X |
|                                      | The proposed project has the potential to impact on sites of archaeological importance.    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |       |   |   |
|                                      | Drilling of boreholes and the mining has potential to impact on palaeontological resources | Should fossils be exposed during mining activities, it should immediately be reported to a heritage specialist so that an investigation and evaluation of the finds can be made.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | X     | X | X |

| Aspect                                 | Impact                                                                                                                                                                             | Mitigation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Phase |   |   |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|---|---|
|                                        |                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | C     | O | D |
| Visual                                 | Scaring of the landscape as a result of the clearance of vegetation.                                                                                                               | <p>The footprints to be cleared of vegetation shall be kept to a minimal;<br/>Where possible, rehabilitation of the work areas shall be undertaken in tandem with construction to ensure that areas stripped of vegetation are kept to a minimum</p> <p>The number of vehicles and machinery to be used shall be kept to a minimum;<br/>Movement of vehicles shall be kept to outside busy hours to minimise the visual impacts on the residents;<br/>Materials transported on public roads must be covered; and</p>                                                                                                                                                                                                                                                                    | X     |   | X |
|                                        | Visual intrusion as a result of the movement of machinery and the establishment of the required infrastructure.                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | X     | X | X |
|                                        | Indirect visual impact due to dust generation as a result of the movement of vehicles and materials, to and from the mine area.                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | X     | X | X |
| Soils and Land use and Land capability | Loss of soil and land capability due to reduction in nutrient status, de-nitrification and leaching due to stripping and stockpiling of soils from infrastructural footprint areas | <p>Soil will be stored with as little compaction as possible</p> <p>Mine infrastructure will, at mine closure, either be demolished or an alternative use for infrastructure will be decided upon. All areas cleared of surface infrastructure will be rehabilitated and re-vegetated</p> <p>Measures to control erosion of soil, such as contouring and vegetation cover, will be implemented, monitored, and maintained</p> <p>Contaminated soil shall be removed and disposed of to an appropriate licensed landfill site in terms of NEM: WA, or can be removed by a service provider that is qualified to clean the soil</p>                                                                                                                                                       | X     | X | X |
|                                        | Loss of land capability                                                                                                                                                            | <p>Due to the nature of the mining operation, it is not possible to significantly mitigate the impact of mining on land capability during the operational phase. However, the mine will implement the following mitigation measures to minimise the impact on the baseline land use and land capability:</p> <ul style="list-style-type: none"> <li>Minimise the footprint area of the mining operation and location of mining infrastructure and structures to that which is absolutely necessary</li> <li>A rehabilitation plan will be developed to achieve the negotiated end land use.</li> <li>Stockpiled soil will be used for rehabilitation purposes</li> <li>Grassed areas will be maintained and monitored to ensure that the vegetation cover is self-sustaining</li> </ul> | X     | X | X |
| Community Health                       | Potential safety impact on local roads due to construction vehicles and haulage of abnormal mine equipment to site                                                                 | <p>Engage the Local Municipality and interested and affected parties to assist with programs targeted at improving traffic management and road safety in the study area;</p> <p>Adherence speed limits.</p> <p>Develop a clear policy for the management of emergencies or accidents in the community as a direct result of the projects activities;</p>                                                                                                                                                                                                                                                                                                                                                                                                                                | X     | X | X |

| Aspect | Impact                                                                                                                                                                  | Mitigation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Phase |   |   |
|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|---|---|
|        |                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | C     | O | D |
|        | Increase in dust levels will create nuisance impact and lead to health problems i.e. sinusitis, silicosis.                                                              | <p>Implement dust control measures.</p> <p>Collect data on a longitudinal basis from the local health centres on incidence of increased respiratory disease - especially respiratory tract infections that could be ascribed to dust. While these may not be specifically ascribed to the Project, the prevailing trends are useful to monitor so that any concerns could be addressed. This may require health systems strengthening to support recording.</p> <p>A General/Mine Manager will be appointed at the mine who will maintain Healthy and Safe Environment as per the Mine Health and Safety Act, 1996.</p> <p>Employees must be supplied with sufficient quantities of PPE (personal protective equipment).</p> <p>Identify the relevant hazards and assess related risks to which persons who are employees at the mine may be exposed to whilst working at the mine and provide health and safety training to its employees.</p> <p>The mine is to monitor and control environmental aspects at the mine which affect, the health and safety of employees and other persons (noise, dust).</p> <p>Manyeleti is to compile an annual report on health and safety at the mine including the statistics and compile a medical report.</p> <p>Maintain complaints register for stakeholders.</p>           | X     | X | X |
|        | Pose an increased risk for communicable diseases due to mine workers in close proximity to each other in enclosed environment allowing communicable diseases to spread. | <p>Collaborate with the Department of Health (DoH) on awareness-creation around vaccinations to communicable diseases for vulnerable sub-populations such as children and old people;</p> <p>Labour policies should encourage hiring of local staff to avoid excessive job-seeking migrants.</p> <p>Reduce the prevalence of communicable diseases by collaborating with relevant government departments and schools for awareness creation and improved understanding of factors exacerbating communicable diseases, including coping strategies that result in behaviour change; and initiating competitions at schools for illustrating innovative ways to improve conditions at home - either by reducing exposure and susceptibility or increasing coping capability.</p> <p>Support community-based information campaigns related to TB symptoms and the need to seek care. The campaign should address the risk of co-infection between HIV and TB;</p> <p>Influx management and advice with regards to town planning to prevent overcrowding; and</p> <p>Develop partnerships to support the community-based TB control programs in conjunction with the DoH and any NGOs. This needs to include case detection, management and surveillance activities under the national TB program policy and strategy</p> | X     | X | X |
|        | Possible increased risk for STIs, including HIV/AIDS due to destructive behaviour by laborers; likely to take back home or from                                         | <p>Develop a HIV/AIDS policy that incorporates both the workplace and community considerations; TB and STI must be integrated into this;</p> <p>Support equal employment opportunities for women and establish livelihood programs to reduce risk for opportunistic sexual encounters and empower women and young girls to earn their own income to be in a position to provide for themselves without having to resort to sexual transactions;</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | X     | X | X |

| Aspect         | Impact                                                                                                                                                 | Mitigation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Phase |   |   |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|---|---|
|                |                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | C     | O | D |
|                | community to labour accommodation.                                                                                                                     | Support (financial or otherwise) NGO groups active in the area on gender-based sexual violence.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |       |   |   |
| Ecology: Flora | Loss of localised biodiversity habitats within sensitive areas due to site clearance and establishment of drill sites.                                 | The Contractor shall be on the lookout for SCC and any floral SCC encountered within the mine footprint area to be relocated to areas with suitable habitat, outside the disturbance footprint. These will be identified and recorded during the impact assessment phase of the process by a biodiversity specialist.                                                                                                                                                                                                                                                                | X     | X | X |
|                | Loss of localised floral species diversity including, SCC, RDL and medicinal protected species due to site clearance and establishment of drill sites. | Floral species of conservation concern, if encountered within the development footprint, are to be handled with care and the relocation of sensitive plant species to suitable similar habitat is to be overseen by a botanist.<br><br>The proposed development footprint shall be kept to the minimum.<br>All disturbed areas must be concurrently rehabilitated during construction;<br>Prohibit the collection of any plant material for firewood or medicinal purposes.                                                                                                          | X     |   | X |
|                | Potential spreading of alien invasive species as indigenous vegetation is removed, and pioneer alien species are provided with a chance to flourish.   | Edge effect control shall be implemented to avoid further habitat degradation outside of the proposed footprint area<br>Monitoring of relocation success will be conducted during the operational phase.<br>Vehicles shall only be allowed on designated roadways to limit the ecological footprint of the project.<br>An Alien Invasive Plant Species Management plan to be developed and implemented.<br>All sites disturbed by mine activities shall be monitored for colonisation by exotic or invasive plants.<br>Exotic or invasive plants shall be controlled as they emerge. | X     | X | X |
| Ecology: Fauna | Vegetation clearance may result in loss of faunal habitat ecological structure, species diversity and loss of species of conservation concern.         | The proposed development footprint areas shall remain as small as possible and where possible be confined to already disturbed areas.<br>No trapping or hunting of fauna shall be permitted.<br>Edge effects of all construction and operational activities, such as erosion and alien plant species proliferation, which may affect faunal habitat, need to be strictly managed.                                                                                                                                                                                                    | X     |   | X |
|                | Habitat fragmentation as a result of construction activities of the access roads leading to loss of floral diversity.                                  | Should any SCC be encountered within the study area, these species will be relocated to similar habitat within or in the vicinity of the study area with the assistance of a suitably qualified specialist.<br>No informal fires in the vicinity of construction areas shall be permitted.                                                                                                                                                                                                                                                                                           | X     |   |   |
|                | Loss of faunal diversity and ecological integrity as a result of mining activities, erosion, poaching and faunal specie trapping.                      | An alien vegetation management programme must be developed and implemented in order to manage alien plant species occurring within the site, and to prevent further faunal habitat loss.                                                                                                                                                                                                                                                                                                                                                                                             | X     | X | X |

| Aspect           | Impact                                                                                                                                                                                            | Mitigation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Phase |   |   |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|---|---|
|                  |                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | C     | O | D |
|                  | Movement of vehicles result in collision with fauna, resulting in loss of fauna.                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | X     | X | X |
| Climate          | Emissions of Green House Gases as a result of the use of plant, heavy moving machinery, generators etc.                                                                                           | All the construction vehicles shall undergo maintenance on a regular basis to improve on the combustion engine vehicle efficiency and reduce GHG emissions.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | X     | X | X |
| Traffic          | Increase in traffic volumes as a result of pre-construction activities which may lead to an increase in traffic congestion along the public roads as well as the farm roads around the mine area. | Local speed limits and traffic laws shall apply at all times to minimise the occurrences of accidents on public roads<br>The number of vehicles and trips shall be kept to a minimum<br>Where possible the transportation of materials and rubbish shall be undertaken outside traffic peak hours to minimise inconveniencing residents                                                                                                                                                                                                                                                                                                                                                         | X     | X | X |
| Noise            | Noise, generated from mining related activities and operation                                                                                                                                     | Vehicles will be maintained in good condition.<br>The surrounding communities will be informed well in advance of noisy events.<br>Vehicles and equipment will be regularly maintained.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | X     | X | X |
| Socio-Economic   | Impacts on the surrounding communities due to mining activities taking place                                                                                                                      | <ul style="list-style-type: none"> <li>• If desirable, and should the need exist, water and power supplies may remain except for the changeover to local management of the services.</li> <li>• Recruitment practises will favour locals, women, SMMEs and HDIs.</li> <li>• The mine will ensure that it complies with the Mine Health and Safety Act.</li> <li>• Manyeleti will implement the provisions in the SLP.</li> <li>• The mine will have a community liaison officer and have an open-door policy whereby problems identified by the communities can be raised and addressed by the mine management team. Records of such interactions shall be kept on file at the mine.</li> </ul> | X     | X | X |
| Waste Management | Potential water and soil pollution as a result of inappropriate waste management practices.                                                                                                       | The management of waste on site will take into account the principles of the NEM: WA and implement the waste management hierarchy of waste management as provided in Figure 13-1.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | X     | X | X |

| Aspect | Impact | Mitigation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Phase |   |   |
|--------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|---|---|
|        |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | C     | O | D |
|        |        |  <p><b>Figure 13-1: Waste Management Hierarchy to be followed</b></p> <p><i>Separation of waste:</i></p> <p>All waste shall be separated into general waste and hazardous waste;<br/> Hazardous waste shall not be mixed with general waste and in doing so increase the quantities of hazardous waste to be managed;<br/> General waste can further be separated into waste that can be recycled and or reused;<br/> No littering shall be allowed in and around the site, a sufficient number of bins shall be provided for the disposal of waste;<br/> Where necessary dedicate a storage area on site for collection of construction waste.</p> <p><i>Storage of waste:</i></p> <p>No stockpiling of debris shall be permitted within 100 m of any water courses and drainage lines, or within 500 m of riparian and wetland areas;<br/> General waste will be collected in an adequate number of litter bins located throughout the construction site;<br/> Bins must have lids in order to keep rainwater out;<br/> Bins shall be emptied regularly to prevent them from overflowing;<br/> All work areas shall be kept clean and tidy at all times;<br/> All waste management facilities will be maintained in good working order;</p> |       |   |   |

| Aspect | Impact | Mitigation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Phase |   |   |
|--------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|---|---|
|        |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | C     | O | D |
|        |        | <p>Waste shall be stored in demarcated areas according to type of waste;</p> <p>Runoff from any area demarcated for waste will be contained, treated, and reused;</p> <p>Flammable substances must be kept away from sources of ignition and from oxidizing agents;</p> <p>No construction rubble shall be disposed of to the wetland and riparian area;</p> <p>If construction rubble is not removed immediately, it shall be stockpiled outside the sensitive environments including riparian areas;</p> <p>Demolition waste and surplus concrete shall be disposed of responsibly;</p> <p>Waste shall not be buried or burned on site; and</p> <p>The maximum retention time for temporary storage of waste generated shall not exceed 30 days, provided the waste does not present a health hazard or risk of odour.</p> <p><i>Disposal of hazardous waste:</i></p> <p>No dumping shall be allowed in or near the construction site;</p> <p>Hazardous containers shall be disposed of at an appropriate licensed site;</p> <p>Hazardous waste will be removed and managed by an approved service provider;</p> <p>A safe disposal certificate will be provided by the approved service provider as proof of responsible disposal of hazardous waste; and</p> <p>The safe disposal certificate shall be stored and provided on request.</p> <p><i>Disposal of general waste:</i></p> <p>No dumping shall take place in or near the construction site;</p> <p>All general waste shall be disposed of to the nearest licensed landfill site;</p> <p>Demolition waste and builder's rubble shall be disposed of to an appropriate licensed landfill site; and</p> <p>The necessary permissions must be obtained to dispose of builders' rubble to the landfill site.</p> |       |   |   |

## 14 Methodology to be used in determining the significance of environmental impacts

The following methodology for determining the significance of environmental impacts will be utilised for the impact assessment phase.

The impact assessment methodology has been formalised to comply with Regulation 31(2) (i) of NEMA, which states the following:

(2) An environmental impact assessment report must contain all information that is necessary for the competent authority to consider the application and to reach a decision ..., and must include –

(i) an assessment of each identified potentially significant impact, including –

- (i) **cumulative impacts**;
- (ii) the **nature** of the impact;
- (iii) the **extent** and **duration** of the impact;
- (iv) the **probability** of the impact occurring;
- (v) the **degree** to which the impact can be **reversed**;
- (vi) the **degree** to which the impact may **cause irreplaceable loss of resources**; and
- (vii) the **degree** to which the impact can be **mitigated**.

All the identified potential impact will be assessed according to the following Impact Assessment Methodology as described below. This methodology has been utilised for the assessment of environmental impacts where the consequence (severity of impact, spatial scope of impact and duration of impact) and likelihood (frequency of activity and frequency of impact) have been considered in parallel to provide an impact rating and hence an interpretation in terms of the level of environmental management required for each impact.

The first stage of any impact assessment is the identification of potential environmental activities<sup>1</sup>, aspects<sup>2</sup> and impacts which may occur during the commencement and implementation of a project. This is supported by the identification of receptors<sup>3</sup> and resources<sup>4</sup>, which allows for an understanding of the impact pathway and an assessment of the sensitivity to change. Environmental impacts<sup>5</sup> (social and biophysical) are then identified based on the potential interaction between the aspects and the receptors/resources.

The significance of the impact is then assessed by rating each variable numerically according to defined criteria as outlined in Table 14-1. The purpose of the rating is to develop a clear understanding of influences and processes associated with each impact. The severity<sup>6</sup>, spatial scope<sup>7</sup> and duration<sup>8</sup>

<sup>1</sup>An **activity** is a distinct process or task undertaken by an organisation for which a responsibility can be assigned. Activities also include facilities or pieces of infrastructure that are possessed by an organisation.

<sup>2</sup>An **environmental aspect** is an 'element of an organisations activities, products and services which can interact with the environment'. The interaction of an aspect with the environment may result in an impact.

<sup>3</sup>**Receptors** comprise but are not limited to people or man-made structures.

<sup>4</sup>**Resources** include components of the biophysical environment.

<sup>5</sup>**Environmental impacts** are the consequences of these aspects on environmental resources or receptors of particular value or sensitivity, for example, disturbance due to noise and health effects due to poorer air quality. Receptors can comprise, but are not limited to, people or human-made systems, such as local residents, communities, and social infrastructure, as well as components of the biophysical environment such as aquifers, flora, and palaeontology. In the case where the impact is on human health or well-being, this should be stated. Similarly, where the receptor is not anthropogenic, then it should, where possible, be stipulated what the receptor is.

<sup>6</sup>**Severity** refers to the degree of change to the receptor status in terms of the reversibility of the impact; sensitivity of receptor to stressor; duration of impact (increasing or decreasing with time); controversy potential and precedent setting; threat to environmental and health standards.

<sup>7</sup>**Spatial scope** refers to the geographical scale of the impact.

<sup>8</sup>**Duration** refers to the length of time over which the stressor will cause a change in the resource or receptor.

of the impact together comprise the consequence of the impact and when summed can obtain a maximum value of 15. The frequency of the activity<sup>9</sup> and the frequency of the impact<sup>10</sup> together comprise the likelihood of the impact occurring and can obtain a maximum value of 10. The values for likelihood and consequence of the impact are then read off a significance rating matrix table as shown in Table 14-1. This matrix thus provides a rating on a scale of 1 to 150 (low, medium low, medium high or high) based on the consequence and likelihood of an environmental impact occurring as shown in Table 14-2.

Natural and existing mitigation measures, including built-in engineering designs, are included in the pre-mitigation assessment of significance. Measures such as demolishing of infrastructure, and reinstatement and rehabilitation of land, are considered post-mitigation.

**Table 14-1: Criteria for Assessing Significance of Impacts**

|                                                                                                                                                                                                                  |                                        |  |                    |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|--|--------------------|
| <b>SEVERITY OF IMPACT</b><br>Insignificant / non-harmful<br>Small / potentially harmful<br>Significant / slightly harmful<br>Great / harmful<br>Disastrous / extremely harmful                                   | <b>RATING</b><br>1<br>2<br>3<br>4<br>5 |  | <b>CONSEQUENCE</b> |
| <b>SPATIAL SCOPE OF IMPACT</b><br>Activity specific<br>MRA specific (within the MRA boundary)<br>Local area (within 5 km of the MRA boundary)<br>Regional<br>National                                            | <b>RATING</b><br>1<br>2<br>3<br>4<br>5 |  |                    |
| <b>DURATION OF IMPACT</b><br>One day to one month<br>One month to one year<br>One year to ten years<br>Life of operation<br>Post closure / permanent                                                             | <b>RATING</b><br>1<br>2<br>3<br>4<br>5 |  |                    |
| <b>FREQUENCY OF ACTIVITY / DURATION OF ASPECT</b><br>Annually or less / low<br>6 monthly / temporary<br>Monthly / infrequent<br>Weekly / life of operation / regularly / likely<br>Daily / permanent / high      | <b>RATING</b><br>1<br>2<br>3<br>4<br>5 |  | <b>LIKELIHOOD</b>  |
| <b>FREQUENCY OF IMPACT</b><br>Almost never / almost impossible<br>Very seldom / highly unlikely<br>Infrequent / unlikely / seldom<br>Often / regularly / likely / possible<br>Daily / highly likely / definitely | <b>RATING</b><br>1<br>2<br>3<br>4<br>5 |  |                    |

<sup>9</sup>**Frequency of activity** refers to how often the proposed activity will take place.

<sup>10</sup>**Frequency of impact** refers to the frequency with which a stressor (aspect) will impact on the receptor.

**Table 14-2: Criteria for Determining the Significance of an Impact**

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

|  |             |           |                             |
|--|-------------|-----------|-----------------------------|
|  | High        | 76 to 150 | Improve current management  |
|  | Medium High | 40 to 75  | Maintain current management |
|  | Medium Low  | 26 to 39  |                             |
|  | Low         | 1 to 25   | No management required      |

SIGNIFICANCE = CONSEQUENCE x LIKELIHOOD

## **15 The positive and negative impacts that the proposed activity and alternatives**

Refer to Section 13 for the positive and negative impacts identified for the proposed project. A detailed assessment of the positive and negative impacts associated with the project will be developed and included in the EIA/ EMPr Report.

## **16 Possible mitigation measures that could be applied and the level of risk**

Refer to Section 13 for the positive and negative impacts identified for the proposed mining project. It is anticipated that the management measures associated with the activities will be adequate to manage the impacts associated with the proposed mining project. This will be further assessed during the impact assessment phase. Detailed mitigation and management measures of the positive and negative impacts associated with the project will be developed and included in the EIA/ EMPr Report.

## 17 The outcome of the site selection matrix

The location of the proposed project components is constrained to the location of the existing and confirmed mineral resource (Mn and Fe Ore). Two types of iron ore mineralized deposits have been identified in the area, namely the laminated hematite ore, which forms part of the Manganore iron formation, and the conglomerate ore, which belongs to the Doornfontein Conglomerate Member at the base of the Gamagara Formation.

The older laminated ore types occur in the upper portion of the Manganore Iron Formation as enriched high-grade hematite bodies. The boundaries of these ore bodies crosscut primary sedimentary bedding, indicating that secondary hematisation of the iron formation took place. In all of these formations, some of the stratigraphic and sedimentological features of the original iron formation are preserved.

