PROPOSED MINING RIGHT OVER PORTION 2 (A PORTION OF PORTION 1), REMAINDER PORTION, REMAINDER PORTION OF PORTION 1 AND PORTION 3 OF THE FARM MAKGANYENE NO 667, TSANTSABANE LOCAL MUNICIPALITY, NORTHERN CAPE

DRAFT SCOPING REPORT

DEPARTMENTAL REFERENCE NUMBER:

NC 30/5/1/2/2/10255 MR

NOVEMBER 2024

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EXECUTIVE SUMMARY

The Applicant, Assmang (Pty) Ltd, applied for a mining right (MR), environmental authorisation (EA), and waste licence (WL) to mine Hematite, Magnetite, Goethite, Limonite, Siderite, Pyrolusite, Psilomelane, Rhodochrosite, Manganite, Braunite, Hausmannite, Manganese ore, Iron ore, and Diamonds (general) from 1 549.61 ha that extends over Portion 2 (portion of Portion 1), Remainder Portion, Remainder Portion of Portion 1 and Portion 3 of the farm Makganyene No 667 in the Tsantsabane Local Municipality of the Northern Cape.

The proposed project triggers listed activities in terms of the National Environmental Management Act, 1998 (Act 107 of 1998) and the Environmental Impact Assessment Regulations 2014 (as amended), as well as the National Environmental Management: Waste Act, 2008 (Act No 59 of 2008) and therefore requires an environmental impact assessment that assess project specific environmental impacts and alternatives, consider public input, and propose mitigation measures, to ultimately culminate in an environmental management programme that informs the competent authority (Department of Mineral Resources and Energy) when considering the environmental authorisation. This report, the Draft Scoping Report, forms part of the departmental requirements and presents the first report of the EIA process.

The earmarked area is subject to a prospecting right (NC 30/5/1/1/2/2292 PR) that expires in November 2024. The proposed Makganyane Iron Ore Mine (applicable to this MR application) will be a greenfield site that will require development from the grassroots up. The proposed mining method will be representative of opencast mining. The first phase will focus on pre-stripping the top layer material, of which the topsoil will be stored separately for rehabilitation. Then waste rock will be stripped to access the ore body followed by open cast mining of Pit 1 and Pit 2. The mining technology will include drilling and blasting with associated truck and shovel operations. Waste rock from the open pit/s will report to the centralised waste rock dump. Ore (RoM) from the open pit/s will report to a crusher situated on site and in the stockpile area. Crushed ore will be stockpiled on-site from where ore will be transported via road to the Beeshoek Mine processing facility (off-site) using side tipper trucks. No processing will take place at the Makganyane Iron Ore Mine.

Need and Desirability

Iron is the most-common metallic element in the universe, and the third most-common component of the planet. Globally, there are an estimated 800 billion tonnes of iron-ore resources, containing over 230 billion tonnes of iron. The South Africa iron and steel sector consumes more than 5 million tonnes of iron ore per annum, with domestic consumption expected to increase to over 6 million tonnes by 2025. The total worldwide estimate of iron ore reserves is approximated at 468 billion tonnes, of which 696 million tonnes is found in South Africa.

The primary goal of the proposed mining operation is the winning of iron ore that will be processed at the Beeshoek Mine. The recovery of manganese and/or diamonds (general) will be treated as derivatives, and the presence/absence thereof does not affect the feasibility of the proposed activity.

The assessment of the need and desirability of the proposed operation as contained in this Scoping Report must be seen as ***preliminary*** to be expanded upon during the environmental impact assessment phase once the specialist studies and public input are available. The National Department of Environmental Affairs' Guideline on Need and Desirability (first version published in terms of section 24J of the NEMA in 2014, and second version in 2017), directs the aspects to be considered and elaborated on during the full EIA process.

Alternative Considered:

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

Presently, the project proposal entails a mining right application over ±1 550 ha of Portion 2 (portion of Portion 1), Remainder Portion, Remainder Portion of Portion 1 and Portion 3 of the farm Makganyene No 667, within the boundaries of the GPS coordinates listed in Table 4 and depicted in Figure 3.

Applicants can only apply for mining rights within areas where such rights are not yet held by other companies/applicants. Furthermore, the mining activities are dependent upon the presence of the desired minerals which are again dependent upon geological formations. Considering this, the proposed footprint of the MR application was founded on the footprint of the prospecting right (NC 2292 PR) backed by the prospecting results and available geological information.

A Locality/Site Alternative that could be applicable to this application is the possible omission of some of the Makganyene farm portions from the application. Based on the present pit design and supporting infrastructure layout the only farm portion not earmarked for development is the most south-western portion (±292 ha) of the Remainder of Makganyene No 667. The possibility of omitting this portion of the farm from the application footprint will be discussed with the Applicant during the EIA process, and the specialists will be tasked to consider the positive and negative aspects of both options (including and excluding the specific section). The findings of the project team and specialists will be presented and assessed in the DEIAR that will also be available for public input.

b) Type of activity to be undertaken

The Applicant intends to mine the iron ore of the mining footprint using opencast methods as discussed in *Section 1(d)(ii) Description of the activities to be undertaken – Project Proposal*.

An alternative land use that can be considered is using the area for agricultural purposes such as game farming and grazing instead of mining. The specialist responsible for the agricultural impact assessment

report will consider the potential losses to agriculture that may occur should the area be mined and compare the agricultural potential of the earmarked area with the income that may be generated through mining. Should viable activity alternatives be identified it will be discussed during the EIA process of the application and included in the DEIAR to be distributed for public comments.

c) Design and layout of the activity

The present project design presents the best-case scenario based on the geological and feasibility results. Two design/layout options were considered by the project team during the planning phase, upon which Option 1 was identified as the preferred alternative.

Apart from these two scenarios, it is expected that the present mine design/layout may have to be altered upon receipt of the specialist reports. The final design/layout alternatives will be considered during the EIA process as supplementary information is obtained from the specialist studies, and the stakeholders and I&AP's contribute their knowledge towards the proposed project.

d) Technology to be used in the activity.

Presently it is expected that the mining process will be as described in *Section 1(d)(ii) Description of the activities to be undertaken – Operational Phase*. This project does not require complex technology to allow the winning of the intended mineral/s, nor will processing take place on site and therefore no further technology alternatives are considered in the Scoping and EIA process unless a need arises upon receipt of the specialist reports and/or public input.

e) Operational aspects of the activity

The present operational aspects of the activity were based on the prospecting results and the optimisation of the proposed mining activity. The operational aspects will however be expanded upon once the findings and recommendations of the specialists are available and will be considered during the EIA process as supplementary information is obtained.

f) Option of not implementing the activity (No-go Alternative)

The no-go alternative entails no change to the *status quo* and is therefore a real alternative that must be considered. If the no-go alternative is implemented the land use of the earmarked footprint will remain that of agriculture, and livestock farming with the manganese, iron and diamond resources unmined. The no-go option will further entail a loss of employment opportunities, as well as socio-economic benefits and growth development opportunities. Given the high levels of unemployment and poverty in the Tsantsabane district the loss of such opportunities is considered significant. The positive implications of

the no-go alternative are that there will be no impact on the bio- and geophysical environment of the earmarked area, nor a change of the land use.

Amongst others, the socio-ecological and socio-economic impacts of mining on the current and future land uses of the study area will be compared to the status quo and will be considered as part of the EIA process and discussed in the DEIAR.

Public Participation Process:

The relevant stakeholders and Interested and Affected Parties (I&AP's) will be informed of the mining right application by means of an advertisement in the Gemsbok and the Noordkaap Bulletin, and on-site notices that will be placed at the entrance to Makganyene No 667/2 where it turns off the R385 and in Postmasburg. A notification letter inviting comments on the DSR over a 30-days commenting period (ending 07 January 2025) will also be sent to the landowners, neighbouring landowners, stakeholders, and any other I&AP that may be interested in the project. The comments received on the DSR will be incorporated into the final Scoping Report (FSR) to be submitted to the DMRE for consideration.

Scoping Report:

The scoping report identifies the potential positive and negative impacts that the proposed project may have on the environment and the community as well as the aspects that may impact on the socio-economic conditions of directly affected persons and proposes possible mitigation measures that could be applied to modify / remedy / control / stop the identified impacts.

Plan of Study for the Environmental Impact Assessment Process:

The aspects to be assessed as part of the environmental impact assessment process will include, but not be limited to, the following:

1. Various alternatives will be considered during the EIA process as supplementary information becomes available. Identifying viable alternatives will in turn dictate the design and layout of the proposed project as well as hone the proposed mining method.
2. The need and desirability of the proposed activity will be discussed in detail and weighed against the no-go option of upholding the status quo at the study area.
3. The inputs received during the public participation process (first- and second phase) will be assessed and considered by the project team during the EIA process.
4. The findings, recommendations and management measure proposed in the specialist studies will be assessed during the EIA process and incorporated into the DEIAR.
5. The impact of the proposed project on the physical-, biological-, and human environments will be assessed.

6. Mitigation measures will be proposed to control, modify, remedy, or stop the impacts associated with the proposed activity on the surrounding environment.
7. Any additional requirements submitted by the DMRE will be incorporated into the DEIAR and treated accordingly.

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LIST OF ACRONYMS

AQIR	Air Quality Impact Report
ASTM	American Society for Testing and Materials
CARA	Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)
CBA	Critical Biodiversity Area
CRR	Comments and Response Report
DEIAR	Draft Environmental Impact Assessment Report
DFFE	Department of Forestry, Fisheries and the Environment
DMRE	Department of Mineral Resources and Energy
DRPW	Department of Roads and Public Works
DSR	Draft Scoping Report
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EAPASA	Environmental Assessment Practitioners Association of South Africa
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EIS	Ecological Importance and Sensitivity
EMPR	Environmental Management Programme
ESA (Arch)	Early Stone Age
ESA	Ecological Support Areas
FEIAR	Final Environmental Impact Assessment Report
FEPA	Freshwater Ecosystem Priority Area
FSR	Final Scoping Report
GDP	Gross Domestic Product
GPS	Global Positioning System
GVA	Gross Value Added
HIA	Heritage Impact Assessment
HIA (Health)	Health Impact Assessment
I&AP	Interested and Affected Party
IDP	Integrated Development Plan
IFC	International Finance Corporation
IOEC	Iron Ore Export Channel
LED	Local Economic Development
LOM	Life of Mine
LSM	Late Stone Age

MHSA	Mine Health and Safety Act, 1996 (Act No 29 of 1996)
MIOM	Makganyane Iron Ore Mine
MPRDA	Minerals and Petroleum Resources Development Act, 2002 (Act No 28 of 2002)
MR	Mining Right
MSA	Middle Stone Age
MWP	Mining Work Programme
NEM:AQA	National Environmental Management: Air Quality Control Act, 2004 (Act No 39 of 2004)
NEM:BA	National Environmental Management: Biodiversity Act, 2004 (Act No 10 of 2004)
NEM:WA	National Environmental Management: Waste Act, 2008 (Act No 59 of 2008)
NEMA	National Environmental Management Act, 1998 (Act No 107 of 1998)
NHRA	National Heritage Resources Act, 1999 (Act No 25 of 1999)
NRTA	National Road Traffic Act, 1996 (Act No 25 of 1999)
NT	Near Threatened
NWA	National Water Act, 1998 (Act No 36 of 1998)
OHSA	Occupational Health and Safety Act, 1993 (Act No 85 of 1993)
PCB's	Polychlorinated Biphenyls
PCO	Pest Control Officer
PES	Present Ecological State
PIA	Palaeontological Impact Assessment
PPE	Personal Protection Equipment
PSM	Palaeontological Sensitivity Map
RAHIA	Rapid Appraisal Health Impact Assessment
ROM	Run of Mine
SAHRA	South African Heritage Resources Agency
SAMBF	South African Mining and Biodiversity Forum
SAMRAD	South African Mining Mineral Resources Administration System
SANBI	South African National Biodiversity Institute
SANS	South African National Standards
SLP	Social and Labour Plan
SWMA	Sub-Water Management Area
TBCS	Terrestrial Biodiversity Compliance Statement
TIA	Traffic Impact Assessment
TLM	Tsantsabane Local Municipality
VU	Vulnerable
WL	Waste Licence
WMA	Water Management Area
ZFMDM	ZF Mgcawu District Municipality

mineral resources
Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

SCOPING REPORT

FOR LISTED ACTIVITIES ASSOCIATED WITH MINING RIGHT

AND/OR BULK SAMPLING ACTIVITIES INCLUDING TRENCHING

IN CASES OF ALLUVIAL DIAMOND PROSPECTING

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

NAME OF APPLICANT: Assmang (Pty) Ltd

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FAX NO: N/A
POSTAL ADDRESS: P.O. Box 782058, Sandton, Gauteng, 2146
PHYSICAL ADDRESS: 24 Impala Road, Chislehurston, Gauteng
FILE REFERENCE NUMBER SAMRAD: NC 30/5/1/2/2/10255 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 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 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.

SCOPING REPORT

1. CONTACT PERSON AND CORRESPONDENCE ADDRESS

a) Details of: Greenmined Environmental (Pty) Ltd

In terms of the National Environmental Management Act, 1998 (Act No 107 of 1998) (NEMA) the proponent/applicant must appoint an independent Environmental Assessment Practitioner (EAP) to undertake the environmental impact assessment (EIA) of any activities regulated in terms of the Act. Assmang (Pty) Ltd (hereinafter the "Applicant") appointed Greenmined Environmental (Pty) Ltd (hereinafter "Greenmined") to undertake the study needed. Greenmined has no vested interest in Assmang (Pty) Ltd or the proposed project and hereby declares its independence as required by the EIA Regulations, 2014 (as amended).

i) The EAP who prepared the report

Name of the Practitioner: Ms Christine Fouché (Senior Environmental Specialist)

Tel No: 021 851 2673 / 082 811 8514

Fax No: 086 546 0579

E-mail address: christine.f@greenmined.co.za

ii) Expertise of the EAP

(1) The qualifications of the EAP
(With evidence attached as **Appendix 1**)

Ms Fouché has a Diploma in Nature Conservation and a B.Sc. in Botany and Zoology. Full CV with proof of expertise is attached as Appendix 1.

(2) Summary of the EAP's experience
(Attach the EAP's curriculum vitae as **Appendix 2**)

Ms Fouché has nineteen years' experience in Environmental Impact Assessments and Mining Applications in South Africa. Ms Fouché is a registered Environmental Assessment Practitioner (registration no: 2019/1003) with EAPASA (Environmental Assessment Practitioners Association of South Africa) since 2019. See a list of past project attached as Appendix 2.

b) Description of the property

Table 1: Property description

Farm Name:	δ Remainder of the farm Makganyene No 667; δ Remainder portion of Portion 1 of the farm Makganyene No 667; δ Portion 2 (a portion of Portion 1) of the farm Makganyene No 667; δ Portion 3 of the farm Makganyene No 667;
Application area (Ha)	1 549.61 ha
Magisterial district	Tsantsabane Local Municipality
Distance and direction from nearest town	±24 km north-west of Postmasburg on opposite sides of the R385 provincial road. Exit Postmasburg towards Olifantshoek. Drive ±24 km along the R385 and the site will be on the left and right of the road.
21 digit Surveyor General Code for each farm portion	δ C04100000000066700000 δ C04100000000066700001 δ C04100000000066700002 δ C04100000000066700003

c) Locality map

(show nearest town, scale not smaller that 1:250000 as **Appendix 6**)

The requested map is attached as Appendix 6.

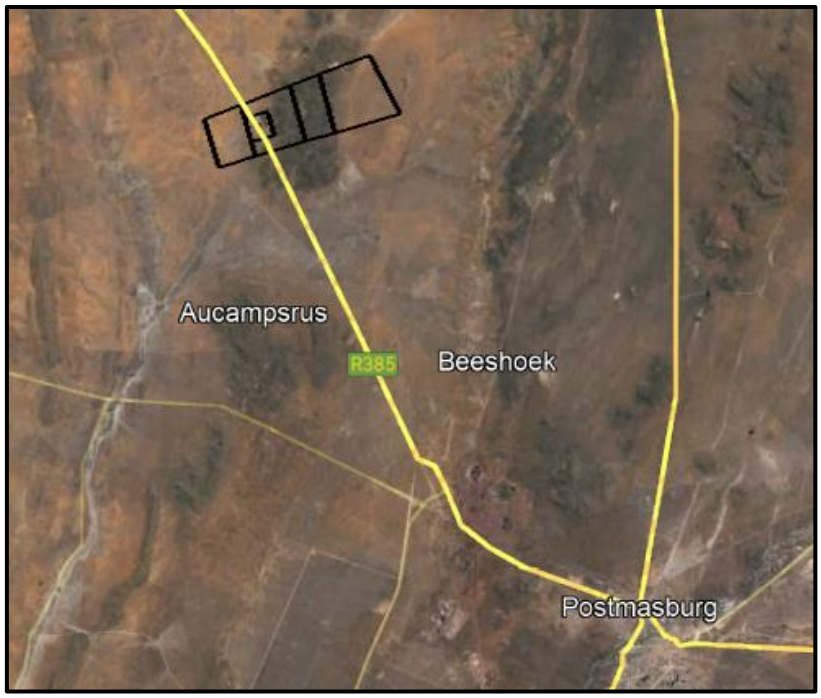

Figure 1: Satellite view of the proposed mining area (black polygon) in relation to the surroundings (Image obtained from Google Earth).

d) Description of the scope of the proposed overall activity

i) Listed and specified activities

Provide a plan drawn to a scale acceptable to the competent authority but not less than 1:10 000 that shows the location, and area (hectares) of all the aforesaid main and listed activities, and infrastructure to be placed on site and attach as **Appendix 4**

The Applicant, Assmang (Pty) Ltd, applied for a mining right (MR), environmental authorisation (EA), and waste licence (WL) to mine Hematite, Magnetite, Goethite, Limonite, Siderite, Pyrolusite, Psilomelane, Rhodochrosite, Manganite, Braunite, Hausmannite, Manganese ore, Iron ore, and Diamonds (general) from 1 549.61 ha that extends over Portion 2 (portion of Portion 1), Remainder Portion, Remainder Portion of Portion 1 and Portion 3 of the farm Makganyene No 667 in the Tsantsabane Local Municipality of the Northern Cape.

Should the relevant authorisations be granted, and the project commence the principal mining activities will entail the following:

- δ Site establishment and infrastructure development;
- δ Strip and stockpile of topsoil and overburden to access the ore (excavation);
- δ Opencast mining (including drilling and blasting);
- δ Transport, stockpile and crushing of run of mine ore (RoM);
- δ Transport of crushed ore to Beeshoek Mine; and
- δ Slope, landscape and rehabilitate the affected areas upon closure of the mine.

The preliminary layout of the mining area is expected to include at least the following:

- δ Internal roads;
- δ Office complex (±1 ha):
  - ε Ablution facilities,
  - ε Diesel depot,
  - ε Equipment workshop,
  - ε Office containers,
  - ε Parking area,
  - ε Planning / meeting site rooms,
  - ε Security access control,
  - ε Water reservoir,
  - ε Wash bays.
- δ Stockpile Area (±15 ha):
  - ε Crushing plant,
  - ε Weigh bridge and Operations Hut,
- δ Excavations (±36 ha):
  - ε Pit 1

- ε Pit 2
- δ Waste rock dump (±64 ha);
- δ Water storage dam/s (for dewatering of the pits).

The proposed project triggers listed activities (see following table) in terms of the National Environmental Management Act, 1998 (Act 107 of 1998) and the Environmental Impact Assessment Regulations 2014 (as amended) and therefore requires an environmental impact assessment (EIA) that assess project specific environmental impacts and alternatives, consider public input, and propose mitigation measures in cooperation with specialists, to ultimately culminate in an environmental management programme (EMPR) that informs the competent authority (Department of Mineral Resources and Energy) when considering the environmental authorisation.

The preliminary site layout plan and schematic representation of the proposed mining activities are attached as Appendix 5 to this report.

Table 2: Listed and specified activities triggered by the proposed mining activities.

NAME OF ACTIVITY (All activities including activities not listed) (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.)	**AERIAL EXTENT OF THE ACTIVITY** Ha or m^2	**LISTED ACTIVITY** Mark with an X where applicable or affected.	**APPLICABLE LISTING NOTICE** (EIA Regulations GNR 544, GNR 545 or GNR 546) / Not listed	**WASTE MANAGEMENT AUTHORISATION** (Authorisation is required in terms of the Waste Management Act (NEM:WA).
Demarcation of the approved footprint	1 549.61 ha	N/A	N/A	N/A
Site establishment and infrastructure development.	±1 ha (Fully operational)	X	EIA Regulation GNR 984 of 2014 (as amended) Activity 17.	Category B Activity 10
Strip and stockpile of topsoil and overburden to access the ore.	±36 ha (Pit 1 & 2) & ±64 ha (Waste Rock Dump) (Fully operational)	X		Category B Activity 11
Opencast mining (including drilling and blasting).	±36 ha (Fully operational)	X		N/A
Transport, stockpile and crushing of RoM.	±15 ha (Fully operational)	X		Category A Activity 2

NAME OF ACTIVITY	AERIAL EXTENT OF THE ACTIVITY	LISTED ACTIVITY	APPLICABLE LISTING NOTICE	WASTE MANAGEMENT AUTHORISATION
Transport of crushed ore to Beeshoek Mine.	±20 km (Mine to Beeshoek Mine)	X		N/A
Slope, landscape and rehabilitate the affected areas upon closure of the mine.	±116 ha (Within the 1 549.61 ha)	X		Category A Activity 14 Category B Activity 9 Category B Activity 11
EIA Regulation GNR 984 of 2014 (as amended) Activity 17: *Any activity including the operation of that activity which requires a mining right in terms of section 22 of the Mineral and Petroleum Resources Development Act, as well as any other applicable activity as contained in this Listing Notice, in Listing Notice 1 of 2014 or Listing Notice 3 of 2014, required to exercise the mining right.*				
NEM:WA: Category A Activity 2: *The sorting, shredding, grinding, crushing, screening or bailing of general waste at a facility that has an operational area in excess of 1000 m².*				
NEM:WA: Category A Activity 14: *The decommissioning of a facility for a waste management activity listed in Category A or B of this Schedule.*				
NEM:WA: Category B Activity 9: *The disposal of inert waste to land in excess of 25 000 tons, excluding the disposal of such waste for the purposes of levelling and building which has been authorised by or under other legislation.*				
NEM:WA: Category B Activity 10: *The construction of a facility for a waste management activity listed in Category B of this Schedule (not in isolation to associated waste management activity).*				
NEM:WA: Category B Activity 11: *The establishment or reclamation of a residue stockpile or residue deposit resulting from activities which require a mining right, exploration right or production right in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).*				

ii) Description of the activities to be undertaken

(Describe Methodology or technology to be employed, and for a linear activity, a description of the route of the activity)

BACKGROUND INFORMATION

Charlton Michael Rex was granted a prospecting right in 2019 for manganese ore, iron ore and diamonds (general) on the above mentioned properties. The prospecting right, with reference number NC 30/5/1/1/2/2292 PR, was subsequently ceded to Makganyane Resources (Pty) Ltd in 2019. In 2020, the prospecting right was renewed until 18 November 2024. Consent by the

Minister in terms of section 11 of the MPRDA was granted on 19 November 2021 to cede the prospecting right to Assmang (Pty) Ltd, and the Deed of Cession legally transferring the prospecting right was executed on 15 December 2021. The table below lists the GPS coordinates of this prospecting right.

Table 3: GPS coordinates of the prospecting right.

NUMBER	DEGREES, MINUTES, SECONDS		DECIMAL DEGREES	
	LAT (S)	LONG (E)	LAT (S)	LONG (E)
1A	28°08’42.35”	22°54’42.37”	-28.145097°	22.911769°
1C	28°09’27.69”	22°56’14.23”	-28.157692°	22.937286°
1D	28°09’46.16”	22°55’03.61”	-28.162823°	22.917670°
2A	28°08’58.80”	22°54’47.84”	-28.149666°	22.913290°
2B	28°08’50.29”	22°55’20.36”	-28.147303°	22.922323°
2C	28°09’19.11”	22°55’29.96”	-28.155310°	22.924989°
2D	28°09’27.62”	22°54’57.44”	-28.157672°	22.915956°
3AT	28°08’04.65”	22°56’31.94”	-28.134624°	22.942206°
3BT	28°07’40.21”	22°57’42.93”	-28.127835°	22.961924°
3CT	28°08’53.30”	22°58’25.59”	-28.148140°	22.973776°
3DT	28°09’17.06”	22°56’54.85”	-28.154740°	22.948571°
3ET	28°08’18.66”	22°55’51.24”	-28.138516°	22.930899°
A	28°09’00.02”	22°53’50.99”	-28.150004°	22.897497°
D	28°09’59.73”	22°54’11.70”	-28.166593°	22.903251°

Figure 2: Satellite view of the prospecting right footprint.

In 2019, exploration of the prospecting area commenced with detailed surface mapping (non-invasive) along the outcrops of the Remaining Extent (RE), and Portion 1 (Remaining Extent) of the farm Makganyene No 667. This was followed by geo-physical surveys (non-invasive) comprising of limited ground magnetic and audio-magnetotelluric surveys covering portions of the same properties. Data collected during the above surveys served as motivation for the implementation of a first phase drilling campaign in two target areas that commenced in July 2019. The first phase drilling campaign was complete in 2021, and the modelling of the data was subsequently done. The second phase drilling campaign commenced in 2022 and continued into 2023.

PROJECT PROPOSAL

Considering the above, the Applicant applied for environmental authorisation, a waste licence and a mining right to win Hematite, Magnetite, Goethite, Limonite, Siderite, Pyrolusite, Psilomelane, Rhodochrosite, Manganite, Braunite, Hausmannite, Manganese ore, Iron ore, and Diamonds (general) from the above mentioned properties. The following table lists the GPS coordinates of the proposed mining area as shown on the mine plans attached as Appendix 3 and 4 respectively.

Table 4: GPS Coordinates of the proposed mining footprint.

NUMBER	DEGREES, MINUTES, SECONDS		DECIMAL DEGREES	
	LAT (S)	LONG (E)	LAT (S)	LONG (E)
A	28°09'00.02"	22°53'50.99"	-28.150006°	22.897497°
B	28°08'42.35"	22°54'42.37"	-28.145097°	22.911769°
C	28°08'18.66"	22°55'51.24"	-28.138516°	22.930899°
D	28°08'04.65"	22°56'31.94"	-28.134624°	22.942206°
E	28°07'40.21"	22°57'42.93"	-28.127835°	22.961924°
F	28°08'53.30"	22°58'25.59"	-28.148140°	22.973776°
G	28°09'17.06"	22°56'54.85"	-28.154740°	22.948571°
H	28°09'27.69"	22°56'14.23"	-28.157692°	22.937286°
J	28°09'46.16"	22°55'03.61"	-28.162823°	22.917670°
K	28°09'59.73"	22°54'11.70"	-28.166593°	22.903251°
1A	28°08'58.80"	22°54'47.84"	-28.149666°	22.913290°
1B	28°08'50.29"	22°55'20.36"	-28.147303°	22.922323°
1C	28°09'19.11"	22°55'29.96"	-28.155310°	22.924989°
1D	28°09'27.62"	22°54'57.44"	-28.157672°	22.915956°

The satellite image below shows the layout of the proposed mining area.