The iron-rich conglomeratic ore is found in the Doornfontein Conglomerate Member of the Gamagara Formation (Carney and Mienie, 2002). The conglomeratic ore is dominated by large poorly sorted hematite and BIF clasts in a hematite and specularite matrix.

A thin band of high-grade massive hematite has been noticed in the boreholes and is mostly found just above the dolomites. This is interpreted to be part of the Manganore Fm and not currently considered an economic target.

The resources on the property in application have been confirmed and estimated to be over 38 million tons of iron ore reserves. For this reason, no site selection assessment was undertaken.

The scoping assessment that has been conducted for the project shows that there are no fatal flaws associated with the project location. However, should sensitive environments such as heritage resources, SCC etc be affected by the project layout, the site layout plan will be revised after the specialist studies have been concluded.

## 18 Motivation where no alternatives were considered

The location of the proposed project components is constrained to the location of the existing and confirmed mineral resource (Mn and Fe Ore). Two types of iron ore mineralized deposits have been identified in the area, namely the laminated hematite ore, which forms part of the Manganore iron formation, and the conglomerate ore, which belongs to the Doornfontein Conglomerate Member at the base of the Gamagara Formation.

The older laminated ore types occur in the upper portion of the Manganore Iron Formation as enriched high-grade hematite bodies. The boundaries of these ore bodies crosscut primary sedimentary bedding, indicating that secondary hematization of the iron formation took place. In all of these formations, some of the stratigraphic and sedimentological features of the original iron formation are preserved.

The iron-rich conglomeratic ore is found in the Doornfontein Conglomerate Member of the Gamagara Formation (Carney and Mienie, 2002). The conglomeratic ore is dominated by large poorly sorted hematite and BIF clasts in a hematite and specularite matrix.

A thin band of high-grade massive hematite has been noticed in the boreholes and is mostly found just above the dolomites. This is interpreted to be part of the Manganore Fm and not currently considered an economic target.

The resources on the property in application have been confirmed and estimated to be over 38 million tons of iron ore reserves. As such, no site alternatives were considered.

The scoping assessment that has been conducted for the project shows that there are no fatal flaws associated with the project location. However, should sensitive environments such as heritage resources, SCC etc be affected by the project layout, the site layout plan will be revised after the specialist studies have been concluded.

## 19 Statement motivation the preferred site

The location of the proposed project components is constrained to the location of the existing and confirmed mineral resource (Mn and Fe Ore). Two types of iron ore mineralized deposits have been identified in the area, namely the laminated hematite ore, which forms part of the Manganore iron formation, and the conglomerate ore, which belongs to the Doornfontein Conglomerate Member at the base of the Gamagara Formation.

The older laminated ore types occur in the upper portion of the Manganore Iron Formation as enriched high-grade hematite bodies. The boundaries of these ore bodies crosscut primary sedimentary bedding, indicating that secondary hematisation of the iron formation took place. In all of these formations, some of the stratigraphic and sedimentological features of the original iron formation are preserved.

The iron-rich conglomeratic ore is found in the Doornfontein Conglomerate Member of the Gamagara Formation (Carney and Mienie, 2002). The conglomeratic ore is dominated by large poorly sorted hematite and BIF clasts in a hematite and specularite matrix.

A thin band of high-grade massive hematite has been noticed in the boreholes and is mostly found just above the dolomites. This is interpreted to be part of the Manganore Fm and not currently considered an economic target.

The resources on the property in application have been confirmed and estimated to be over 38 million tons of iron ore reserves. As such, no site alternatives were considered.

The scoping assessment that has been conducted for the project shows that there are no fatal flaws associated with the project location. However, should sensitive environments such as heritage resources, SCC etc be affected by the project layout, the site layout plan will be revised after the specialist studies have been concluded.

## **20 Plan of study for the environmental impact assessment process**

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

According to the MPRDA and NEMA regulations, feasible alternatives need to be considered and assessed during the scoping and impact assessment phases of the project. The alternatives identified must serve to achieve the triple bottom-line of sustainability i.e. they must meet the social, economic, and ecological needs of the public. The alternatives must also aim to address the key significant impacts of the proposed project by maximizing benefits and avoiding or minimizing the negative impacts. The primary objective must be to avoid all negative impacts, rather than to minimise them.

The “feasibility” and “reasonability” of and the need for alternatives must be determined by considering, inter alia:

- The general purpose and requirements of the activity;
- Need and desirability;
- Opportunity costs;
- The need to avoid negative impact altogether;
- The need to minimise unavoidable negative impacts;
- The need to maximise benefits, and
- The need for equitable distributional consequence.

Refer to Section 9 for consideration of alternatives.

### **20.2 Description of aspects to be assessed as part of the environmental impact assessment process**

The proposed infrastructure and activities will be located within the property boundaries shown in Section 4.1. The key infrastructure provided in Section 5 will form part of the proposed project as the infrastructure footprints (and associated infrastructure footprints) and surrounding areas will need to be assessed by specialists during the impact assessment phases of the project. The specialist studies and impact assessment process will also include an assessment of the project alternatives described in Section 9 of this report.

The following environmental aspects will be assessed as part of the EIA phase based on the environmental attributes description and screened impacts in Table 13-1 and Table 13-2:

- Traffic;
- Surface Water;
- Ground Water;
- Soil and Land use Capability;
- Terrestrial Biodiversity (Fauna, Flora, and Avifauna);
- Aquatic Biodiversity (Freshwater, Hydropedology, Wetland Impact Assessment);
- Noise;
- Air Quality;
- Visual Impact;

- Heritage and Cultural Resources (Archaeological);
- Palaeontology;
- Socio-Economic aspects;
- Community Health; and
- Traffic.

## 20.3 Description of aspects to be assessed by specialists

Based on the outcomes of the DEFF screening tool and associated protocols for specialist assessment, specialist themes for which the site is rated as being of Low or Medium sensitivity generally require a “Compliance Statement” by the EAP or specialist. Those rated as High or Very High sensitivity will require detailed Specialist Impact Assessment to describe aspects of the baseline and assess potential impacts of the project. Based on the findings of the screening tool, the following specialist studies will be conducted:

The DFFE Screening tool shows that the area is considered to be of very high aquatic biodiversity, and terrestrial biodiversity value and high palaeontology and heritage resources value. A copy of the screening report is attached as Appendix 6. The results from the DFFE Screening Tool are summarised in Table 20-1.

**Table 20-1: DFFE Screening Tool Results**

| Theme                                      | Very High sensitivity | High sensitivity | Medium sensitivity | Low sensitivity |
|--------------------------------------------|-----------------------|------------------|--------------------|-----------------|
| Agriculture Theme                          |                       |                  | X                  |                 |
| Animal Species Theme                       |                       | X                |                    |                 |
| Aquatic Biodiversity Theme                 | X                     |                  |                    |                 |
| Archaeological and Cultural Heritage Theme |                       | X                |                    |                 |
| Civil Aviation Theme                       |                       |                  | X                  |                 |
| Defence Theme                              |                       |                  |                    | X               |
| Palaeontology Theme                        |                       | X                |                    |                 |
| Plant Species Theme                        |                       |                  |                    | X               |
| Terrestrial Biodiversity Theme             | X                     |                  |                    |                 |

The following site-specific specialist studies will be conducted during the impact assessment phase:

- Terrestrial Biodiversity Impact Assessment;
- Aquatic Biodiversity Impact Assessment;
- Archaeology and Cultural Heritage; and
- Palaeontology.

However, due to the nature of the proposed project and other required licences and permits, the following additional specialist studies will be undertaken:

- Visual
- Noise;
- Closure and Rehabilitation;
- Air Quality;
- Groundwater

- Hydrology and Surface water; and
- Soil and Land Capability.

The specific high-level Terms of Reference (ToR) for each specialist study are provided in Section 20.3.1 to Section 20.3.12. The generic ToR for each specialist study is to:

- Describe the existing baseline characteristics of the study area and place this in a regional context;
- Identify and assess potential impacts resulting from the project (including impacts associated with the construction and operation of the project);
- Identify and describe potential cumulative impacts resulting from the proposed development in relation to proposed and existing developments in the surrounding area;
- Recommend mitigation measures to avoid or minimise impacts and/or optimise benefits associated with the proposed project; and
- Recommend and draft a monitoring programme, if applicable.

Certain impacts that are anticipated to be of limited or lower significance, either by virtue of the scale of the impacts, their short duration (e.g., construction phase only), disturbed nature of the receiving environment and/or distance to communities, will be assessed by EAP Team and reported directly into the EIR. The EAP will make use of the impact assessment methodology described in Section 14 and will ensure that the specialist studies reports comply with the requirements of Appendix 6 of the NEMA.

### 20.3.1 Hydrology and Surface Water

The specialist will undertake a hydrology and surface water study which will include

- Determination of the 1:50 year and 1: 100-year floodlines of all the watercourses on the affected property;
- Assessment of the hydrology of the site to indicate the storm volumes emanating from the various sub catchments within the site (Calculation of the stormwater runoff based on impervious surface of the site);
- Describe the hydrology in relation to the position of the water resources in the area;
- Provide layout drawings of the following elements.
  - o indicate the site in relation to watercourses, including the floodlines in the area;
  - o Detailed project design layout and demarcation clean and dirty water areas as well as proposed stormwater controls and monitoring points;
  - o Describe what stormwater controls are required to ensure that the site will be environmentally compliant from a stormwater management point of view.
- Provide a water and salt balance to be used by the mine.

The stormwater management plan will be in compliance with the requirements of GNR704 of the NWA.

### 20.3.2 Ground Water

The objectives of the groundwater specialist study will be to:

- describe baseline groundwater conditions, including but not limited to the hydrocensus, groundwater quality, groundwater users, aquifer characteristics etc;
- determine the groundwater yield potential for mine water supply;
- complete an environmental impact assessment with respect to groundwater. The impact assessment will consider pre-construction, construction, operational, decommissioning and closure and post closure phases of the proposed mining project.

The investigation will include

- Site visit and review of existing data;
- Hydrocensus within and around the surrounding areas, including the identification of groundwater users in the area;
- Groundwater sampling and analysis;
- Definition and characterisation of the affected aquifer;
- Development of conceptual and numerical groundwater models to:
  - o Predict potential inflows to the proposed mine; and
  - o Predict potential impacts of the proposed mining on groundwater resource;
- Identification of groundwater management and monitoring requirements and measures.

Using the various data and information sources, a site specific conceptual hydrogeological model as well as numerical groundwater flow and transport models will be developed for the proposed mining project.

### 20.3.3 Soil and Land use Capability

The soil study will include the following components:

- Outline of the study approach and identification of the assumptions and sources of information to be used.
- A desktop study of existing maps, broad soil classes, etc. to establish broad baseline conditions and areas of environmental sensitivity.

The assessment will entail:

- Soil survey: A detailed soil survey (150 m x 150 m) will be conducted at the area where the proposed mining project will be located. The maps generated during the desktop study phase will be used to determine a grid and these areas will be traversed on the pre-determined transects. Auger samples will be studied. In areas of great soil form variety, more samples points will be evaluated to establish soil form boundaries.

Observations will be made regarding soil texture, depth of soil, soil structure, organic matter content and slope of the area. The soil characteristics of each sample point will be noted and logged with a global positioning system. The location of these auger points will be indicated in a Survey Points Map to be included in the final specialist report. Soil samples for chemical analysis will be taken at sampling points and at each point both topsoil (0-300mm) and subsoil (300-600mm) will be sampled.

The soils will be described using the S.A. Soil Classification Taxonomic System (Soil Classification Working Group, 1991) published as memoirs on the Agricultural Natural Resources of South Africa No.15. Soils will be grouped into classes with relatively similar soil properties and pedogenesis. A cold 10% hydrochloric acid solution will be used on site to test for the presence of carbonates in the soil.

- Chemical analyses: Representative soil samples will be stored in perforated soil sampling plastic bags on site and sent by courier to SGS Soil Laboratory in Somerset West for chemical soil analysis. Samples will be analysed for pH, phosphorus content, cations (calcium, magnesium, potassium, and sodium), electrical conductivity, organic carbon content and relative fractions of sand, silt, and clay.
- Reporting: The results of the soil survey will be mapped, and zones of similar soil forms indicated. Once soil form groups have been outlined, soil potential and land capability will be determined using the guidelines developed by the Agricultural Research Council.

The possible impacts of the proposed project on soil, agricultural potential and land capability will then be evaluated.

### 20.3.4 Terrestrial Biodiversity

The assessment will be undertaken to fulfil the ecological assessment requirements of the EIA as required in terms of the MPRDA, NEMA (1998) and associated regulations, as well as other legal requirements applicable on both national and provincial levels. The assessment will also be conducted to best meet all relevant stakeholders' requirements for ecological assessments. The proposed approach will be as follows:

- Floral assessment: The proposed methodology includes both a desktop review and a field work component. A desktop review of distribution lists (including Red Data Listed (RDL) species) and available literature will be conducted to guide the field work component. The vegetation type of the area will be defined according to sources such as Mucina & Rutherford (2006). Extensive consideration will also be given to determining the Ecological Importance and Sensitivity (EIS) of the subject property according to relevant provincial and national conservation databases. The SANBI and the National Herbarium Pretoria (PRE) Computerised Information System (PRECIS) databases for the relevant Quarter Degree Square (QDS) will also be consulted and will serve as the reference data to which field surveys will be compared to.

The assessment will include a detailed assessment for the entire area to be affected by mining activities as well as the surrounding zone of influence. The field assessment will identify:

- o Various habitat types;
- o A description of each habitat type based on conservation importance and present ecological state;
- o Floral species associated with each habitat component:
  - Focus on sensitive habitat types and impacts associated to them to fulfil the requirements of the study. Such sensitive areas will be mapped where detail will be given of the ecological aspect of concern in each sensitivity zone;
  - Focus on establishing the presence of RDL species and other sensitive species identified as well as suitable habitats for any of these species;
  - Specific focus will also be given to identifying areas of severe weed and alien vegetation encroachment, which will be mapped;
  - Medicinal plant species will also be identified, and the location of special medicinal species will be presented on maps;
  - Veld condition will be quantitatively assessed according to a pre-defined veld condition index and will also be quantitatively compared to the typical vegetation for the vegetation type of the area according to Mucina & Rutherford (2006);
  - Species lists for each habitat unit will be developed;
  - Based on the findings a detailed impact assessment on all identified significant risks will take. Recommendations on management and mitigation measures with regards to the construction and operation of the proposed development to manage and mitigate impacts on the ecology of the area; and
  - Rehabilitation and closure requirements will be considered.
- Faunal assessment: The faunal assessment will be conducted using the following methods:
  - o Extensive consideration will be given to determining the EIS of the subject property according to relevant databases. The relevant Mpumalanga Province databases for the QDS will also be consulted and will serve as the reference data to which field surveys will be compared to;

- o Visual observations of occurring species;
- o Identification of evidence of occurrence, e.g., call spoor, droppings, etc.;
- o Capture of fauna by various methods including netting, trapping, and dragging. In this regard special mention is made of the use of pitfall traps and sweep netting for invertebrates as well as the use of Sherman traps to determine the composition of the small mammal community on the site. Rope dragging methods will also be used to flush birds from areas where RDL avifaunal species are deemed likely to occur;
- o Nocturnal studies to identify nocturnal animals in the area may take place if it is deemed necessary;
- o The reports produced will include sensitive habitat types and impacts from habitat disturbance, faunal assemblages at risk and an assessment of impacts on migratory routes;
- o The Red Data Sensitivity Index (RDSIS) will also be considered to quantify the importance of the subject property in terms of RDL faunal conservation;
- o Based on the findings a detailed impact assessment on all identified significant risks will take place; and
- o Recommendations on management and mitigation measures (including opportunities and constraints) with regards to the construction and operation of the proposed development to manage and mitigate impacts on the faunal assemblage of the area will be provided.

The following field assessment methodologies will be followed as deemed necessary:

- Avifauna:
  - o The Southern African Bird Atlas Project 2 (SABAP 2) species list for the quarter degree square will be compared with the database of birds identified on the study area during the field surveys. Field surveys will be undertaken utilising a pair of binoculars and birdcall identification techniques will also be utilised during the assessment to accurately identify avifaunal species;
  - o Potential biodiversity list;
  - o Habitat evaluation for RDL species and areas of avifaunal importance; and
  - o Extensive consideration will be given to impacts on avifaunal ecology with specific mention of impacts on migratory species and migratory corridors.
- Mammals:
  - o A potential biodiversity list will be compiled from available literature sources;
  - o Short habitat descriptions of all habitat types pertaining to RDL species will be given;
  - o The habitat types will be evaluated for potentially supporting RDL species;
  - o If considered necessary, the survey will be extended to a nocturnal survey to potentially enable augmentation of the data. The use of surveillance techniques such as Sherman traps and automated camera traps will then be used;
  - o The field assessment will identify the presence of various mammalian species through direct (visual observations) and indirect (spoor, burrow, and scat identifications); and
  - o A species list, detailing their specific conservation status will be compiled from the field observations.
- Herpetofauna:
  - o A complete potential biodiversity list will be provided;
  - o The conservation status of each species listed will be determined;
  - o The potential species list in accordance with the habitat availability will also be compiled;
  - o The species recorded during the field survey will be listed;

- o Habitat evaluations will be undertaken for suitability for supporting various RDL species recorded from the region;
- o Identification through call identification and direct observation; and
- o Thorough site searches within the various habitat type units will be employed for determining the species community structures for the proposed development site with special mention of searching of target areas including rocky outcrops and wetland areas.
- Invertebrate assessment:
  - o Sweep netting;
  - o Direct visual observations; and
  - o Sweeping for ground dwellers.

### 20.3.5 Wetland Delineation and Aquatic Biodiversity

The wetland assessment will comprise of the following:

- Detailed desktop assessments of the NFEPA database as well as available regional wetland layers to define the wetland features based on existing desktop data. The wetlands will then be delineated in the field according to the Department of Water Affairs (DWA) (2005) guideline methodology. Once the wetland boundary has been defined it will be mapped and the relevant buffers applied.
- Delineation of the wetland resources will take place according to the DWAF (2005) guidelines and an assessment of the wetland PES, Index of Habitat Integrity (IHI), WET-Health, wetland Vegetation Response Assessment Index (VEGRAI) and wetland function and eco-services will take place according to DWS approved protocols. Recommendations for mitigating impacts on the aquatic environment will also be provided.
- The assessment will be undertaken to best meet the requirements of the DWS to supply specialist information for a WUA application.
- Results will be compiled into a report which will include a discussion on the findings. Specific attention will be given to the impacts associated with the proposed development with impacts being assessed according to a pre-defined impact assessment methodology.
- Extensive attention will be given to the development of recommendations for mitigating impacts on the receiving environment. These mitigation measures can then be incorporated into the EMP for the development to ensure that the wetland ecology of the area is adequately protected.

An assessment of the aquatic resources within the study area will also be undertaken as follows:

- On site biota specific water quality testing will take place for parameters including pH, conductivity, dissolved oxygen, and temperature;
- Habitat integrity will be assessed according to the IHIA index (Kleynhans, 1999);
- Habitat conditions for aquatic macro-invertebrates according to the IHAS index (McMillan, 1998);
- Assessment of the aquatic macro-invertebrate community. Assessments will be based on the South African Scoring System version 5 (SASS5) index according to the protocol of Dickens & Graham (2001). Analyses of data will take place by comparing the data to the classification of Dallas (2007) Dickens & Graham (2001). In addition, the Macro Invertebrate Response Assessment Index (MIRAI) Eco status tool will be used to further characterise and define the PES and potential risks to the aquatic macro- invertebrate community;

- The fish community will be assessed based on the Fish Response Assessment Index (FRAI) Eco status tool to characterise and define the PES and potential risks to the aquatic macro-invertebrate community;
- Allowance has been made for toxicological assessment according to the Direct Estimation of Ecological Effect Potential (DEEEP) to assist in defining the requirements for the discharge in term so volumes that can be released; and
- Findings will be compiled into a report which will highlight the PES, ECO status and EIS of the system. In addition, an impact assessment will be undertaken according to a pre-defined impact assessment methodology. The report will also highlight key recommendations to be considered in the implementation of the project.

### 20.3.6 Hydropedology

The Hydropedology assessment will include a desktop review of existing wetland and geohydrological data and/or reports;

- Conduct a soil survey to verify current soil conditions on site;
- Subsurface soil observations will be made by means of a standard hand auger method, and soil in the vicinity of the investigated wetland features will be classified according to the South African Soil Classification System (Soil Classification Working Group, 2018);
- Field data will include a description of physical soil properties including the following parameters.
  - o Landscape position in relation to the investigated wetlands (recorded on Global Positioning System (GPS));
  - o Texture estimated as % clay according to the in-situ hand feel method;
  - o Diagnostic soil horizon sequence and individual depths up to 1m below ground surface where no refusal is encountered; and
  - o Depth to saturation (water table), if encountered.
- Delineate the spatial extent of the identified soil forms using a GIS software programme;
- Delineate soils driving the wetland systems;
- Classify the hydrological hillslopes using the Le Roux, et al. (2015) method;
- Collect selected verification samples for textural analysis and soil moisture content at an accredited analytical laboratory;
- Estimate the hydraulic conductivity according to soil texture according to the Food and Agriculture Organisation (FAO) method (FAO, 1980);
- Identify the potential impacts of the proposed mining development on the unsaturated flow processes and wetlands;
- Recommend suitable mitigation and management measures to alleviate the identified impacts on the wetland hydropedological conditions;
- Based on the outcome of the hydro pedological assessment, and taking into consideration the results of the geohydrological assessment, a scientifically determined buffer will be generated around the affected wetlands; and
- Compile a brief report on the conceptual hydro pedological regime of the investigated wetlands based on the identified soil types under current conditions.

### 20.3.7 Noise

The study to determine the prevailing noise levels in and around the proposed mine shaft will be based on:

- SANS 10328 – Methods for environmental noise impact assessments;
- SANS 10103:2008 – The measurement and rating of environmental noise with respect to land use, health, annoyance and to speech communication and the;
- Guidelines for community noise impact assessments;
- International Finance Corporations Environmental Health and Safety Guidelines;
- The Scottish Government – Controlling the Environmental Effects of Surface Mineral Workings;
- Relevant Noise Control Regulations and/or by-laws applicable in the study area.

The noise study will be applicable on the following areas:

- Abutting noise sensitive areas;
- Boundary of the mining area; and
- Existing haul roads.

The noise survey from an environmental noise point of view will be undertaken during the daytime period and the night-time period to evaluate the recommended noise levels laid down by SANS 10103:2008 and to get a representative residual noise level for the areas where the proposed activities will take place.

The construction, operational and closure phases will be addressed in the report and the baseline information existing and newly acquired data will be used to determine the potential impact and management measures.

The process will include:

- Step1 – Define the project requirements and noise problem – gather technical support information;
- Step 2 – Establish baseline noise environment and determine extent of the noise impact of initial proposal;
- Step 3 – Identify and agree on noise mitigations options;
- Step 4 – Assess noise impact and evaluate key considerations and significance for each mitigation option; and
- Step 5 – Determine optimal noise control solution.

The proposed noise survey will consist out of the following:

- Preliminary survey and identification of measuring points;
- All measurements will be done on the boundary of the property;
- Sound pressure readings will also be done at the closest residential area – if applicable;
- Noise survey at the identified measuring sites – Ambient noise measurements;
- Calculation of noise propagation;
- Analyses of results; and
- Results of the survey, report and recommendations and mapping of noise contours for the sites.

### 20.3.8 Air Quality and Climate Change

The Air Quality Assessment will be conducted as follows:

- A desktop air quality impact study, including:
  - o the identification of air quality sensitive receptors;
  - o an analysis of regional climate and site-specific atmospheric dispersion considering local meteorology, land-use, and topography; and
  - o an analysis and assessment of existing (baseline) ambient air quality data (if available).
- The establishment of the mine emissions inventory;
- Atmospheric dispersion simulations for the mine area;
- A human health risk and nuisance impact screening assessment based on dispersion simulation results; and
- An Air Quality Impact Assessment (AQIA) as part of the EIA process in the prescribed specialist report format.

Prior to discussing the methodology proposed for adoption, air quality regulations governing operations need to be considered. These include but are not limited to:

- Emission limits and standards;
- National Ambient Air Quality Standards (NAAQS) for criteria pollutants;
- National Dust Control Regulations (NDCR) for dust fall; and
- International inhalation health criteria for non-criteria pollutants

NAAQS and inhalation health criteria are fundamental to effective air quality management, providing the link between the source of atmospheric emissions and the user of that air at the downstream receptor site. NAAQS and inhalation health criteria generally indicate safe daily exposure levels for most of the population, including the very young and the elderly, throughout an individual's lifetime. Criteria are normally given for specific averaging or exposure periods.

The effected atmospheric environment will be determined by considering:

- The local atmospheric dispersion potential;
- The position of Air Quality Sensitive Receptors (AQSRs) in relation to the project; and
- Ambient air quality in the study area to be sourced from the South African Air Quality Information System (SAAQIS).

An understanding of the atmospheric dispersion potential of the area is essential to an air quality impact assessment. Physical environmental parameters that influence the dispersion of pollutants in the atmosphere include terrain, land cover and meteorology.

The emission inventory will form the basis for the assessment of the air quality impacts from emissions on the receiving environment. As a minimum, all pollutants regulated in terms of the proposed listed activities will be included in the assessment.

Dispersion models compute ambient concentrations and fallout rates as a function of source configurations, emission strengths and meteorological characteristics, thus providing a useful tool to ascertain the spatial and temporal patterns in the ground level concentrations arising from the emissions of various sources. Increasing reliance has been placed on concentration estimates from

models as the primary basis for environmental and health impact assessments, risk assessments and emission control requirements. It is therefore important to carefully select a dispersion model for the purpose. The United States Environmental Protection Agency (US EPA) approved American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) model will be used. AERMOD is Gaussian plume steady state model.

Simulated ambient pollutant concentrations and fallout rates will be compared to NAAQS, health risk screening levels, and Non-Descript Sensitive Receptors (NDCRs). Compliance will be assessed, and a health risk/nuisance screening completed. The findings of the above will be fed into the identification of suitable management and mitigation measures. Reference will be made to best practice. The main deliverables of the air quality specialist study will include an AQIA.

### 20.3.9 Visual Impact

The visual impact assessment will include:

- Site visits and fieldwork in order to obtain an overview of the proposed sites and surrounding areas.
- Literature review and collecting baseline data to establish the receiving environment and establish a view catchment area, view corridors, viewpoints, and receptors.
- Identifying mitigation measures to reduce or eliminate any potential the visual impacts identified.

A Viewshed Analysis will be undertaken and will include the compilation of a preliminary spatial model (based on the proposed infrastructure). The process will include:

- Provide descriptions of the possible visual impacts that the proposed project may have on the surrounding landscape using viewshed analysis, including the identification of potential sensitive viewers / receptors informed by the EA process, as well from the viewshed.
- Compile a preliminary 3 dimensional (3D) spatial model (based on the layout plans and contour information) for the chosen sites and determine the viewshed of the proposed project using a GIS three-dimensional software modelling package.
- Determine a series of representative viewpoints from areas that are deemed to be affected by the proposed project.
- Using these viewpoints in conjunction with a site visit, assess the visual impacts of the proposed project.
- Provide descriptions of the possible visual impacts that the project may have on the surrounding landscape using both a binary and fuzzy viewshed analysis, including the identification of potential sensitive viewers / receptors informed by the EIA process, as well from the viewshed.

A site visit will be undertaken to confirm the outcomes of the viewshed analysis, focusing primarily on areas identified as being potentially visually sensitive to the proposed project.

The Visual Impact Assessment (VIA) report will be compiled and will include:

- An analysis of the potential visual impacts and provide mitigation measures for any potential impacts.
- Compile a Final VIA report summarising the methodology, findings, management, and monitoring plans (if necessary) and recommendations to supplement the EIA associated reports, in the required report template format.

### 20.3.10 Heritage and Cultural Resources

The Heritage and cultural resources survey will involve the following aspects:

- Archival and desktop survey of existing archaeological and heritage information of the survey area (baseline assessment);
- Geographical information (maps and aerial photographs);
- Pedestrian survey of the survey area;
- Photographic recording of heritage sites
- Random consultation with local people to ascertain aspects of intangible heritage; and
- Recording and documenting sites with a GPS and compiling maps using GIS.

The deliverables from the assessment will be a Phase 1 heritage impact report that will include:

- Detailed description of all archaeological and historical artefacts, structures (including graves) and settlements documented in the area (including photographs);
- Establish the level of sensitivity/importance of the archaeological and historical (both tangible and intangible) remains in the area;
- Oral traditions related by the local communities will be a high priority when establishing the significance of archaeological and historical remains as well as graves in formal cemeteries and informal burials;
- Propose practical mitigation measures for predicted impacts (management measures);
- Indicate limitations and assumptions; and
- Provide the relevant authorities with appropriate documents for their review and decision-making. Copies of the Heritage Report will be submitted with the EIR and EMP to the South African Heritage Resources Authority (SAHRA) Provincial Authority for review and comment.

### 20.3.11 Palaeontology

The palaeontology assessment will include:

- Desktop Assessment: A desktop study which is aimed at compiling as much information as possible regarding the geology of the area and palaeontology resources within the proposed development areas will be undertaken. The specialist will make use of resources such as geological maps, scientific literature, institutional fossil collections, satellite images, aerial maps and topographical maps were used. It provides an assessment of the observed or inferred palaeontological heritage within the study area, with recommendations (if any).
- Fieldwork: The fieldwork will be an extension of the completed desktop assessment and will focus on assessing the area for potential for fossils and other palaeontology resources.

A palaeontology impact assessment will be undertaken and mitigation measures that Manyeleti will be required to implement should any palaeontology resources are encountered during the implementation of the project will be identified.

### 20.3.12 Closure and Rehabilitation Plan

The Scope of the Closure and Rehabilitation Plan will include:

- Prepare plans to be consistent with the requirements of GN R1147 as stated in the various Appendices to the regulations with this to include:
  - o An annual rehabilitation plan (Appendix 3 of Regs)
  - o A final rehabilitation, decommissioning and closure plan (Appendix 4 of Regs)

- o A report documenting the outcomes of a Risk Assessment (Appendix 5 of Regs)

The following are the material items where focus will be required.

- Stakeholder issues and comments that have informed the plan;
- The mine plan and schedule;
- Findings of an environmental risk assessment and associated requirements;
- A description and evaluation of alternative closure and post closure options;
- Motivation for preferred closure actions;
- A definition and motivation of the closure and post closure periods;
- Details associated with ongoing research on closure options;
- Development and maintenance of a list and assessment of threats and opportunities and uncertainties;
- A schedule for the closure actions, including organisational capacity; and
- Development of an environmental risk report to be consistent with the requirements specified in Appendix 5 of the NEMA Financial Provision Regulations.

The liability associated with the project will be calculated and presented per the requirements of GN 1147 GG 39425 of 20 November 2015. The total liability will be split to indicate the liability for the implementation of the final rehabilitation, decommissioning and closure plan as well as the implementation of measures to address residual risks.

### 20.3.13 Community Health

The consideration of Community Health in EIA's is a relatively new process in South Africa designed to ensure that the 'often-overlooked' potential health impacts associated with a project on surrounding communities are considered and assessed including how the current health system can absorb such.

The community and mine workers from the community may be at risk at follows:

- Safety risk due to use of machinery
- Should a contagious illness such as Tuberculosis (TB) or Covid break out, mine workers living and working in close proximity to each other in an enclosed environment allows viruses to spread easily.
- Mine workers may be exposed to high dust levels resulting in increased incidences of asthma, bronchitis;
- Potential increase in communicable diseases i.e. TB, Human Immunodeficiency Virus (HIV)/ Acquired Immunodeficiency Syndrome (AIDS).
- Destructive behaviours by labourers which they are likely to take back home or from the community to labour accommodation.
- Increased trauma, accidents due to accidents in the workplace will place added burdens on the health care infrastructure
- Potential to increase accidents and injuries due to change in road traffic may increase accident levels in the area.
- People in the community generally drink and smoke socially; however there is those who drink as a means to relieve stress and forget problems related to unemployment and economic and social pressures. Drug use is also prevalent in the community. Stakeholder Engagement sessions also revealed alcohol and drug abuse to be on the rise more especially among the

youth. There are no known cases of domestic violence. With more money available among community members specifically youth there is the risk of increased drug and alcohol abuse.

The proposed project is unlikely to have a major impact related to communicable diseases if these are mitigated effectively. This can be mitigated by Health Systems Strengthening (HSS) to improve TB case detection and case management in local dispensaries; developing and maintain site-based TB policies and programmes; as well as outbreak preparedness and response plans.

The proposed project is expected to have medical personnel onsite and in case of emergency patients / injured personnel can be airlifted.

Access to jobs, income, goods, and services can enhance mental health and well-being and reduce stress among the community. Having a sense of control over one's life is crucial for mental well-being, so mining projects can improve mental health by reducing poverty, increasing self-esteem, and empowering local communities.

A full Community Health Impact Assessment Study will be conducted during the impact assessment phase to identify and assess potential community health impacts that may result from the proposed project. The study would consider applicable international standards i.e., International Finance Corporation (IFC) Performance Standard 4 (PS4): Community Health, Safety and Security. The impact assessment process will entail:

- Desktop assessment of the community health profile;
- Site visit to ground truth the information collected during the desktop assessment:
  - o Collect primary participatory data in the form of semi-structured, random one-on-one discussions with respondents in the different project- affected communities;
  - o Gather additional information that was not available in the public domain during the desktop review. This includes collection of information from health facilities, from the national health information management system, as well as from unpublished reports and documents – qualitative and quantitative data;
  - o Identify key informants and conduct interviews using a semi-structured questionnaire;
  - o View the standards of the local health facilities and functionality of the health management information system; and
  - o Visualise the project and location of communities in relation to planned Project activities.
- Key Informant Interview (KII) to:
  - o Gain a better understanding of the structure and capacity of the local health system and to enquire what health statistics would be available at the local level and where possible obtain authorised copies of statistics and reports;
  - o The KII will be conducted with the health personnel at this facility in Afrikaans, using a semi- structured questionnaire i.e., health, social and environmental determinants
- Considering the potential future health impacts that the proposed project will have on the health of the respective communities;
- Determining the existing health needs of the community based on health strategies, infrastructure programs, service priorities, delivery plans and challenges;
- Based on the existing evidence, rating the likelihood and consequence of different health impacts to outline their significance and prioritization for mitigation; and
- Considering recommendations for mitigation/management of priority impacts. Recommend measures to avoid/mitigate negative and enhance positive impacts resulting from the project at the relevant project stage.

### 20.3.14 Socio-Economic

The objectives, approach and methodology of the social study have been developed with consideration of legal requirements for an EIA as well as the definition of a Social Impact Assessment (SIA). SIA is defined as “the processes of analysing, monitoring and managing the intended and unintended social consequence, both positive and negative, of planned interventions (policies, programs, plans, project) and any social change processes invoked by those interventions” (IAIA, Vanclay, 2003, 6). The intention of an SIA is to maximise positive impacts, enhance development opportunities and to avoid and/or minimise negative impacts.

The definition of an SIA distinguishes between impacts (consequences) and change processes. An impact is felt on a physical/cognitive/perceptual level, which happens as a result of a change. People respond to these changes and impacts. The influx of job seekers is a change; the impacts that are experienced as a result of this change could include social conflict, diseases, and economic growth.

Impacts and changes affect the ways in which people live, work, play, relate to one another, organise to meet their needs, and cope with the stress of society. The ways in which these changes are perceived, “given meaning to and valued” depend on the social context and the various social groups. For example, water quality does not provide insight, the function of the water and value of it to society provides the necessary information. Indirect impacts also have to be considered, for example the change in the groundwater table might impact on grassland productivity, which might impact on people’s values.

To determine and assess the potential changes and impacts of the proposed project, the social study will have to answer a number of objectives. The objectives of the SIA will be to:

- Understand and assess the current social situation;
- Assess baseline information with specific focus on vulnerable groups, i.e. groups’ capacity to manage and adapt to change. Baseline information will include:
  - o Socio-demographic information;
  - o Socio-economic information including livelihoods activities;
  - o Land use activities;
  - o Settlement patterns.
- Determine the areas of influence with consideration of social and physical boundaries;
- Understand the social aspects of the project;
- Determine Manyeleti’s policies, goals, and targets relevant to the study;
- Develop option selection criteria from a social perspective;
- Assess options and identify preferred options from a social perspective;
- Determine and assess the changes, risks and impacts that are likely to occur without the project;
- Determine and assess the changes, risks and impacts that are likely to occur with the project;
- Develop mitigation measures and management plans to enhance the project’s impact on the social situation, during construction, operation, closure, and decommissioning, without compromising the economic and natural environment;
- Develop mitigation measures and management plans to avoid, minimise and/or off-set the project’s potential negative impacts, during construction, operation, closure, and

decommissioning, on the social situation without compromising the economic and natural environment.

The methods that will be used to meet the objectives are:

- Desktop review of secondary data sources such as the Integrated Development Plans of the local and district municipalities, household census and the Social and Labour Plan;
- Participatory appraisal of the built environment, natural resources, ecosystems services, social, human, and economic capital of areas of influence, i.e. stakeholders from different groups will be consulted to inform the appraisal of key areas over a period of three days;
- Description of types of land-uses in the social area of influence and identification of vulnerable groups in the project affected area and potential impacts on the groups.
- Fieldwork will be used to obtain additional information and communicate with key stakeholders. Stakeholders typically include social structures such as ward councillors, municipal representatives, landowners, community representatives, farmer's associations, forums, and political leaders, amongst others.
- Information will be obtained via focus groups, formal and information interviews, observation, immersions, in-the-moment discussion groups, the Internet and literature reviews. Notes will be kept of all interviews and focus groups. Where possible, communities will be interviewed in the language of their choice, and interpreters may be used.
- The qualitative research conducted during the field work period will assist with understanding the social environment and the impacts the proposed project may have on local communities in the social area of influence.

The final report will focus on current conditions, providing baseline data, and the possible impacts that might occur in future. Recommendations for mitigation will be made at the end of the report.

### **20.3.15 Traffic**

The Traffic Impact Assessment (TIA) will consist of the following:

- Confirm the planned extent of the proposed mine project;
- Conduct traffic surveys to identify the existing traffic demand;
- Estimate the number of additional peak hour trips generated by the project;
- Create a traffic model in Microsoft Excel to distribute the additional generated trips on the road network;
- Conduct capacity analyses with the additional trips on the road network; and
- Compile a TIA Report documenting the findings and recommendations.

The following tasks will be undertaken during the investigation:

- Obtain all relevant information regarding the proposed mine project, to identify and clarify all applicable issues, with reference to the extent of the proposed project and proposed access arrangements to develop the project data.
- Conduct manual as well as electronic surveys to identify existing peak hour and daily traffic volumes, including the modal split (light and heavy vehicles).
- Conduct pedestrian surveys to identify existing pedestrian movements.
- Evaluate the existing public transport within the study area.

- Evaluate the existing non-motorised transport within the study area.
- Estimate the additional trips that will be added to the road network because of the proposed project during the weekday AM and PM peak periods and assign these trips to the surrounding road network.
- Conduct capacity analyses using the aaSIDRA and/or the Highway Capacity Software to determine the traffic operating conditions at the critical intersections for the following scenarios:
  - o 2023 Weekday AM and PM peak periods, without the proposed mine project; and
  - o 2023 Weekday AM and PM peak periods, with the proposed mine project.
- Incorporate future traffic patterns and growth to determine future traffic growth scenarios.
- Conduct capacity analyses using the aaSIDRA and/or the Highway Capacity Software to determine the traffic operating conditions at the critical intersections for the following scenarios:
  - o 2028 Weekday AM and PM peak periods, with the proposed mine project; and
  - o 2028 Weekday AM and PM peak periods, without the proposed project.
- If required, identify practical and feasible road improvements to the road network, accesses and/or infrastructure upgrades to ensure acceptable traffic operating conditions.
- Provide an impact significance rating for the proposed project.
- Compile a TIA Report including inter alia the impact significance rating, the results of the assessment, conclusions, and recommendations.

## **20.4 Proposed method of assessing the environmental aspects including the proposed method of assessing alternatives**

Refer to Section 14 which provides a description of the methodology to be used in the assessment of environmental impacts.

## **20.5 The proposed method of assessing duration significance**

Refer to Section 14 which provides a description of the methodology to be used in the assessment duration of significance.

## **20.6 The stages at which the Competent Authority will be consulted**

The consultation process to be followed with the DMR as part of the review and decision-making stages include:

- Scoping review and decision-making stage (Draft and Final);
- Environmental impact assessment review and decision-making stage (draft and final); and
- The environmental authorisation decision making and appeal process stage.

## **20.7 Particulars of the public participation process with regard to the impact assessment process that will be conducted**

The Public Participation Process will be ongoing throughout the project phases. The stakeholder engagement proposed for the impact assessment phase is presented below.

### **20.7.1 Stakeholder engagement during impact Assessment phase**

Stakeholders will be informed once the competent authority (DMR) has accepted the Scoping Report and given permission for the commencement of the impact assessment phase of the process.

Stakeholder engagement during the impact assessment phase will focus on providing information and opportunity for public comment on the findings of the specialist studies and the findings and recommendations, impact assessment and management programme. The draft findings will be presented in the Draft EIA/EMPr Report to be reviewed and commented on by the public.

The availability of the Draft EIA/EMPr Report for public comment will be announced in the same newspaper as for project announcement.

Registered I&APs will be informed through notification letters distributed by email in advance of the report being made available. Should it be required, stakeholders will be invited to a public meeting where the contents of the Draft EIA/EMPr Report will be presented and discussed. Stakeholders will have an opportunity to review and comment on the Draft EIA/EMPr Report in any of the following ways:

- By completing comments forms available with the report at public places, and by submitting additional written comments, by email or fax, or by telephone, to the EAP; and
- The draft EIA/EMPr Report will be available for comment for a period of 30 days at public places in the project area as per the announcement and scoping phase and placed on the Ndi Geological website.

Depending on the responses received during the registration period, and where requested by the stakeholders, a public meeting may be held during the impact assessment phase of the project.

Where necessary, comments and issues raised by I&AP's during the commenting period will be consolidated into the Final EIA/EMPr Report with the relevant response issued by the EAP. The Final EIA/EMPr Report will then be submitted to the DMR for decision making. The comments will also be collated into the CRR that will form an Appendix to the Final EIA

/EMPr Report.