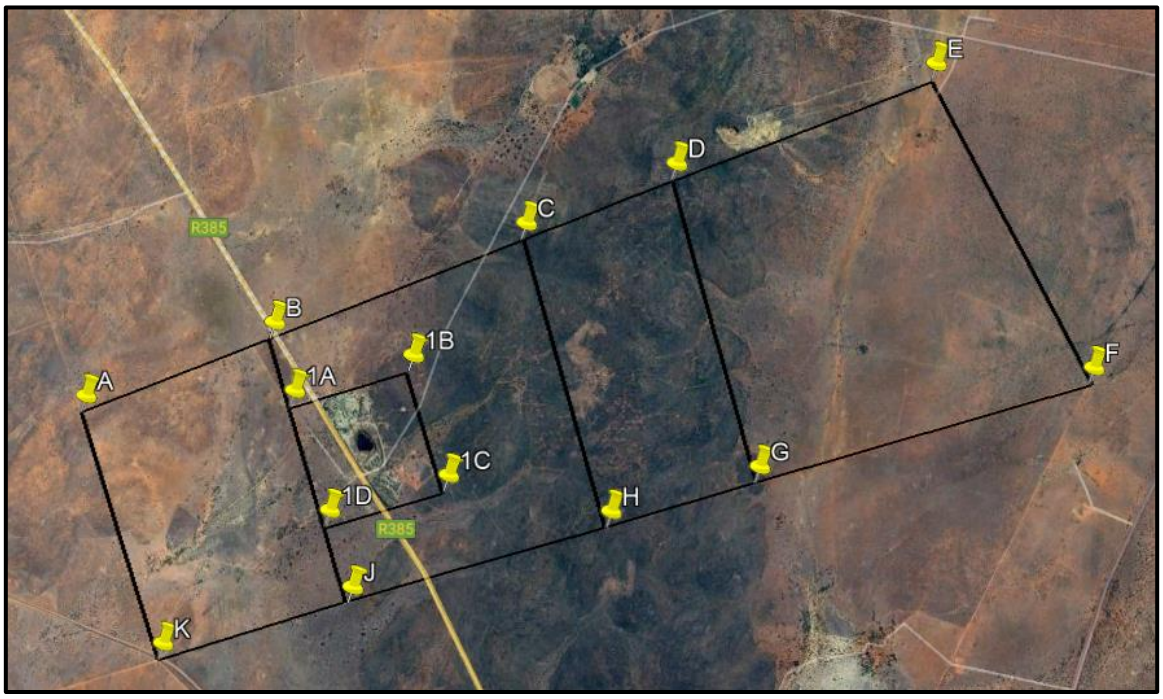

Figure 3: Satellite view showing the proposed mining area (black polygon) in relation to the surrounding landscape. (Image obtained from Google Earth)

Should the relevant authorisations be granted, and the proposed mining be allowed, the project will comprise of activities that can be divided into three key phases (discussed in more detail below) namely the:

(1) *Site establishment/construction phase* which will involve the demarcation of the site boundaries and buffer zones (if required) pertaining to existing infrastructure and areas of significance (such as but not limited to graveyards, drainage lines/watercourses, Critical Biodiversity Areas (CBA) and/or Ecological Support Areas (ESA)) identified during the environmental impact assessment. Site establishment will further necessitate the clearing of vegetation, stripping and stockpiling of topsoil, and establishment of site infrastructure.

(2) *Operational phase* that will entail opencast mining. The first phase will focus on pre-stripping the top layer material, of which the topsoil will be stored separately for rehabilitation. Then waste rock will be stripped to access the ore body followed by open cast mining of Pit 1 and Pit 2 (refer to Figure 6). The mining technology will include drilling and blasting with associated truck and shovel operations. Ore (RoM) from the open pit/s will report to a crusher situated on site and in the stockpile area. Crushed ore will be stockpiled on-site from where ore will be transported via road (R385) to the Beeshoek Mine processing facility (off-site) using side tipper trucks. No processing will take place at the Makganyane Iron Ore Mine.

(3) *Decommissioning phase* which will involve the sloping and rehabilitation of all affected areas, the replacement of topsoil, and the removal of all infrastructure no longer needed by the landowners. The right holder will further be responsible for the seeding of all rehabilitated areas. Once the full mining area is rehabilitated, the mining right holder will be required to submit a closure application to the Department of Mineral Resources and Energy in accordance with section 43(4) of the MPRDA, 2002. The Closure Application will be submitted in terms of Regulation 62 of the MPRDA, 2002, and Government Notice 940 of NEMA, 1998.

PHASES OF THE PROJECT

(1) Site Establishment / Construction Phase

Site establishment will entail the demarcation of the mining boundaries and sensitive areas, clearance of vegetation (where necessary), stripping and stockpiling of topsoil to allow the establishment of mining related infrastructure, stockpiles, and the excavation zone as detailed below:

Demarcation of Mining Boundaries

Pursuant to receipt of the relevant authorisations the boundary of the mining area will be demarcated. Project specific and sensitive areas to be demarcated within the boundary of the mining footprint may include, but not be limited to, “no-go” buffer zones identified during the EIA process, the stockpile area, the excavations, office complex, water storage facilities, the waste rock dump etc.

Clearing of Vegetation

The vegetation types of the earmarked footprint are classified as Kuruman Mountain Bushveld (SVk 10), Olifantshoek Plains Thornveld (SVk 13), and Postmasburg Thornveld (SVk 14). Ground truthing confirmed that the vegetation cover of the study area varies from natural to near natural, representing the Kuruman Mountain Bushveld (along the outcrops), Olifantshoek Plains Thornveld (majority of the footprint), and the Postmasburg Thornveld (intermittently dispersed through the footprint). Prior to the prospecting activities, disturbance to the natural vegetation cover mainly occurred on Portion 2 of Makganyene No 667 where the historic diamond pit occurs, and the Remainder (RE) of Makganyene No 667 where the farm yard (with associated infrastructure) and some fields for commercial crop, were established. Apart from these areas and upon commencement of the prospecting activities, the vegetation disturbance was contained to the footprint of the prospected pads that have since been reinstated and are in the process of rehabilitating. The farms and surroundings are known for the occurrence of Camel Thorn (*Vachellia erioloba*), and Shepherd's Trees (*Boscia albitrunca*) that are provincially protected plants.

The draft environmental impact assessment report (DEIAR) will assess and elaborate on the floral component of the study area as part of the EIA process. An ecologist will be commissioned to undertake a detailed Terrestrial and Biodiversity Impact Assessment (TBIA) (including Animal and Plant Species Assessment) to determine the potential impact that the mine may have on the receiving- and greater ecology of the study area. The flora-part of the study will assess the various plant communities, inform on the occurrence of endangered plant communities and red data plant species, identify areas of concern to be excluded (if any) from the mining footprint, instruct on the management of red data species, identify the presence and distribution of threatened plants present in the study area, and propose management and mitigation measures for identified impacts. The findings of the specialist and full TBIA will form part of the draft environmental impact assessment report (DEIAR) to be circulated for public comments.

Topsoil Stripping

It is proposed that topsoil removal will be restricted to the exact footprint of areas to be altered/mined during the site establishment- and operational phase. The topsoil will be stockpiled at a designated signposted area to be replaced during the rehabilitation of the area. It will be part of the obligations of site management to prevent the mixing of topsoil heaps with overburden/other soil heaps. The complete A-horizon (the top 100 – 200 mm of soil which is

generally darker coloured due to high organic matter content) will be removed. If it is unclear where the topsoil layer ends the top 300 mm of soil (if available) will be stripped.

Access and Internal Roads

Presently it is proposed that the Makganyane Iron Ore Mine (MIOM) will be accessed from the existing R385 provincial road connecting Postmasburg and Olifantshoek.

Within the mining boundary, haul roads will be developed and extended as mining progress. The haul roads will be constructed with suitable material from the waste rock dump end tipped in a single that will then be levelled and graded.

The crushed ore will be transported by truck from the MIOM stockpile area to the Beeshoek Mine processing facility (off-site) via the R385.

Road and traffic related detail will be discussed in more detail in the DEIAR. A road engineer will be appointed to undertake a Traffic Impact Assessment (TIA) to identify the potential impact that the proposed activity may have on the receiving environment. The TIA will include traffic counts, analysis of data, scenario data, conclusion, and recommendations to mitigate identified impacts and be included in the DEIAR.

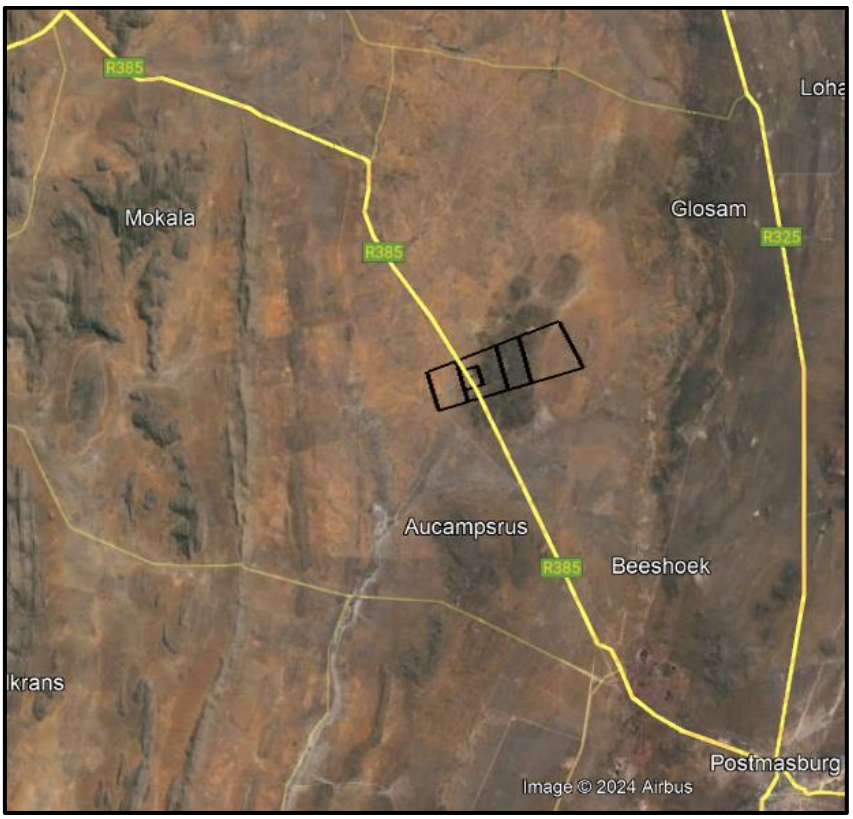

Figure 4: View of the R385 that will be used to access the proposed mining area and transport ore to Beeshoek Mine (image obtained from Google Earth).

Electricity Requirements

When required, power for the infrastructure substations will be sourced from the 132kV overhead power line supply available near the identified operation. Contractors will mainly use diesel generated power supply and hence minimal electricity infrastructure will be required.

Establishment of Site Infrastructure

The detail regarding site infrastructure and the supporting services will be discussed in more detail in the DEIAR. Currently, the site infrastructure to be established within the mining footprint is expected to consist of at least the following:

- Internal roads;
- Office complex (±1 ha):
  - Ablution facilities,
  - Diesel depot,
  - Equipment workshop,
  - Office containers,
  - Parking area,
  - Planning / meeting site rooms,
  - Security access control,
  - Water reservoir,
  - Wash bays.
- Stockpile Area (±14 ha):
  - Crushing plant,
  - Weigh bridge.
- Water storage dam/s (for dewatering of the pits).

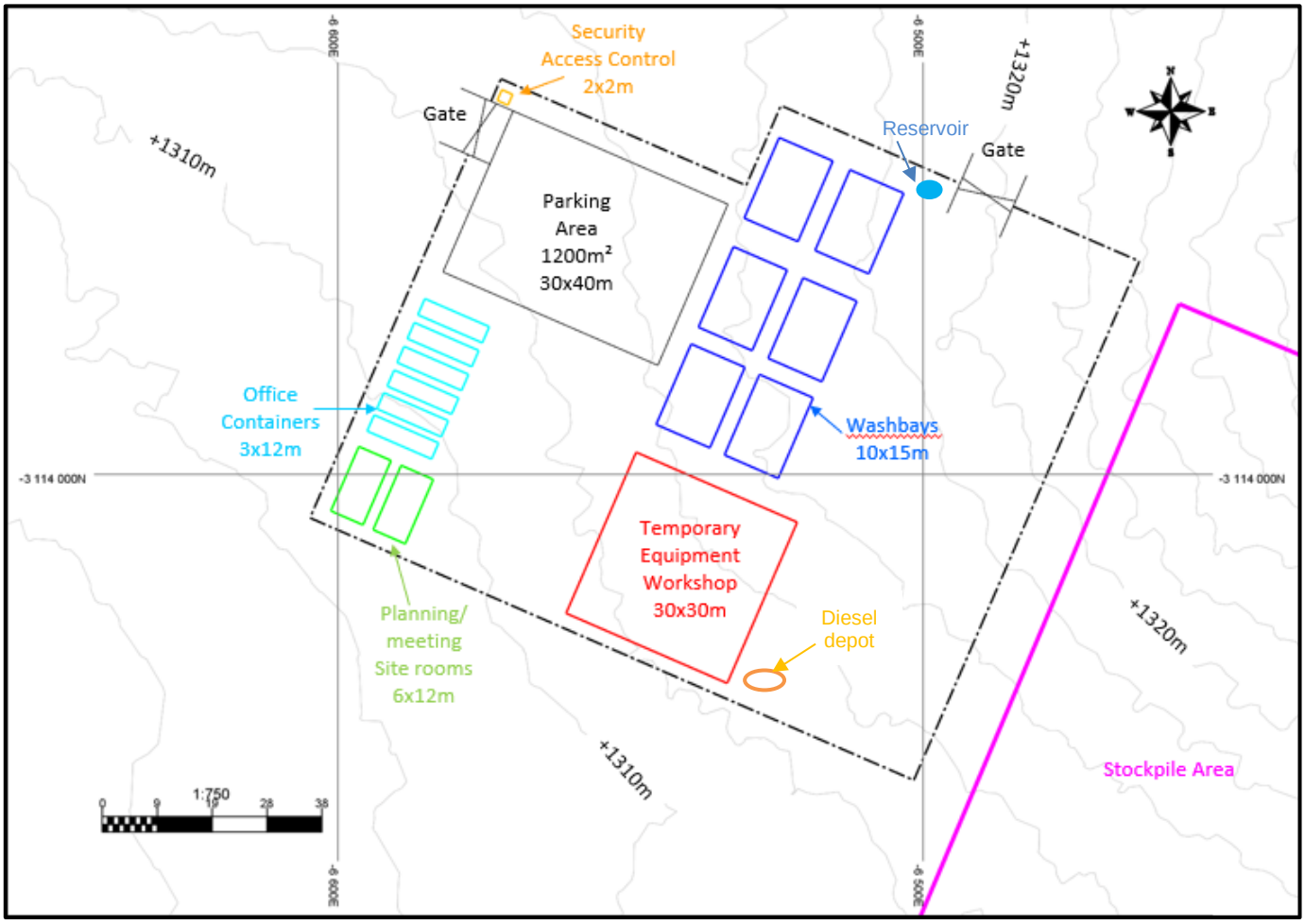

Figure 5: Preliminary layout of the infrastructure to be developed on site (final to be included in the EIAR).

(2) Operational Phase

Mining production will only commence during the fifth year of the mining right due to the build-up period. Furthermore, it is estimated that for the first three years of the mining right, there will be no employees at the mine. The estimated number of positions available from year four is 50 permanent employees, and provision was made for ±30 contract workers.

Mining will take place by means of an open pit mining operation along the orebody. The first phase will focus on pre-stripping the top layer material, of which the topsoil will be stored separately for rehabilitation. Then waste rock will be stripped to access the ore body followed by open cast mining of Pit 1 and Pit 2 (refer to Figure 6). The mining technology will include drilling and blasting with associated truck and shovel operations.

Waste rock from the open pit/s will report to the centralised waste stockpile area. The waste rock dump, located central of the operation, will store excavated material until such time as pit deposition is possible.

Mining will take place by cutting 10 m benches, with an overall highwall slope angle of between 45° - 55° to ensure geotechnical integrity. Access will be established for the identified pits and infrastructure aligned to be flexible to supply volumes anticipated. Access to the open pit resources will be via a typical open pit layout using ramps inclined at 8% for each pit.

Ore (RoM) from the open pit/s will report to a crusher situated on site and in the stockpile area. Crushed ore will be stockpiled on-site from where ore will be transported via road to the Beeshoek Mine processing facility (off-site) using side tipper trucks. No processing will take place at the MIOM.

Ore will be mined in three shifts per day using excavators and articulated dump trucks for hauling purposes. Drilling and blasting will take place utilising vertical drilling and explosive charging units.

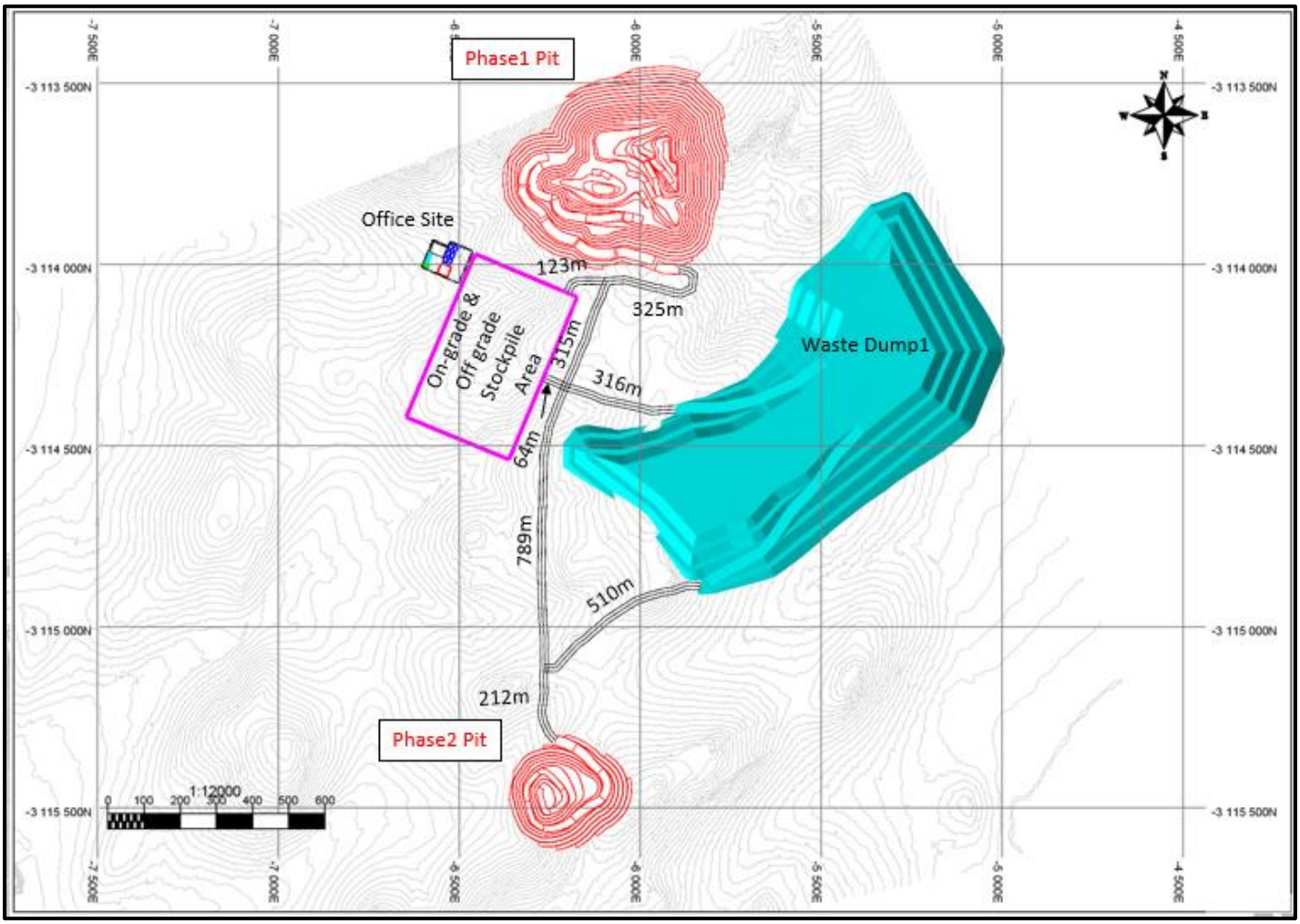

Figure 6: Proposed mine design layout (image obtained from the Mining Work Programme).

Presently it is proposed that ±116 ha of the 1 549.61 ha MR footprint will be altered by the proposed mining activity.

As mentioned earlier, currently the mining activities are expected to entail the following:

- δ Site establishment and infrastructure development;
- δ Strip and stockpile of topsoil and overburden to access the ore (excavation);
- δ Opencast mining (including drilling and blasting);
- δ Transport, stockpile and crushing of RoM; and
- δ Transport of crushed ore to Beeshoek Mine.

Dewatering

Pit dewatering is envisaged to allow for a safe mining environment. It is also expected that groundwater levels will increase below the waste rock dumps. The storage of the excess water as well as the potential impact that dewatering may have on the groundwater level and the possible formation of a groundwater depression cone will be assessed during the following EIA process by an appropriately qualified specialist whose findings and recommendations will be incorporated into the DEIAR.

NEM:WA Related Activities

The proposed activity triggers listed activities in terms of the National Environmental Management: Waste Act, 2008 (Act No 59 of 2008) (as amended) (NEM:WA) as specified in *Section 1(d)(i) Listed and specified activities*. The following discussion explains the reasoning behind applying for the listed activities.

- δ *NEM:WA Category A Activity 2: The sorting, shredding, grinding, crushing, screening or bailing of general waste at a facility that has an operational area in excess of 1 000 m².*

  In terms of Schedule 3 of the NEM:WA, 2008 (as amended), General Waste is defined as waste that does not pose an immediate hazard or threat to health or to the environment, and includes-

  a) domestic waste;
  b) building and demolition waste;
  c) business waste;
  d) inert waste; or
  e) any waste classified as a non-hazardous waste in terms of their regulations made under section 69,

  and includes non-hazardous substances, materials or objects with business, domestic, inert, building and domestic waste as outlined in the Act.

The Act defines Inert Waste as waste that-

a) does not undergo any significant physical, chemical or biological transformation after disposal;
b) does not burn, react physically or chemically biodegrade or otherwise adversely affect any other matter or environment with which it may come into contact; and
c) does not impact negatively on the environment, because of its pollutant content and because the toxicity of its leachate is insignificant; and which include:
    a) discarded concrete, bricks, tiles and ceramics.
    b) discarded glass.
    c) discarded soil, stones and dredging spoil.

Considering this, the proposed use of waste rock / overburden (inert waste) to construct the haul roads triggers this activity (Cat A Act 2) as the rock may need to be crushed and screened at the crusher plant prior to use.

δ *NEM:WA Category B Activity 9: The disposal of inert waste to land in excess of 25 000 tons, excluding the disposal of such waste for the purposes of levelling and building which has been authorised by or under other legislation.*

As mentioned earlier, the waste rock will be stored at the central waste rock dump until such time as pit deposition is possible at which point some of the waste rock will be moved to the excavation. The placement of the waste rock (inert waste) back into the excavations there triggers this listed activity.

δ *NEM:WA Category B Activity 10: The construction of a facility for a waste management activity listed in Category B of this Schedule (not in isolation to associated waste management activity).*

This activity is triggered by association as to the above listed waste activities are applicable.

δ *NEM:WA Category B Activity 11: The establishment or reclamation of a residue stockpile or residue deposit resulting from activities which require a mining right, exploration right or production right in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).*

The proposed development of the waste rock dump and associated stockpiles trigger this listed activity. The activity is further applicable as the topsoil, waste rock and unwanted material stockpiles will be used to rehabilitate the mining area upon closure.

- *NEM:WA Category A Activity 14: The decommissioning of a facility for a waste management activity listed in Category A or B of this Schedule.*

  This activity will be applicable during the decommissioning phase of the project when the mining area will be rehabilitated and the disturbance reinstated.

Additional waste management practices (unlisted in terms of the NEM:WA) to be implemented at the mine include the following:

- General waste will mainly consist of paper, plastic, glass, metal and potentially tin that will be contained in sealable refuse bins that will be removed to the Postmasburg landfill site when the capacity of the containers is reached.

- Hazardous waste will mainly be the result of accidental spillages/breakdowns. The hazardous waste to be generated will be kept in designated hazardous waste containers to be removed from the site by a registered hazardous waste handling contractor.

- Ablution facilities will be available to the employees at the site camp that is presently expected to drain into a septic tank to be serviced by an appropriately qualified contractor when needed.

- Water that originates from the dewatering of the pits will be contained in a storage dam/s to be reused by the mine for dust suppression purposes. The water generated at the wash bays is presently expected to drain into an oil sump of sufficient size that will be serviced by an appropriately qualified contractor (when needed).

(3) Decommissioning phase

Material from the waste rock dump will be used in the progressive rehabilitation of the excavations. This will not entail the complete backfill/levelling of the excavations but will assist in the shaping and landscaping of the impact areas.

The closure objectives will be detailed in the Environmental Impact Assessment Report and Environmental Management Programme, to be submitted as part of the application process for approval by the Department of Mineral Resources and Energy. At this stage the following

baseline rehabilitation actions are proposed from which a detailed Closure Plan will be developed (to be approved as part of the EIA process):

- δ Rehabilitation of all the disturbed surface areas shall entail landscaping, levelling, sloping, top dressing, land preparation, seeding (if required), and weed / alien clearing.
- δ All unwanted infrastructures, equipment, and other items used during the mining period will be removed from the site in accordance with section 44 of the MPRDA, 2002.
- δ Waste material of any description, including receptacles, scrap, rubble, and tyres, will be removed entirely from the mining area and disposed of at a recognized landfill facility. It will not be permitted to be buried or burned on the site.
- δ The rehabilitation area will be cleared of weeds and invader plant species. Priority will be given to species regarded as Category 1a and 1b invasive species in terms of NEM:BA (National Environmental Management: Biodiversity Act 10 of 2004 and regulations applicable thereto).
- δ Final rehabilitation shall be completed within a period specified by the Regional Manager.

Once the full mining area was rehabilitated the MR holder is required to submit a closure application to the Department of Mineral Resources and Energy in accordance with section 43(4) of the MPRDA, 2002 that states: *"An application for a closure certificate must be made to the Regional Manager in whose region the land in question is situated within 180 days of the occurrence of the lapsing, abandonment, cancellation, cessation, relinquishment or completion contemplated in subsection (3) and must be accompanied by the prescribed environmental risk report".* The Closure Application will be submitted in terms of Regulation 62 of the MPRDA, 2002, and Government Notice 940 of NEMA, 1998.

e) Policy and Legislative Context

Table 5: Applicable legislation and guidelines consulted during the compilation of the report.

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT (a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process).	**REFERENCE WHERE APPLIED**
Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983).	Assessment of biophysical environment and current land use.

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED
Subdivision of Agricultural Land Act, 1970 (Act No. 70 of 1970).	
Hazardous Substances Act, 1973 (Act 15 of 1973)	The mitigation measures proposed for the project consider the HAS, 1973.
Integrated Environmental Management Guideline: Guideline on Need and Desirability (2017).	The need and desirability of the project was assessed in accordance with these guidelines.
Labour Relations Act, 1995 (Act No 66 of 1995) read together with applicable amendments such as the Labour Relations Amendment Act, 2002 (Act No 12 of 2002)	The mitigation measures proposed for the site will consider the Labour Relations Act.
Mine Health and Safety Act, 1996 (Act No. 29 of 1996) read together with applicable amendments and regulations thereto including relevant OHSA regulations.	The mitigation measures proposed for the site consider the MHSA, 1996.
Mineral and Petroleum Resources Development Act, 2002 (Act No 28 of 2002) read together with applicable amendments and regulations thereto.	Application for a mining right. Reference number: NC 30/5/1/2/2/10255 MR
Mining and Biodiversity Guideline: Mainstreaming Biodiversity into the Mining Sector	Assessment of biophysical environment.
National Development Plan, 2030	Determination of the nature, significance, consequence, extent, duration, and probability of the impacts.
National Environmental Management Act,1998 (Act No. 107 of 1998) and the Environmental Impact Assessment Regulations, 2014 (as amended): δ EIA Regulations GNR 984 of 2014 (as amended) Activity 17	Application for environmental authorisation. Reference number: NC 30/5/1/2/2/10255 MR
National Environmental Management: Air Quality Control Act, 2004 (Act No. 39 of 2004) read together with applicable amendments and regulations thereto specifically the National Dust Control Regulations, GN No R827.	The mitigation measures proposed for the project consider the NEM:AQA, 2004 and the National Dust Control Regulations.