### **20.7.2 Notification of authority decision**

Registered stakeholders will be advised in writing (mail, email, fax, and SMS) of the authority decision on the EIA/EMPr. The notification will include details on the procedure to appeal the decision relating to each authorisation.

Notification to registered stakeholders will summarise the authorities' decision and provide information according to legal requirements on how to lodge an appeal should they so wish.

## **20.8 Description of the tasks that will be undertaken during the environmental impact assessment process**

The following activities will take place as part of the planned environmental authorisation process going forward:

- Compiled the Final Scoping Report once comments and feedback have been received from stakeholders and authorities. Comments on the draft scoping report will be incorporated into the Final Scoping Report;
- Conduct the specialist studies according to Appendix 6 of the NEMA;
- Conduct the impact assessment according to the impact assessment methodology as provided in Section 14;

- Develop an EMPr: The EMPr will be compiled to mitigate the impacts identified in the impact assessment;
- Develop specialist recommendations: Findings from the specialist studies will be summarised in the EIA/EMPr Report;
- Provide stakeholder feedback on the assessment phase in accordance with the approach that is proposed in Section 10 of this report;
- Submit the draft EIA/EMPr Report for stakeholder and authority review and comment: All stakeholders will be provided with 30-days to review and comment on the findings of the impact assessment as it will be presented in the draft EIA/EMPr Report.
- Submit the final EIA/EMPr: The Final EIA/EMPr Report will be submitted to the DMR following the incorporation of stakeholder comments; and
- Communicate the decision on the application for the EA/WML to registered stakeholders.

## **20.9 Measures to avoid, reverse, mitigate or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored**

Detailed mitigation and management measures of the positive and negative impacts associated with the project will be developed and included in the EIA/ EMPr Report. Section 13 provides a preliminary high-level assessment of potential impacts and mitigation measures that may be implemented to minimise, reverse, or manage the identified impacts.

## **20.10 Other information required by the Competent Authority**

### **20.10.1 Impact on the socio-economic conditions of any directly affected person**

Full details on the socio-economic conditions will be made available during the impact assessment phase after the specialist studies have been conducted and consultation with the community, stakeholders and other I&APs has been concluded.

The proposed project will provide employment opportunities, skills development, social development programmes, community upliftment and economic injection at local, regional, and possibly national levels. Furthermore, negative impacts including visual, traffic, service delivery, land use changes and security and safety will be assessed and discussed during the impact assessment phase. Preliminary socio-economic impacts that may occur include:

- Nuisance noise due to mining activities and drilling;
- Nuisance air emissions from mining activities and movement of vehicles which will result in nuisance dust generation;
- Safety concerns as a result of movement of additional traffic on the roads, transporting ore and material to and from the mine;
- Influx of jobseekers to site, which may result in an increase in opportunistic crime;
- Uncontrolled access to private property outside of the demarcated boundaries; and
- Visual impact as a result of the vegetation clearance.

Management and mitigation measures must be implemented to prevent environmental pollution which may impact on environmental resources utilised by communities, landowners, and other stakeholders. Measures to manage the potential impacts on communities, individuals or competing land uses in

close proximity have been included in Section 13. These issues will be refined, assessed, and discussed in detail during the impact assessment phase.

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

The Northern Cape is rich in archaeological sites and landscapes that reflect the complex South African heritage from the Stone Age to Colonial history. Within the region, Stone Age sites and complexes have been, and are still being investigated in some detail.

A site specific HIA will be conducted by a specialist as part of the impact assessment phase.

### **20.10.3 Other matters required in terms of Sections 24(4)(a) and (b) of the Act**

Section 24(4)(b)(i) of the NEMA (as amended), provides that an investigation must be undertaken of the potential consequences or impacts of the alternatives to the activity on the environment and assessment of the significance of those potential consequences or impacts, including the option of not implementing the activity. Alternatives have been discussed in Section 9 of this draft Scoping Report and will be addressed in detail during the impact assessment phase once the specialist assessments and comments from I&APs, stakeholders and the competent authorities have been received.

## 21 Undertaking regarding correctness of information

I Ndivhudzannyi Mofokeng herewith undertake that the information provided in the foregoing report is correct, and that the comments and inputs from stakeholders and Interested and Affected parties has been correctly recorded in the report.



---

Signature of the EAP

DATE: 2023/04/28

## 22 Undertaking regarding level of agreement

I, Ndivhudzannyi Mofokeng herewith undertake that the level of agreement with Interested and Affected Parties and stakeholders has been correctly recorded and reported herein.



---

Signature of the EAP

DATE: 2023/04/28

## **23 Statement of Ndi Geological Consulting Independence**

Neither Ndi Geological nor any of the authors of this report have any material present or contingent interest in the outcome of this report, nor do they have any pecuniary or other interest that could be reasonably regarded as being capable of affecting their independence or that of Ndi Geological.

Ndi Geological has no prior association with Manyeleti regarding the proposed mining activities that are the subject of this report. Ndi Geological has no beneficial interest in the outcome of the technical assessment being capable of affecting its independence.

Ndi Geological's fee for completing this report is based on its normal professional daily rates plus reimbursement of incidental expenses. The payment of that professional fee is not contingent upon the outcome of the report.

## 24 Conclusion

The aim of this Scoping Report is to provide an indication of the identified, positive, and negative environmental and socio-economic impacts associated with the proposed project activities. The stakeholder engagement in the scoping phase will play an important role in determining possible impacts and allowing the concerns by the stakeholders to be adequately addressed in the impact assessment phase of the EIA process. The Draft Scoping Report has presented:

- The environmental process undertaken so far;
- A brief description of the proposed project;
- A baseline description of the current environment;
- The potential environmental and social impacts identified to date; and
- The recommended environmental process and associated PPP to be followed, to develop the EIA/EMPr Report.

A comprehensive public involvement process will be implemented throughout the scoping phase. The EIA process is; however, iterative, and therefore additional potential issues/impacts and alternatives may be identified during the impact assessment phase that may require further investigation/consideration. Once the Scoping Report review and comment period is concluded, the CRR will be updated with the additional issues and submitted to DMR. An EIA/ EMPr Report will be compiled and subjected to a round of public review and comment. The EIA will then be presented to the authorities for decision-making. On submission of the final EIA/ EMPr Report to the DMR, notification will be sent to registered I&AP's to inform them of the submission of the documents; and the opportunity to request copies of the Final reports.

No fatal flaws have been identified during the scoping Phase of this project. A comprehensive impact assessment will be undertaken and incorporated into the EIA/EMPr Report during the impact assessment phase. The proposed comprehensive stakeholder engagement process in the PoS will ensure that the stakeholders are involved in the process, from the conception of the EA/WML application process to the end.

It is anticipated that implementation of the PoS presented in this report will result in an adequate EIA process which will result in the formulation of a sound EMPr to be implemented throughout the mining activities by Manyeleti.

The process followed during the detailed impact assessment phase will meet the requirements of the legislation to ensure that the DMR receives enough information to enable informed decision-making.

All data used as source material plus the text, tables, figures, and attachments of this document have been reviewed and prepared in accordance with generally accepted professional engineering and environmental practices.

## Appendices

## **Appendix 1: EAP Qualifications**

## EAPASA

Unit 19 Oxford Office Park  
3 Bauhinia Street  
Highveld Techno Park  
Centurion  
0157  
Tel. (+27) 12 880 2154

## Environmental Assessment Practitioners Association of South Africa

*Advancing environmental assessment practice in South Africa*



Email: [registrar@eapasa.org](mailto:registrar@eapasa.org) / Website: [www.eapasa.org](http://www.eapasa.org)

Mrs Ndivhudzannyi Mofokeng  
38 Ophelia street  
38 Ophelia street  
Kimberley  
8301

Sent by email to: [atshidzaho@gmail.com](mailto:atshidzaho@gmail.com)

Dear Mrs Mofokeng

**Registered Environmental Assessment Practitioner: Number 2020/1554**  
**Ndivhudzannyi Mofokeng : South African ID 8406210420080**

The Environmental Assessment Practitioners Association of South Africa (EAPASA) herewith certifies that Ndivhudzannyi Mofokeng is a Registered Environmental Assessment Practitioner (EAP) in accordance with the prescribed criteria of Regulation 15.(1) of the Section 24H Registration Authority Regulations (Regulation No. 849, Gazette No. 40154 of 22 July 2016, of the National Environmental Management Act (NEMA), Act No. 107 of 1998, as amended).

Your registration is duly authorised by EAPASA as the single Registration Authority for EAPs in South Africa (appointed as per Regulation No. 104, Gazette No. 41434 of 8 February 2018, in terms of section 24H(3)(a) of the NEMA). Your status as a Registered EAP is displayed in the 'EAP Register' - please find your name and contact email address at

<https://registration.eapasa.org/registered-practitioners>

Your registration is effective for a period of five years from 31 August 2020, and expires on 31 August 2025. The renewal of your registration in 2025 will be contingent on you having met the requirements of EAPASA's Continuing Professional Development (CPD) policy during each year of registration.

As a Registered EAP you are required to uphold the EAPASA Code of Ethical Conduct and Practice in your professional endeavours, towards the goal of quality assurance in environmental assessment practice.

Please accept my congratulations on your registration.

Best regards

Dr Richard Hill  
Registrar

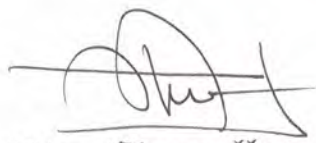
Date: 31 August 2020

Board Members: Ms Snowy Makhudu (Chairperson), Mr Khangwelo Desmond Musetsho (Vice-Chairperson),  
Mr Ntsako Baloyi, Mr Zama Dlamini, Mr Siyabonga Gqalangile, Ms Jacqui Hex, Mr Phumudzo Nethwadi, Mr Danie Neumann.  
Registrar: Dr Richard Hill  
NPO Reg. No. 122-986

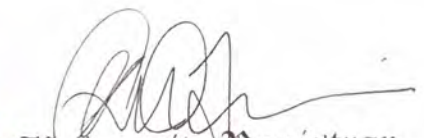
# University of Venda



This is to Certify that the Degree of  
**Bachelor of Earth Sciences in  
Mining and Environmental Geology**  
was Awarded to  
MUDAU NDIVHUDZANNYI  
at a Ceremony held on the  
19-SEP-2008  
in Accordance with the Provisions of the  
Act and Statute

  
Vice Chancellor



  
University Registrar

  
Dean

## **Appendix 2: EAP CV**

**Address:** Herlear, Kimberley, Northern Cape Province, South Africa**Email:** atshidzaho@gmail.com**Mobile:** +27 (0) 82 760 8420**Citizen :** Republic of South Africa

## PERSONAL DETAILS

---

|                  |                        |
|------------------|------------------------|
| Names            | : Ndivhudzannyi        |
| Surname          | : Mofokeng             |
| ID Number        | : 840621               |
| Nationality :    | : South African        |
| Gender :         | : Female               |
| Marital Status : | : Married              |
| Drivers License  | : Code 10              |
| Home Language :  | : Tshivenda            |
| Other Languages  | : English and Setswana |

## CAREER SUMMARY

---

Ndivhudzannyi graduated with an Honours degree in Earth Science, majoring in Mining and Environmental Geology. She is a self-motivated and hardworking Geologist with 13 years of experience in environmental, mining exploration, open cast work and consulting in the mining industry. She has proven leadership skills from supervising exploration rigs (Reverse Circulation and Percussion Drilling). Proven field experience in exploration, i.e. mapping, borehole logging, borehole sampling, sample preparation for laboratory analysis, supervisory duties in the field. Her responsibilities involve but are not limited to managing all Environmental matters: Environmental Impact Assessment and Environmental Management Programme, Environmental Authorizations, Environmental Auditing & Risk Assessment, Mine Closure & Rehabilitation, and conducting & reviewing Environmental specialists' studies. Ndivhudza also has experience in writing geological reports, including Prospecting Work Programmes and Mining Work Programmes Environmental Management Plans, handling Department of Mineral Resources and Energy documents in general like the submission of Mining & Prospecting Right Applications and Renewals.

## KEY PROFESSIONAL ASSOCIATIONS AND QUALIFICATIONS

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### 1. Member of the Geological Society of South Africa (GSSA)

Membership No: 969222

### 2. Member of the Environmental Assessment Practitioners Association of South Africa (EAPASA)

Membership No: 2020/1554

## EDUCATION AND QUALIFICATIONS

1. Bachelor Of Science In Mining And Environmental Geology (BESMEG)

**University of Venda, South Africa**

2009

2. Currently studying LLB registering with University of South Africa (UNISA).

## EMPLOYMENT HISTORY

**January 2018 – to date**

**Environmental Assessment Practitioner**  
NDI Geological Consulting Services (Pty) Ltd

**May 2014 – December 2017**

**Environmental Consultant**  
Ndi Geological Consulting Services-Sole Proprietary

**February 2013 – April 2014**

**Environmental Consultant**  
Centre for Advanced Satellite and Mineral Exploration  
Geoscientific Mineral Resources Consulting

**February 2012 – December 2012**

**Environmental Consultant**  
Pikwane Diamonds Mining Company

**January 2010 – October 2011**

**Environmental Consultant**  
Geo-Rock International (Pty) Ltd

**January 2007 – January 2009**

**Exploration Geologist**  
Rockwell diamonds Mining Company

## PROFESSIONAL COURSES ATTENDED

| Year                   | Course Attended                                                 | Course Offered By                                                                |
|------------------------|-----------------------------------------------------------------|----------------------------------------------------------------------------------|
| 29 - 30 June 2021      | 8th Annual Social and Labour Plan Conference                    | Intelligence Transfer Centre                                                     |
| 04th - 05th March 2021 | Environmental Law and Compliance                                | Business Success Solutions Pty Ltd                                               |
| 22-23 August 2012      | 4th Annual Mineral Resources Compliance & Reporting Conference  | Department of Mineral and Resources                                              |
| June - September 2010  | Microsoft office and excel Training                             | Georock International                                                            |
| 2008                   | Mentoring course                                                | Macvlei Company                                                                  |
| 24 - 24 August 2007    | Annual diamond and kimberlite symposium Kimberley, South Africa | Geological Society of South Africa Directorate of Professional Programmes' (DPP) |

## REFEREES

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Available on request in respect of Protection of Personal Information Act (POPI Act).

## **Appendix 3: Locality Map**



Application for a Mining Right and EA/WML for the Proposed Mining of Iron (Fe) and Manganese (Mn) Ore on the Remaining and Portion 2 of Farm Langverwacht 432

Locality Map

Legend

- Proposed Mining Right Area
- Mine Infrastructure
  - Elevated Water Storage Tank
  - Wash Plant
  - Substation
  - Parking
  - Workshop
  - Office Area
  - PC Dam
  - Proposed Pit
  - Change Houses

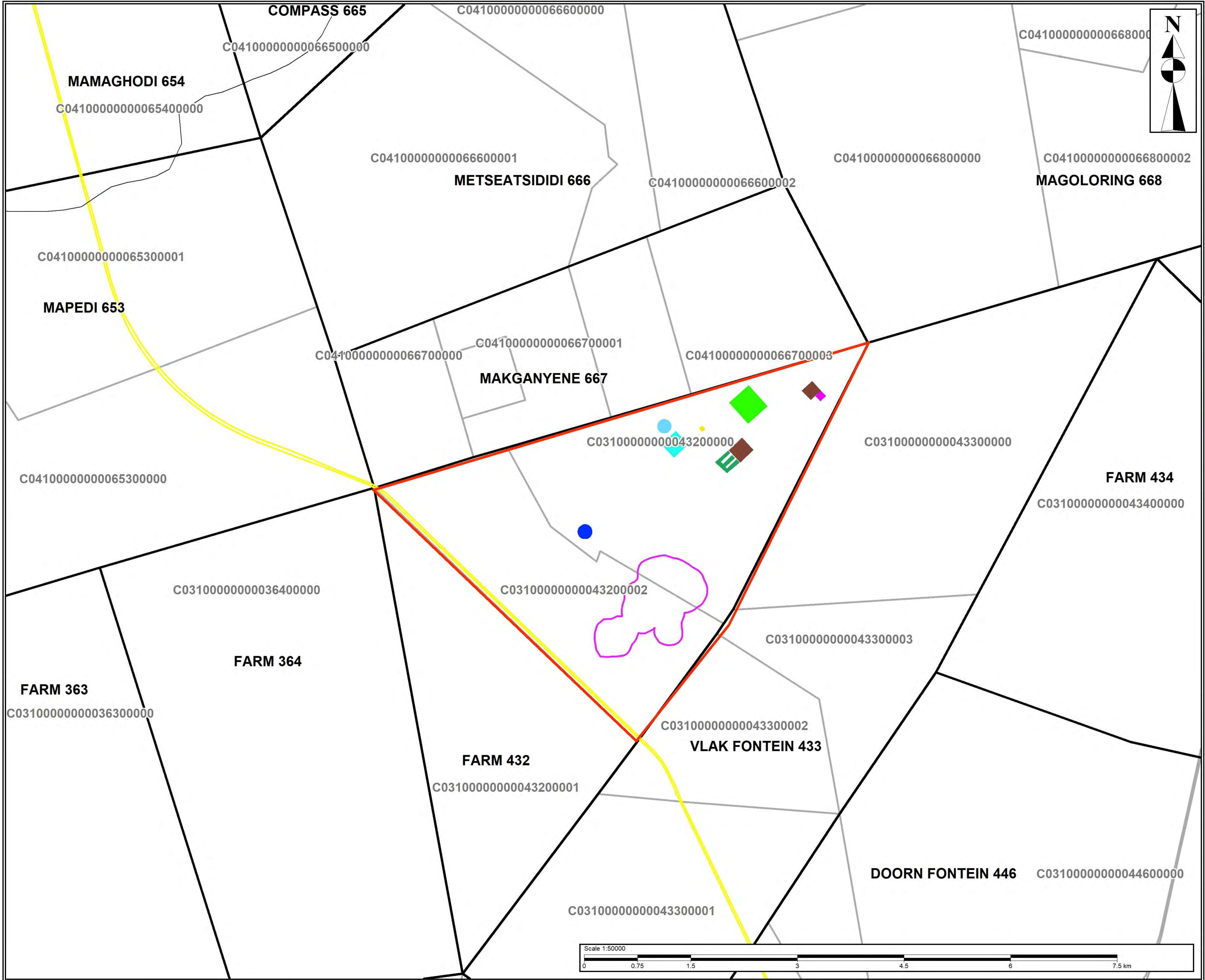
Locality Map



Map by:



Coordinate System: WGS 84



Application for a Mining Right and EA/WML for the Proposed Mining of Iron (Fe) and Manganese (Mn) Ore on the Remaining and Portion 2 of Farm Langverwacht 432

Cadastral

Legend

- Erven
- Existing Mineral Right Areas
- Farm Portions
- Parent Farms
- Servitude Lines
- Proposed Mining Right Area
- (imported shp) catchments\_quaternary
- Mine Infrastructure
  - Elevated Water Storage Tank
  - Wash Plant
  - Substation
  - Parking
  - Workshop
  - Office Area
  - PC Dam
  - Proposed Pit
  - Change Houses

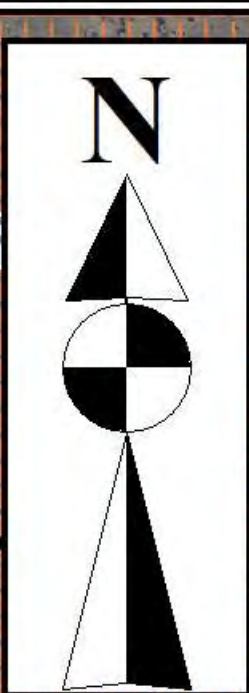
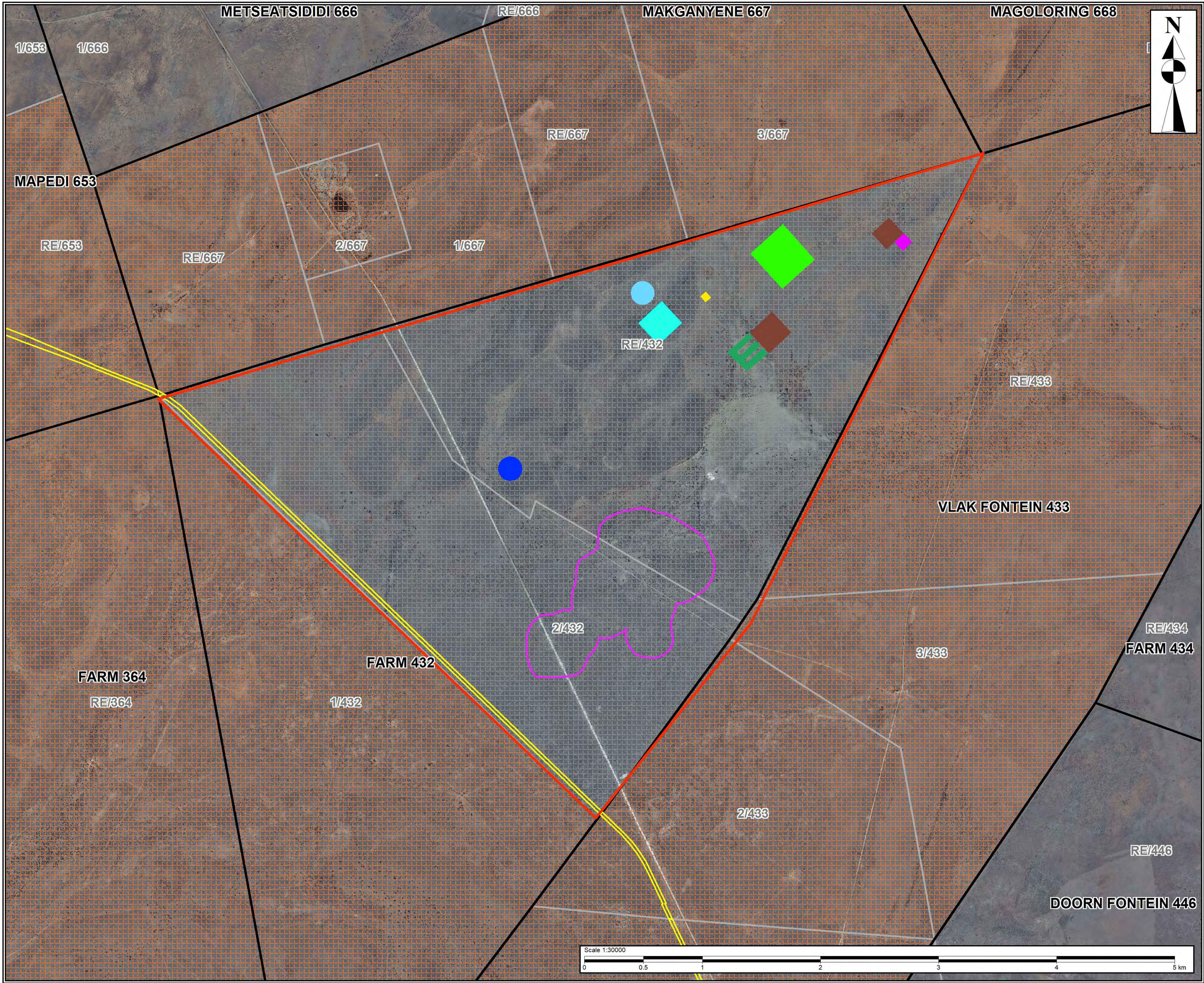
Locality Map