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED
National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) read together with applicable amendments and regulations thereto. NEM:BA: List of terrestrial species and freshwater species that are threatened or protected, restricted activities that are prohibited, and restricted activities that are exempted, 2023.	Assessment of biophysical environment.
National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) read together with applicable amendments and regulations thereto: δ Category A Activity 2; δ Category A Activity 14; δ Category B Activity 9; δ Category B Activity 10; δ Category B Activity 11; NEM:WA, 2008: National norms and standards for the storage of waste (GN 9260).	An application for a waste licence accompanied the EA application submitted to the DMRE. Reference number: NC 30/5/1/2/2/10255 MR The mitigation measures proposed for the site will consider the NEM:WA, 2008.
National Forest Act, 1998 (Act No 84 of 1998) read together with applicable amendments and regulations thereto.	Assessment of biophysical environment.
National Heritage Resources Act, 1999 (Act No. 25 of 1999)	Assessment of the cultural and heritage environment.
National Road Traffic Act, 1996 (Act No. 93 of 1996)	The mitigation measures proposed for the project consider the NRTA, 1996.
National Water Act, 1998 (Act No. 36 of 1998) read together with applicable amendments and regulations thereto. Department of Water Affairs and Forestry Best Practice Guideline Series (2007).	A water use licence application will be submitted to the Department of Water and Sanitation in terms the National Water Act, 1998 (Act No. 36 of 1998).
National Web based Environmental Screening Tool Site Sensitivity Verification Requirements for Specialist Assessment, and all relevant Species Protocols. Appendix 6 of the EIA Regulations, 2014 (as amended)	Assessment of biophysical environment Applicable to the specialists to be appointed on the project.

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED
Northern Cape Nature Conservation Act, 2009 (Act No 9 of 2009) read together with applicable amendments and regulations thereto.	Assessment of biophysical environment
Public Participation Guideline in terms of the NEMA EIA Regulations.	The guidelines were used during the public participation process.
Species Environmental Assessment Guidelines (SANBI, 2020)	Applicable to the specialists to be appointed on the project.
The South African Constitution.	To be upheld throughout the EIA assessment, planning-, construction-, operational- and decommissioning phases.
ZF Mgcawu District Municipality Draft Integrated Development Plan 2017-2022 – Annual Review 2018/2019.	The information of the IDP was used to inform this report.

f) Need and desirability of the proposed activities.

(Motivate the need and desirability of the proposed development including the need and desirability of the activity in the context of the preferred location).

(Information obtained from the Mining Work Programme, 2024)

Iron is the most-common metallic element in the universe, and the third most-common component of the planet. It is also one of three naturally magnetic elements – alongside cobalt and nickel – and the most magnetic of these. Globally, there are an estimated 800 billion tonnes of iron-ore resources, containing over 230 billion tonnes of iron. The largest iron ore-producing nations include Russia, Brazil, China, Australia, India and the USA. Iron ore is the raw material used to make pig iron, in turn a key input for making steel. Raw iron is alloyed with several elements (e.g. tungsten, manganese, nickel, vanadium, chromium) to strengthen and harden it into steel for construction, automobiles, and other forms of transport such as trucks, trains and railway tracks. China produces around half of the world's steel, followed by India, Japan, the USA, South Korea and Russia. Together, they produce over three-quarters of global steel supply. Almost all mined iron ore is used for making steel – one of the most useful materials ever created and the catalyst behind a step-change in global development and convenience.

The South Africa iron and steel sector consumes more than 5 million tonnes of iron ore per annum, with domestic consumption expected to increase to over 6 million tonnes by 2025. Pre-Covid level were as high as 7 – 8 million tonnes. The South African steel sector has installed capacity of more than 10 million of crude steel production per annum, with steel plants operating mainly in Gauteng and Kwa-Zulu Natal. The product consumers for iron ore in South Africa are diverse, spanning domestic steel manufacturers, construction and infrastructure projects, mining and heavy machinery industries, and various international markets. The demand dynamics are influenced by factors such as global iron ore prices, supply chain efficiencies, government policies, and economic growth.

The total worldwide estimate of iron ore reserves is approximated at 468 billion tonnes, of which 696 million tonnes is found in South Africa. This is made up of seven iron ore mines in the Northern Cape, operated by three different companies. At current production rates, this translates roughly into 13 years left of iron ore mining in South Africa. Most of these operations are within the vicinity of the town of Kathu. The iron ore operations give direct employment to around 18 000 people and support several stakeholders in the region. The current situation underlines the importance of exploration to develop the country's resource base. It is essential that the challenges faced by bulk commodity miners, such as manganese and iron ore are addressed to extend mining in the province. South Africa ranks in the top ten of the largest producers and exporters of Iron Ore and remains as one of the leading suppliers of high-grade iron ore globally.

The primary goal of the proposed mining operation is the winning of iron ore that will be processed at the Beeshoek Mine. The recovery of manganese and/or diamonds (general) will be treated as derivatives, and the presence/absence thereof does not affect the feasibility of the proposed activity.

The assessment of the need and desirability of the proposed operation as contained in this Scoping Report must be seen as ***preliminary*** to be expanded upon during the environmental impact assessment phase once the specialist studies and public input is available. The National Department of Environmental Affairs' Guideline on Need and Desirability (first version published in terms of section 24J of the NEMA in 2014, and second version in 2017), as incorporated below, directs the aspects to be considered and elaborated on during the full EIA process.

Table 6: Need and desirability determination.

1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES		
How will this development impact on the ecological integrity of the area?		
Question	**Response**	**Level of Desirability**
How were ecological integrity considerations considered? How will this development disturb or enhance ecosystems and/or result in the loss or protection of biological diversity?	As discussed under *Section 1(h)(iv)(1)(a) Type of environment affected by the proposed activity*, the Mining and Biodiversity Map shows that Makganyene No 667/3 (north-eastern section of the proposed mining footprint) is within an area of highest biodiversity importance with a corresponding rating of highest risk for mining. According to the 2016 Northern Cape CBA BGIS Map Viewer, the proposed mining footprint extends across an area classified as Critical Biodiversity Area 1 (CBA1). The vegetation type of the study area extends into the Kuruman Mountain Bushveld (SVk 10), the Olifantshoek Plains Thornveld (SVk 13), and the Postmasburg Thornveld (SVk 14) that are all considered Least Threated in terms of conservation status. The DFFE Screening Report for Environmental Authorisations as required by the 2014 EIA Regulations highlights the following environmental sensitivities: δ Agricultural Theme: **Low & Medium** δ Animal Species Theme: **Mainly Low** δ Aquatic Biodiversity Theme: **Very High** δ Archaeological and Cultural Heritage Theme: **Low & High** δ Civil Aviation Theme: **Low & Medium** δ Defence Theme: **Low** δ Palaeontology Theme: **Medium** δ Plant Species Theme: **Low** δ Terrestrial Biodiversity Theme: **Very High** A qualified ecologist will assess the sensitivity, and ground-truth the conservation status of the study area. The findings will be presented in the Terrestrial Biodiversity Impact Assessment that will be inclusive of a Plant- and Animal Species Assessment and discussed in detail in the draft environmental impact assessment report (DEIAR). The discussion will also propose mitigation and management measures to address/minimise identified impacts.	Desirability to be commented on by the specialist and assessed in the EIAR.
How will this development pollute and/or degrade the biophysical environment?	The site specific processes will be discussed in more detail in the DEIAR, and the potential of the proposed activity degrading the biophysical environment will be determined once the findings of the specialists were received.	

1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES		
How will this development impact on the ecological integrity of the area?		
Question	**Response**	**Level of Desirability**
	It must be noted that there is a prospecting right (NC 30/5/1/1/2/2292 PR) over the proposed mining right application area that expires in November 2024. As such, the entire area (including the area marked as highest risk for mining) was previously approved for prospecting (mining related) activities.	
What waste will be generated by this development?	The general waste will mainly consist of paper, plastic, glass, metal and potentially tin that will be contained in sealable refuse bins that will be removed to the Postmasburg landfill site when the capacity of the containers is reached. Hazardous waste will mainly be the result of accidental spillages/breakdowns. The hazardous waste to be generated will be kept in designated hazardous waste containers to be removed from the site by a registered hazardous waste handling contractor. Ablution facilities will be available to the employees at the site camp that is presently expected to drain into a septic tank to be serviced by an appropriately qualified contractor when needed. No waste (apart from inert waste) will be disposed of or treated on the mining area/farm. The waste rock (inert waste) will be used to rehabilitate the excavations and to improve and maintain the internal roads during the operational phase. Water that originates from the dewatering of the pits will be contained in a storage dam/s to be reused by the mine for dust suppression purposes. The water generated at the wash bays is presently expected to drain into an oil sump of sufficient size that will be serviced by an appropriately qualified contractor (when needed).	Highly Desirable
How will this development disturb or enhance landscapes and/or sites that constitute the nation's cultural heritage?	*Refer to Part 2(h)(iv)(1)(c) Description of specific environmental features and infrastructure on the site – Site Specific Cultural and Heritage Environment.*	Desirability to be commented on by the specialist and

1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES		
How will this development impact on the ecological integrity of the area?		
Question	**Response**	**Level of Desirability**
	The cultural and heritage environment with specific reference to archaeological- and palaeontological aspects will be reviewed by appropriately qualified specialists and the findings updated (if necessary) and discussed in the DEIAR.	assessed in the EIAR.
How will this development use and/or impact on non-renewable natural resources?	First ore should be reached ±1 year after waste rock stripping commenced, with an average of 250 000 tonnes per month expected. Waste rock stripping will continue for the full period of the project up to month 28 from where it will drop to month 38 when life of mine is complete. The waste rock will facilitate the progressive rehabilitation of the excavations. Apart from the ore that will be mined and removed from site, the project will reuse a large portion of the waste rock (non-renewal natural resource) within the mining footprint.	Highly Desirable
How will this development use and/or impact on renewable natural resources and the ecosystem of which they are part?	Potable water as well as water for ablution, the wash bays and dust suppression purposes will be needed. It is expected that the excavations will need to be dewatered as mining progress, and presently it is proposed that this water will be used for dust suppression. Borehole water will most likely supply the other water needs of the mine (upon DWS approval). Water supply and management will be discussed in more detail in the DEIAR, while the various specialists will comment on the potential impacts applicable to the ecosystem.	Desirability to be commented on by the specialist and assessed in the EIAR.
How were a risk-averse and cautious approach applied in terms of ecological impacts?	The findings of the specialists will be assessed during the EIA phase and if needed alternatives will be considered to minimise the impact of the mining activity on biological sensitive areas.	
How will the ecological impacts resulting from this development impact on people's environmental right?	This will be determined by the specialists responsible for the Socio-economic and Health Impact Assessments.	

1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES		
How will this development impact on the ecological integrity of the area?		
Question	**Response**	**Level of Desirability**
Describe the linkages and dependencies between human wellbeing, livelihoods and ecosystem services applicable to the area in question and how the development's ecological impacts will result in socio-economic impacts.	This will be determined by the specialists responsible for the Socio-economic and Health Impact Assessments.	Desirability to be commented on by the specialist and assessed in the EIAR.
Based on all of the above, how will this development positively or negatively impact on ecological integrity objectives/targets/considerations of the area?	The findings of the specialists will be assessed and if needed various alternatives will be considered to minimise the impact of the mining activity on biologically sensitive areas. These findings will be collated into the draft EIAR that will be available for public perusal and commenting. Following the commenting period, the project proposal will be finalised.	
Considering the need to secure ecological integrity and a healthy biophysical environment, describe how the alternatives identified, resulted in the selection of the "best practicable environmental option" in terms of ecological considerations		

2. PROMOTING JUSTIFIABLE ECONOMIC AND SOCIAL DEVELOPMENT		
What is the socio-economic context of the area?		
Question	**Response**	**Level of Desirability**
What is the socio-economic context of the area?	Please refer to *Section 1(h)(iv)(1*)(a) Socio-economic Environment.	Desirability to be commented on by the specialist and assessed in the EIAR.
Considering the socio-economic context, what will the socio-economic impacts be of the development, and specifically also on the socio-economic objectives of the area?	This will be determined by the specialists responsible for the Socio-economic and Health Impact Assessments.	
How will this development address the specific physical, psychological, developmental, cultural, and social needs and interests of the relevant communities?		
Will the development result in equitable impact distribution, in the short- and long-term?	The proposed mine intends to employ ±80 people (including both permanent and contract employees) the majority of which will come from the local community for the life of the mine. This is of crucial importance in the Tsantsabane Local Municipality (TLM) with an unemployment rate of ±39%. Further to this, the mine will operate in accordance with the provisions of the Mining Charter, 2018 as well as the Employment Equity Act, 1998 giving preference to historically disadvantaged employees from within the local area in terms of employment.	Highly Desirable
In terms of location, describe how the placement of the proposed development will contribute to the area.	The operation will contribute to the local economy of the area, both directly and through the multiplier effect that its presence creates. Equipment and supplies will be purchased locally, and wages will be spent at local businesses, generating both jobs and income in the area. In addition thereto the implementation of the Social and Labour Plan (which is obligatory for a mining right holder) will contribute positively to the socio-economic environment of the local community. If successful, the project will secure another iron ore resources for the Applicant, support the operations of Beeshoek Mine, and strengthen South Africa's iron market.	Highly Desirable

2. PROMOTING JUSTIFIABLE ECONOMIC AND SOCIAL DEVELOPMENT		
What is the socio-economic context of the area?		
Question	**Response**	**Level of Desirability**
How were a risk-averse and cautious approach applied in terms of socio-economic impacts?	The specialist responsible for the Social-Economic Impact Assessment will propose mitigation measures to reduce the potential impact that the proposed activity may have on the receiving environment. Once approved, the management outcomes are legally binding, to be implemented by site management for the duration of the site establishment-, operational- and decommissioning phases.	Desirability to be commented on by the specialist and assessed in the EIAR.
How will the socio-economic impacts resulting from this development impact on people's environmental right?	This will be determined by the specialists responsible for the Socio-Economic and Health Impact Assessments.	
Considering the linkages and dependencies between human wellbeing, livelihoods and ecosystem services, describe the linkages and dependencies applicable to the area in question and how the development's socio-economic impacts will result in ecological impacts?		
What measures were taken to pursue the selection of the "best practicable environmental option" in terms of socio-economic considerations?	The findings of the specialists will be assessed and if needed various alternatives will be considered to minimise the impact of the mining activity on socio-economic matters. These findings will be collated into the draft EIAR that will be available for public perusal and commenting. Following the commenting period, the project proposal will be finalised.	
What measures were taken to pursue environmental justice so that adverse environmental impacts shall not be distributed in such a manner as to unfairly		

2. PROMOTING JUSTIFIABLE ECONOMIC AND SOCIAL DEVELOPMENT		
What is the socio-economic context of the area?		
Question	**Response**	**Level of Desirability**
discriminate against any person, particularly vulnerable and disadvantaged persons?		
What measures were taken to pursue equitable access to environmental resources, benefits, and services to meet basic human needs and ensure human wellbeing, and what special measures were taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination? What measures were taken to ensure that the responsibility for the environmental health and safety consequences of the development has been addressed throughout the development's life cycle?	The mine will have to operate in accordance with, amongst others, the following: δ CARA, 1983 – to ensure agriculture related compliance; δ Financial Provision Regulations, 2015 – to ensure compliance in terms of rehabilitation; δ Mine Health and Safety Act, 1996 (as amended) – to ensure employee safety; δ MPRDA, 2002 (as amended) – to ensure mining related compliance; δ NEM:AQA, 2004 – to ensure air quality related compliance; δ NEM:BA, 2004 – to ensure biodiversity related compliance; δ NEM:WA, 2008 – to ensure waste related compliance; δ NEMA, 1998 (as amended) – to ensure environmental related compliance; δ NWA, 1998 – to ensure water related compliance. Should the proposed application be approved the mining area will also be subject to compliance with the above listed legislation.	Highly Desirable
Considering the interests, needs and values of all the interested and affected parties, describe how the development will allow for opportunities for all the segments of the community that is consistent with the priority needs of the local area.	The operation will contribute to the local economy of the area, both directly and through the multiplier effect that its presence creates. Equipment and supplies will be purchased locally, and wages will be spent at local businesses, generating both jobs and income in the area. In addition thereto the implementation of the Social and Labour Plan (which is obligatory for a mining right holder) will contribute positively to the socio-economic environment of the local community. If successful, the project will secure another iron ore resource for the Applicant, support the Beeshoek Mine's operations, and strengthen South Africa's iron market. Further to this, the mine will give preference to historically disadvantaged employees from within the local area in terms of employment.	Highly Desirable

2. PROMOTING JUSTIFIABLE ECONOMIC AND SOCIAL DEVELOPMENT		
What is the socio-economic context of the area?		
Question	**Response**	**Level of Desirability**
What measures have been taken to ensure that current and/or future workers will be informed of work that potentially might be harmful to human health or the environment or of dangers associated with the work, and what measures have been taken to ensure that the right of workers to refuse such work will be respected and protected.	The mine must operate in accordance with the specifications of the Mine Health and Safety Act, 1996 (MHSA). Site management will have daily discussions with the staff regarding the work to be performed and the environment in which the work will take place. Grievances/concerns can be lodged during the daily site meetings. The MHSA further requires the submission of quarterly occupational hygiene reports that record site specific occupational hygiene exposure assessments.	Highly Desirable
Describe how the development will impact on job creation in terms of, amongst other aspects?	The proposed mine intends to employ ±80 people (including permanent and sub-contracted) the majority of which will come from the local community for the duration of the mining right.	Highly Desirable
What measures were taken to ensure that the environment will be held in public trust for the people, that the beneficial use of environmental resources will serve the public interest, and that the environment will be protected as the people's common heritage.	The proposed mine will operate in accordance with a valid EA, MR, and WL to be issued by the DMRE. Compliance of the site with the approved EMPR, EA- and WL conditions will be reported on as per departmental specification. Considering this, the proposed activity will take place in an environmentally sustainable manner with the least possible impact on the receiving environment. The Applicant will also have to comply with the conditions/requirements of the water use authorisation to be issued by the DWS.	Highly Desirable
Are the mitigation measures proposed realistic and what long-term environmental legacy and managed burden will be left.	It is believed that the preliminary list of mitigation measures proposed in this document is realistic and can be implemented (when needed) by the mine. This list will be expanded upon receipt of the specialist reports.	Desirable
What measures were taken to ensure that the costs of remedying pollution,	In terms of Section 41 of the MPRDA, 2002 a mining right holder must submit a financial provision to the DMRE that is sufficient to rehabilitate or manage the negative environmental impacts related to the mining activity. Upon	Highly Desirable

2. PROMOTING JUSTIFIABLE ECONOMIC AND SOCIAL DEVELOPMENT		
What is the socio-economic context of the area?		
Question	**Response**	**Level of Desirability**
environmental degradation, and consequent adverse health effects and of preventing, controlling or minimising further pollution environmental damage or adverse health effects will be paid for by those responsible for harming the environment.	approval of this application, Assmang (Pty) Ltd will lodge a financial guarantee with the DMRE that will be deemed sufficient to cover the financial provision amount needed to rehabilitate the mining footprint. The environmental liability of the operation will annually be reviewed and if a shortfall is indicated, the guarantee will be accordingly adjusted.	
Considering the need to secure ecological integrity and a healthy bio-physical environment, describe how the alternatives identified, resulted in the selection of the best practicable environmental option in terms of socio-economic considerations.	The findings of the specialists will be assessed and if needed various alternatives will be considered to minimise the impact of the mining activity on the socio-economic environment. These findings will be collated into the draft EIAR that will be available for public perusal and commenting. Following the commenting period, the project proposal will be finalised.	Desirability to be commented on by the specialist and assessed in the EIAR.
Describe the positive and negative cumulative socio-economic impacts bearing in mind the size, scale, scope and nature of the project in relation to its location and other planned developments in the area.		

g) Period for which the environmental authorization is required

The Applicant requests that the Environmental Authorisation (EA) be valid for at least the duration of the mining right.

h) Description of the process followed to reach the proposed preferred site.

NB!! This section is not about the impact assessment itself, It is about the determination of the specific site layout having taken into consideration (1) the comparison of the originally proposed site plan, the comparison of that plan with the plan of environmental features and current land uses, the issues raised by interested and affected parties, and the consideration of alternatives to the initially proposed site layout as a result.

i) Details of all alternatives considered

With reference to the site plan provided as Appendix 4 and the location of the individual activities on site, provide details of the alternatives considered with respect to:

(a) the property on which or location where it is proposed to undertake the activity;
(b) the type of activity to be undertaken;
(c) the design or layout of the activity;
(d) the technology to be used in the activity;
(e) the operational aspects of the activity; and
(f) the option of not implementing the activity

A) <u>THE PROPERTY ON WHICH, OR LOCATION WHERE, IT IS PROPOSED TO UNDERTAKE THE ACTIVITY</u>

Presently, the project proposal entails a mining right application over ±1 550 ha of Portion 2 (portion of Portion 1), Remainder Portion, Remainder Portion of Portion 1 and Portion 3 of the farm Makganyene No 667, within the boundaries of the GPS coordinates listed in Table 4 and depicted in Figure 3.

Applicants can only apply for mining rights within areas where such rights are not yet held by other companies/applicants. Furthermore, the mining activities are dependent upon the presence of the desired minerals which are again dependent upon geological formations. The MWP for this application notes that the proposed open pit mining operations were looked at in terms of primary ore for the operation, with the aim to support a sustainable mining approach that considers optimised extraction of the resources. Considering this, the proposed footprint of the MR application was founded on the footprint of the prospecting right (NC 2292 PR) backed by the prospecting results and available geological information.

The only other Locality/Site Alternative that could be applicable to this application would be the possible omission of some of the Makganyene farm portions from the application. Based on the present pit design and supporting infrastructure layout the only farm portion not earmarked for development is the most south-western portion (±292 ha) of the Remainder of Makganyene No 667 as presented in the following figure.

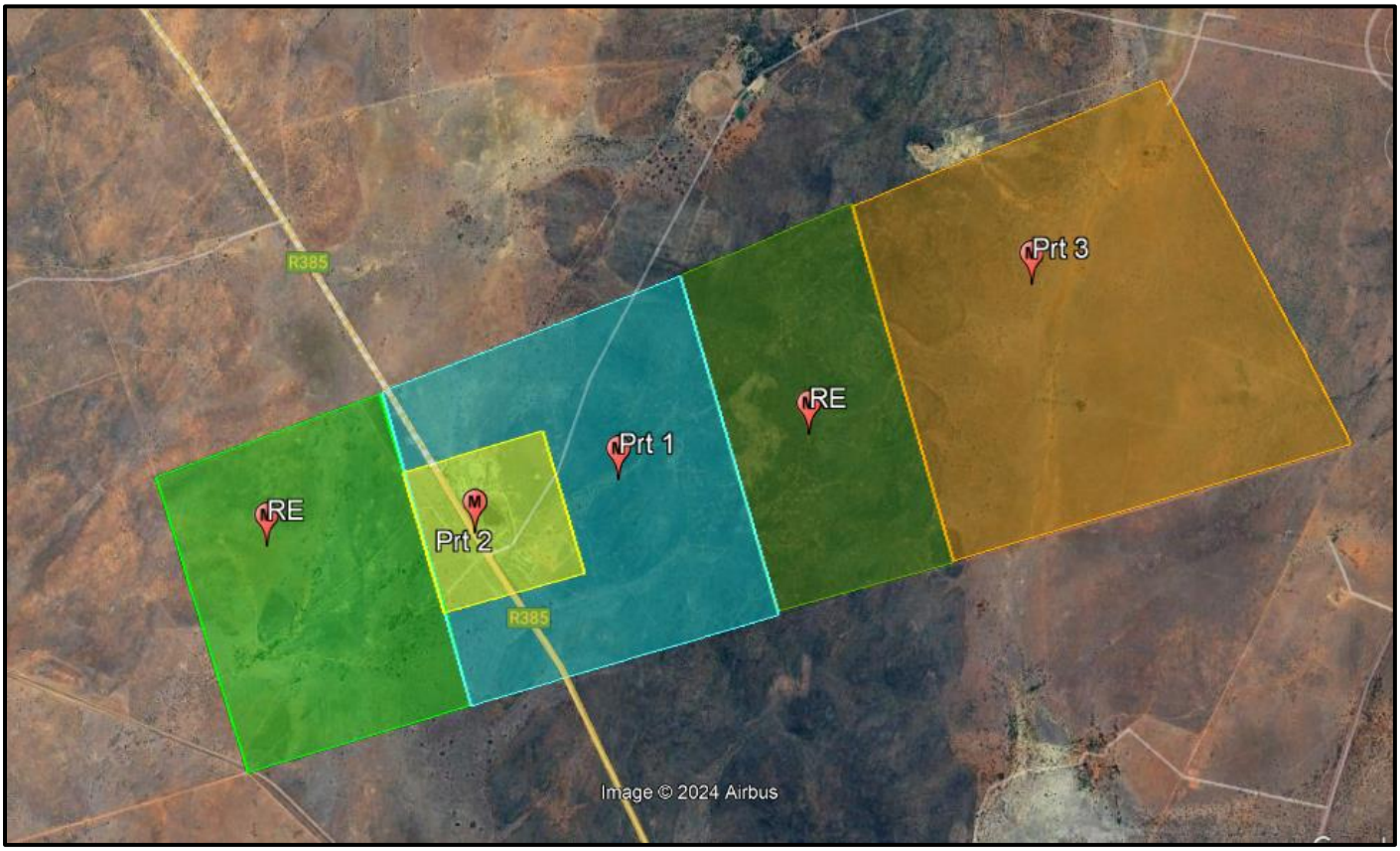

Figure 7: Satellite view of the south-western portion (light green polygon) of the Remainder of Makganyene No 667 presently not earmarked for development.

The possibility of omitting this portion of the farm from the application footprint will be discussed with the Applicant and the specialists will be tasked to consider the positive and negative aspects of both options (including and excluding the specific section). The findings of the project team and specialists will be presented and assessed in the DEIAR that will also be available for public input.

B) <u>TYPE OF ACTIVITY TO BE UNDERTAKEN</u>

The Applicant intends to mine the iron ore of the mining footprint using opencast methods as discussed in *Section 1(d)(ii) Description of the activities to be undertaken – Project Proposal*.

An alternative land use that can be considered is using the area for agricultural purposes such as game farming and grazing instead of mining. The specialist responsible for the agricultural impact assessment report will consider the potential losses to agriculture that may occur should the area be mined and compare the agricultural potential of the earmarked area with the income that may be generated through mining. Should viable activity alternatives be identified it will be discussed during the EIA process of the application and included in the DEIAR to be distributed for public comments.

C) DESIGN AND LAYOUT OF THE ACTIVITY

The present layout of the proposed mining footprint is depicted in Figure 6 as well as Appendix 5.

As mentioned earlier, the open pit mining operations were looked at in terms of primary ore for the operation, with the aim to support a sustainable mining approach that considers optimised extraction of the resources. The present project design presents the best-case scenario based on the geological and feasibility results. The following two design/layout options (discussed in more detail below) were considered by the project team during the planning phase:

- Option 1 – Phase 1 & 2 Scenario,
- Option 2 – Phase 1 – 4 Scenario.

OPTION 1: Phase 1 & 2 Scenario

The Phase 1 & 2 design scenario includes the open cast mining of only two pits referred to as Pit 1 and Pit 2. The LoM schedule for this scenario is over 38 months.

The MWP notes that the geological setting of the ore bodies does not allow for a faster ramp up period as the ore bodies that were identified do not sub-outcrop on the surface. Hence a fair amount of overburden and topsoil needs to be removed before the ore can be accessed. Free digging is limited but can be done up to ±5 m in vertical depth whereafter blasting will be required. For Phase 1 & 2 the selected go forward case shown in the following figure, waste production will build up to 1,9 million tonnes per month in month 4. Continue at this rate for another 6 months when first ore will be reached, with an average of 250 000 tonnes per month. The open pits will have an initial aggressive waste stripping requirement to open the ore horizon. Waste stripping will continue for the full period of the project up to month 28 from where it will drop to month 38 when life of mine is complete.

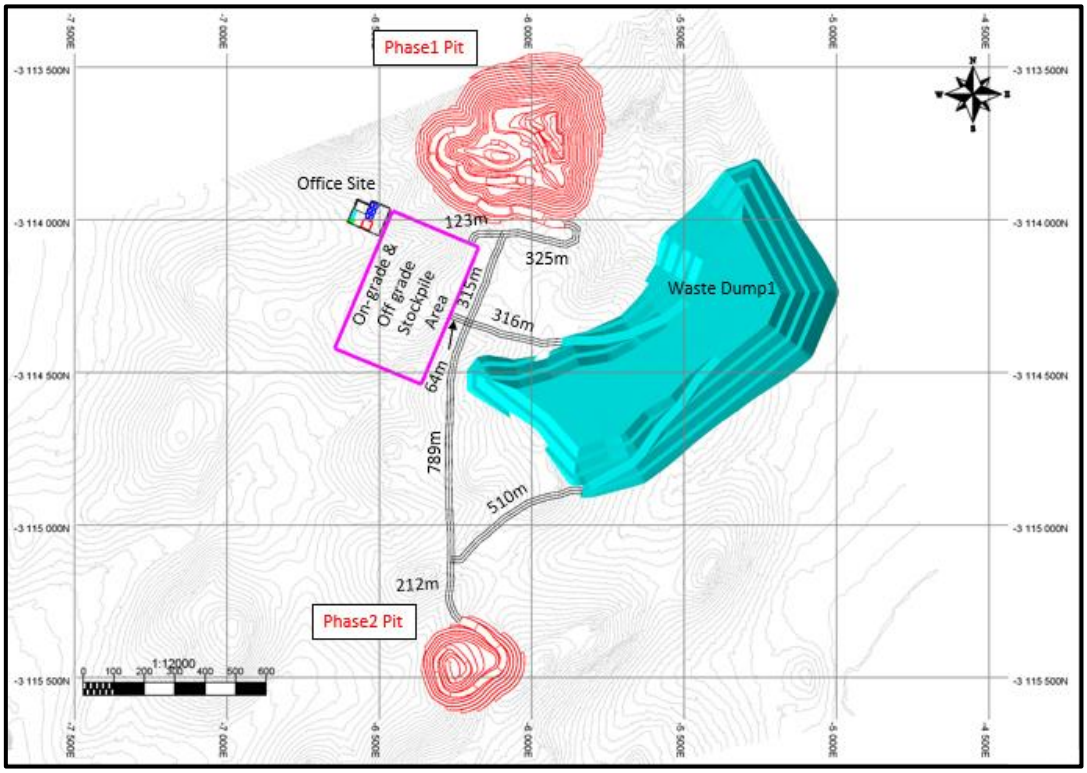

Figure 8: Preferred layout of Pit 1 (north) and Pit 2 (south) (image obtained from the MWP).

OPTION 2: Phase 1 – 4 Scenario

The Phase 1 – 4 scenario entail the mining of Pit 1 and Pit 2 with an eventual Phase 3 and 4 extension of the two pits (respectively) as presented in the following figure. Initially this scenario indicated some sound approaches by targeting pushback areas (Phase 3 and 4) on Pits 1 and 2 but was not economical viable due to increase waste mining that would be required. Therefore this scenario was not pursued further.

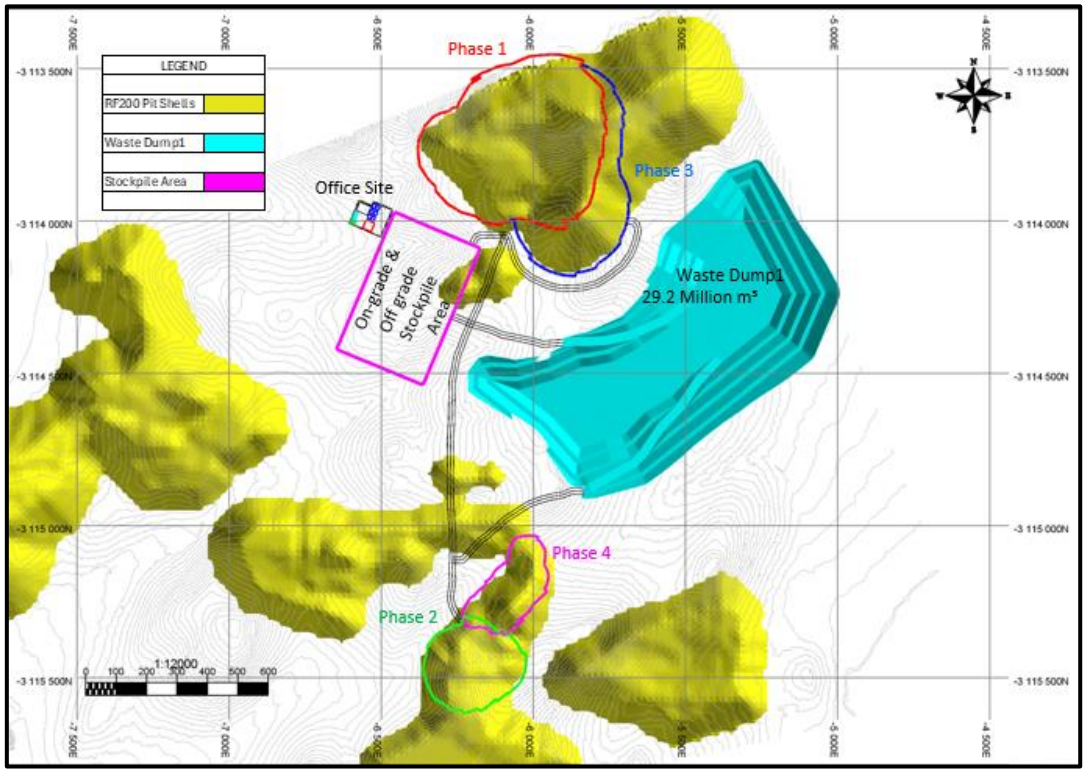

Figure 9: Alternative layout of mining area through phases 1 - 4 (image obtained from the MWP).

Final Design/Layout Proposal

Apart from the two scenarios discussed above, it is expected that the present mine design/layout may have to be altered upon receipt of the specialist reports. The final design/layout alternatives will be considered during the EIA process as supplementary information is obtained from the specialist studies, and the stakeholders and I&AP's contribute their knowledge towards the proposed project.

D) TECHNOLOGY TO BE USED IN THE ACTIVITY

Presently it is expected that the mining process will be as described in *Section 1(d)(ii) Description of the activities to be undertaken – Operational Phase*. This project does not require complex technology to allow the winning of the intended mineral/s, nor will processing take place on site and therefore no further technology alternatives are considered in the Scoping and EIA process unless a need arises upon receipt of the specialist reports and/or public input.

E) OPERATIONAL ASPECTS OF THE ACTIVITY

The present operational aspects of the activity were based on the prospecting results and the optimisation of the proposed mining activity. The operational aspects will however be expanded upon once the findings and recommendations of the specialists are available and will be considered during the EIA process as supplementary information is obtained.

F) OPTION OF NOT IMPLEMENTING THE ACTIVITY (NO-GO ALTERNATIVE)

The no-go alternative entails no change to the *status quo* and is therefore a real alternative that must be considered. If the no-go alternative is implemented the land use of the earmarked footprint will remain that of agriculture, and livestock farming with the manganese, iron and diamond resources unmined. The no-go option will further entail a loss of employment opportunities, as well as socio-economic benefits and growth development opportunities. Given the high levels of unemployment and poverty in the Tsantsabane district the loss of such opportunities is considered significant.

The positive implications of the no-go alternative are that there will be no impact on the bio- and geophysical environment of the earmarked area, nor a change of the land use.

Amongst others, the socio-ecological and socio-economic impacts of mining on the current and future land uses of the study area will be compared to the *status quo* and will be considered as part of the EIA process and discussed in the DEIAR.

ii) Details of the Public Participation Process Followed

Describe the process undertaken to consult interested and affected parties including public meetings and one on one consultation. NB the affected parties must be specifically consulted regardless of whether or not they attended public meetings. (Information to be provided to affected parties must include sufficient detail of the intended operation to enable them to assess what impact the activities will have on them or on the use of their land.

The relevant stakeholders and I&AP's will be informed of the mining right application by means of an advertisement in the Gemsbok and the Noordkaap Bulletin, and on-site notices that will be placed at the entrance to Makganyene No 667/2 where it turns off the R385 and in Postmasburg. A notification letter inviting comments on the DSR over a 30-days commenting period (ending 07 January 2025) will also be sent to the landowners, neighbouring landowners, stakeholders, and any other I&AP that may be interested in the project. The comments received on the DSR will be incorporated into the final Scoping Report (FSR) to be submitted to the DMRE for consideration. The following table provides a list of the I&AP's and stakeholders that will be informed of the project.

Upon approval of the Final Scoping Report the Draft Environmental Impact Assessment Report will be compiled and circulated for public comment for a 30-day commenting period. The comments received on the draft EIA & EMPR will be incorporated into the final EIA & EMPR to be submitted for decision making to DMRE.

Table 7: List of the landowners, I&AP's and stakeholders that will be informed of the project and availability of the DSR.

LANDOWNERS & INTERESTED AND AFFECTED PARTIES	STAKEHOLDERS
Landowner: δ Mr JC Wessels Makganyene No 667/RE, 1, 2 δ Chris Cla Konstruksie CC (Mrs AP Claassens) Makganyene No 667/3 **Surrounding Landowners and I&AP's:** δ Kouwater Boerdery (Pty) Ltd Metseatsididi No 666/RE, 2 δ Mr CC Claassens Magoloring No 669/RE δ Me GHJ Claassens Vlakfontein No 433/RE δ Sishen Iron Ore Co (Pty) Ltd Farm No 432/1, 2 Farm No 364/0 δ Lynpunt Trust Mapedi No 653/RE δ Slabcon Trust Metseatsididi No 666/1 δ Makganyane Resources (Pty) Ltd Interested and Affected Party	δ Department of Agriculture, Environmental Affairs, Rural Development and Land Reform; δ Department of Agriculture, Land Reform and Rural Development; δ Department of Economic Development and Tourism; δ Department of Labour; δ Department of Roads and Public Works (DRPW); δ Department of Water and Sanitation (DWS); δ Eskom; δ South African Heritage Resources Agency (SAHRA); δ Tsantsabane Local Municipality (TLM); δ Tsantsabane Local Municipality (Ward 6); δ ZF Mgcawu District Municipality (ZFMDM).

iii) Summary of issues raised by I&Aps

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

Table 8: Summary of issues raised by I&AP's and stakeholders.

Interested and Affected Parties **List the names of persons consulted in this column, and** **Mark with an X where those must be consulted were in fact consulted**		**Date Comments Received**	**Issues raised**	**EAP's response to issues raised by the Applicant**
AFFECTED PARTIES		**-**	**-**	**-**
Landowner/s	**X**	**-**	**-**	**-**
Mr JC Wessels δ Makganyene No 667/RE, 1, 2	X	Any comments received on the draft scoping report will be incorporated into the final scoping report.		
Chris Cla Konstruksie CC (Mrs AP Claassens) δ Makganyene No 667/3	X			
Lawful occupier/s of the land	**N/A**	-	-	-
Landowners or lawful on adjacent properties	**X**	**-**	**-**	**-**
Kouwater Boerdery (Pty) Ltd δ Metseatsididi No 666/RE, 2	X	Any comments received on the draft scoping report will be incorporated into the final scoping report.		
Mr CC Claassens δ Magoloring No 669/RE	X			
Me GHJ Claassens δ Vlakfontein No 433/RE	X			
Sishen Iron Ore Co (Pty) Ltd δ Farm No 432/1, 2	X			

Interested and Affected Parties List the names of persons consulted in this column, and Mark with an X where those must be consulted were in fact consulted		Date Comments Received	Issues raised	EAP's response to issues raised by the Applicant
δ Farm No 364/0				
Lynpunt Trust δ Mapedi No 653/RE	X			
Slabcon Trust δ Metseatsididi No 666/1	X			
Municipal councillor Ward 6	**X**	Any comments received on the draft scoping report will be incorporated into the final scoping report.		
Municipality Tsantsabane Local Municipality (TLM)	**X**			
Organs of state (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWA etc	**X**	**-**	**-**	**-**
Department of Roads and Public Works (DRPW)	X	Any comments received on the draft scoping report will be incorporated into the final scoping report.		
Department of Water and Sanitation	X			
Department of Public Works	X			

Interested and Affected Parties List the names of persons consulted in this column, and Mark with an X where those must be consulted were in fact consulted		Date Comments Received	Issues raised	EAP's response to issues raised by the Applicant
Eskom	X			
Communities		No communities border the mining area or were identified within 100 m from the site.		
-	**-**	**-**	**-**	**-**
Dept. Land Affairs	**-**	Any comments received on the draft scoping report will be incorporated into the final scoping report.		
-	**-**	**-**	**-**	**-**
Traditional Leaders		No tradition leaders borders the mining area or were identified within 100 m from the site.		
-	**-**	**-**	**-**	**-**
Dept. Environmental Affairs	**X**	-		
Department of Agriculture, Environmental Affairs, Rural Development and Land Reform	X	Any comments received on the draft scoping report will be incorporated into the final scoping report.		
Other Competent Authorities affected		**-**	**-**	**-**
Department of Agriculture, Land Reform and Rural Development	X	Any comments received on the draft scoping report will be incorporated into the final scoping report.		

Interested and Affected Parties List the names of persons consulted in this column, and Mark with an X where those must be consulted were in fact consulted		Date Comments Received	Issues raised	EAP's response to issues raised by the Applicant
Department of Economic Development and Tourism	X			
Department of Labour	X			
South African Heritage Resources Agency (SAHRA)	X			
ZF Mgcawu District Municipality	X			
OTHER AFFECTED PARTIES		-	-	-
-		**-**	**-**	**-**
INTERESTED PARTIES		-	-	-
Makganyane Resources (Pty) Ltd	X	09/09/2024	Makganyane Resources (Pty) Ltd submitted the following comments on the application.	The correspondence received from Makganyane Resources (Pty) Ltd was acknowledged on 12 September 2024 and it was confirmed that the company will be provided with the documents that are available to all registered I&AP's as part of the environmental authorisation process.
Comments received from Makganyane Resources (Pty) Ltd: "Makganyane Resources (Pty) Ltd hereby provides formal notification to register as an interested and affected party in terms of Assmang Mining Right ("Mining Right") and Environmental Authorization ("EA") in terms of an application submitted for a Mining Right for iron ore and manganese over Portion 2 (a Portion of Portion 1), Remainder Portion,				

Interested and Affected Parties List the names of persons consulted in this column, and Mark with an X where those must be consulted were in fact consulted	Date Comments Received	Issues raised	EAP's response to issues raised by the Applicant
Remainder Portion of Portion 1 and Portion 3 of the Farm Makganyene No. 667, situated in the administrative district of Kuruman, in the Northern Cape province ("the Property") under DMRE reference NC 30/5/1/1/2/2/10255 MR. Makganyane Resources (Pty) Ltd hereby requests to be furnished with the entire mining right application, including the mining works programme, technical and supporting documentation, environmental authorization application and all other appropriate documentation in terms of the High Court, Gauteng Division judgement of Baleni and Others with case number: 96628/2015…"			

iv) The Environmental attributes associated with the sites.

(1) Baseline Environment

(a) Type of environment affected by the proposed activity.

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

This section describes the general biophysical, cultural, and socio-economic environment as well as baseline conditions that may be affected by the proposed project. The information provided here was obtained from desktop studies and must be treated as preliminary. More detailed information based on site specific conditions, obtained during site assessments, and focussed investigations will be collected during the EIA process and elaborated on in the DEIAR.

PHYSICAL ENVIRONMENT

CLIMATE

The project area has a semi-desert climate with hot summers and mild to cold winter temperatures. Average temperatures vary from approximately 25 °C in the summer month of January to nearly 20 °C in the July. The mean annual precipitation (MAP) for the project area is in the region of 320 mm, with most rainfall occurring mainly during summer (Steenkamp 2024).

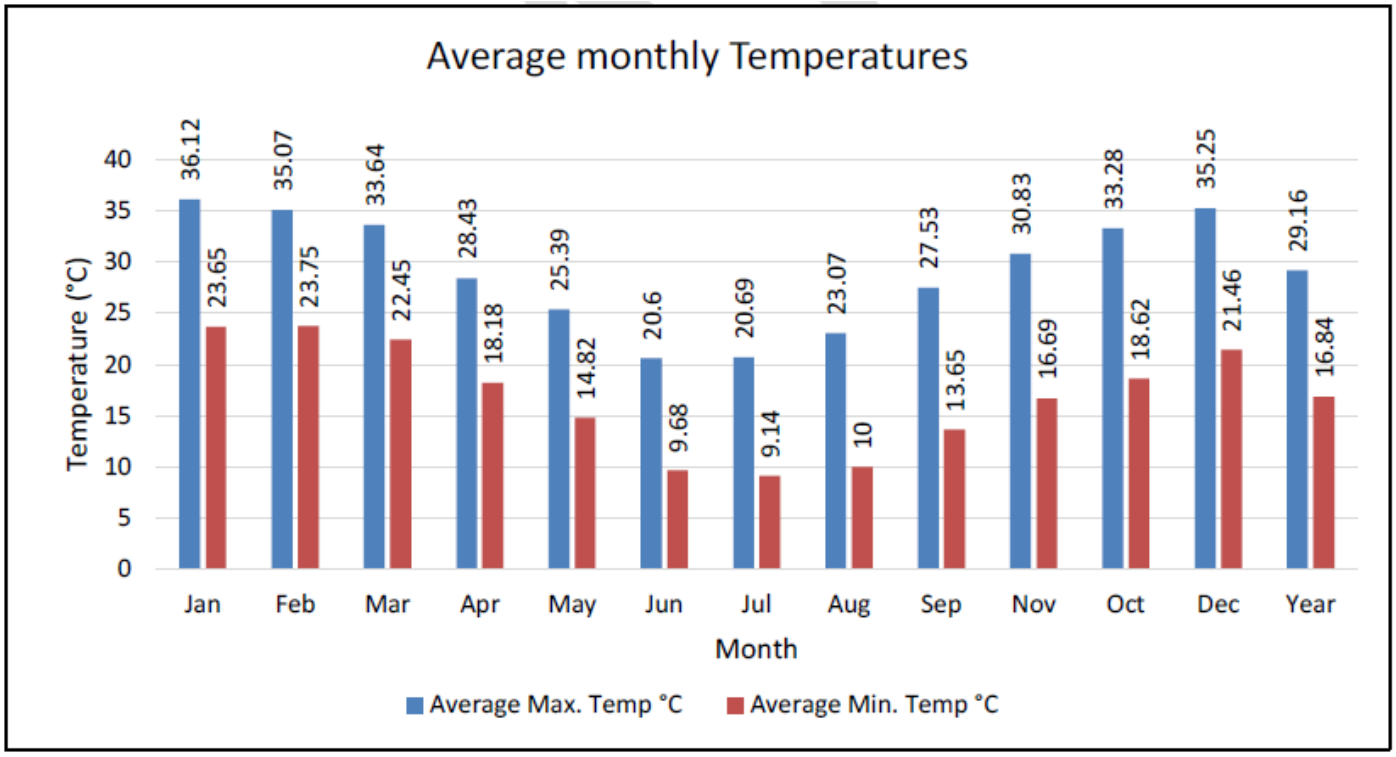

Figure 10: Average monthly temperatures for the Postmasburg area (weatherandclimate.com/)

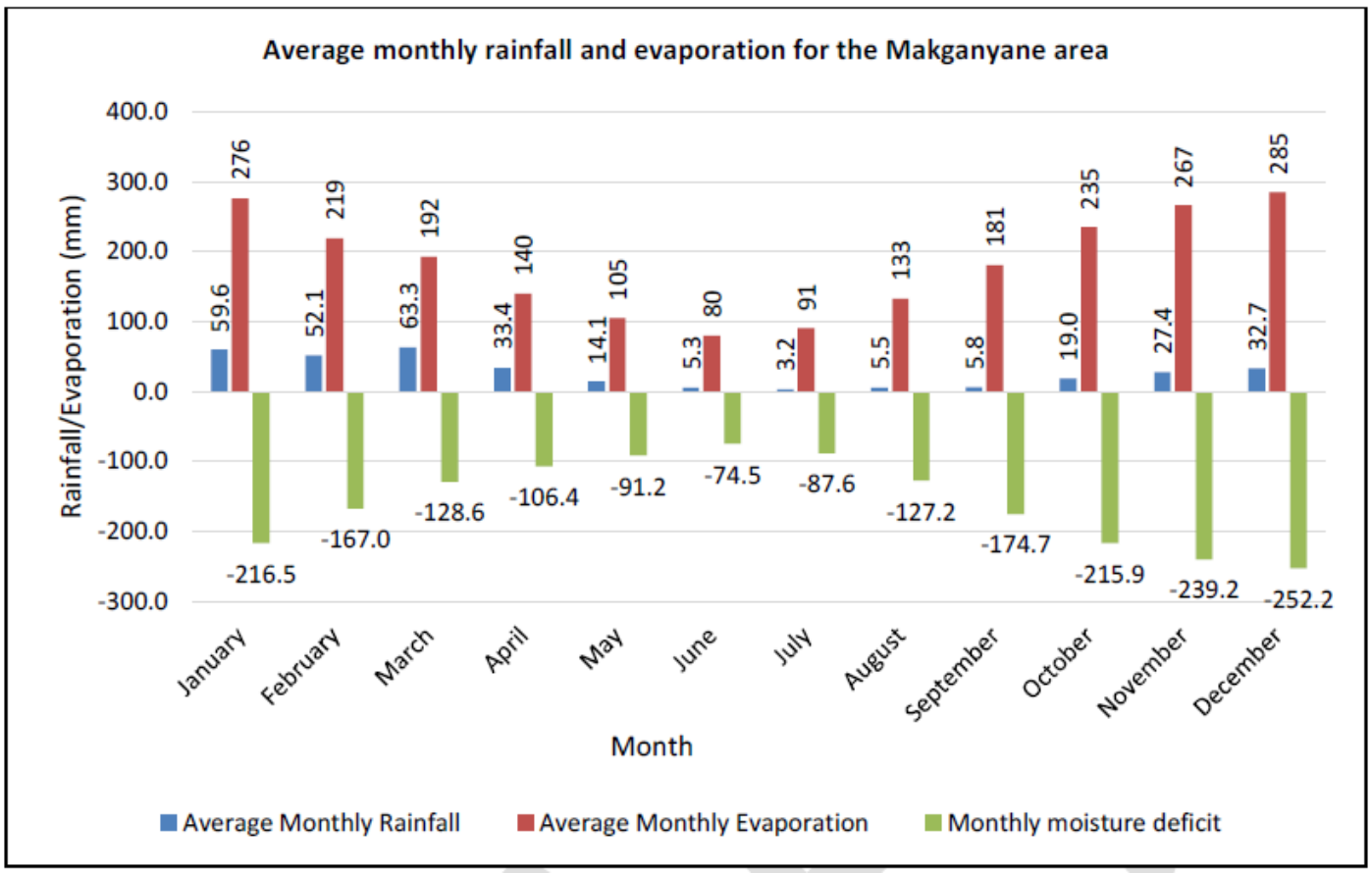

Figure 11: Mean annual rainfall and evaporation for the project area (DWS, 2024).

The dominant wind direction of Postmasburg is fairly constant ranging from north to west-northwest, with the average wind speed being ±6 knots (11.11 km/h) as shown in the following figure.

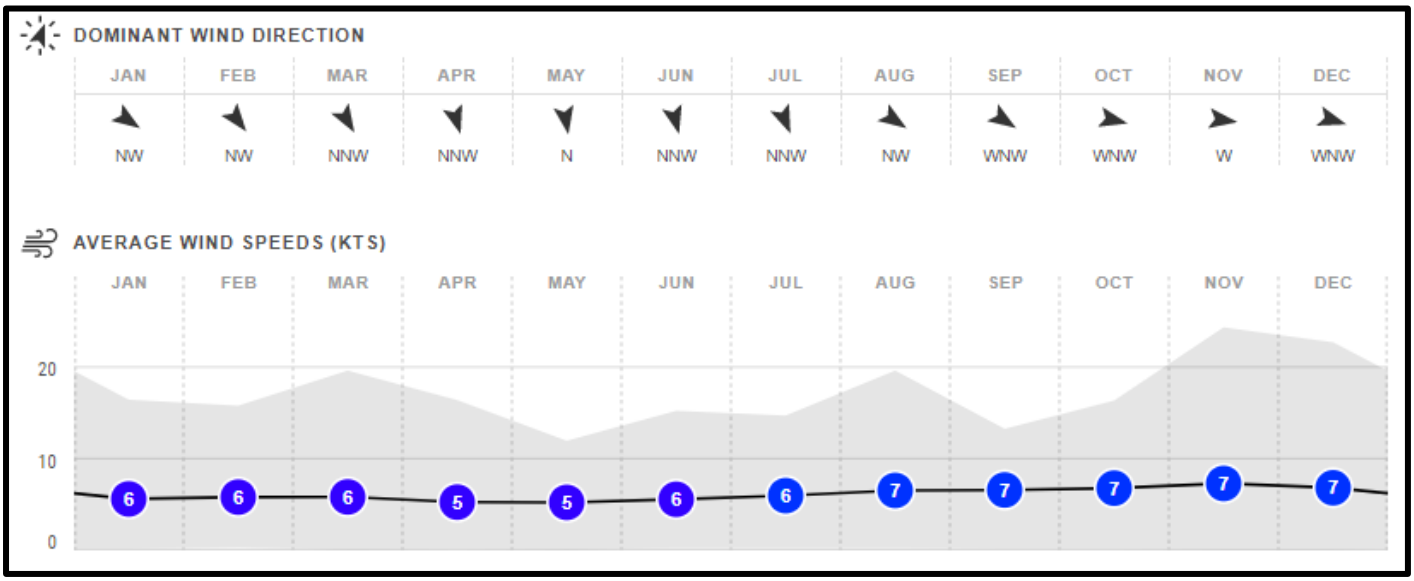

Figure 12: Image showing the dominant wind direction and average wind speed over a 12 month period for the Postmasburg area. (Image obtained from www.windfinder.com/windstatistics/postmasburg)

TOPOGRAPHY

The topography of the greater Postmasburg – Olifantshoek area is shown in the following figure. The area forms part of the inland plateau of South Africa with elevations generally at about 1 400 mamsl. The topography is of the inselberg type, displaying rounded or sharp crested peaks and ridges projecting through sand or calcrete covered flats.