Map by:



Coordinate System: WGS 84



Application for a Mining Right and EA/WML  
for the Proposed Mining of Iron (Fe) and  
Manganese (Mn) Ore on the Remaining and  
Portion 2 of Farm Langverwacht 432

Affected and Adjacent Properties

Legend

- Affected Properties
- Adjacent Properties
- Erven
- Existing Mineral Right Areas
- Farm Portions
- Parent Farms
- Servitude Lines
- Proposed Mining Right Area
- (imported shp) catchments\_quaternary
- Mine Infrastructure
  - Elevated Water Storage Tank
  - Wash Plant
  - Substation
  - Parking
  - Workshop
  - Office Area
  - PC Dam
  - Proposed Pit
  - Change Houses

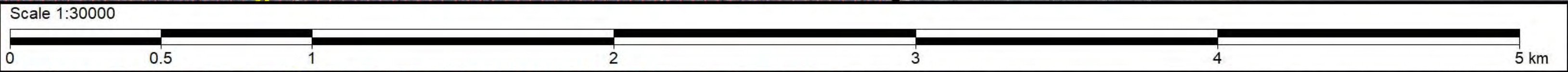
Locality Map



Map by:



Coordinate System: WGS 84



## **Appendix 4: Listed Activity Map**

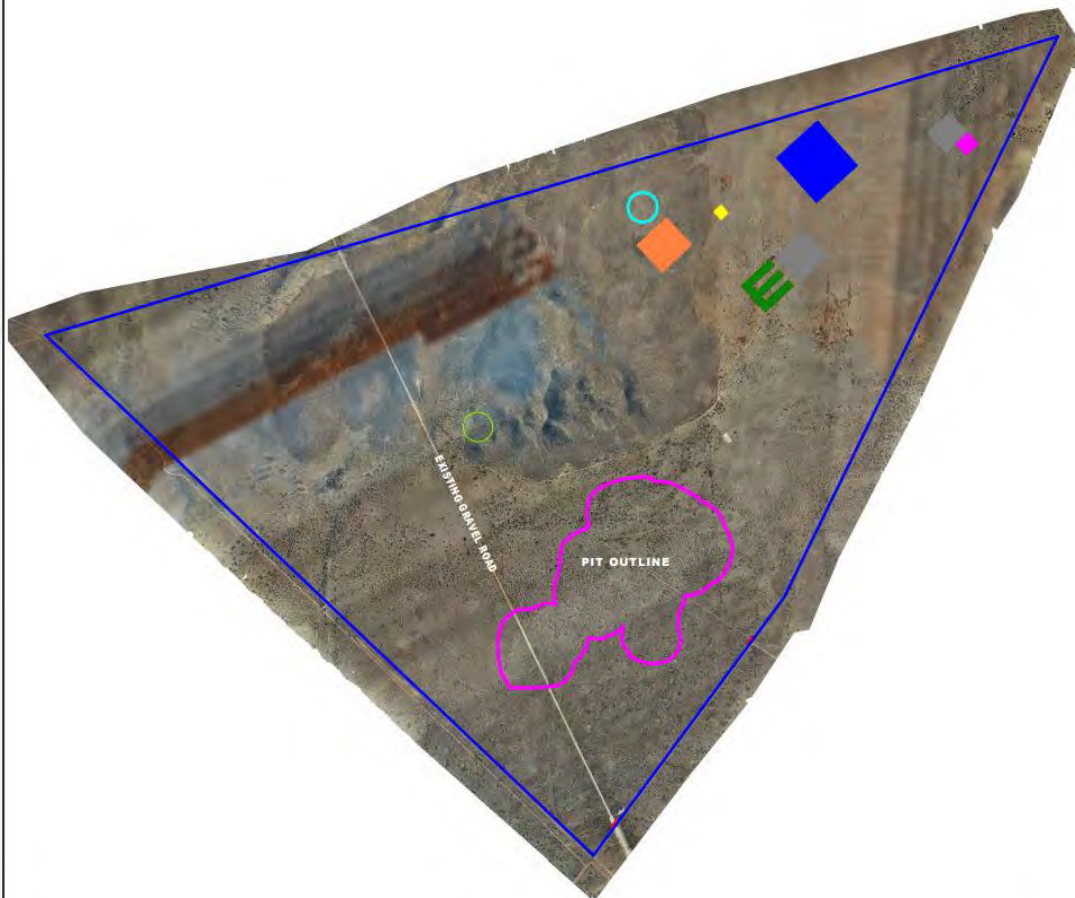
# MANYELETI CONSULTING LANGVERWATCH 432 IRON ORE PROJECT BLOCK PLAN LAYOUT

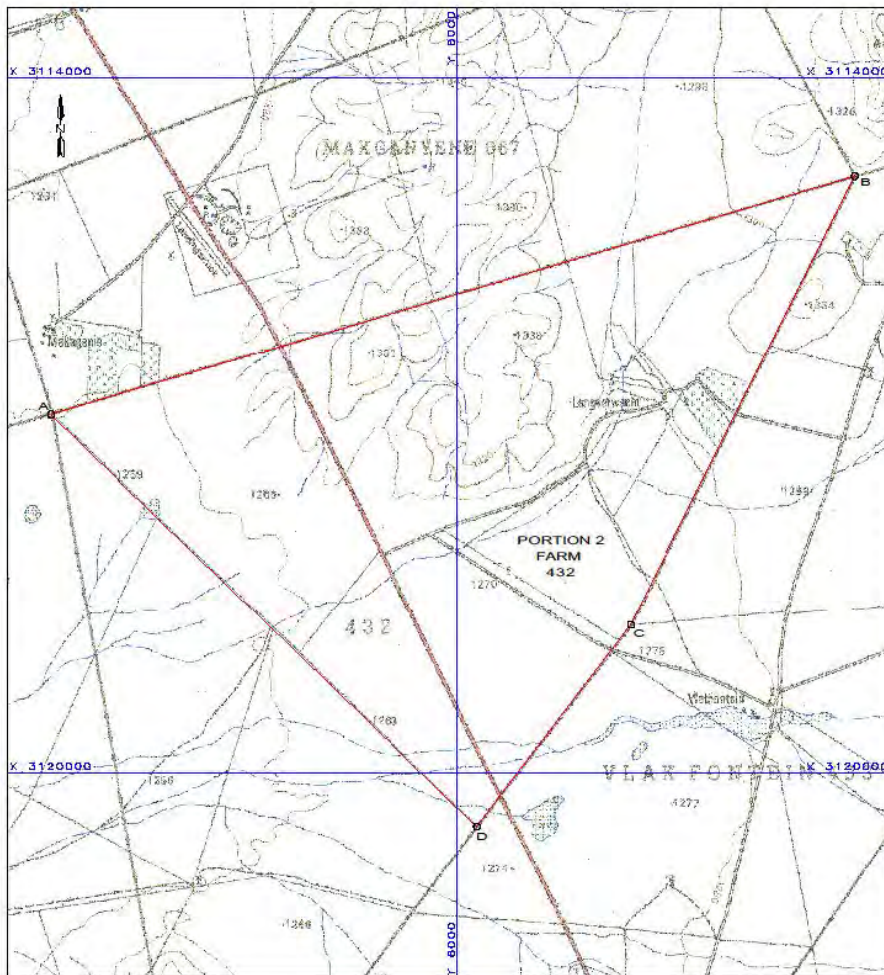
## LEGEND

| DIMENSIONS/AREA                                                                     |                             |                          |
|-------------------------------------------------------------------------------------|-----------------------------|--------------------------|
|  | MINING BOUNDARY             | 1562.80 Ha               |
|  | PIT OUTLINE                 | 128.19 Ha                |
|  | ENTRANCE                    | 20 m                     |
|  | ELEVATED WATER STORAGE TANK | 5m x 5m Stand<br>10 000L |
|  | PC DAM                      | 1 Ha                     |
|  | CHANGE HOUSES               | 15m x 15m                |
|  | PARKINGS                    | 50m x 3m                 |
|  | SUBSTATION                  | 5m x 5m                  |
|  | OFFICE AREA                 | 30m x 30m                |
|  | WORKSHOP                    | 50m x 50m                |
|  | WASH PLANT                  | 50m x 80m                |



SCALE 1: 24 000  
Date: 06/11/2022





# **MANYELETI CONSULTING (PTY) LTD** **PROSPECTING RIGHT LAY-OUT PLAN**

**WGS 84 DATUM SURVEY SYSTEM WG 23**

**SCALE 1 : 30 000**

THE FIGURE A, B, C, D AND A SITUATED ON PORTION 2 OF OF THE FARM 432, REPRESENTS 1998,6845ha, ADMINISTRATIVE DISTRICT OF HAY PROVINCE OF THE NORTHERN CAPE.

WITH REGARD TO A PROSPECTING RIGHT OF THE PROVISIONS OF SECTION 2.2 OF THE MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT, 2002 (NO. 28 OF 2002).

GEOGRAPHICAL CO-ORDINATES:

| Lat. DMS    | Long. DMS |
|-------------|-----------|
| A 28.186644 | 22.903167 |
| B 28.146135 | 22.973809 |
| C 28.183458 | 22.954117 |
| D 28.198720 | 22.840617 |

PLAN APPROVED: \_\_\_\_\_  
 REGIONAL MANAGER NORTHERN CAPE MINERAL DEVELOPMENT  
 DATE: \_\_\_\_\_

NAME OF APPLICANT: \_\_\_\_\_  
 SIGNED: \_\_\_\_\_  
 DATE: \_\_\_\_\_

## **LEGEND**

|                  |                        |                        |
|------------------|------------------------|------------------------|
| SURFACE CONTOURS | SECONDARY ROADS        | AREA UNDER APPLICATION |
| DRA DRAIN        | AREA UNDER APPLICATION | FARM BOUNDARIES        |
| PRIMARY ROADS    |                        |                        |



## **Appendix 5: Stakeholder Engagement Documentation**

27 April 2023

Dear Stakeholder,

**APPLICATION FOR A MINING RIGHT AND ASSOCIATED INTEGRATED ENVIRONMENTAL  
AUTHORISATION AND WASTE MANAGEMENT LICENCE IN RESPECT OF IRON AND MANGANESE  
ORE ON THE REMAINING EXTENT AND PORTION 2 OF FARM LANGVERWACHT 432 IN THE ZF  
MGCAWU DISTRICT MUNICIPALITY, NORTHERN CAPE PROVINCE**

---

**INVITATION TO REGISTER, PARTICIPATE AND COMMENT**

---

Notice is hereby given in terms of Section 16 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002) (MPRDA), as amended by Section 12 of the Act 49 of the MPRDA, 2008 and the National Environmental Management Act, 1998 (Act No 107 of 1998) (NEMA) as amended, that Manyeleti Consulting SA (Pty) Ltd (Manyeleti) is applying for a Mining Right (MR) and associated Environmental Authorisation (EA) and Waste Management Licence (WML) for the proposed mining of Iron (Fe) and Manganese (Mn) Ore on the Remaining Extent and Portion 2 of Farm Langverwacht 432 in the Tsantsabane Local Municipality (TLM) of the ZF Mgcawu District Municipality (ZFMDM), in the Northern Cape Province of South Africa.

## **1. INTRODUCTION**

The proposed mining project triggers activities listed in Listing Notices 1, 2 and 3 of the NEMA as well as activities listed in GNR921 (Categories A, B and C) of the National Environmental Management: Waste Act, 2008 (Act 59 of 2008) (NEM: WA) and will require an EA and WML from the Northern Cape Department of Mineral Resources (DMR), Competent Authority.

The proposed mining project will cover an area of 1 699.6179 ha hectares and located on the Remaining Extent and Portion 2 of Farm Langverwacht 432 located 67 kilometres South of the Kuruman town and 19 kilometres northeast of the town Postmasburg, in the Tsantsabane Local Municipality (TLM) of the ZF Mgcawu District Municipality (ZFMDM), in the Northern Cape Province of South Africa.

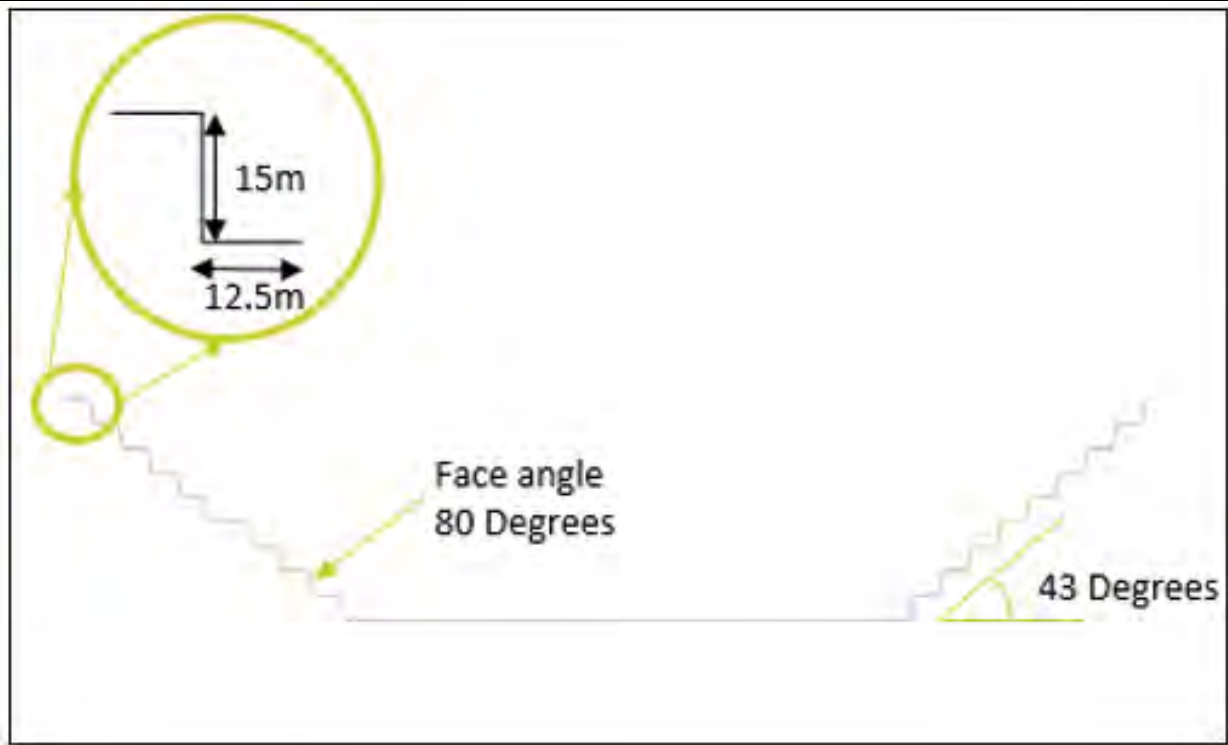
Ndi Geological Consulting Services (Pty) Ltd was appointed by Manyeleti as the Independent Environmental Assessment Practitioner (EAP) to facilitate the Integrated EA and WML process to be submitted to the DMR.

## **2. PROJECT DESCRIPTION**

The MR and EA/WML applications are for the proposed mining of iron and manganese ore. The plan is to mine the resource areas by open pit mining method where a box-cut will be established. Mining will be operated in operational pushbacks. Due to the proximity and the nature of the orebodies, mining will be conducted by conventional opencast mining method. Each mining area will be treated as a separate pit. Mining will be done on three ore bodies at most of the time. Access to the opencast mining areas will be provided by a number of haul roads to the crushing, screening, and magnetic separation plants for the minerals.

The pit design criteria are as follows:

- Ramps designed at a gradient of a max of 10%
- Overall pit slope angle is 43 degrees
- Final pit shell at 12.5m bench width
- Bench height is 15m
- Bench angle is 80 degrees



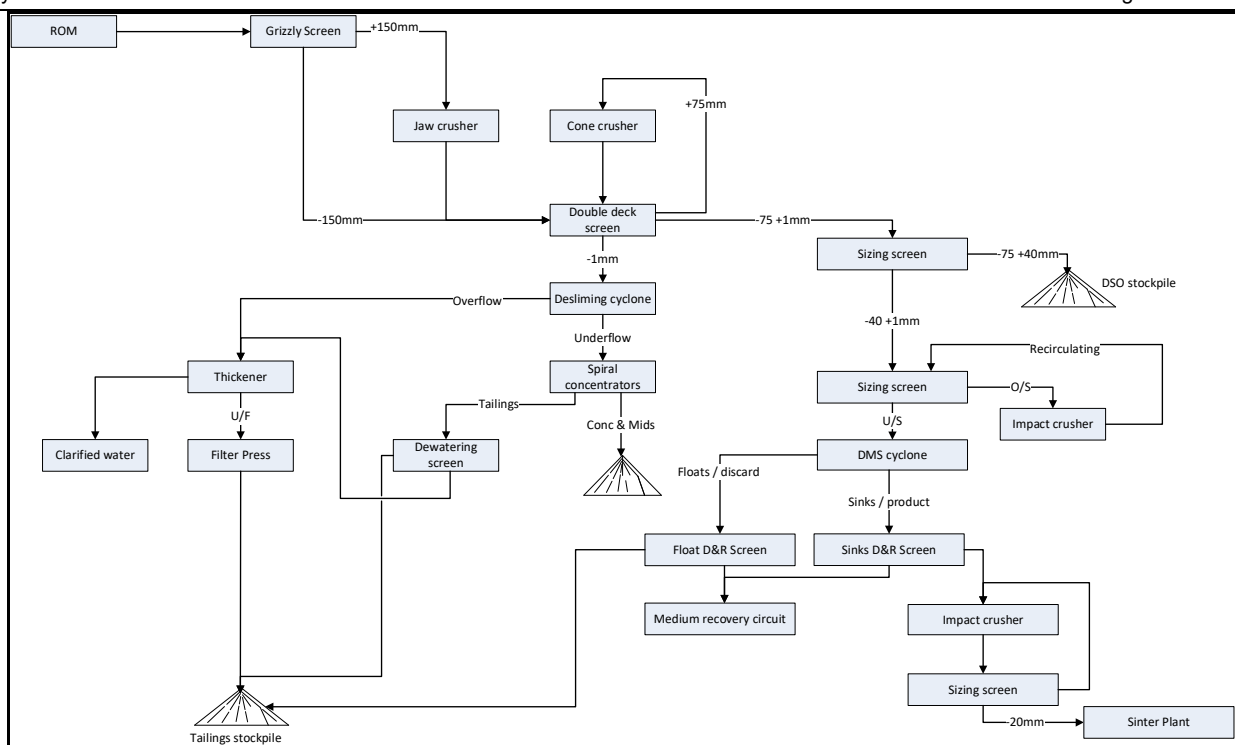
**Figure 1: Schematic Cross-Section of the Pit**

The mining process will include drilling, blasting, loading, hauling and quality control. The Reverse Circulation (RC) drill machine will be utilized to drill holes for prospecting resources as well as blasting. Drilling depth of the hole will be determined by the thickness of the overburden and orebody.

After drilling, explosives provided by service providers are placed down the holes using trucks designed for such purposes. The quantities of explosives are determined by the purposes of the blasting and the nature of the materials to be blasted. Once the materials have been blasted, excavators and Front-End Loaders (FELs) will load the minerals onto the dump trucks and Articulated Dump Trucks (ADTs). Wastes and Run of Materials (RoMs) will be loaded separately onto different trucks and hauled to designated areas.

The processing of ore will result in screened out waste being dumped on a temporary tailings stockpile. The waste from the tailings stockpile will either be used for back-filling of excavations or hauled to the waste rock dump. Sampling is a process that is undertaken throughout the production process, and at various times during mining of the ore and from the stockpiles at the completion of the plant process. The samples are analysed to maintain the correct iron ore grade.