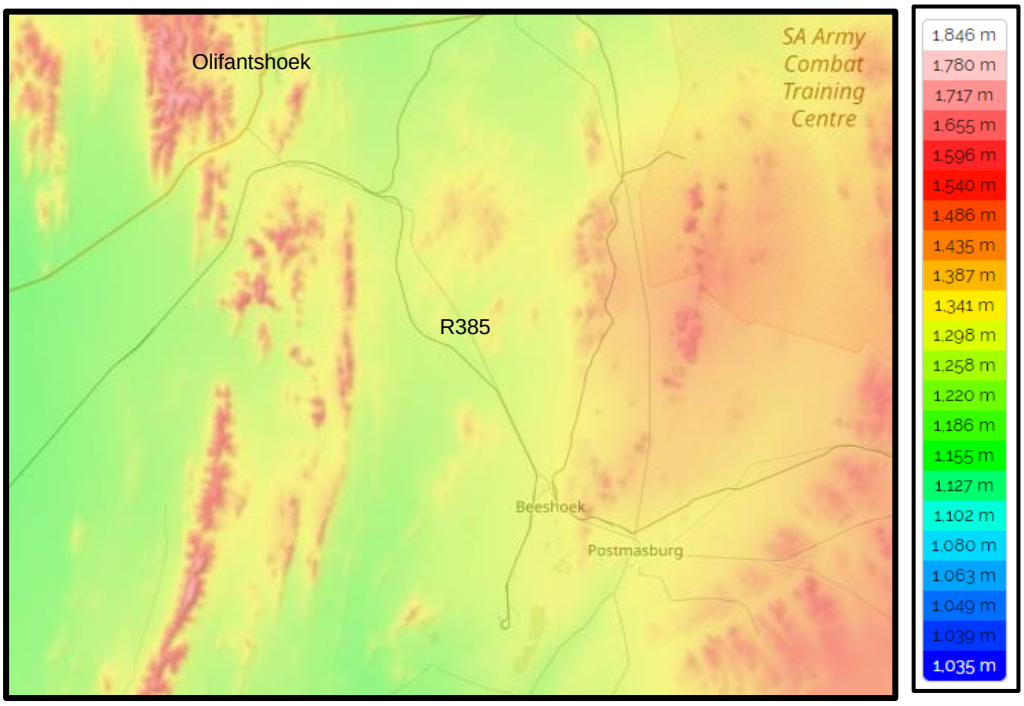

Figure 13: Map showing the topography of the greater Postmasburg – Olifantshoek area (image obtained from www.en-za.topographic-map.com/maps/7136/Postmasburg/).

Also refer to *Section 1(h)(iv)(1)(c) Description of specific environmental features and infrastructure on site – Site Specific Topography.*

VISUAL CHARACTERISTICS

The visual character of the greater study area mainly comprises of an agricultural setting intersected by mining, road-, railway- and electricity infrastructure. Through the years the area gained recognition for its manganese and iron ore potential and mines such as Kumba Iron Ore, Beeshoek-, Heuningkranz-, and Kolomela Mine were established. The towns of both Olifantshoek and Postmasburg have a low aesthetic value.

The immediate surrounding land uses, adjacent of the mining area, include agricultural activities (grazing) and mining (Kumba Heuningkranz). A diamond mine (Metseatsididi) operates along the northern boundary of the farm, and the historic diamond pit on the Makganyene farm was abandoned and remains a landscape feature. Various target areas

on the earmarked properties were prospected in the past five years. Considering this, the aesthetic ambiance of the region is that of a rural area with natural landscapes altered, in places, by mining/prospecting.

Also refer to *Part A(1)(h)(iv)(c) Description of specific environmental features and infrastructure on the site – Site Specific Visual Characteristics.*

GEOLOGY AND SOILS

(Information extracted from the Mining Work Programme, 2024)

Summary of the Regional Geology

Iron ores of the Transvaal Supergroup occur in the Northern Cape Province within the Maremane Dome, along an approximately 90 km long north-south trending line between the towns of Sishen in the north and Postmasburg in the south. The Maremane Dome dips gently to the east and is mostly composed of the dolostones of the Campbellrand Subgroup and iron formations of the Asbesheuwels Subgroup (Kuruman and Griquatown iron formations) (Smith and Beukes, 2016).

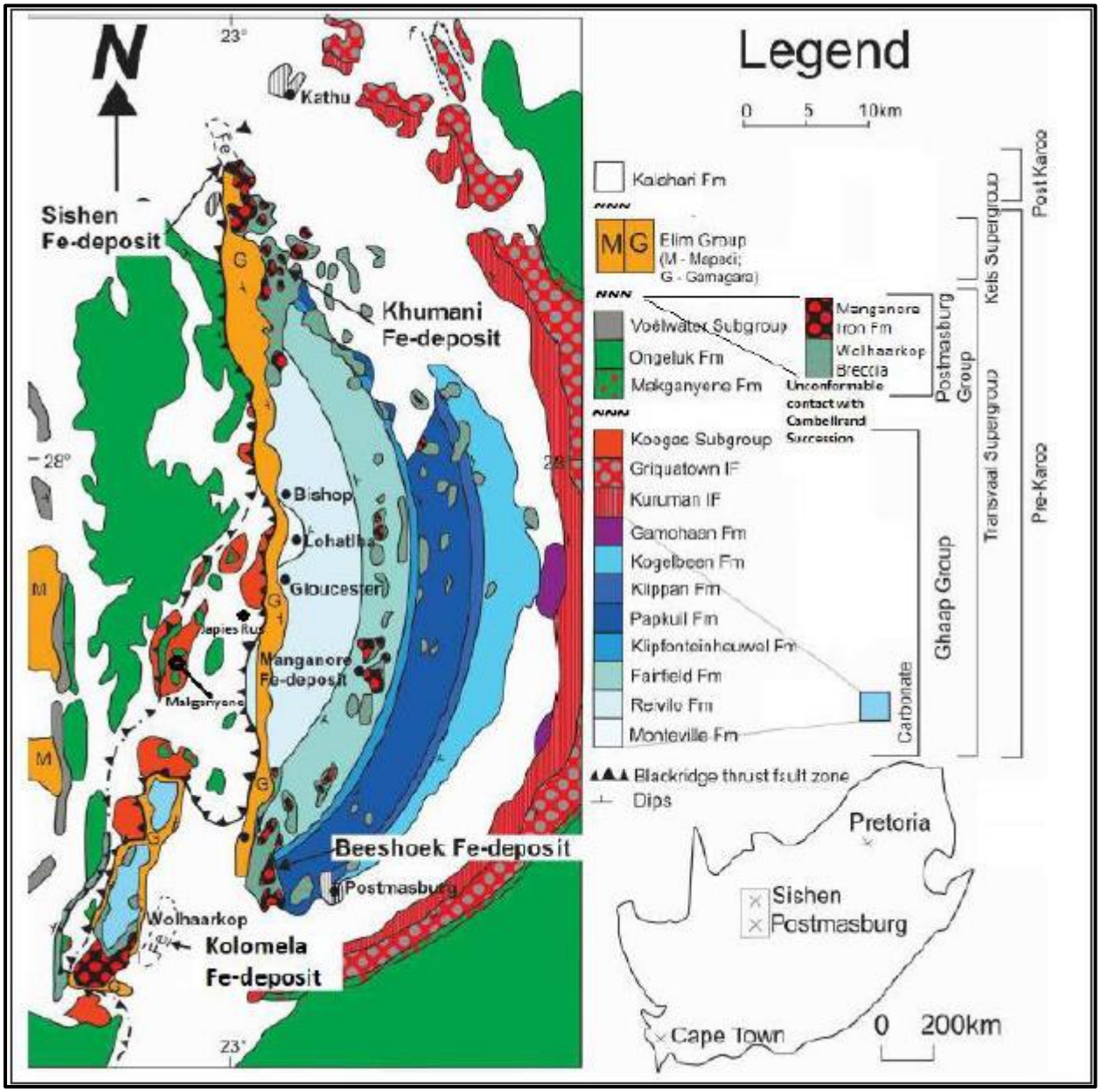

Figure 14: Regional geological map of the Maremane Dome region in the Northern Cape Province indicating the location of the Sishen, Khumani, Beeshoek and Kolomela iron ore deposits (image obtained from the MWP).

An erosional unconformity called the pre-Gamagara/Mapedi unconformity, cuts through the Maremane anticline and is succeeded by the Gamagara/Mapedi red bed succession. The unconformity, which is regionally developed over the entire Griqualand West area, is consistently marked by the presence of a ferruginous lateritic weathering profile in the rocks immediately below it. Formation of the unconformity and weathering took place around 2.2 to 2.0 Ga, at the time of lower Elim Group deposition (Dalstra and Rosière, 2008), following a period of folding and uplift of Transvaal Supergroup strata. Because of the folded nature of the strata below, the unconformity transects a wide variety of rocks, the compositions of which determine lateral variations along the lateritised surface. Towards the west of the Maremane Dome, older rocks of the Transvaal Supergroup,

including the Koegas Subgroup, Makganyene diamictite and Ongeluk lava, have been thrust over the post-Mapedi/Gamagara units along the Black Ridge thrust (Beukes and Smit, 1987), (Smith and Beukes, 2016).

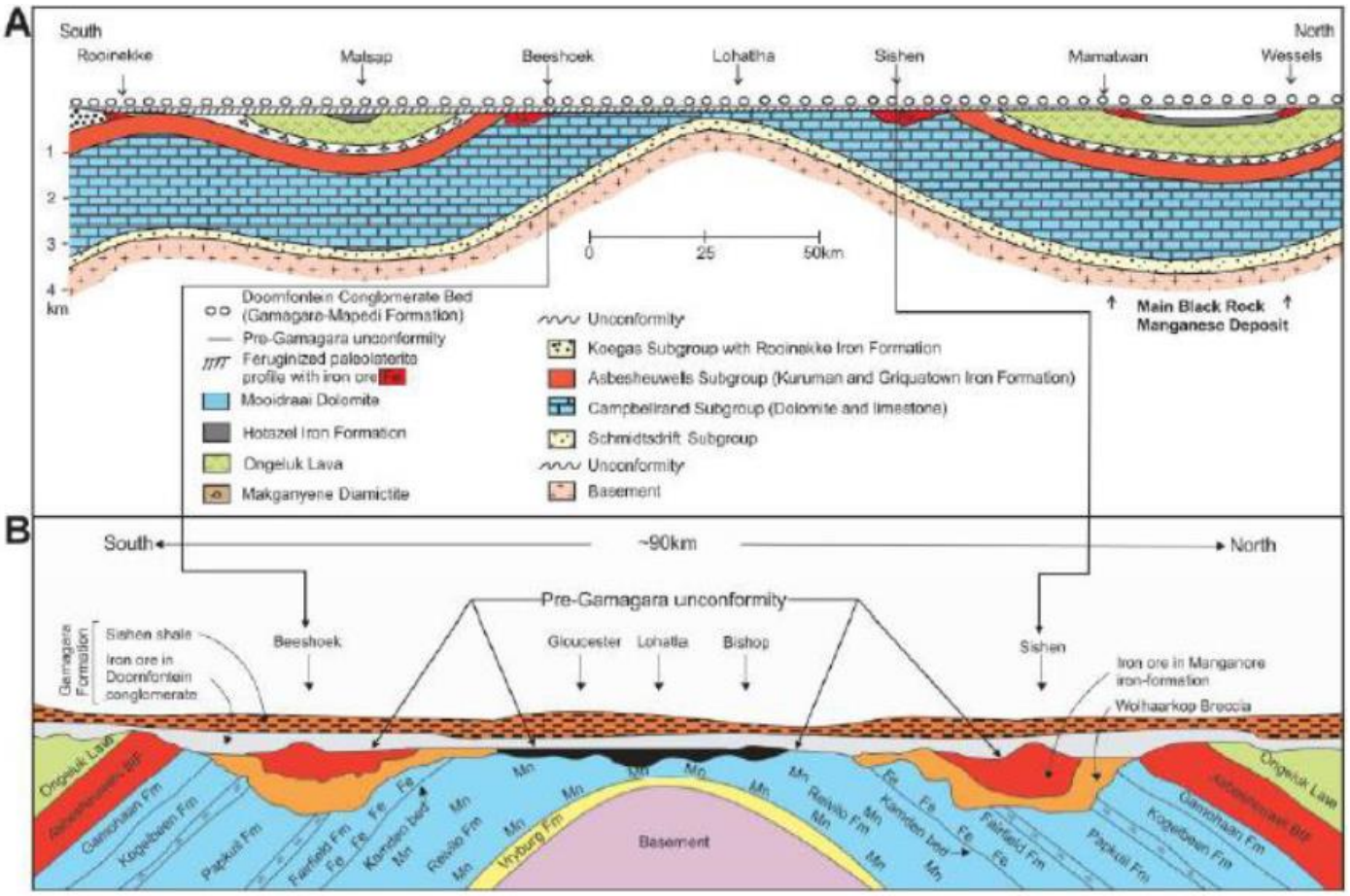

Figure 15: Schematic north-south cross section through (A) the western margin of the Griqualand West area and (B) the Maremane Dome (modified after Cairncross et al., 1997; Van Deventer, 2009). Sub-surface dips of lithologies are exaggerated for illustrative purposes (image obtained from the MWP).

The name Manganore Iron Formation was introduced by Beukes (1977, 1978) to describe the iron formation unit which overlies the Wolhaarkop Breccia on the Maremane dome because its correlation with the other units in the Transvaal Supergroup was uncertain (Van Schalkwyk and Beukes, 1986). Van Schalkwyk and Beukes (1986) correlates the Manganore Iron Formation with the Kuruman Iron Formation. They based their conclusion mainly on sedimentary structures in cycles zones that may correlate. The differences in mineralogical composition between the Kuruman Iron Formation with its ferrous minerals such as magnetite, siderite, greenalite, minnesotaite and stilpnomelane and the Manganore Iron Formation which comprise mainly of hematite, raised questions regarding the validity of the proposed correlation. Since the Kuruman Iron Formation went through periods of metamorphism, processes which are absence in the Manganore Iron Formation, it was proposed by writer that the Manganore Iron Formation was a separate banded iron

formation.

It was suggested by writer that the Manganore Iron Formation was deposited much later in the erosional deep structured synclinal basins and troughs that formed during the uplifting of the Maremane dome. The Wolhaarkop Breccia, a siliceous chert breccia, marks the dissolution surface between the dolomite and overlying ore-bearing iron formation formed in these deep structural basins. In some areas where the Manganore Iron Formation was deposited, karstic slump structures developed in these troughs (depressions) causing a high degree of brecciation of the BIFs and hematite ores.

The Makganyene iron ore deposits are located south-west of the farm Mogoloring 668 (Japies Rus). This western limb of the Maremane Dome represents the edge of the Kaapvaal craton and has been subjected to intensive folding, faulting, and thrusting. Early regional tectonism played a critical role in the genesis, deformation, and preservation of the ores from younger erosive events. As a result of regional tectonism, the lithological units in the area did not maintain their original sequence of depositional layering due to major thrust faulting of the lithological units associated with the Kheis-Korannaberg orogeny (Stowe, 1986) which caused large scale deformation.

The geology of the farm Makganyene consists of a basement of the Campbellrand Subgroup, Maremane dome dolomites. In the core of the dome erosion has laid bare Gamagara quartzites, overlain on all sides by banded jaspers of the Koegas Subgroup. The quartzites have been crushed and turned into a glassy-looking purplish rock near the contact with the over-riding banded jaspers, which are local at least 30 m thick. The latter have been finely granulated along the contact and pass upwards through more and less brecciated varieties onto the normal banded or thickly bedded jaspers, dipping gently to the west and to the east. The Gamagara quartzites represent remnants- originally laid down on the Dolomite or Koegas beds and which have probably taken part in previous horizontal movement (Visser,1944).

Most of the iron ore occurs as hematite clasts in the lower Doornfontein Member of Gamagara Formation overlaying the blinkklip breccia and Cambellrand dolomite. Manganese mineralization with a high Fe% content, occurs most often below the iron ore and in a few areas above the iron ore.

Also refer to *Section 1(h)(iv)(1)(c) Description of specific environmental features and infrastructure on site – Site Specific Geology.*

HYDROLOGY

(Information extracted from the Lower Vaal Water Management Area: Internal Strategic Perspective, October 2004 and the Report on Geohydrological Investigation as Specialist Input to the Mining Right Application, Steenkamp 2024)

The mining area falls within the Molopo Sub-Water Management Area (SWMA) which is managed as part of the Lower Vaal Water Management Area (WMA ID 20). The project area is located within the D73A quaternary catchment, which covers an area of just over 3 200 km^2. Surface elevations and water courses for the project area are indicated in the following figure.

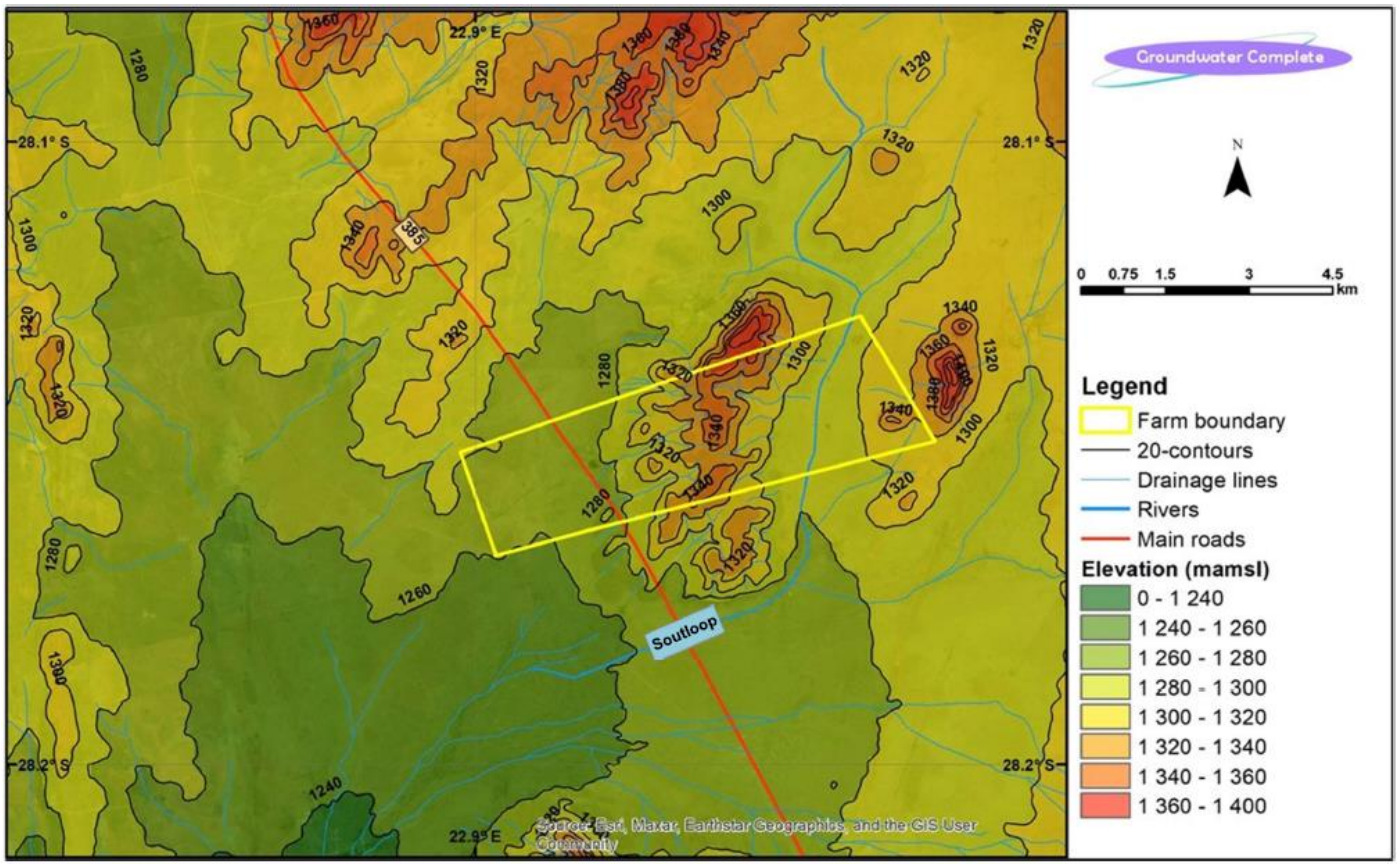

Figure 16: Surface elevations and water courses for the project area (Groundwater Complete 2024).

Although the Molopo SWMA forms part of the Lower Vaal WMA, it does not form part of the model for the Vaal River System as drainage of surface water from the Molopo SWMA occurs in the direction of the Orange River and not the Vaal River. The Molopo SWMA is considered an endoeric area as flows from the Molopo River have not reached the Orange River in recorded history. The bulk of the water used in this sub-catchment is from groundwater. Generally the groundwater quality from most of the boreholes in the study area is fit for human and domestic animal use. Borehole yields in the calcrete aquifer generally vary from 0.2 to ±2 l/s. In the Heuningkranz area (adjacent to the Makganyane farm) two aquifer types were identified. The first aquifer is described as "*a shallow, double*

porosity, unconfined or semi-confined aquifer within the upper 2 – 20 m of the geological profile". The second aquifer is deeper occurring at depths exceeding 20 m. The aquifer is semi-confined to confined in some areas. (EXM Advisory Services (Pty) Ltd, 2018)

The project area is drained by tributaries of the Soutloop watercourse, which is always dry apart from run-off during and directly after significant rainfall events. The watercourse and tributaries occur as flat, open valley-bottom areas that are often up to 1 km wide.

According to the National Freshwater Ecosystem Priority Areas (NFEPA) map as presented by SANBI, a NFEPA of conservation importance extends over the study area (see figure below). Two ephemeral drainage lines passes through the greater study area as shown in the figure below. The eastern drainage line feeds a small pan to the south, while the western drainage line feeds an extensive wetland area so the south-west of Postmasburg.

Figure 17: National Wetlands and NFEPA BGIS Map Viewer showing the position of the NFEPA (dark green polygon). The lighter green represents an Upstream FEPA. (Image obtained from the BGIS Map Viewer – National Wetlands and NFEPA).

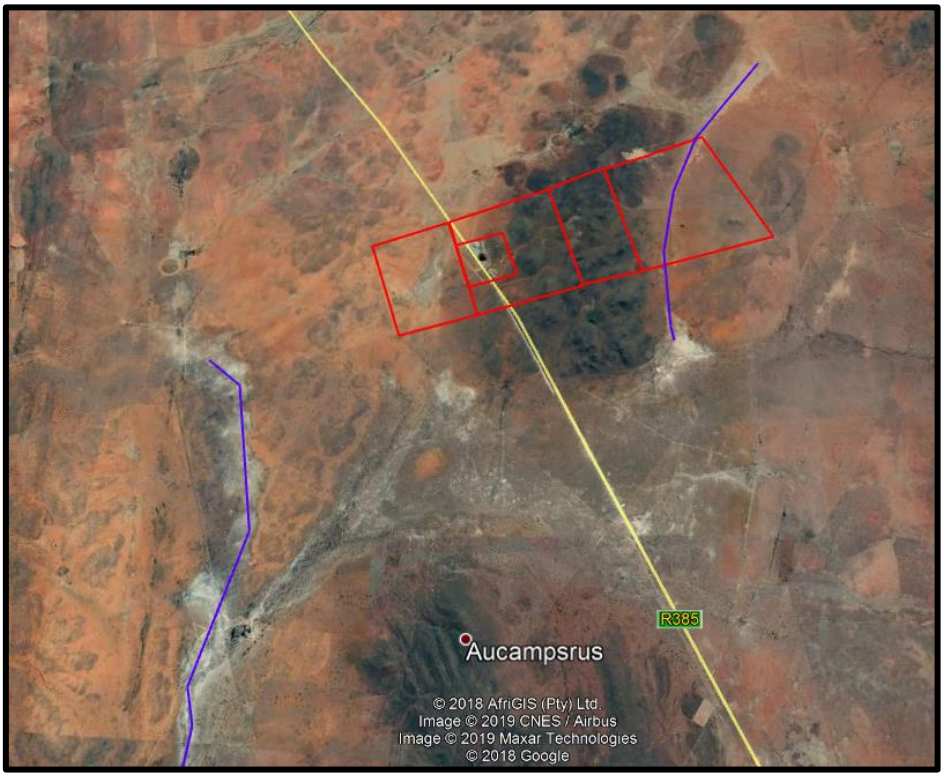

Figure 18: Satellite view of the two ephemeral drainage lines (blue lines) in the greater study area (image obtained from Google Earth).

Also refer to *Section 1(h)(iv)(1)(c) Description of specific environmental features and infrastructure on site – Site Specific Hydrology.*

AIR QUALITY AND NOISE AMBIANCE

Due to the low rainfall, the air quality of the study area is characterised as dry, arid and dusty. Dust is the most important pollutant given the area's rural character predominantly affected by agriculture and mining. The noise ambiance of the study area is classified as ambient rural or pastoral with noise levels mainly modified by traffic along the R385, railway traffic, farming equipment and mining related operations.

Also refer to *Section 1(h)(iv)(1)(c) Description of specific environmental features and infrastructure on site – Site Specific Air Quality and Noise Ambiance.*

BIOLOGICAL ENVIRONMENT

MINING AND BIODIVERSITY

(Information extracted from the Mining and Biodiversity Guideline: Mainstreaming Biodiversity into the Mining Sector, Department of Environmental Affairs, Department of Mineral Resources, Chamber of Mines, 2013)

The Mining and Biodiversity Guideline, compiled by the South African Mining and Biodiversity Forum (SAMBF) provides the mining sector with a practical, user-friendly

manual for integrating biodiversity considerations into planning processes and managing biodiversity during the developmental and operational phases of a mine, from exploration through to closure.

When the study area is placed on the Mining and Biodiversity Map, as shown in the figure below, Makganyene No 667/3 (north-eastern section of the proposed mining footprint) is within an area of highest biodiversity importance with a corresponding rating of highest risk for mining.

The Mining and Biodiversity Guideline's definition for areas of highest biodiversity importance stipulates that: "*these areas are viewed as necessary to ensure protection of biodiversity, environmental sustainability, and human well-being"*. The guidelines note that environmental screening, the EIA, and specialists should focus on confirming the presence and significance of biodiversity features and provide a site-specific basis on which to apply the mitigation hierarchy to inform regulatory decision-making.

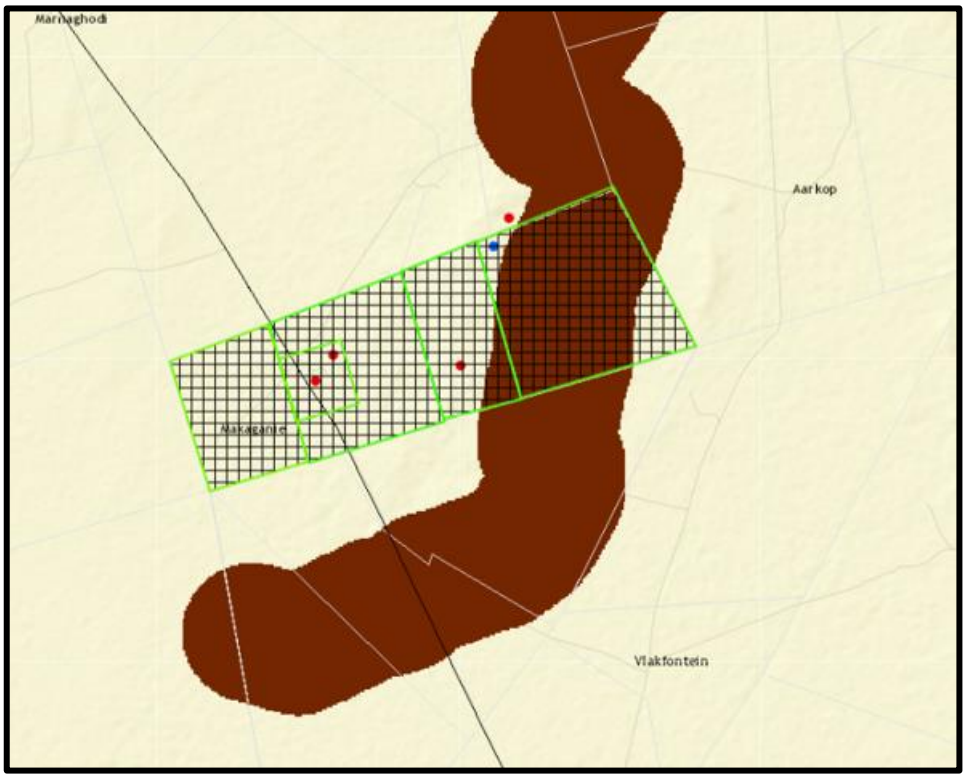

Figure 19: The Mining and Biodiversity importance map with the proposed mining footprint shown by the green polygon. The dark brown area shows an area of highest biodiversity importance with highest risk for mining (image obtained from the BGIS Map Viewer – Mining Guidelines).

It must be noted that there is a prospecting right (NC 30/5/1/1/2/2292 PR) over the proposed mining right application area that expires in November 2024. As such, the entire area (including the area marked as highest risk) was previously approved for prospecting related activities.

Also refer to *Section 1(h)(iv)(1)(c) Description of specific environmental features and infrastructure on site – Site Specific Terrestrial Biodiversity, Conservation Areas, Groundcover and Fauna.*

BIODIVERSITY CONSERVATION AREAS

According to the 2016 Northern Cape CBA BGIS Map Viewer, the proposed mining footprint extends across an area classified as Critical Biodiversity Area 1 (CBA1).

The Lexicon of Biodiversity Planning in South Africa provides the following definition for a CBA:

- Critical Biodiversity Area (CBA): *"an area that must be maintained in a good ecological condition in order to meet biodiversity targets. CBA's collectively meet biodiversity targets for all ecosystem types as well as for species and ecological processes that depend on natural or near-natural habitat, that have not already been met in the protected area network."*

Figure 20: 2016 Northern Cape CBA BGIS Map Viewer showing the proposed mining area over the CBA1 (green polygon).

Also refer to *Section 1(h)(iv)(1)(c) Description of specific environmental features and infrastructure on site – Site Specific Terrestrial Biodiversity, Conservation Areas, Groundcover and Fauna.*

GROUNDCOVER

According to Mucina and Rutherford (2012) three vegetation types extends into the earmarked area i.e. the Kuruman Mountain Bushveld (SVk 10), the Olifantshoek Plains Thornveld (SVk 13), and the Postmasburg Thornveld (SVk 14).

Figure 21: National vegetation cover map showing the proposed mining area within the Kuruman Mountain Bushveld (light sandy colour), the Olifantshoek Plains Thornveld (light grey-brown colour), and the Postmasburg Thornveld (darker brown-green colour). (Image obtained from BGIS Map Viewer – National Vegetation Map).

1. Kuruman Mountain Bushveld (SVk 10)

The Kuruman Mountain Bushveld is characterized by rolling hills with generally gentle to moderate slopes and hill pediment areas with an open shrubveld with *Lebeckia macrantha* prominent in places.

Some of the important taxa found in this vegetation type include Se*arsia lancea, S. pyroides, Diospyros austro-africana, Euclea crispa, E. undulate, Olea earopaea, Tarchonanthus camphoratus, Amphiglossa triflora, Anthospermum rigidum, Helichrysum zeyheri;* Grammnoids*: Andropogon chinensis, Anthephora pubescens, Aristida congesta, Digitaria eriantha, Themeda triandra.* Biogeographically Important Taxa: *Lebeckia macrantha* (Griqualand West endemics), *Tarchonanthus obovatus, Euphorbia wilmaniae, E. planiceps, Digitaria polyphylla, Sutera griquensis.*

The vegetation type is classified as Least Threatened and according to Mucina and Rutherford (2012) none of it is conserved in statutory or private conservation areas. A conservation target of 16% was set for the vegetation type.

2. Olifantshoek Plains Thornveld (SVk 13)

The Olifantshoek Plains Thornveld is a very wide and diverse unit on plains with usually open tree and shrub layers with for example Ac*acia luederitzii, Boscia albitrunca* and *Searsia tenuinervis*, and with a usually sparse grass layer.

Some of the important taxa found in this vegetation type include *Acacia erioloba, A. mellifera, Boscia albitrunca, Terminalia sericea, Lycium hirsutum, Rhigozum obovatum, Searsia tridactyla, Tarchonanthus camphoratus, Aptosimum procumbens, Grewia retinervis, Solanum tomentosum.* Grammnoids*: Schmidtia papophoroides, Stipagrostis uniplumis, Aristida congesta, Digitaria eriantha.* Biogeographically Important Taxa: *Acacia luederitzii, Lebeckia macrantha, Hermannia burchelli, Justicia puberula, Tarchonanthus obovatus.*

The vegetation type is classified as Least Threatened and according to Mucina and Rutherford (2012) only 0.3% is statutorily conserved in the Witsand Nature Reserve. Approximately 1% of the vegetation type has been transformed and the occurrence of erosion is very low. A conservation target of 16% was set for the vegetation type.

3. Postmasburg Thornveld (SVk 14)

The vegetation and landscape features of the Postmasburg Thornveld is described as flats surrounded by mountains supporting open, shrubby thornveld characterised by dense shrub layer often lacking a tree layer, the grass layer is very sparse. Shrubs are generally low with a karroid affinity.

Some of the important taxa found in this vegetation type include *Acacia erioloba, A. karroo, Searsia lancea, S. tridactyla, Ziziphus mucronata, Diospyros lycioides, Ehretia rigida, Tarchonanthus camphoratus, Grewia flava, Felicia muricata, Melolobium microphyllum, Sutera linariifolia,* Grammnoids*: Digitaria eriantha, Enneapogon scoparius, Eragrostis lehmanniana, Aristida adscensionis, A. congesta, A. diffusa.* Biogeographically Important Taxa*: Euphorbia bergii, Digitaria polyphylla.*

The vegetation type is classified as Least Threatened and according to Mucina and Rutherford (2012) none of it is conserved in statutory or private conservation areas.

Very little of the vegetation type has been transformed and the occurrence of erosion is very low. A conservation target of 16% was set for the vegetation type.

2018 SANBI Vegetation Map

The vegetation types listed above corresponds with the latest vegetation map of South Africa (SANBI, 2018), as shown below.

Figure 22: BGIS 2018 National Vegetation Map showing the proposed mining area within the Kuruman Mountain Bushveld (light sandy colour), the Olifantshoek Plains Thornveld (light grey-brown colour), and the Postmasburg Thornveld (darker brown-green colour). (Image obtained from BGIS Map Viewer – 2018 National Vegetation Map).

Also refer to *Section 1(h)(iv)(1)(c) Description of specific environmental features and infrastructure on site – Site Specific Terrestrial Biodiversity, Conservation Areas, Groundcover, and Fauna.*

FAUNA

The study area is mainly used for stock grazing. Apart from the domestic animals and game, the indigenous faunal action of the area is high and shows a rich diversity with various protected species still present. The following faunal species are known to occur in/around the study area (non-exhaustive list):

Mammals

- Aardvark (*Orycteropus afer*)
- Bat-eared Fox (*Otocyon megalotis*)
- Black-footed Cat (*Felis nigripes*) (VU)
- Bushveld Gerbil (*Gerbilliscus leucogaster*)
- Cape Fox (*Vulpes chama*)
- Cape Porcupine (*Hystrix africaeaustralis*)
- Desert Pygmy Mouse (*Mus indutus*)
- Ground Squirrel (*Xerus inauris*)
- Horses (*Equus* spp.)
- Kudu (*Tragelaphus strepsiceros*)
- Namaqua Rock Mouse (*Aethomys namaquensis*)
- Slender Mongoose (*Galerella sanguinea*)
- Smith's Red Rock Hare (*Pronolagus rupestris*)
- Southern Multimamate Mouse (*Mastomys coucha*)
- Springbok (*Antidorcas marsupialus*)
- Springhare (*Pedetes capensis*)
- Steenbok (*Raphicerus campestris*)
- Yellow Mongoose (*Cynictis penicillata*)
- Warthog (*Phacochoerus africanus*)

Birds

- African March-harrier (*Circus ranivorus*)
- Black Stork (*Ciconia nigra*)
- Chestnut-banded Plover (*Charadrius pallidus*)
- Kori Bustard (*Ardeotis kori*) (NT)
- Lanner Falcon (*Falco biarmicus*)
- Lesser Kestrel (*Falco naumanni*)
- Martial Eagle (*Polemaetus bellicosus*) (VU)
- Ostrich (*Struthio camelus*)
- Secretary Bird (*Saggittarius sepentarius*) (VU)
- Tawny Eagle (*Aquila rapax*)
- Yellow-billed Stork (*Mycteria ibis*)

Invertebrates

- Baboon Spiders
- Boomslang (*Dispholidus typus typus*)

- Burrowing Scorpions
- Namaqua Plated Lizard (*Gerrhosaurus typicus*)
- Namaqua Sand Lizzard (*Pedioplanis namaquensis*)
- Striped Skaapsteker (*Psammophylax tritaeniatus*)

Also refer to *Section 1(h)(iv)(1)(c) Description of specific environmental features and infrastructure on site – Site Specific Terrestrial Biodiversity, Conservation Areas, Groundcover, and Fauna.*

HUMAN ENVIRONMENT

CULTURAL AND HERITAGE ENVIRONMENT

(Information extracted from the Heritage Impact Assessment for the Proposed Makganyane Mining Permit, Northern Cape Province, 2021 as well as the Palaeontological Impact Assessment for the Proposed Makganyane Prospecting Right Application, Postmasburg, Northern Cape Province, 2019)

The archaeological record for the greater study area consists of the Stone Age and Iron Age.

Stone Age

South Africa has a long and complex Stone Age sequence of more than 2 million years. The broad sequence includes the Later Stone Age, the Middle Stone Age, and the Earlier Stone Age. The larger study area has a wealth of pre-colonial archaeological sites (Morris & Beaumont 2004). Famous sites in the region include the world renowned Wonderwerk Cave to the north of the study area. Closer to Kuruman two shelters on the northern and southern faces of GaMohaan (in the Kuruman Hills north-west of the town) contain Later Stone Age remains and rock paintings. Rock art is known to occur at Danielskuil to the north-east and on Carter Block (Morris 2008). Middle Stone Age material is on record around the study area.

According to Morris (2005) in the immediate area to the north of the study area, the Earlier Stone Age is represented by 11 known sites (Bruce, Kathu, Uitkoms, Sishen, Demaneng, Lylyveld and Mashwening); the Middle Stone Age by 5 sites (all in the vicinity of Kathu); and the Later Stone Age by 10 sites (one on King, one at Mashwening and eight at Kathu). Rock engravings have been identified from Sishen and Bruce (the Bruce site was salvaged and recorded by Fock & Fock 1984), as well as Beeshoek, to the east of the study area (Fock & Fock 1984; Morris 1992; Beaumont 1998). Specularite sources are known on Demaneng and Lylyveld and were mined in Stone Age times at a site on Doornfontein to the east of the study area (Beaumont 1973; Beaumont & Boshier 1974) and at

Tsantsabane to the east of Postmasburg (Beaumont 1973; Thackeray et al. 1983): numerous other specularite workings have also been recorded (Beaumont 1973).

Iron Age

Iron Age expansion southwards past Kuruman into the Ghaap plato and towards Postmasburg dates to the 1600's (Humphreys, 1976 and Thackeray, 1983). Definite dates for Tswana presence in the Postmasburg area are around 1805 when Lichtenstein visited the area and noted the mining activities of the Tswana (probably the Thlaping) tribes in the area. The Thlaro and Thlaping settled the area from Campbell in the east to Postmasburg and towards the Langeberg close to Olifantshoek in the north-west before 1770 (Snyman, 1988). The Korana expansion after 1770 started to drive the Thlaro and Thlaping further north towards Kuruman (Shillington, 1985); Morris (2005) indicated that three Iron Age sites close to the study area are on record (Demaneng, Lylyveld and Kathu).

Historical Information

Rock paintings in the area serve as evidence that the hunter gatherer Bushmen had inhabited Griqualand West for centuries. In the 1770s, the Korana (people of Nama ancestry) moved into the Postmasburg area and disrupted the Bushmen's way of life. The Korana regularly visited a primitive mine in the Blinkklipkop, which today forms part of the town of Postmasburg, to exploit shimmering substances, namely hematite and specularite, which were mixed with fat and applied to the skin to give a sought-after shiny red appearance. With the later arrival of the Tswana, Korana, Griqua and Europeans the Bushmen gradually emigrated to the Kalahari, Botswana and Namibia. (Snyman 1983: Foreword, 1-3).

The Tswana (Western Sotho) invaded the Northern Cape about 500 years ago, but the later Hay district in which Postmasburg was located was only occupied in the early 1800s. Long before settling in this area the Tswana also undertook journeys to Blinkklipkop to mine for the cosmetic substance that they called sibilo.

In the 1820s the Griqua leader Andries Waterboer was able to expel his enemies, the Bergenaars of the Langeberge, from Blinkklip, as the area was called at the time. This became a permanent outpost of the Griqua tribe. By the 1830s the Blinkklip population had grown to the extent that missionary of the London Mission Society, John Baillie, was stationed there for a time. Nikolaas Waterboer succeeded his father in 1853, and after this the tribe's authority in the area started to wane. Waterboer and his tribe became British subjects in 1871 after the British annexed Griqualand West. The discovery of diamonds

further paved the way for white settlement in this district. (Snyman 1983: 4-5; Breutz 1963: 8)

Farms were surveyed by the British in the Griekwastad district in the 1870s, and between 1876 and 1878 the first farms owned by Europeans were purchased in this area. It was only in 1891 that 82 town plots were surveyed around the existing police station at Blinkklip. In the same year members of the church petitioned the Commissioner of Crown Lands to rename this town Postmasburg, in remembrance of Professor Dirk Postma, a minister of the Dutch Reformed Church in South Africa. This name change was affected in April 1892. (Snyman 1983: 10).

The manganese fields in the Postmasburg area were opened for prospecting in 1922, and this greatly boosted the development of the town and caused an influx of new residents. The economic depression of the 1930 adversely affected mining in the area, but the town economy could still rely on the agricultural sector. Postmasburg became a municipality in 1936. (Snyman 1983: 12)

Cultural Landscape

Historical land use and the cultural landscape are linked since the cultural landscape is shaped to some extent by the history of the area. The farm is used for the farming of livestock in recent years, evident by fences and watering holes. Historical maps indicate older mining activities in the surrounding area with no developments in the project area.

Palaeontology

The South African Heritage Resources Agency (SAHRA) compiled the Palaeontological (fossil) Sensitivity Map (PSM) to guide developers, heritage officers and practitioners in screening palaeontologically sensitive areas at the onset of a project. When the footprint of the earmarked properties are placed on the PSM, it shows that the farms extend over moderate (green) areas of concern as presented in the following figure.

Figure 23: The SAHRA palaeontological sensitivity map shows that the proposed mining footprint (black polygon) extends over an area of moderate (green) concern (image obtained from the PalaeoSensitivity Map on SAHRIS).

Also refer to *Section 1(h)(iv)(1)(c) Description of specific environmental features and infrastructure on site – Site Specific Cultural and Heritage Environment.*

SOCIO-ECONOMIC ENVIRONMENT

(Information extracted from the ZF Mgcawu District Municipality Draft Integrated Development Plan 2017- 2022 – Annual Review 2018/2019 and the Social and Labour Plan of this application attached as Appendix 7)

The farms are within Wards 6 of the Tsantsabane Local Municipality (TLM). The TLM is one of six local municipalities within the ZF Mgcawu District Municipality (ZFMDM) that is classified as a Category C municipality of the Northern Cape Province. The seat of the TLM is in Postmasburg with the municipal area including the towns/settlements of Boichoko, Postdene, New Town, Stasie, Groen Water, Skyfontein, Jean Heaven, Marenane, and Beeshoek.

According to Statssa (2016) and CSIR (2022), TLM in 2021 had a population 43 758 people, which reflected an increase of 8 678 people between 2011 (had a population of 35 093) and 2021, also indicating a population increase of 17 345 between 2001 (had a population of 31 014) and 2021. As such, by 2031 it is expected that TLM will reach 55 345 people, adding an approximate number of 11 590 to the 2021 figures. This population growth trend is expected to increase the number of people that the municipality must

provide services to, keeping in mind that the municipality is currently facing challenges in meeting its present demand on water, sanitation, and electricity provision.

Gender and Population Profile

The 2021 Stats SA data for Tsantsabane Local Municipality on age and gender distribution, enables populations comparison from earlier periods 2011, 2016 until 2021 to be drawn for purpose establishing trends but also for forecast planning. These data include whether specific age bands in the population are growing or declining (following table). The graphical comparison in the form of an overlayed growth pyramid below shows the TLM population age and gender breakdown for the years 2011, 2016 and 2021.

Table 9: Age and gender distribution of population of Tsantsabane Local Municipality

Age group	Sum of 2011		Sum of 2016		Sum of 2021		2011 Total	2016 Total	2021 Total
	Female	Male	Female	Male	Female	Male			
Total	17323	18243	19079	20433	21054	22704	35566	39512	43758
0-4	1951	1922	1978	1926	2147	2050	3873	3904	4197
5-9	1571	1552	1745	1678	1712	1618	3124	3423	3330
10-14	1501	1560	1621	1627	1827	1819	3061	3247	3646
15-19	1428	1440	1444	1457	1536	1493	2868	2901	3029
20-24	1710	1926	1704	1943	1692	1994	3635	3647	3686
25-29	1724	2168	1921	2541	1930	2614	3892	4462	4544
30-34	1379	1832	1790	2462	2021	2878	3211	4252	4899
35-39	1248	1430	1450	1707	1918	2225	2678	3157	4143
40-44	982	1047	1076	1225	1217	1448	2030	2302	2665
45-49	843	882	895	1024	1002	1237	1725	1919	2238
50-54	803	717	880	781	986	905	1520	1661	1891
55-59	619	596	659	661	709	756	1214	1320	1465
60-64	541	491	621	629	708	748	1032	1249	1456
65-69	415	280	518	324	619	389	696	842	1008
70-74	256	226	333	232	419	271	483	565	690
75+	352	173	445	217	611	259	525	662	870

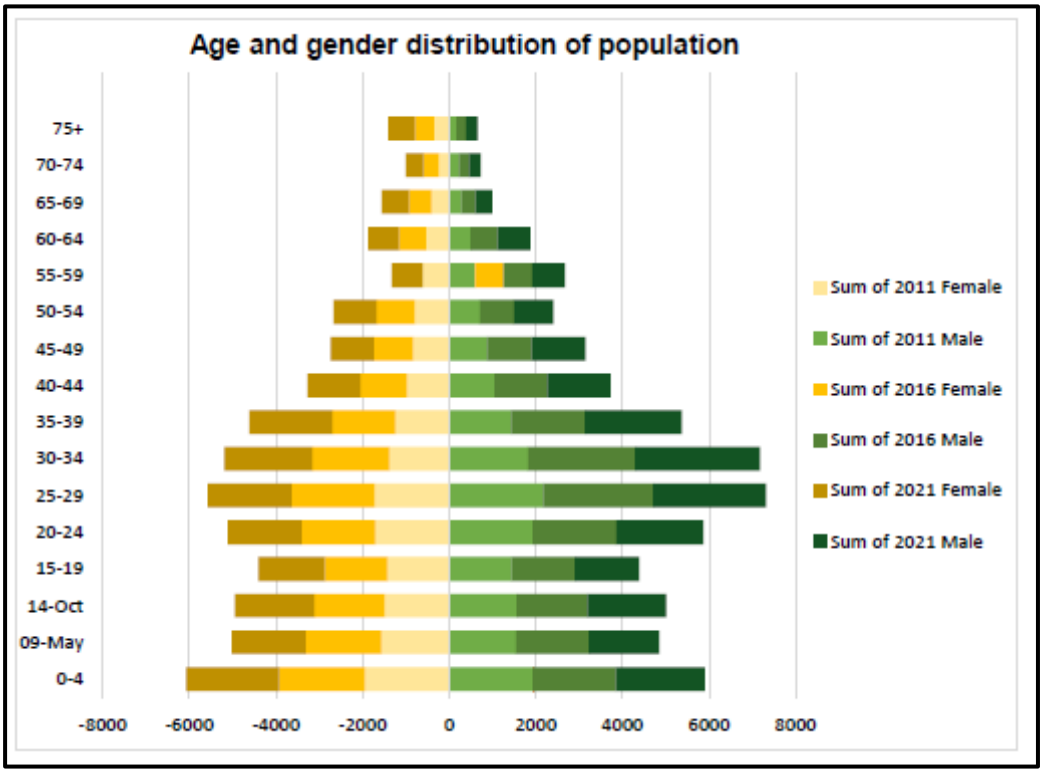

Figure 24: Gender and age distribution profile (image obtained from Statistics South Africa).

Education Levels

It is important to understand the level of education of people in a particular area, as one is then able to have a clear understanding the human resource capital of the area and gauge its potential to respond to socio-economic environmental factors both for social and economic development of the area. From the 2011 StasSA Census data the following is the educational data for Tsantsabane Local Municipal area.

Table 10: Education levels of the TLM.

Group	Percentage
No Schooling	4,6%
Some Primary	41%
Completed Primary	6,4%
Some Secondary	32,1%
Completed Secondary	13,7%
Higher Education	1%
Not Applicable	1,2%

The above picture when compared with the 2019 Kumba Kolomela Social Impact Assessment Survey conducted in the whole of Tsantsabane Local Municipality through

1284 respondents there is no improvements. The graphs below show data for both school and post-school education.

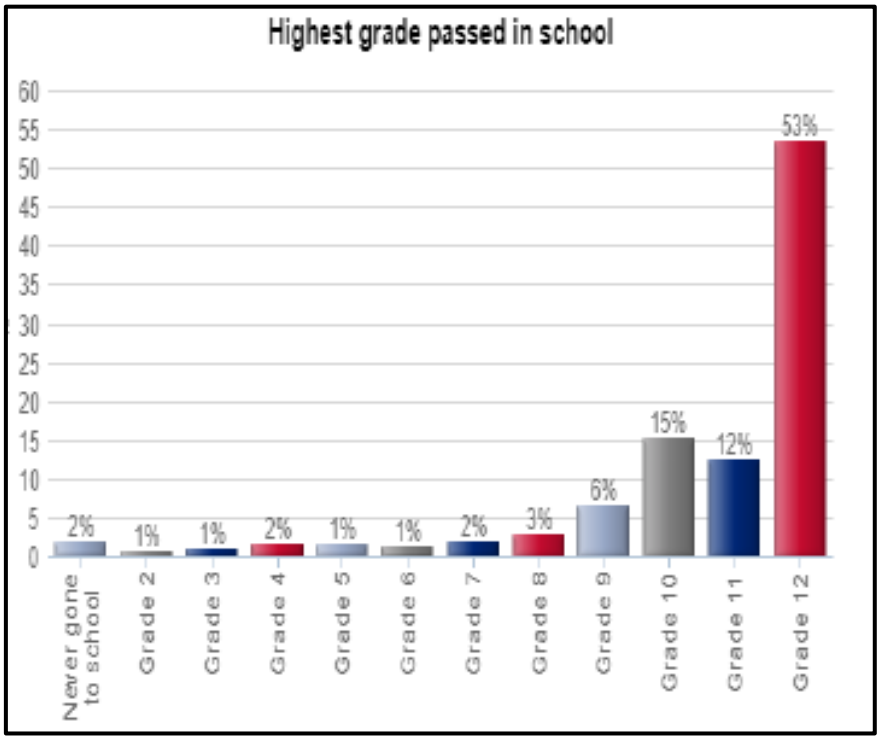

Figure 25: Highest grade passed in school.

From the above its evident that the Municipality and all key stakeholders need to put concerted efforts to address the structural flaws contributes to the above concerning picture on education levels in Tsantsabane Local Municipality. 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 tertiary education enrolment or employment opportunities. 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 Plaatjie University has recently started a limited offering of some courses. In response to this situation the municipality has made provision in its Mountain View and Greenfield Township establishment project (part of the Mix typology Human Settlement Bulk & Link Infrastructure Project) provided for space for two primary and secondary schools respectively.

And through the ZFM District Intergovernmental Forum the Regional Department confirm that the Provincial Government has approved the building of high school English medium Secondary Education School. With regards to education levels per gender, the diagram below depicts data of a concerning picture of low education level in general and it negative impact particularly on the ability of females to gain exposure and perform well at various levels of education system. The general implications are dire for the whole population and its ability to take advantage of socio-economic opportunity presented by the mining and solar industry investment in the area both with regards to enterprise development and employment.

Employment Status

The 2011 Census by StasSA depicts that unemployment figures has drastically reduced from 4 466 in 2001 to 3 795 in 2011 this shows a decrease of 15%. Employment has increased by 69% in 2011, this is attributable to various socio-economic sectors investment in the area linked to the upsurge in mining and solar industrial investment. The 2019 Kumba Kolomela Social Impact Assessment Survey conducted in the whole of Tsantsabane Local Municipality capturing 4039 respondents give the following details in terms of employment status and per sector in the Tsantsabane Municipal Area.

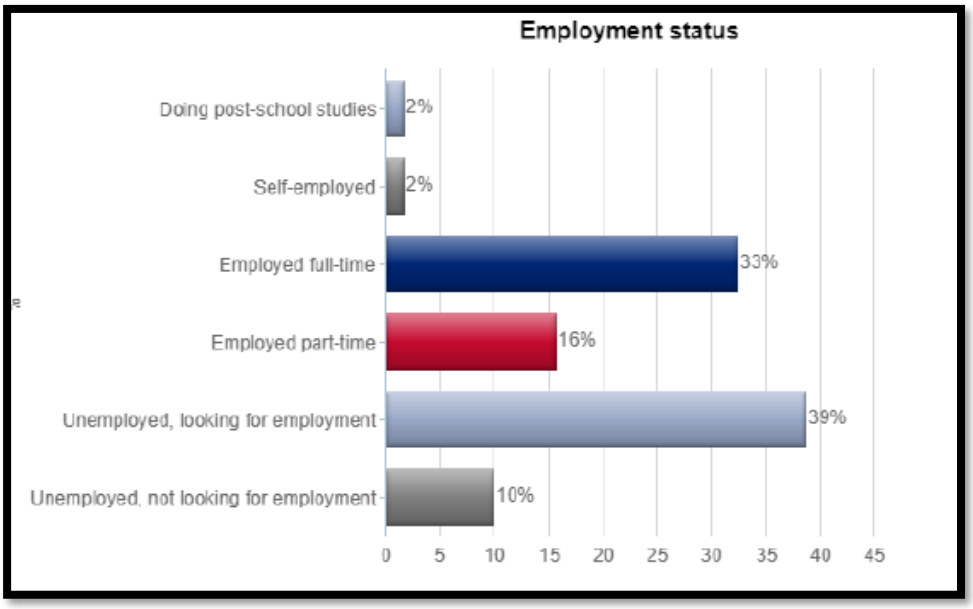

Figure 26: Employment status of the TLM.