Plant processing design: The basic plant design is provided in Figure 2.



**Figure 2: A Basic Plant Process Flow Diagram**

The processing will include:

- **Crushing and Screening (-150+75mm):** The Run of Material (ROM) from open-cast mining is fed to an inclined grizzly screen for preliminary separation of 150mm material in prior to a jaw crusher. Oversize material from the grizzly (+150mm) is transferred to a jaw crusher for size reduction. The crushed material (-150mm) from a jaw crusher combines with the undersized material from the grizzly screen and fed to a double-deck screen for separation of 75mm material. The oversize material (+75mm) from the screen is transferred to a secondary crusher for further reduction. The -75mm + 40mm could be sent to product stockpile as Direct Shipping Ore (DSO) provided the quality is within specification (>30%Mn). The - 40 + 1mm material from the sizing screen is fed to Dense Medium Separation (DMS).
- **Dense Medium Separation (-40+1mm):** The feed to a DMS circuit is screened at 40mm where any oversize that may have been misplaced is sent to an impact crusher which is installed in a closed loop with the screen. The screen undersize is mixed with ferrosilicon medium and gravitate to the DMS cyclone at a head of 12D and medium to ore ratios of at least 5 to 1. The medium density ranges from 3.2 to 3.8t/m<sup>3</sup> RD depending on grade and densimetric characteristics of the feed. Both the floats and sinks (product) are fed to the drain & rinse screens for recovery of Fesi medium. The floats / waste combines with spiral tails as onto the final tails stockpile. The sinks stream is fed to an impact crusher for further reduction to -20mm before feeding to the sinter plant for removal of Sulphur.
- **Fines beneficiation (-1mm):** Fine materials are separated using gravity concentration which separates particles based on specific gravity. The feed to the spiral concentrator is pumped to a desliming cyclones for removal of -45µm. The cyclone overflow reports to the thickener and underflow fed to spirals circuit. the thickener underflow is fed to a filter where the filter cake combines with spiral tails and DMS tails as final tails. The product from the spirals is stored in washed product stockpile.

Infrastructure required for mining will be established on the NC 30/5/1/1/2/11950 PR Prospecting Area on Portion 2 and the Remainder of Langverwacht 432. Most services that will be required during mining are also available regionally. Mine infrastructure on the mining area will be required in order for full production to take place. Some of the infrastructure such as the offices and ablution facilities will not need to be constructed since they will be in the form of containers.

- **Roads:** The proposed mining area already has existing roads through which it can be accessed. A secondary gravel road connecting from the R385 Road is currently being used to access the mining area. Other gravel roads in the area are also being used. The R385 Road will be used to transport the final iron ore product to Postmasburg Iron Ore Export Railway Siding, from which it will be railed or hauled to Saldanha Harbour.

- Rail: Once the mining right has been approved, the applicant will apply for a railway slot on Lohatlha Railway Sliding. The loading station is approximately 26km away from the proposed mining property.
- Electricity: The mining project will make use of generators to supply power to the mine and plant areas. The upgrade of plants will make use of Eskom power, which will be applied for.
- Water: It is anticipated that 20 tons of water will be used for dust suppression and other non-production purposes. This water will either be obtained from the Tsantsabane Local Municipality or underground. The Department of Water and Sanitation will be contacted to seek their recommendation on the use of water.

### 3. PROJECT LOCATION

The proposed mining will be undertaken on the on the Remaining Extent and Portion 2 of Farm Langverwacht 432 located sixty-seven kilometres South of the Kuruman town and nineteen kilometres northeast of the town Postmasburg, in the Tsantsabane Local Municipality (TLM) of the ZF Mgcawu District Municipality (ZFMDM), in the Northern Cape Province of South Africa.

### 4. ENVIRONMENTAL AUTHORISATION PROCESSES TO BE FOLLOWED

The proposed mining project triggers activities listed in the NEMA as follows:

- Listing Notice 1: Activities 12, 19, 24, 27, 30, 56
- Listing Notice 2: Activities 4, 15, 17, 21, 27
- Listing Notice 3: Activities 10, 12

In addition, the proposed project triggers activities listed in GNR 921 of the NEM: WA as follows:

- Category A: Activity 10 and 11
- Category B: Activity 1 and 10
- GNR 633: Activity 11
- Category C: Does not require a WML

Since the proposed mining project triggers activities listed in both Listing Notice 1, 2 and 3 of the NEMA as well as Category A and B of the NEM: WA, a full integrated Environmental Impact Assessment (EIA) including scoping and impact assessment phases will be required as stipulated in GNR 982 (as amended by GNR325 of 7 April 2017 and 21 June 2021).

### 5. STAKEHOLDER ENGAGEMENT

The Public Participation Process will be conducted as stipulated in Chapter 6 of the NEMA and will entail the following:

- Project announcement Phase:
  - Newspaper advertisements;
  - On-site notices which erected around the project site;
  - Notification letters (current notification);
  - Registration of Interested and Affected Parties (I&APs) in an I&AP database; and
  - Compilation of the Comments and Responses Report (CRR).
- Draft Scoping Report Phase:
  - Announcement of the availability of the draft Scoping Report for I&APs review and comment (current notification in Section 6);
  - Draft Scoping Report commenting period (30 days) commencing 28 April 2023;
  - Updating of CRR.
- Draft Environmental Impact Report and Environmental Management Programme (EIR/EMPr Report) Phase:
  - Announcement of the availability of the draft EIR/EMPr for registered I&APs review and comment;
  - Draft EIR/EMPr commenting period (30 days); and
  - Updating of CRR
- Notification of registered I&APs of the decision by the DMR and the appeal process.

Stakeholders are invited to register as Interested and Affected Parties (I&APs) to be kept informed on the progress of the project. To obtain additional information about the proposed project, or to submit concerns and comments, please contact the EAP.

Should you wish to be registered as an I&AP, please submit your contact details (name, contact numbers, postal address, e mail address), stating your interest in the project to the EAP on the contact

details below. Any written comments on the proposed project must be submitted to the EAP by mail, fax, or email within 30 days of this notice (29 May 2023) to the EAP at the contact details provided below.

***By registering as a stakeholder, you consent to Ndi Geological processing and, if necessary, disclosing your personal information which Ndi Geological undertakes to do in accordance with the requirements of the new Protection of Private Information Act (POPIA) promulgated in 2021.***

## 6. DRAFT SCOPING REPORT AVAILABLE FOR COMMENT

Stakeholders are invited to review and provide comments on the Draft Scoping Report which will be available for comment for a period of 30 days from 28 April 2023 to 29 May 2023. Copies of the Draft Scoping Report will be made available at the following public places for review

| Public Place           | Locality                                                                        | Telephone    |
|------------------------|---------------------------------------------------------------------------------|--------------|
| Ndi Geological website | <a href="http://www.ndigeoservices.co.za/">http://www.ndigeoservices.co.za/</a> | 053 842 0687 |

Comments received from the stakeholders will be collated into a Comments and Responses Register (CRR) which will be submitted to the DMR with the Final Scoping Report.

Please submit written comments by mail, fax, or email by **29 May 2023** to Ndi Geological:

**Please submit comments to the EAP:**

**Ndivhudzannyi Mofokeng**

Ndi Geological Consulting Services (Pty) Ltd

38 Ophelia Street, Kimberley, 8301

Contact Numbers 082 760 8420/053 842 0687

Fax: 086 538 1069

atshidzaho@gmail.com/ndi@ndigeoservices.co.za

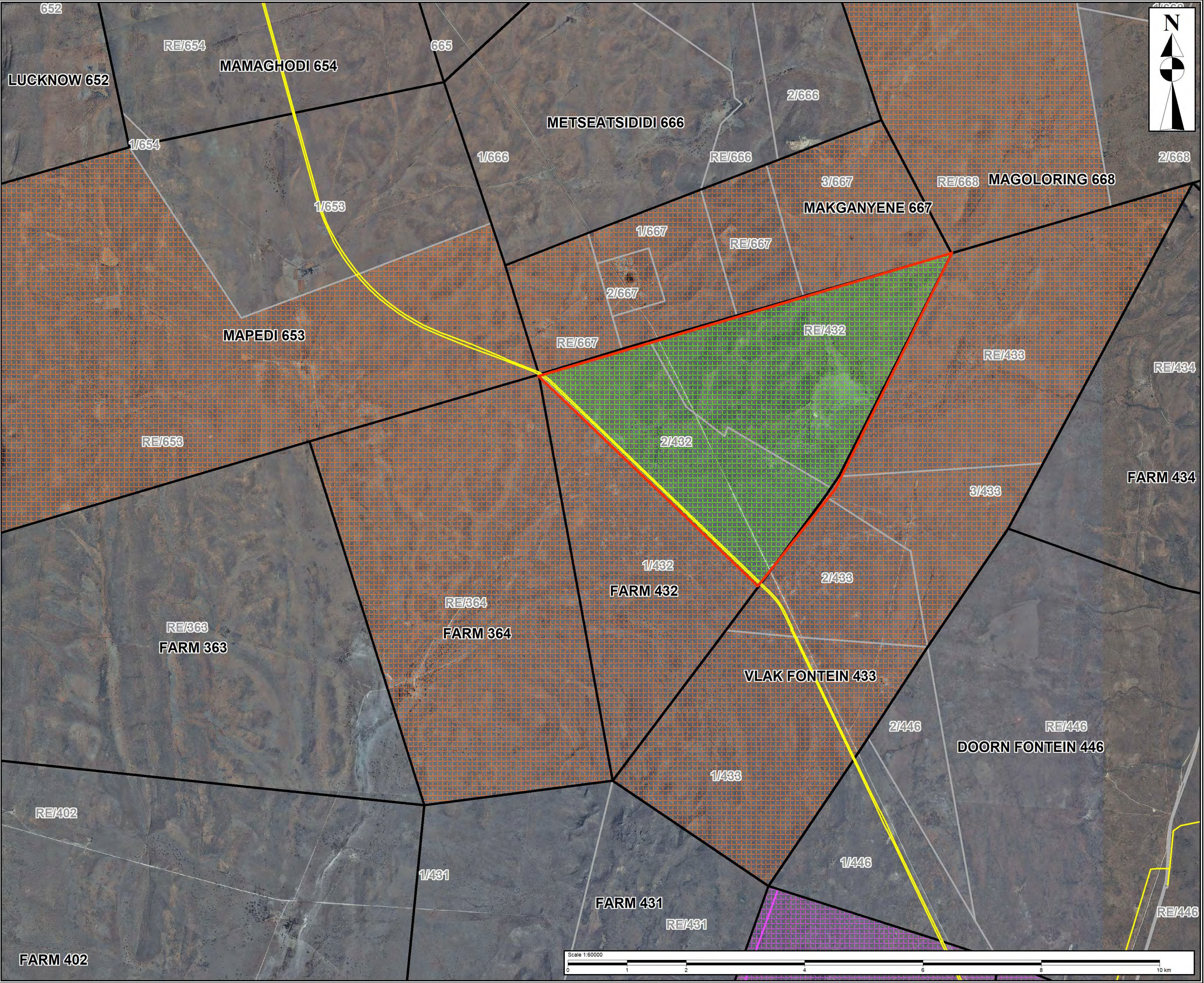
Please do not hesitate to contact us should you require additional information or clarification regarding the proposed project. Our team welcomes your participation and looks forward to your involvement throughout the Stakeholder Engagement Process.

**Yours faithfully,  
Ndi Geological Consulting Services (Pty) Ltd**



Ndivhudzannyi Mofokeng  
Environmental Assessment Practitioner

## **Appendix A: Locality Map**



Application for a Mining Right and EA/WML for the Proposed Mining of Iron (Fe) and Manganese (Mn) Ore on the Remaining and Portion 2 of Farm Langverwacht 432

Affected and Adjacent Properties

**Legend**

- Affected Properties
- Adjacent Properties
- Erven
- Existing Mineral Right Areas
- Farm Portions
- Parent Farms
- Servitude Lines
- Proposed Mining Right Area

Locality Map



Map by:



Coordinate System: WGS 84

## **Appendix B: Comment Form**

**APPLICATION FOR A MINING RIGHT AND ASSOCIATED INTEGRATED ENVIRONMENTAL AUTHORISATION  
AND WASTE MANAGEMENT LICENCE IN RESPECT OF IRON AND MANGANESE ORE ON THE REMAINING  
EXTENT AND PORTION 2 OF FARM LANGVERWACHT 432 IN THE ZF MGCAWU DISTRICT MUNICIPALITY,  
NORTHERN CAPE PROVINCE**

**REGISTRATION AND COMMENT SHEET**

**APRIL 2023**

|                         |  |                    |  |
|-------------------------|--|--------------------|--|
| <b>TITLE</b>            |  | <b>FIRST NAME</b>  |  |
| <b>INITIALS</b>         |  | <b>SURNAME</b>     |  |
| <b>ORGANISATION</b>     |  |                    |  |
| <b>POSTAL ADDRESS</b>   |  |                    |  |
| <b>LAND LINE TEL NO</b> |  | <b>POSTAL CODE</b> |  |
| <b>FAX NO</b>           |  | <b>CELL NO</b>     |  |
|                         |  | <b>EMAIL</b>       |  |

**REGISTRATION AS AN INTERESTED AND AFFECTED PARTY (I&AP) (please mark applicable box with X)**

|                                                                                                                                                                                                |            |           |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-----------|
| <b>Please formally register me as an interested and affected party (I&amp;AP) so that I may receive further information and notifications during the Environmental Authorisation processes</b> | <b>YES</b> | <b>NO</b> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-----------|

**I would like my notifications by:**

|                |                |                 |             |
|----------------|----------------|-----------------|-------------|
| <b>E-mail:</b> | <b>Letter:</b> | <b>Fax/Tel:</b> | <b>SMS:</b> |
|----------------|----------------|-----------------|-------------|

**In terms of GNR 326 (EIA regulations) I disclose below any direct business, financial, personal, or other interest that I may have in the approval or refusal of the application:**

.....  
 .....

**Comments (Use a separate sheet if you wish to):**

|  |
|--|
|  |
|  |
|  |
|  |
|  |

**I would like to suggest the following additional person (s) as affected and/or interested in the proposed project (Use separate sheet if you wish to):**

|              |                |                 |                 |
|--------------|----------------|-----------------|-----------------|
| <b>Name:</b> | <b>E mail:</b> | <b>Fax/Tel:</b> | <b>Address:</b> |
| <b>Name:</b> | <b>E mail:</b> | <b>Fax/Tel:</b> | <b>Address:</b> |

**By registering as a stakeholder, you consent to Ndi Geological processing and, if necessary, disclosing your personal information which Ndi Geological undertakes to do in accordance with the requirements of the new Protection of Private Information Act (POPIA) promulgated in 2021.**

**Ndivhudzannyi Mofokeng**  
 Ndi Geological Consulting Services (Pty) Ltd  
 38 Ophelia Street, Kimberley, 8301  
 Cell: 082 760 8420  
 Tel: 053 842 0687, Fax: 086 538 1069  
 atshidzaho@gmail.com, ndi@ndigeoservices.co.za

**THANK YOU FOR YOUR CONTRIBUTION**

|              |                   |              |
|--------------|-------------------|--------------|
| <b>NAME:</b> | <b>SIGNATURE:</b> | <b>DATE:</b> |
|--------------|-------------------|--------------|

## **Appendix 6: A copy of the DFFE Screening Report**

**SCREENING REPORT FOR AN ENVIRONMENTAL AUTHORIZATION AS  
REQUIRED BY THE 2014 EIA REGULATIONS – PROPOSED DEVELOPMENT  
FOOTPRINT ENVIRONMENTAL SENSITIVITY**

**EIA Reference number:** Manyeleti MR/EA/WML

**Project name:** Manyeleti MR/EA/WML

**Project title:** Application for a MR/EA/WML for Fe and Mn Ore Mining for Manyeleti

**Date screening report generated:** 09/04/2023 16:02:01

**Applicant:** Manyeleti

**Compiler:** N Mofokeng

**Compiler signature:**



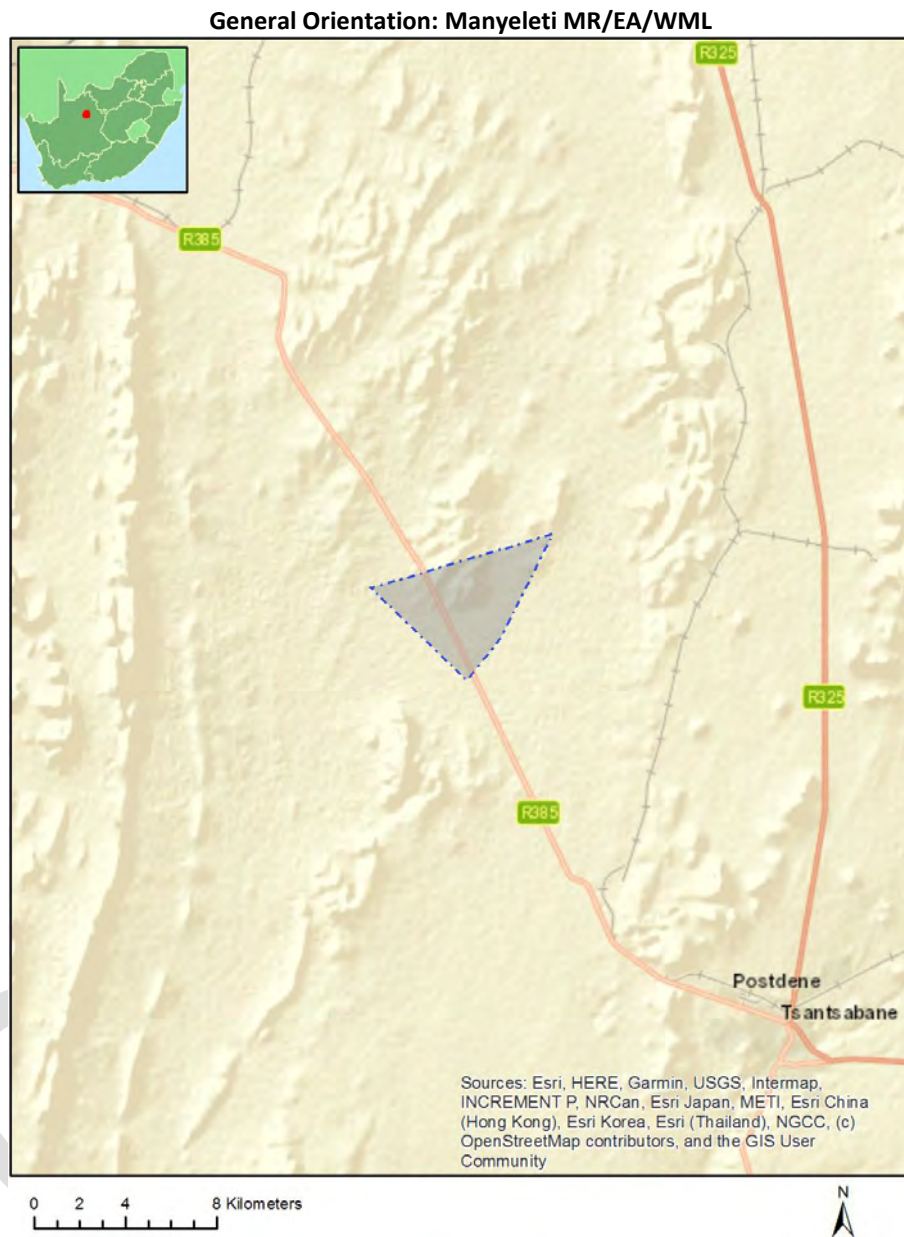
**Application Category:** Mining|Mining Right

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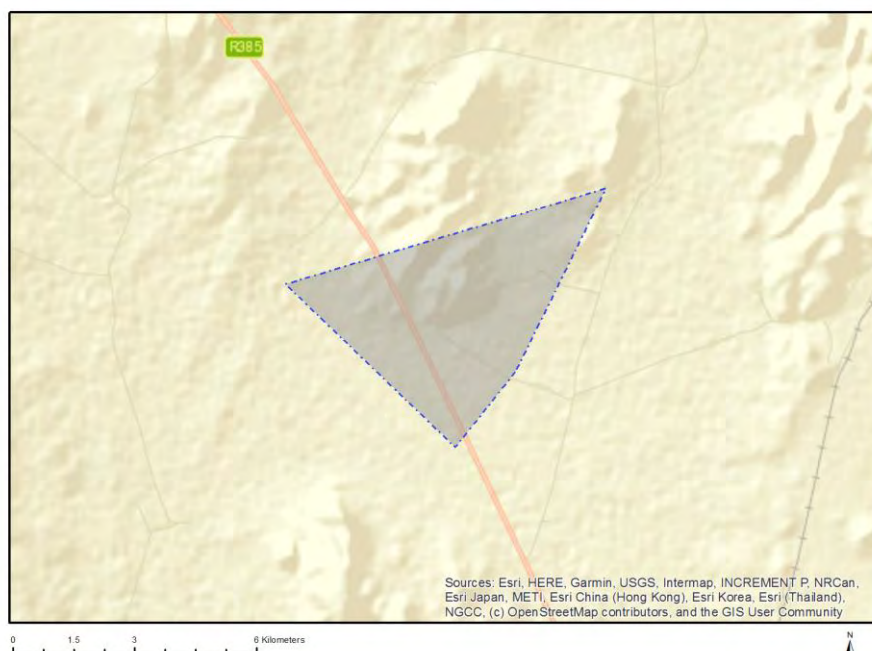
|                                                                                                                                                         |    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| Proposed Project Location .....                                                                                                                         | 3  |
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| Cadastral details of the proposed site .....                                                                                                            | 4  |
| Wind and Solar developments with an approved Environmental Authorisation or applications<br>under consideration within 30 km of the proposed area ..... | 5  |
| Environmental Management Frameworks relevant to the application .....                                                                                   | 5  |
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## Proposed Project Location

### Orientation map 1: General location



## Map of proposed site and relevant area(s)



## Cadastral details of the proposed site

Property details:

| No | Farm Name    | Farm/ Erf No | Portion | Latitude     | Longitude    | Property Type |
|----|--------------|--------------|---------|--------------|--------------|---------------|
| 1  | VLAK FONTEIN | 433          | 0       | 28°11'27.37S | 22°57'45.2E  | Farm          |
| 2  |              | 432          | 0       | 28°10'53.97S | 22°55'53.22E | Farm          |
| 3  |              | 364          | 0       | 28°11'59.95S | 22°53'25.82E | Farm          |
| 4  |              | 432          | 2       | 28°10'45.93S | 22°55'45.12E | Farm Portion  |
| 5  | VLAK FONTEIN | 433          | 0       | 28°9'42.22S  | 22°59'3.28E  | Farm Portion  |
| 6  |              | 432          | 1       | 28°11'52.76S | 22°55'11E    | Farm Portion  |
| 7  | VLAK FONTEIN | 433          | 3       | 28°11'20.99S | 22°58'19.34E | Farm Portion  |
| 8  |              | 432          | 0       | 28°9'54.96S  | 22°56'54.44E | Farm Portion  |
| 9  |              | 364          | 0       | 28°11'59.56S | 22°53'27.84E | Farm Portion  |
| 10 | VLAK FONTEIN | 433          | 2       | 28°11'56.21S | 22°57'15.38E | Farm Portion  |

Development footprint<sup>1</sup> vertices:

| Footprint | Latitude     | Longitude    |
|-----------|--------------|--------------|
| 1         | 28°10'0.64S  | 22°54'11.4E  |
| 1         | 28°8'53.28S  | 22°58'26.87E |
| 1         | 28°11'2.22S  | 22°57'14.82E |
| 1         | 28°11'55.39S | 22°56'26.94E |
| 1         | 28°10'0.64S  | 22°54'11.4E  |

<sup>1</sup> “development footprint”, means the area within the site on which the development will take place and includes all ancillary developments for example roads, power lines, boundary walls, paving etc. which require vegetation clearance or which will be disturbed and for which the application has been submitted.