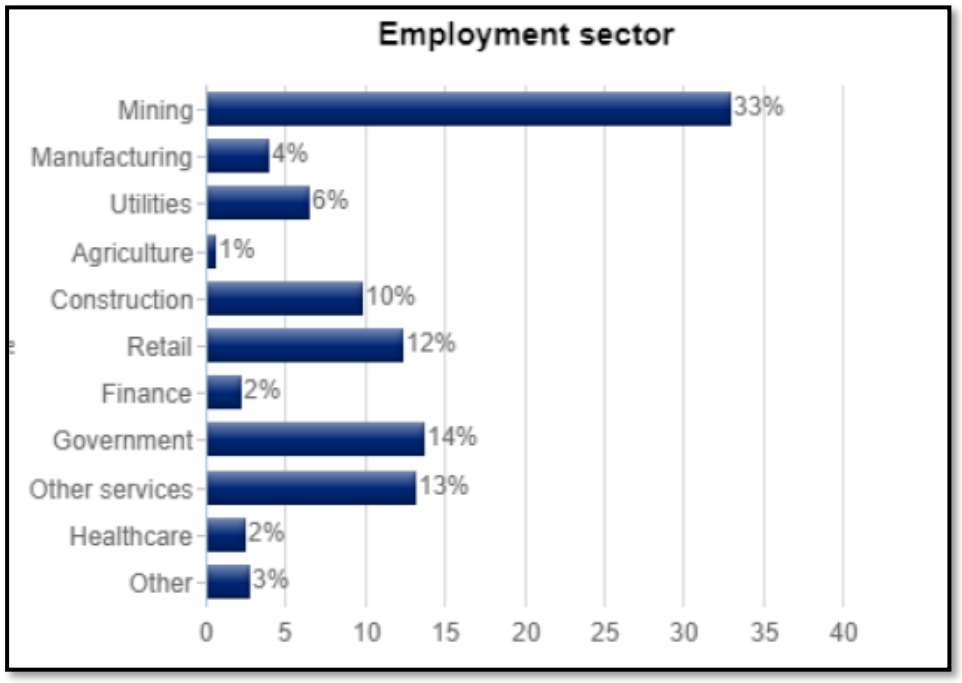

Figure 27: Employment sectors of the TLM.

The ZFMDM accounts for 30% of the Northern Cape economy. As mentioned earlier, the economic activities of the TLM comprise of Agriculture, Livestock Farming, Irrigation Farming, Tourism & Heritage, Eco-adventures and Safaris, and Mining. The main agriculture related activity is livestock farming that occurs mainly on large farms, because of the low carrying capacity, where farming is extensive and mainly privately owned. The tourism industry is noted as the fastest growing component of the economy of the ZFMDM (2012 – 2017). Mining is one of the major sectors in the ZFMDM and is found in all municipalities. Within the TLM limestone, asbestos, iron, manganese, and gemstones (diamonds) are mined.

Whilst the above picture creates comfort the concern for Tsantsabane Municipal Council remains the sustainability of this picture or its positive impact on local population given the data of education levels, impact on special groups (youth, women & disabled), impact of COVID 19 pandemic on the above. Moreover, the concern remains the importing and extraction nature of solar and mining industries in relation to production requirements and lack of beneficiation respectively. The review of the TLM local economic development strategy and spatial development framework documents must put focus on creating sustainability beyond life of mining investment.

Income Levels

Income variable is one of the variables that measure individual and household welfare. It is an important variable that assists in generating indicators relating to poverty and

development. Statistics on income levels also facilitate planning and resources allocation" (Stats SA, Roambi). Most people in the Tsantsabane municipal area have no monthly income. The following depict the income levels as per StasSA data from 2011 Census.

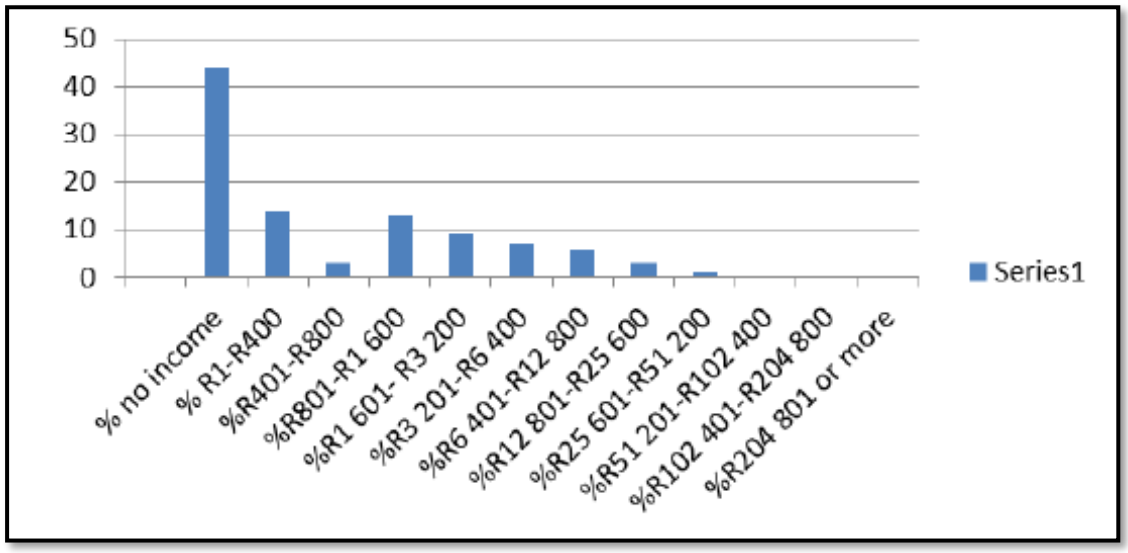

Figure 28: TLM income levels.

However, the 2019 Kumba Kolomela Social Impact Survey assessment gives additional details on household income and various government grant incomes this is based on 1289 respondents, further confirming the dire poverty situation of the community. This situation has indeed changed to the worst given the socio-economic decline caused by COVID 19 pandemic, the June 2021 unrest, and recent KZN and TLM flooding events

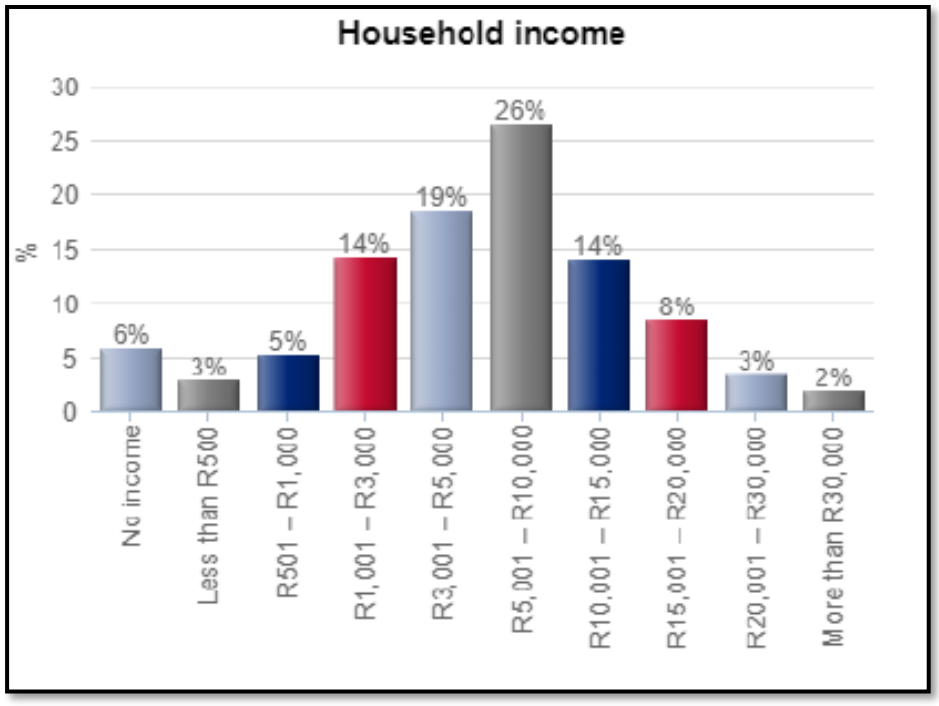

Figure 29: TLM household income.

(b) Description of the current land uses

The farm Makganyene No 667 (including all portions) is situated in a rural setting. The abandoned open cast pit on Portion 2 (a portion of Portion 1) of Makganyene No 667 serves as a landmark of the intermittent diamond mining that took place over a period of ±69 years from the 1920's. The R385 provincial road passes through Portions 1 and 2 of Makganyene No 667. The land use of the property mainly comprises of livestock and game farming.

The Screening Report for Environmental Authorizations as required by the 2014 EIA Regulations (hereafter referred to as the "DFFE Screening Report"), classifies the Agricultural Theme Sensitivity of the area as depicted in the following figure, where the green areas represent land of low capability, while the yellow areas show land of low-moderate to moderate capability. Sections of the earmarked footprint were prospected until recently and the agricultural sensitivity of the area will be confirmed as part of the Agricultural Impact Assessment.

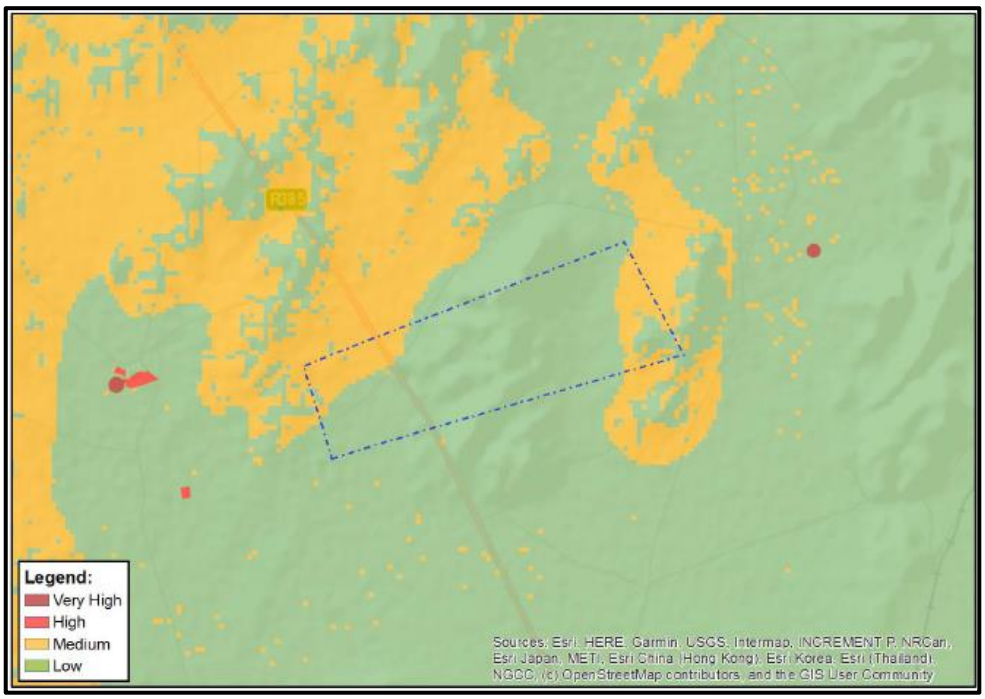

Figure 30: Agricultural theme sensitivity according to the DFFE screening report (2024).

Economic deposits (past and present) of the greater study area comprises of the following:

- δ Iron (Postmasburg and Sishen);
- δ Manganese (Kalahari Manganese Basin and the Postmasburg Manganese Field);
- δ Crocidolite (Asbesheuwel Subgroup);
- δ Zinc/Lead (Pering and Bushy Park);
- δ Diamonds (Finch and Postmasburg); and

δ Limestone deposits (Lime Acres and Danielskuil).

The immediate surrounding land uses, adjacent to the proposed mining area, include agricultural activities (grazing) with occasional game hunting. A diamond mine (Metseatsididi) operates north-east of the mining footprint.

The following table provides a description of the land uses and/or prominent features that currently occur within a 500 m radius of the study area:

Table 11: Land uses and/or prominent features that occur within 500 m radius of the study area.

LAND USE CHARACTER	YES	NO	DESCRIPTION
Natural area	**YES**	-	The proposed footprint is surrounded by natural areas used for grazing.
Low density residential	-	**NO**	-
Medium density residential	-	**NO**	-
High density residential	-	**NO**	-
Informal residential	-	**NO**	-
Retail commercial & warehousing	-	**NO**	-
Light industrial	-	**NO**	-
Medium industrial	-	**NO**	-
Heavy industrial	-	**NO**	-
Power station	-	**NO**	-
High voltage power line	-	**NO**	-
Office/consulting room	-	**NO**	-
Military or police base / station / compound	-	**NO**	-
Spoil heap or slimes dam	**YES**	-	The old diamond mine on the property was left un-rehabilitated and the spoil heaps from the mine is present north of the quarry pit. The DF Malan/Metseatsididi diamond mine operates along the northern boundary of Portion 3 of Makganyene No 667, while the mining right for the Anglo American Kumba Heuningkranz Mine was approved to the south of the Remainder of Makganyene No 667.
Quarry, sand or borrow pit	**YES**	-	
Dam or reservoir	**YES**	-	Various dams and/or reservoirs are present on the earmarked farms.
Hospital/medical centre	-	**NO**	-
School/ crèche	-	**NO**	-
Tertiary education facility	-	**NO**	-
Church	-	**NO**	-
Old age home	-	**NO**	-
Sewage treatment plant	-	**NO**	-
Train station or shunting yard	-	**NO**	-

LAND USE CHARACTER	YES	NO	DESCRIPTION
Railway line	**YES**	-	The IOEC (Iron Ore Export Channel) railway line passes the southern corner of the earmarked footprint.
Major road (4 lanes or more)	-	**NO**	The R385 provincial gravel road crosses the Makganyene farm.
Airport	-	**NO**	-
Harbour	-	**NO**	-
Sport facilities	-	**NO**	-
Golf course	-	**NO**	-
Polo fields	-	**NO**	-
Filling station	-	**NO**	-
Landfill or waste treatment site	-	**NO**	-
Plantation	-	**NO**	-
Agriculture	**YES**	-	The earmarked properties are used for agricultural purposes.
River, stream, or wetland	-	**NO**	-
Nature conservation area	-	**NO**	-
Mountain, hill, or ridge	**YES**	-	A range of outcrops intersects the centre part of the MR footprint. Mainly across the Remaining Extent and Portion 1 of Makganyene No 667.
Museum	-	**NO**	-
Historical building	-	**NO**	-
Protected Area	-	**NO**	-
Graveyard	**YES**	-	A family graveyard is present on Makganyene No 667/RE near the farm house, while a stone cairn was identified on a small hill (Makganyene No 667/3) that is possibly a pre-colonial grave.
Archaeological site	**YES**	-	
Other land uses (describe)	-	**NO**	-

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

SPECIFIC ENVIRONMENTAL FEATURES

SITE SPECIFIC TOPOGRAPHY

The topography of the proposed mining area ranges from flat in the south-west, gradually changing into an undulating area towards the centre where various outcrops intersects the farm, upon which it flattens out again towards the north-eastern boundary of the MR footprint.

The lowest surface elevation of ±1 250 meters above mean sea level (mamsl) occurs near a tributary streambed which eventually becomes part of the Soutloop River to the south/south-west, while the highest elevations are found in the hills in the centre of the farm at ±1 360 mamsl. The figure below shows an elevation gain of 110 m across the 7.18

km distance (southern to northern corner), a maximum slope of 8.8% with an average slope of 2.6%.

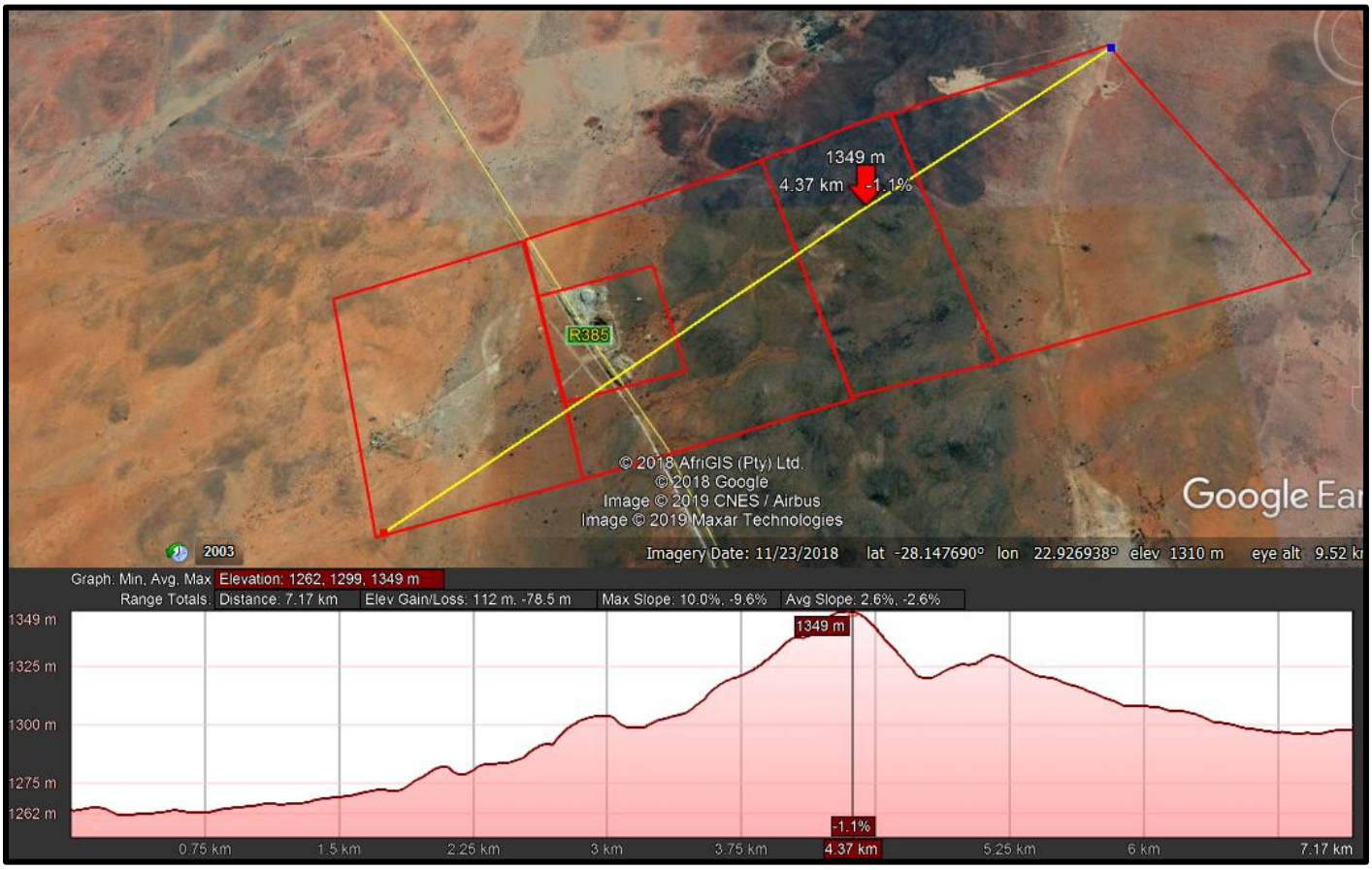

Figure 31: Elevation profile of the prospecting footprint (image obtained from Google Earth).

SITE SPECIFIC VISUAL CHARACTERISTICS

The proposed Makganyane MR extends over ±1 550 ha straddling the R385 provincial road to the east and west. As mentioned earlier, a range of outcrops are present on the farm lifting the elevation and enhancing the visual character of the site. The figures below show the viewshed analysis of the prospecting area within a ±10 km radius. The green shaded areas shows the positions from where the mining area is visible. Due to the vast size of the MR footprint the viewshed analysis was drawn for the lower laying areas (western boundary), high laying areas (centre), and the western boundary.

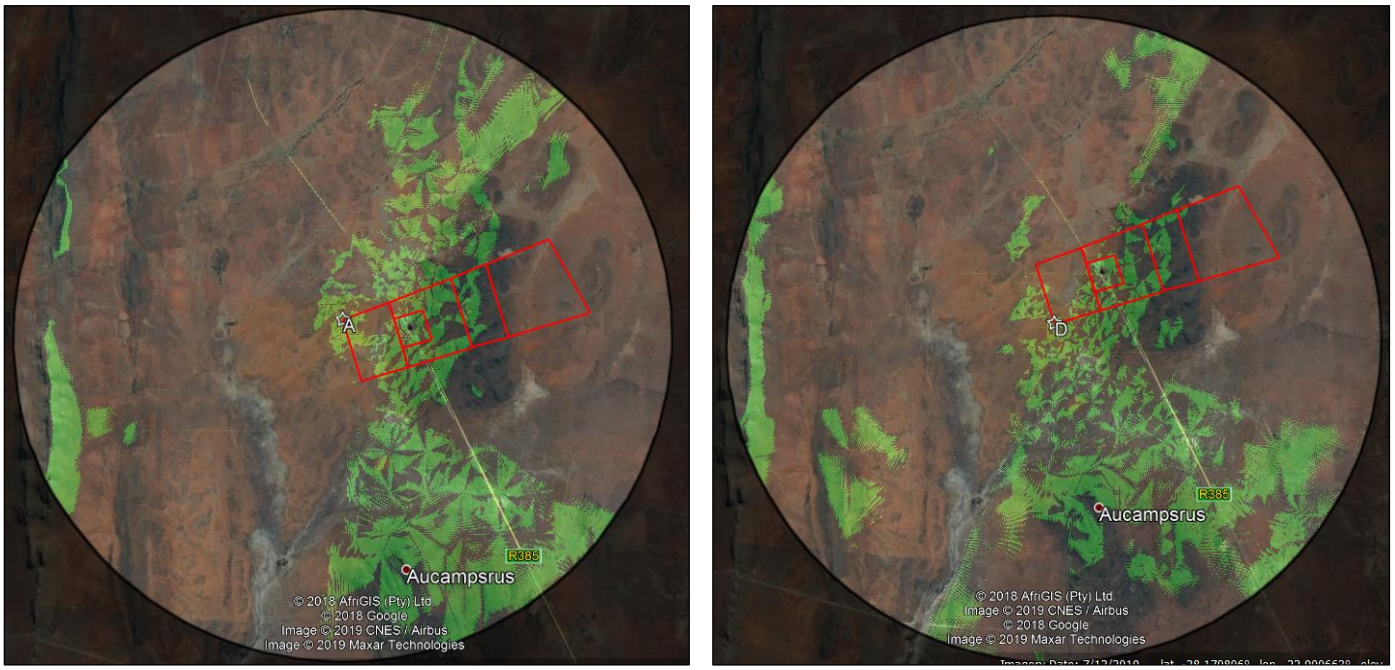

Figure 32: Viewshed of the western boundary of the proposed mining area (image obtained from Google Earth).

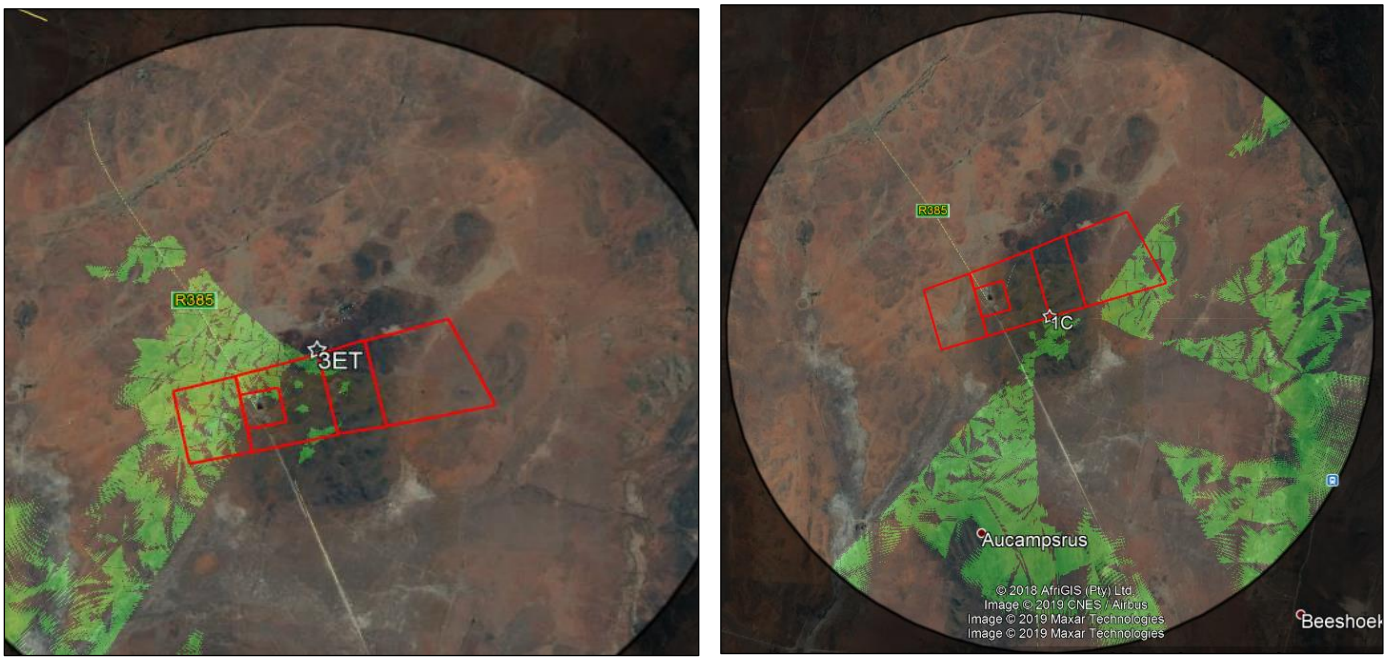

Figure 33: Viewshed of the highest area (centre) of the proposed mining footprint (image obtained from Google Earth).

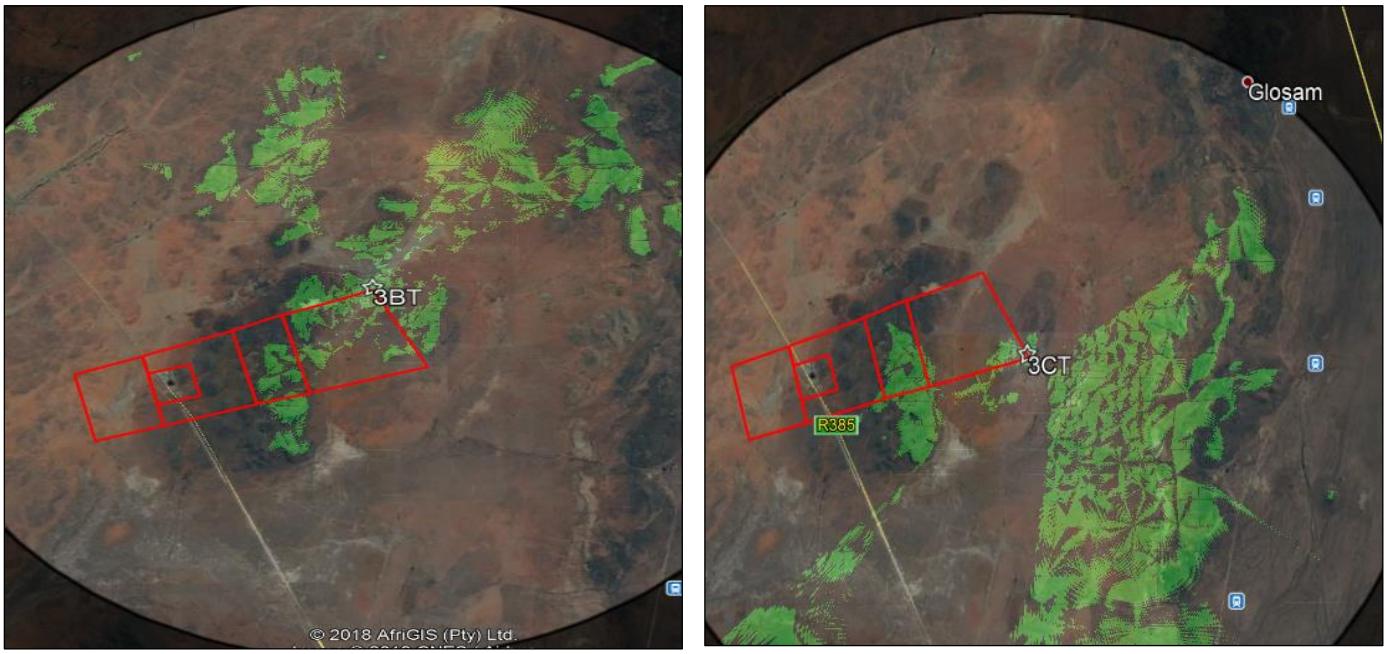

Figure 34: Viewshed of the eastern boundary of the proposed mining area (image obtained from Google Earth).