## Wind and Solar developments with an approved Environmental Authorisation or applications under consideration within 30 km of the proposed area

| No | EIA Reference No   | Classification | Status of application | Distance from proposed area (km) |
|----|--------------------|----------------|-----------------------|----------------------------------|
| 1  | 12/12/20/2649      | Solar PV       | Approved              | 24.3                             |
| 2  | 14/12/16/3/3/2/698 | Solar PV       | Approved              | 14                               |

## Environmental Management Frameworks relevant to the application



| Environmental Management Framework | LINK                                                                                                                                                                                          |
|------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Siyanda District Municipality EMF  | <a href="https://screening.environment.gov.za/ScreeningDownloads/EMF/SIYANDA_EMF_REPORT_2008.doc">https://screening.environment.gov.za/ScreeningDownloads/EMF/SIYANDA_EMF_REPORT_2008.doc</a> |

## Environmental screening results and assessment outcomes

The following sections contain a summary of any development incentives, restrictions, exclusions or prohibitions that apply to the proposed development footprint as well as the most environmental sensitive features on the footprint based on the footprint sensitivity screening

results for the application classification that was selected. The application classification selected for this report is:

**Mining | Mining Right.**

### Relevant development incentives, restrictions, exclusions or prohibitions

The following development incentives, restrictions, exclusions or prohibitions and their implications that apply to this footprint are indicated below.

| Incentive, restriction or prohibition             | Implication                                                                                                                                                                                       |
|---------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Strategic Transmission Corridor-Northern corridor | <a href="https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/Combined_EGI.pdf">https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/Combined_EGI.pdf</a> |

### Proposed Development Area Environmental Sensitivity

The following summary of the development footprint environmental sensitivities is identified. Only the highest environmental sensitivity is indicated. The footprint environmental sensitivities for the proposed development footprint as identified, are indicative only and must be verified on site by a suitably qualified person before the specialist assessments identified below can be confirmed.

| Theme                                      | Very High sensitivity | High sensitivity | Medium sensitivity | Low sensitivity |
|--------------------------------------------|-----------------------|------------------|--------------------|-----------------|
| Agriculture Theme                          |                       |                  | X                  |                 |
| Animal Species Theme                       |                       | X                |                    |                 |
| Aquatic Biodiversity Theme                 | X                     |                  |                    |                 |
| Archaeological and Cultural Heritage Theme |                       | X                |                    |                 |
| Civil Aviation Theme                       |                       |                  | X                  |                 |
| Defence Theme                              |                       |                  |                    | X               |
| Paleontology Theme                         |                       | X                |                    |                 |
| Plant Species Theme                        |                       |                  |                    | X               |
| Terrestrial Biodiversity Theme             | X                     |                  |                    |                 |

### Specialist assessments identified

Based on the selected classification, and the known impacts associated with the proposed development, the following list of specialist assessments have been identified for inclusion in the assessment report. It is the responsibility of the EAP to confirm this list and to motivate in the assessment report, the reason for not including any of the identified specialist study including the provision of photographic evidence of the footprint situation.

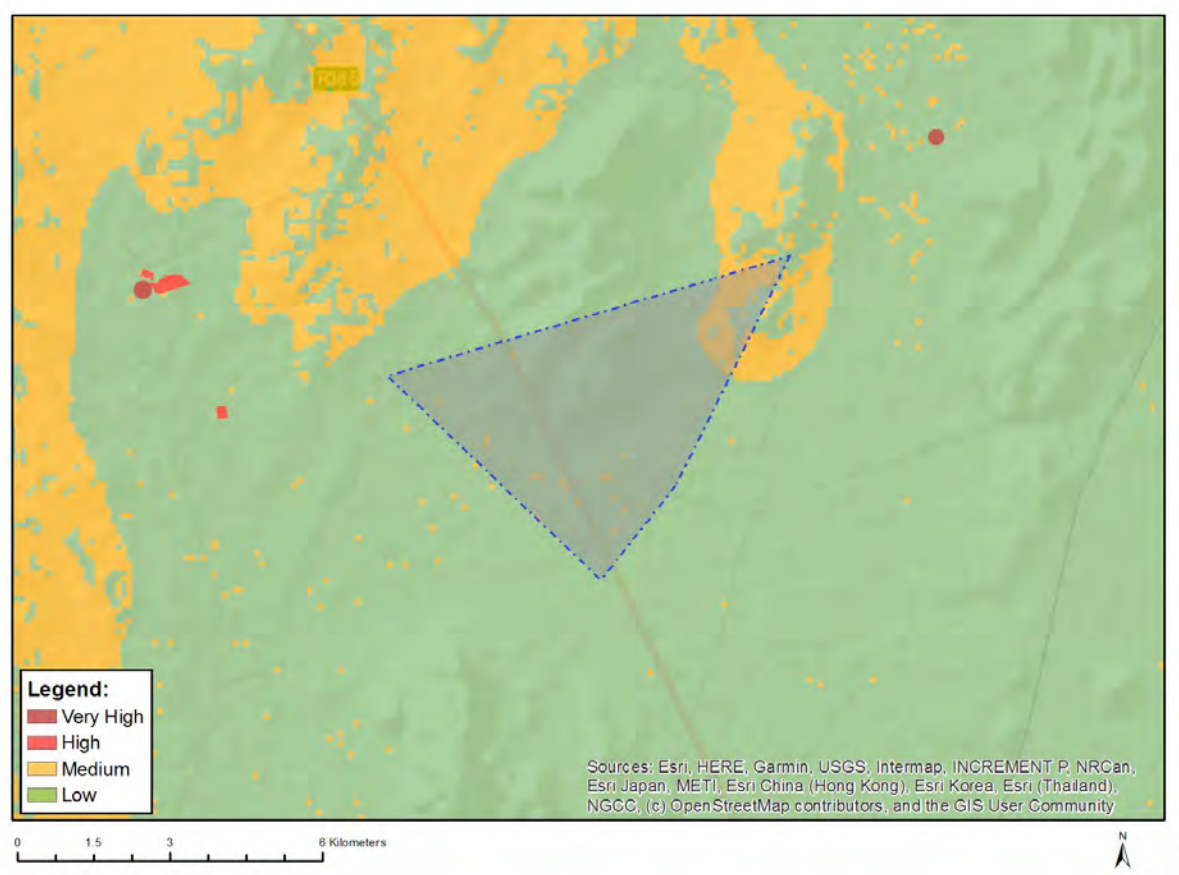
| No | Specialist assessment              | Assessment Protocol                                                                                                                                                                                                                                                               |
|----|------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1  | Agricultural Impact Assessment     | <a href="https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Agriculture_Assessment_Protocols.pdf">https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Agriculture_Assessment_Protocols.pdf</a> |
| 2  | Landscape/Visual Impact Assessment | <a href="https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf">https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf</a> |

|    |                                                        |                                                                                                                                                                                                                                                                                             |
|----|--------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3  | Archaeological and Cultural Heritage Impact Assessment | <a href="https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf">https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf</a>           |
| 4  | Palaeontology Impact Assessment                        | <a href="https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf">https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf</a>           |
| 5  | Terrestrial Biodiversity Impact Assessment             | <a href="https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Terrestrial_Biodiversity_Assessment_Protocols.pdf">https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Terrestrial_Biodiversity_Assessment_Protocols.pdf</a> |
| 6  | Aquatic Biodiversity Impact Assessment                 | <a href="https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Aquatic_Biodiversity_Assessment_Protocols.pdf">https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Aquatic_Biodiversity_Assessment_Protocols.pdf</a>         |
| 7  | Hydrology Assessment                                   | <a href="https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf">https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf</a>           |
| 8  | Noise Impact Assessment                                | <a href="https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Noise_Impacts_Assessment_Protocol.pdf">https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Noise_Impacts_Assessment_Protocol.pdf</a>                         |
| 9  | Radioactivity Impact Assessment                        | <a href="https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf">https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf</a>           |
| 10 | Traffic Impact Assessment                              | <a href="https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf">https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf</a>           |
| 11 | Geotechnical Assessment                                | <a href="https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf">https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf</a>           |
| 12 | Climate Impact Assessment                              | <a href="https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf">https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf</a>           |
| 13 | Health Impact Assessment                               | <a href="https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf">https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf</a>           |
| 14 | Socio-Economic Assessment                              | <a href="https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf">https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf</a>           |
| 15 | Ambient Air Quality Impact Assessment                  | <a href="https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf">https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf</a>           |
| 16 | Seismicity Assessment                                  | <a href="https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf">https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf</a>           |
| 17 | Plant Species Assessment                               | <a href="https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Plant_Species_Assessment_Protocols.pdf">https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Plant_Species_Assessment_Protocols.pdf</a>                       |
| 18 | Animal Species Assessment                              | <a href="https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Animal_Species_Assessment_Protocols.pdf">https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Animal_Species_Assessment_Protocols.pdf</a>                     |

# Results of the environmental sensitivity of the proposed area.

The following section represents the results of the screening for environmental sensitivity of the proposed footprint for relevant environmental themes associated with the project classification. It is the duty of the EAP to ensure that the environmental themes provided by the screening tool are comprehensive and complete for the project. Refer to the disclaimer.

## MAP OF RELATIVE AGRICULTURE THEME SENSITIVITY

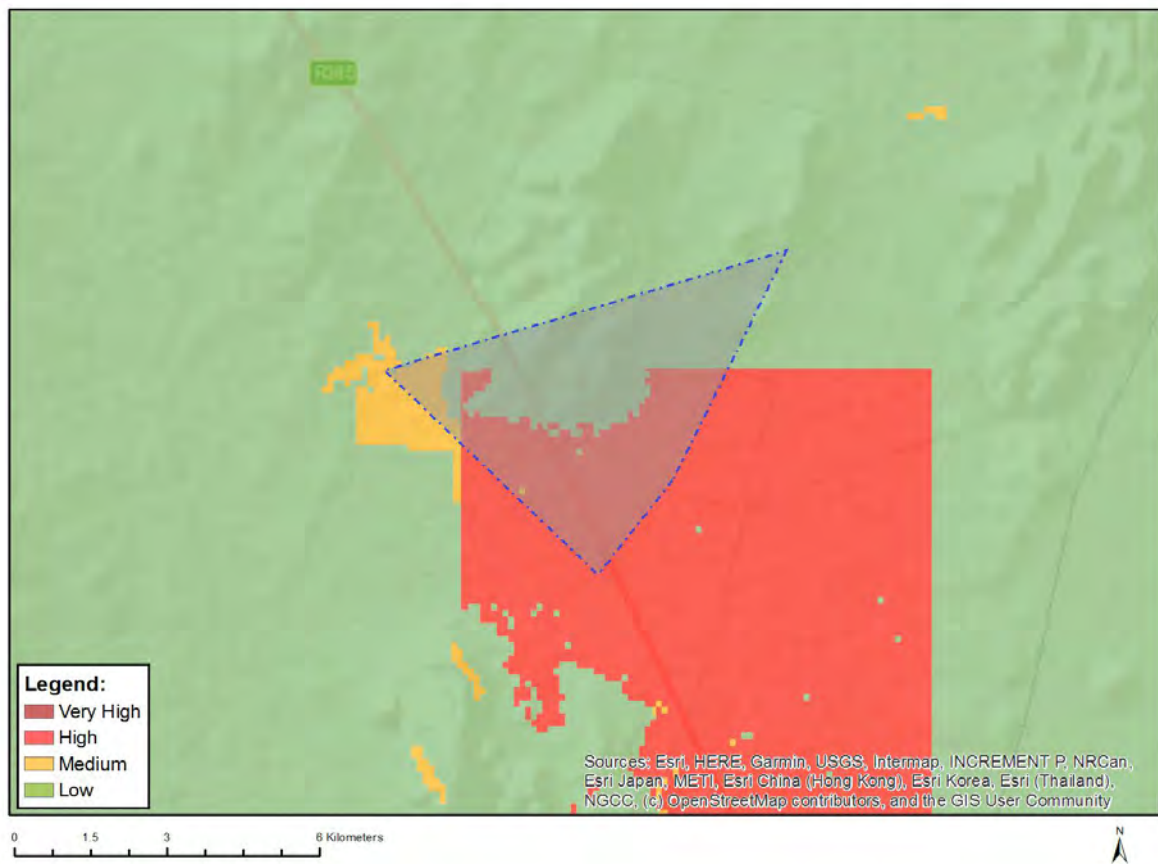


| Very High sensitivity | High sensitivity | Medium sensitivity | Low sensitivity |
|-----------------------|------------------|--------------------|-----------------|
|                       |                  | X                  |                 |

### Sensitivity Features:

| Sensitivity | Feature(s)                                                                          |
|-------------|-------------------------------------------------------------------------------------|
| Low         | Land capability;01. Very low/02. Very low/03. Low-Very low/04. Low-Very low/05. Low |
| Medium      | Land capability;06. Low-Moderate/07. Low-Moderate/08. Moderate                      |

## MAP OF RELATIVE ANIMAL SPECIES THEME SENSITIVITY



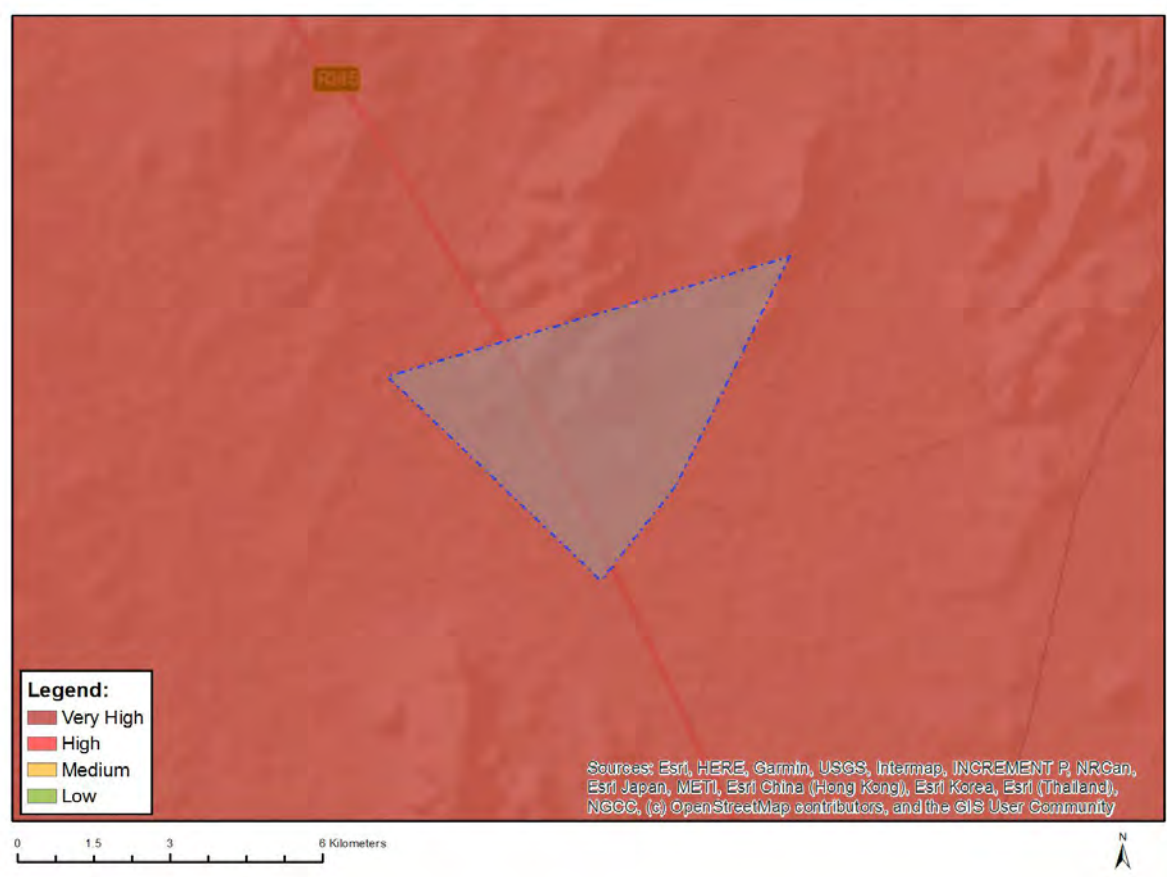
Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at [eiadatarequests@sanbi.org.za](mailto:eiadatarequests@sanbi.org.za) listing all sensitive species with their unique identifiers for which information is required. The name has been withheld as the species may be prone to illegal harvesting and must be protected. SANBI will release the actual species name after the details of the EAP or specialist have been documented.

| Very High sensitivity | High sensitivity | Medium sensitivity | Low sensitivity |
|-----------------------|------------------|--------------------|-----------------|
|                       | X                |                    |                 |

### Sensitivity Features:

| Sensitivity | Feature(s)                    |
|-------------|-------------------------------|
| High        | Aves-Cursorius rufus          |
| Low         | Subject to confirmation       |
| Medium      | Aves-Neotis ludwigii          |
| Medium      | Aves-Sagittarius serpentarius |

MAP OF RELATIVE AQUATIC BIODIVERSITY THEME SENSITIVITY

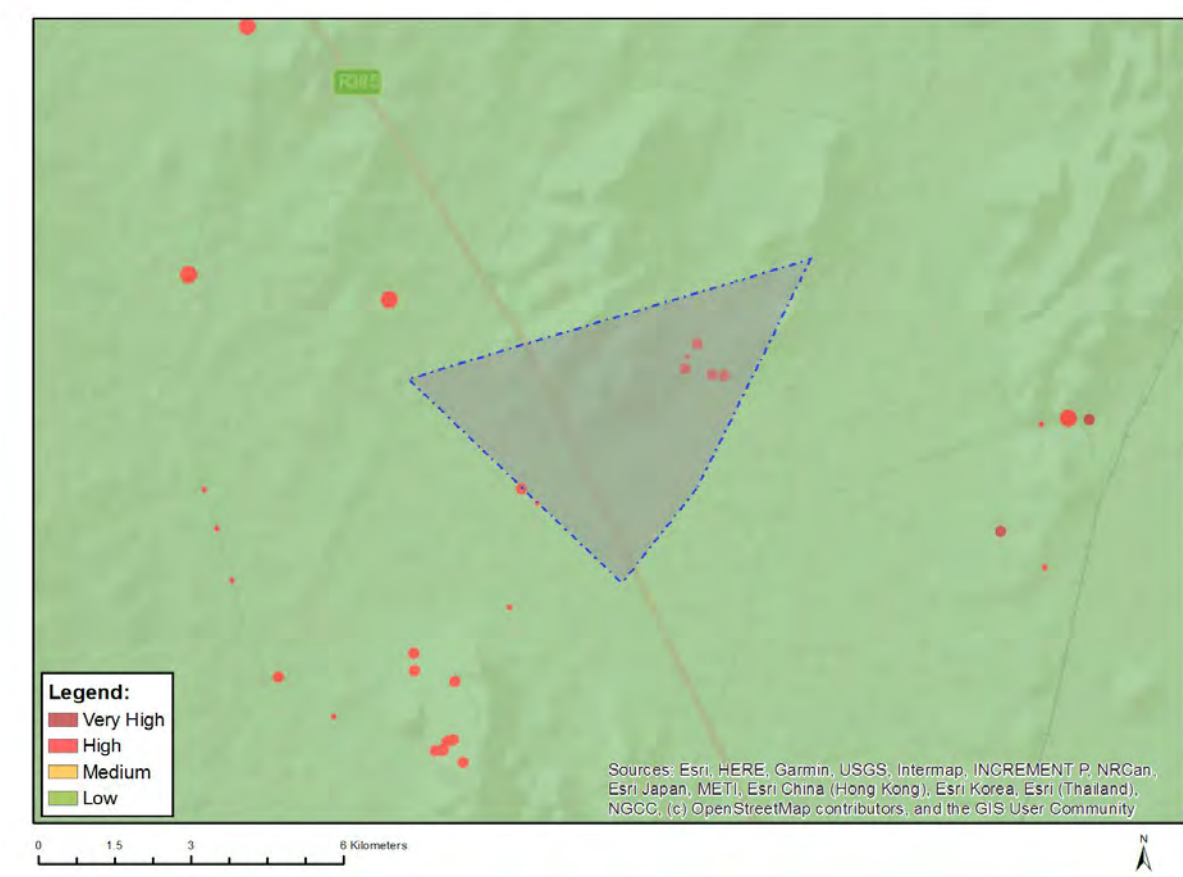


| Very High sensitivity | High sensitivity | Medium sensitivity | Low sensitivity |
|-----------------------|------------------|--------------------|-----------------|
| X                     |                  |                    |                 |

Sensitivity Features:

| Sensitivity | Feature(s)                                            |
|-------------|-------------------------------------------------------|
| Very High   | Wetlands and Estuaries                                |
| Very High   | Freshwater ecosystem priority area quinary catchments |

# MAP OF RELATIVE ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME SENSITIVITY

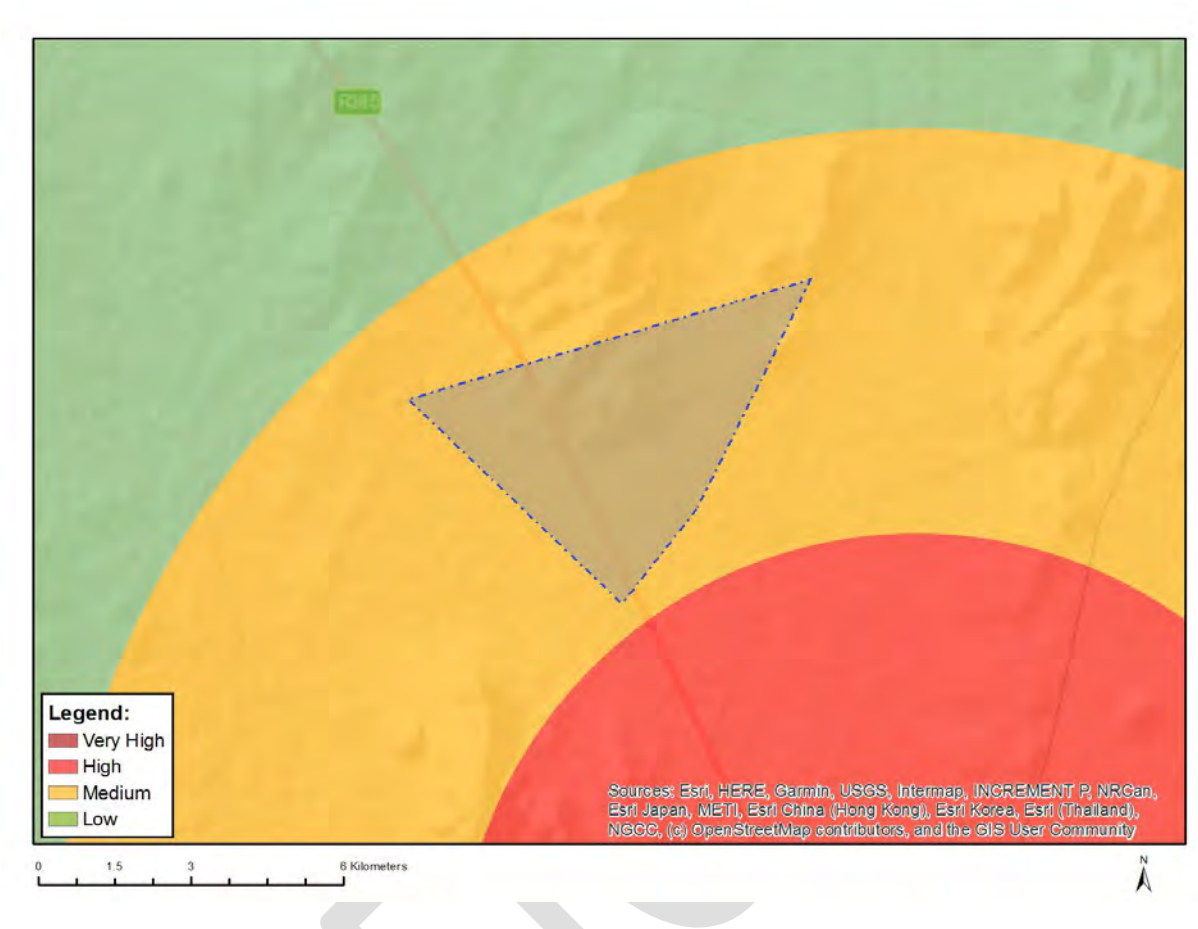


| Very High sensitivity | High sensitivity | Medium sensitivity | Low sensitivity |
|-----------------------|------------------|--------------------|-----------------|
|                       | X                |                    |                 |

## Sensitivity Features:

| Sensitivity | Feature(s)                                |
|-------------|-------------------------------------------|
| High        | Within 100m of a Grade IIIb Heritage site |
| High        | Within 50m of a Grade IIIc Heritage site  |
| Low         | Low sensitivity                           |

MAP OF RELATIVE CIVIL AVIATION THEME SENSITIVITY

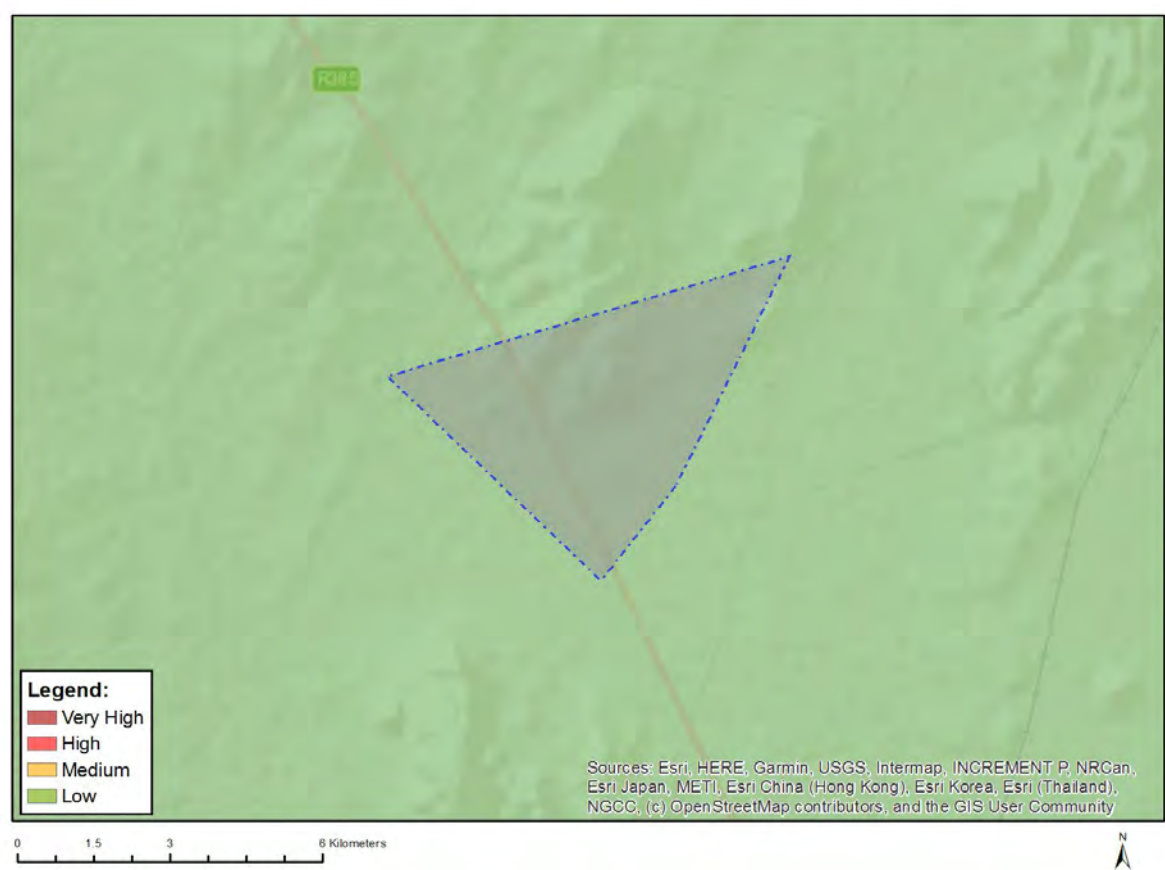


| Very High sensitivity | High sensitivity | Medium sensitivity | Low sensitivity |
|-----------------------|------------------|--------------------|-----------------|
|                       |                  | X                  |                 |

Sensitivity Features:

| Sensitivity | Feature(s)                                            |
|-------------|-------------------------------------------------------|
| Medium      | Between 8 and 15 km of other civil aviation aerodrome |

MAP OF RELATIVE DEFENCE THEME SENSITIVITY

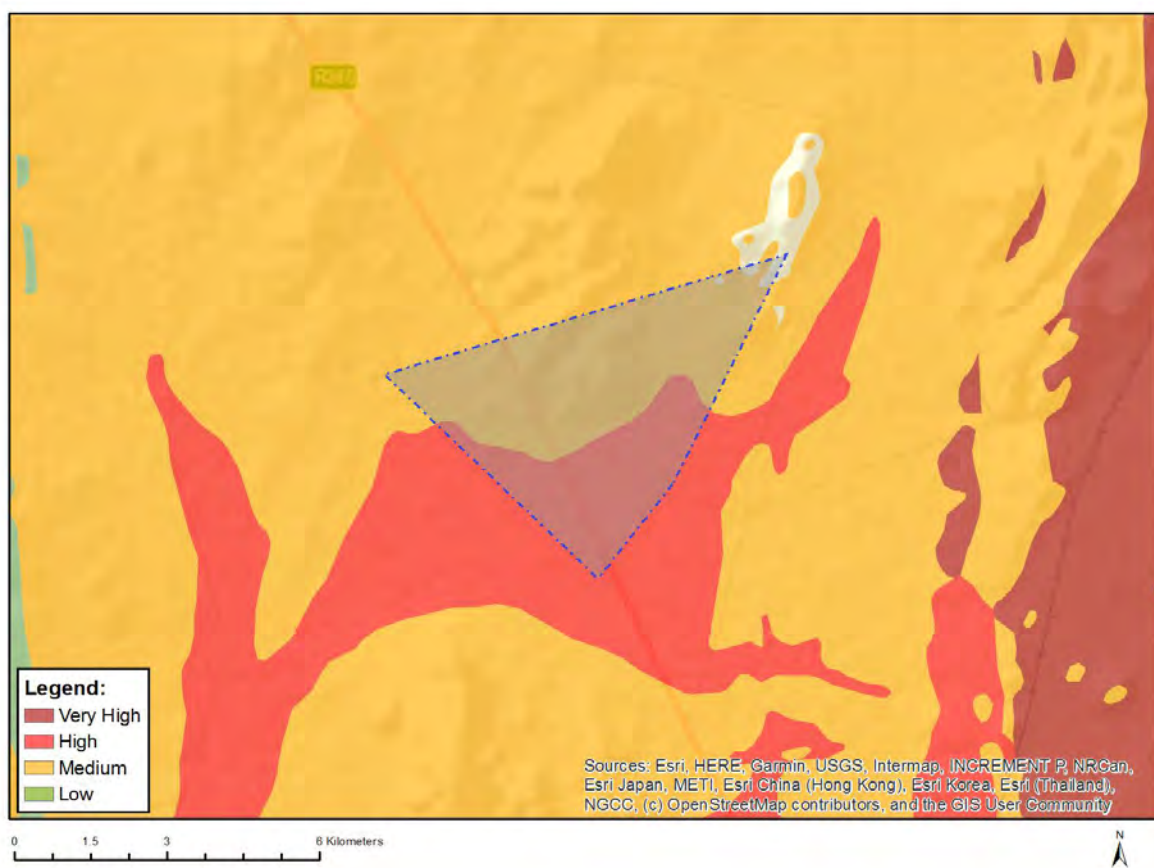


| Very High sensitivity | High sensitivity | Medium sensitivity | Low sensitivity |
|-----------------------|------------------|--------------------|-----------------|
|                       |                  |                    | X               |

Sensitivity Features:

| Sensitivity | Feature(s)      |
|-------------|-----------------|
| Low         | Low Sensitivity |

## MAP OF RELATIVE PALEONTOLOGY THEME SENSITIVITY

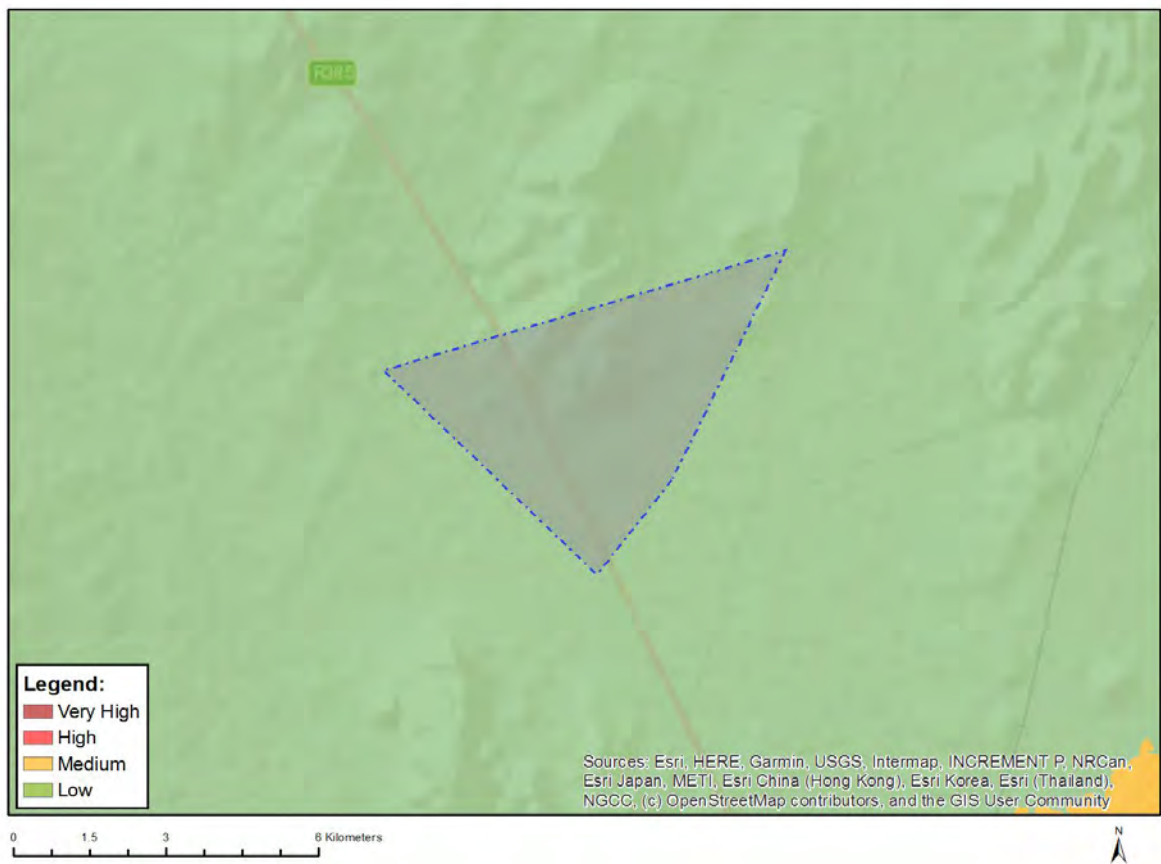


| Very High sensitivity | High sensitivity | Medium sensitivity | Low sensitivity |
|-----------------------|------------------|--------------------|-----------------|
|                       | X                |                    |                 |

### Sensitivity Features:

| Sensitivity | Feature(s)                                         |
|-------------|----------------------------------------------------|
| High        | Features with a High paleontological sensitivity   |
| Medium      | Features with a Medium paleontological sensitivity |

## MAP OF RELATIVE PLANT SPECIES THEME SENSITIVITY



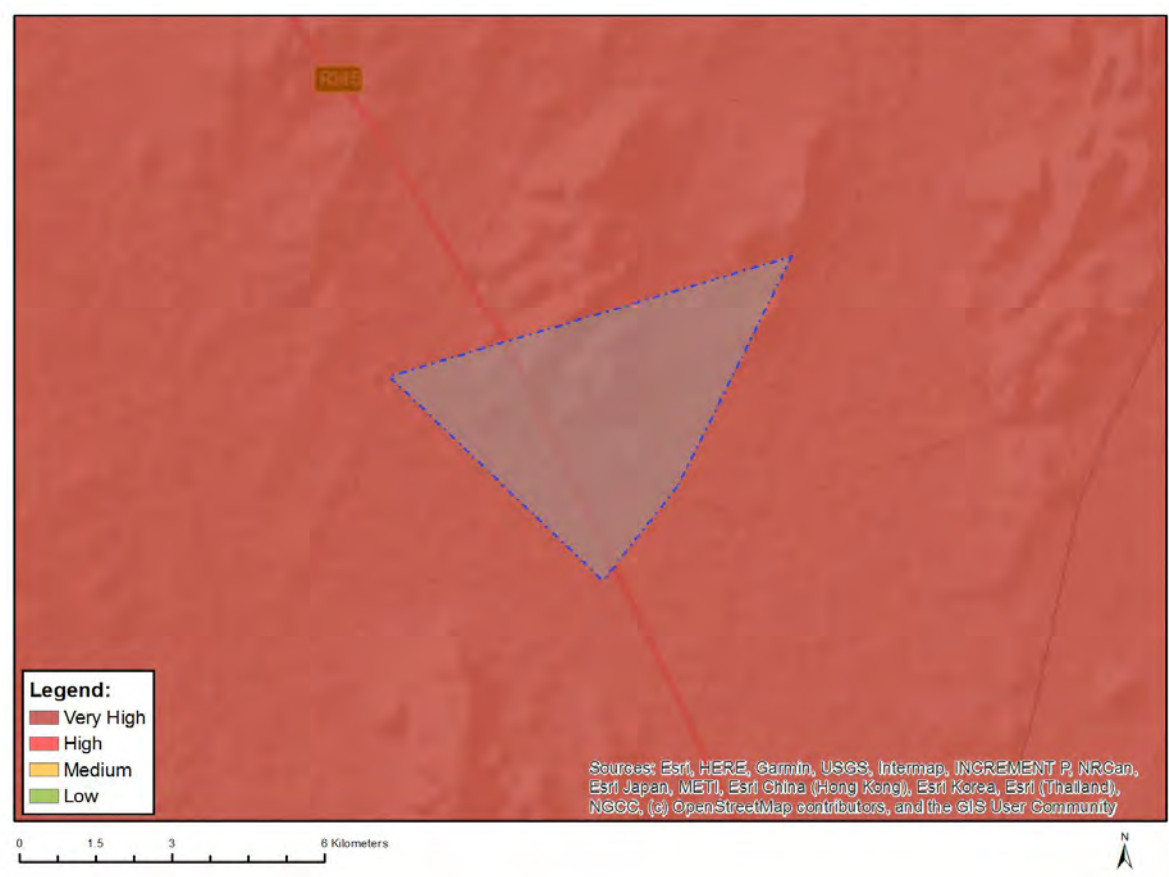
Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at [eiadatarequests@sanbi.org.za](mailto:eiadatarequests@sanbi.org.za) listing all sensitive species with their unique identifiers for which information is required. The name has been withheld as the species may be prone to illegal harvesting and must be protected. SANBI will release the actual species name after the details of the EAP or specialist have been documented.

| Very High sensitivity | High sensitivity | Medium sensitivity | Low sensitivity |
|-----------------------|------------------|--------------------|-----------------|
|                       |                  |                    | X               |

### Sensitivity Features:

| Sensitivity | Feature(s)      |
|-------------|-----------------|
| Low         | Low Sensitivity |

# MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY



| Very High sensitivity | High sensitivity | Medium sensitivity | Low sensitivity |
|-----------------------|------------------|--------------------|-----------------|
| X                     |                  |                    |                 |

## Sensitivity Features:

| Sensitivity | Feature(s)                   |
|-------------|------------------------------|
| Very High   | Critical biodiveristy area 1 |
| Very High   | Ecological support area      |
| Very High   | FEPA Subcatchments           |