The following conclusions were made from the viewshed analysis:

- **Western Boundary –** Intermittent visibility mainly from the higher laying areas to the north, and south.
- **Centre –** Low visibility from the immediate surroundings towards the west, south-west and southeast.
- **Eastern Boundary –** Intermittent visibility mainly from the south-east with low visibility from the north, north-east.

The potential impact that the proposed project may have on the receiving environment will be assessed as part of the Visual Impact Assessment that will be incorporated into the EIAR.

SITE SPECIFIC GEOLOGY

(Information obtained from the MWP, 2024)

Most of the surface outcrop features towards the east of the property comprises diamictites of the Makganyene Formation. Some quartzite splays cover the diamictite in places. The flat laying topography to the west comprises mostly of sand and sporadic outcrops of the Ongeluk lava. Two almost parallel linear features with a south-south-west to north-north-east trend are present on the geological sheet, possibly representing the continuation of thrust faults (following figure). The western feature seems to connect with a thrust fault. The report notes that the property warrants in depth investigation due to the close location

to recent iron ore deposits intersected on the farm Heuningkrantz and mining activities on Aucampsrust, where similar rock formations are present. Both the Gamagara Formation and the Rooinekke Iron Formation are hosts rocks to iron and manganese mineralization. Clastic ore deposits present on Kameelhoek, Aucampsrust and Makganyene were documented by Nel, Tin 1929.

Surface Outcrop Mapping

Manganese bearing jasperoied and mudstone, typical to the Rooinekke and Naragas formations of the Koegas Subgroup, as well as banded iron formations are present in outcrop. It was suggested that slivers of the Makganyene diamictite are overlaying the Rooinekke Iron Formation of the Koegas Sub-Group in outcrop.

Weathered lava fragments and poor outcrops are present towards the west. Marthaspoort quartzite, defining the top of the Gamagara Formation, is present on different localities towards the east. Iron ore and flagstone remnants are present up-dip of the Marthaspoort quartzite.

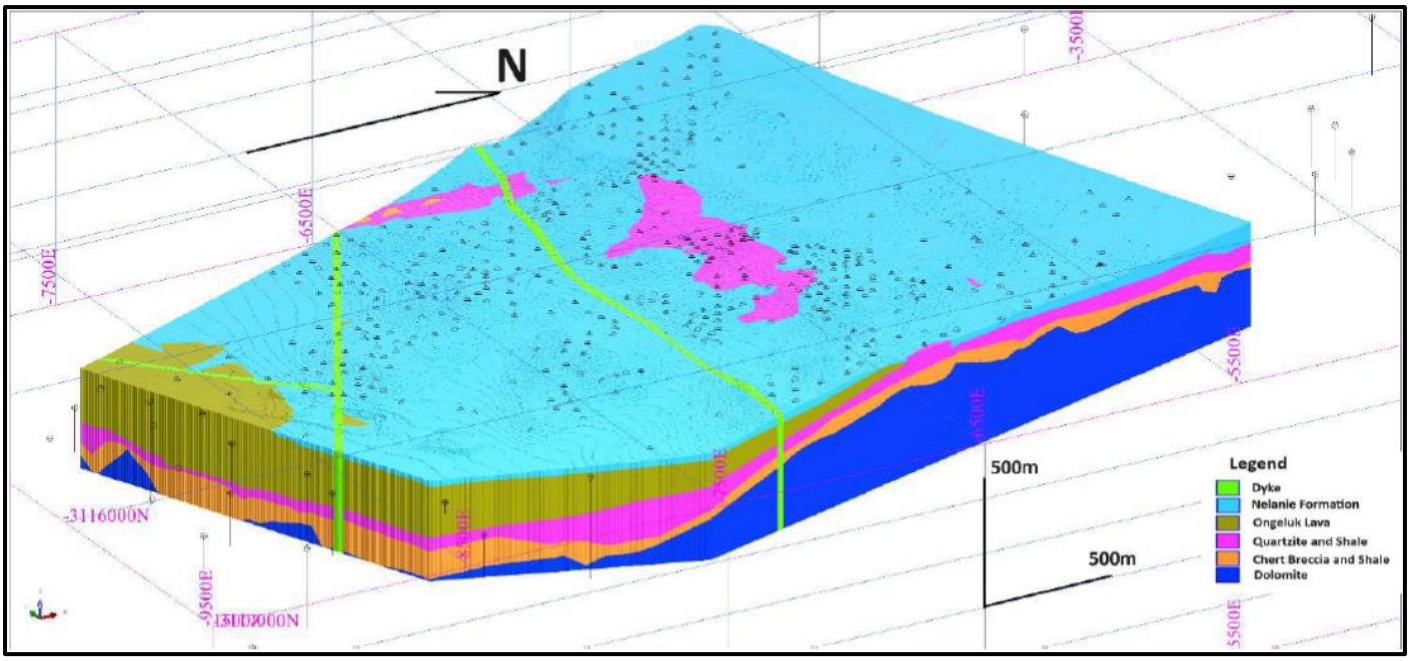

Figure 35: General Stratigraphic Zones with their Main Material Types (image obtained from the MWP).

The site specific geology of the earmarked area will be expanded upon in the EIAR upon completion of all the relevant specialist studies.

SITE SPECIFIC HYDROLOGY

The site specific hydrology of the proposed mining footprint is representative of the regional hydrology described for the study area earlier in this report (*Section 1(h)(iv)(1)(a)*

Type of Environment Affected by the Proposed Activity – Hydrology). The DFFE Screening Report shows the proposed MR footprint within an area of Very High aquatic biodiversity importance as depicted in the following figure.

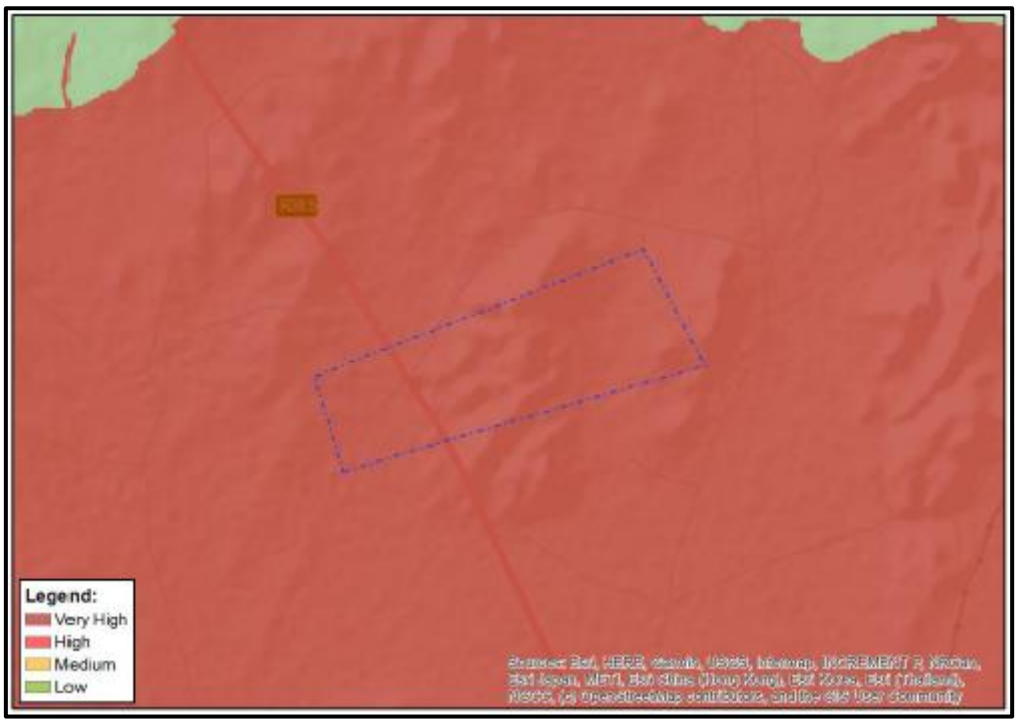

Figure 36: Aquatic biodiversity theme sensitivity according to the DFFE screening report (2024).

A hydrologist will be contracted to conduct a comprehensive Aquatic Biodiversity (if needed) and Hydrological Impact Assessment of the study area during the EIA process. The geohydrology/hydropedology of the area will also be assessed and discussed. The scope of work includes an investigation of the watercourses within the study area, as well as the delineation of those watercourses. The assessment will fulfil the ecological assessment requirements of the EIA process as required in terms of the applicable Assessment Protocol (2020) and/or the requirements of Appendix 6 of the EIA Regulations. The assessment will also report on the required information needed for the water use licensing in terms of the NWA, 1998. The reports will form part of the DEIAR.

SITE SPECIFIC AIR QUALITY AND NOISE AMBIANCE

The proposed mining footprint encompasses an uninhabited farm house (landowner of Makganyene No 667/1,2,RE) in the west. The figure below shows the position of the nearest surrounding residences/infrastructure to the MR footprint.

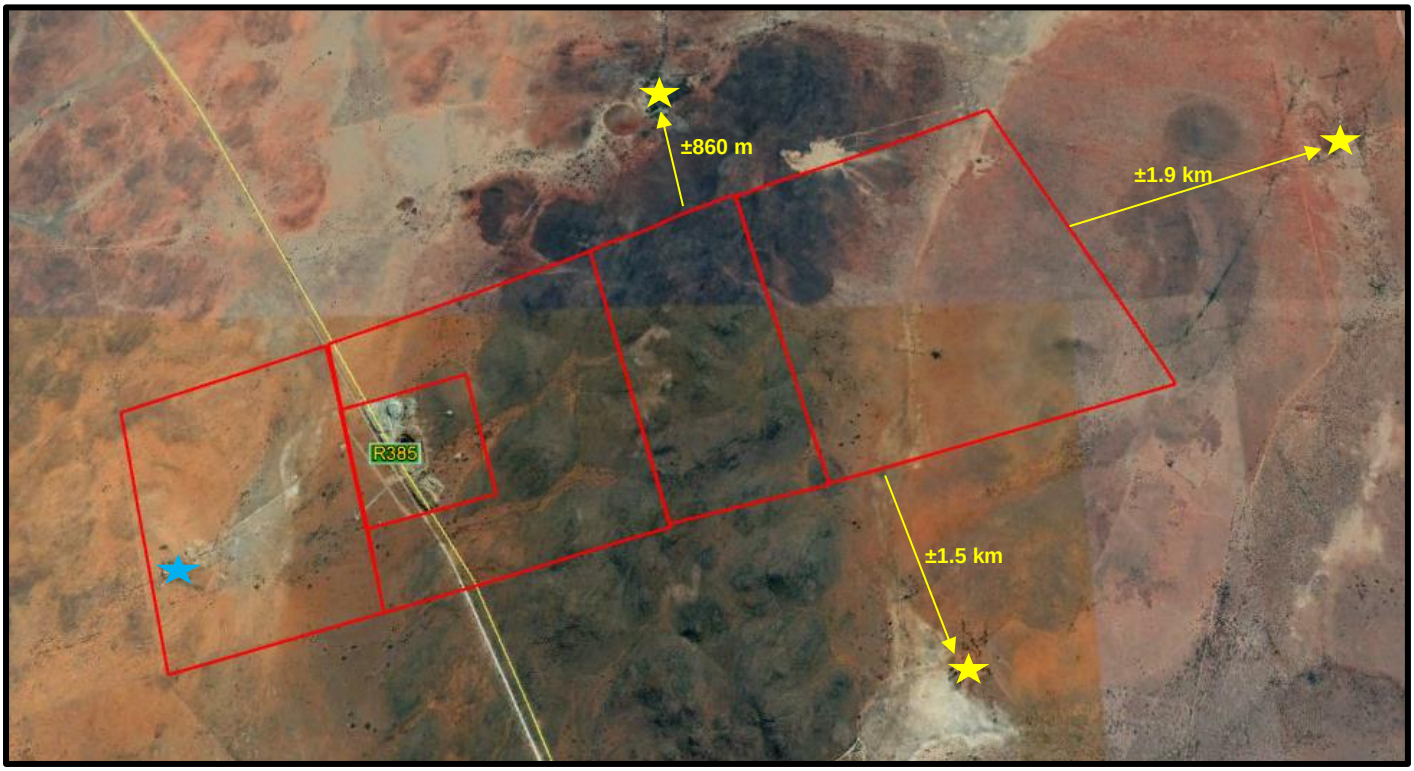

Figure 37: Satellite view showing the distance between the mining footprint and surrounding residences. The blue star indicates the farm house on Makganyene No 667 (image obtained from Google Earth).

Presently, the air quality of the study area is mainly impacted by traffic along the R385, mining activities in the surroundings, and dust generated from denuded areas.

Emission into the atmosphere is controlled by the National Environmental Management: Air Quality Act, 2004. The proposed mining activity does not trigger an application in terms of the said act, and emissions to be generated is expected to mainly entail dust due to the displacement of soil, blasting, crushing of RoM and transport of material on gravel roads.

Noise will be generated because of blasting, crushing, and screening, as well as loading, stockpiling, and transporting of material.

The impact of the proposed project on the air quality of the receiving environmental will be assessed during the EIA process by an appropriately qualified specialist. The Air Quality Impact Assessment will report on the baseline air quality of the study area, as well as advise on the potential impacts that the proposed mining activity may have on the receiving environment. The report will further propose mitigation and management measures to address/minimise identified impacts.

SITE SPECIFIC TERRESTRIAL BIODIVERSITY, CONSERVATION AREAS, GROUNDCOVER AND FAUNA

As mentioned earlier, when the mining area is layered over the Mining and Biodiversity Map, Portion 3 of Makganyene No 667 (north-eastern section of the prospecting footprint) falls over and area of highest biodiversity importance with a corresponding rating of highest risk for mining (see Figure 19). The position of the biodiversity area of highest concern corresponds with the position of the ephemeral drainage line (discussed above).

The DFFE Screening Report notes that the plant species sensitivity of the area is of low significance, while the Terrestrial Biodiversity Sensitivity is indicated as Very High due to the presence of the CBA1, an Ecological Support Area (ESA), and the FEPA sub-catchment.

Figure 38: Plant species theme sensitivity according to the DFFE screening report (2024).

Figure 39: Terrestrial biodiversity theme sensitivity according to the DFFE screening report (2024).

The DFFE screening report classifies the Animal Species Theme Sensitivity of the area as depicted in the following figure.

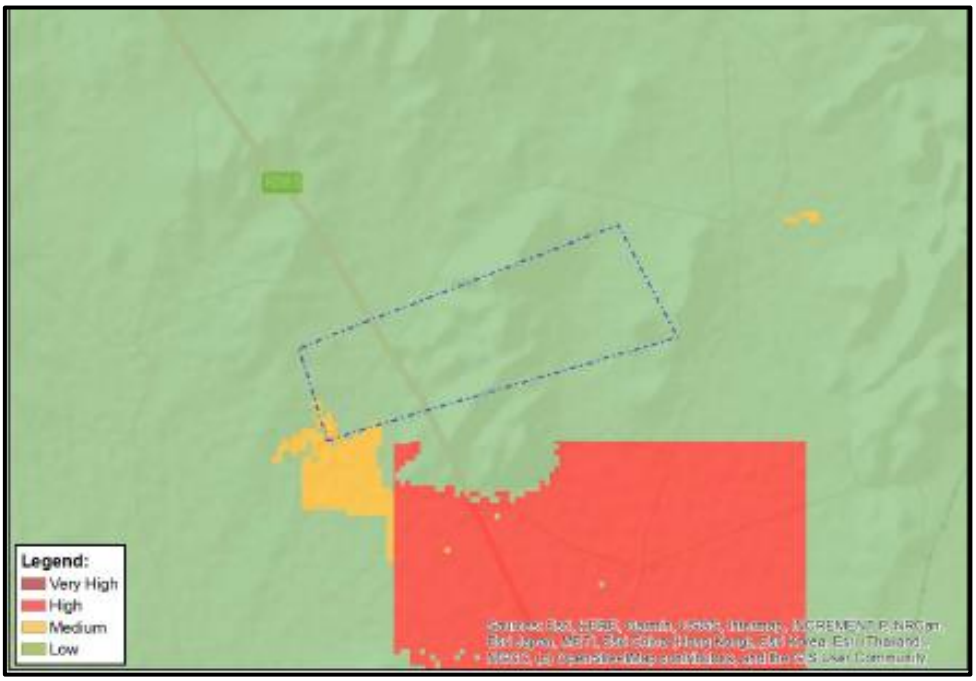

Figure 40: Plant species theme sensitivity according to the DFFE screening report (2024).

In line with the protocol for the specialist assessment and minimum report content requirements for environmental impacts on terrestrial biodiversity, as per Government Notice 320 published in terms of NEMA, dated 20 March 2020: “Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in

terms of Sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, when applying for Environmental Authorisation" – section 3, subsection 1:

- δ An applicant intending to undertake an activity identified in the scope of the protocol, on a site identified on the screening tool as being of 'Very High' sensitivity for terrestrial biodiversity, must submit a Terrestrial Biodiversity Specialist Assessment; however;
- δ Where the information gathered from the site sensitivity verification differs from the designation of 'Very High' terrestrial biodiversity sensitivity on the screening tool and it is found to be of a 'Low' sensitivity, then a Terrestrial Biodiversity Compliance Statement must be submitted.

A qualified ecologist will assess the sensitivity, and ground-truth the conservation status of the study area. The findings will be presented in the Terrestrial Biodiversity Impact Assessment that will be inclusive of a Plant- and Animal Species Assessment and discussed in detail in the draft environmental impact assessment report (DEIAR). The discussion will also propose mitigation and management measures to address/minimise identified impacts.

SITE SPECIFIC CULTURAL AND HERITAGE ENVIRONMENT

(Information extracted from the Heritage Impact Assessment for the Proposed Makganyane Mining Permit, Northern Cape Province, 2021 as well as the Palaeontological Impact Assessment for the Proposed Makganyane Prospecting Right Application, Postmasburg, Northern Cape Province, 2019)

The DFFE Screening Report notes the Archaeological and Cultural Heritage sensitivity of the area as Low, while the palaeontological sensitivity of the area is marked as Medium. The DFFE Screening Report therefore differs from the SAHRA palaeontological sensitivity map that shows the area to be of low concern.

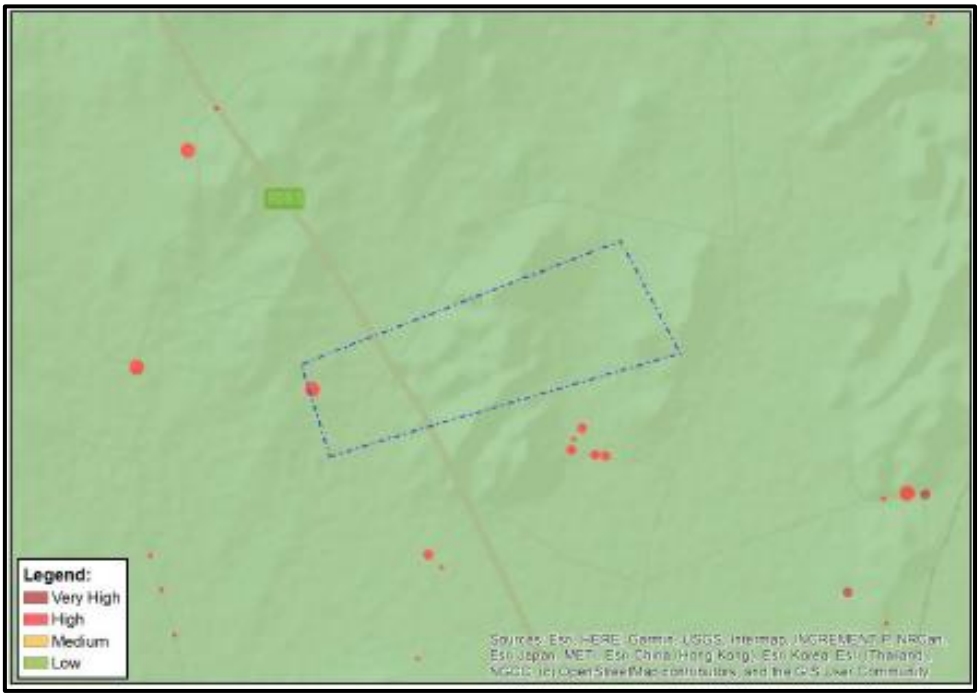

Figure 41: Archaeological theme sensitivity of the proposed area according to the DFFE screening report (2024).

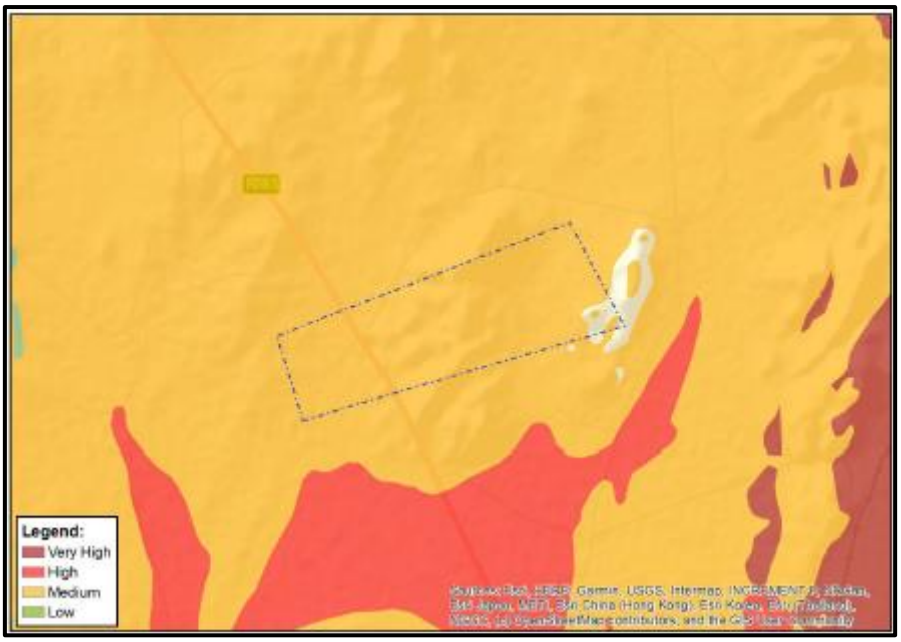

Figure 42: Palaeontological theme sensitivity of the proposed area according to the DFFE screening report (2024).

In 2019, HCAC – Heritage Consultants assessed the prospecting right area (same as the current MR application footprint) for archaeological and/or palaeontological remnants. The HIA (Heritage Impact Assessment) noted that the general area consists of two kinds of topographical elements: undulating plains characterised by thick sand cover and a range of hills roughly splitting the area in two. Archaeological visibility is the lowest on the plains that are mantled with Aeolian sand and characterised by grass veld.

Historical land use and the cultural landscape are linked since the cultural landscape is shaped to some extent by the history of the area. The farm is used for the farming of livestock in recent years, evident by fences and watering holes. This is largely related to small stock but has not left much trace. Some mining activities also took place between 1967 and 1982 with a single farmstead located in the western portion of the study area. Human impact is limited to isolated farming infrastructure like farm fences, tracks, wind pumps and dams relating to the cultural landscape that consist of extensive farming and mining activities. The cultural landscape (mining and farming activities) is generally modern without significant cultural landscape elements of concern and impacts are deemed to be of low significance.

The local geology is not conducive to the forming of shelters on the ridges in contrast to areas where small shelters have been noted with lithic scatters to the north-west and to the east on the farms Heuningkrans, Langverwacht and Mookaneng (Kusel 2013 and vd Walt 2019). No rock art, historical farm steads or colonial-era stonewalling (dwellings or kraals) were recorded.

During the survey ten find spots consisting of isolated stone tools were recorded. These find spots are out of context and of no significance. The survey also recorded four features consisting of two cemeteries, a stone cairn that could possibly mark a pre-colonial burial and one feature relating to previous exploration.

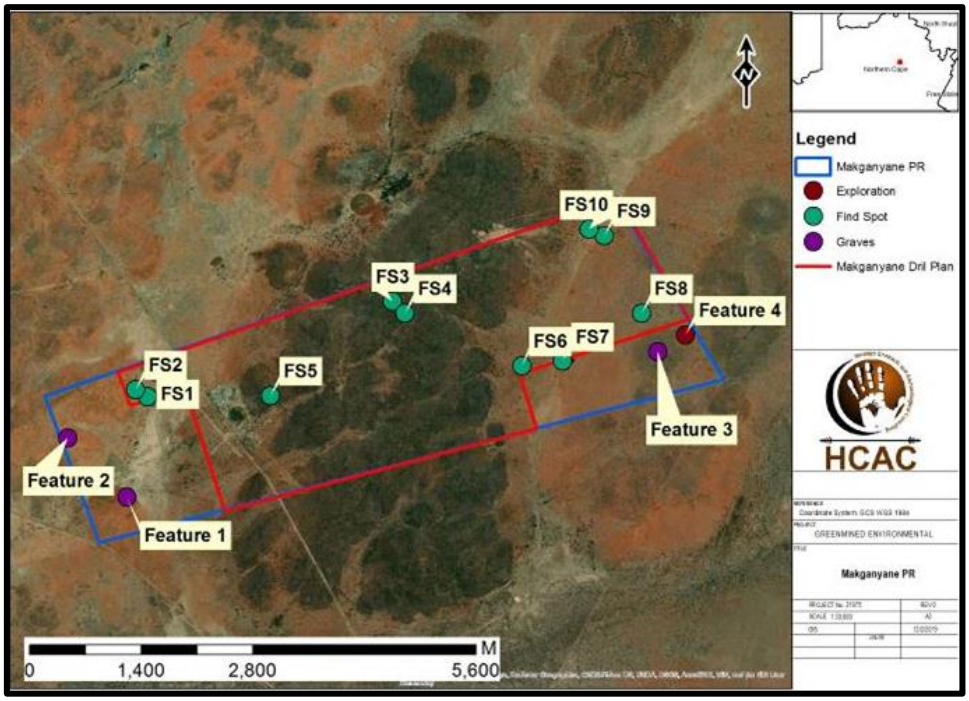

Figure 43: Position of heritage features recorded during the survey of the prospecting area.

In terms of the paleontological component, an independent study conducted by Prof Marion Bamford (2019) of the study area, concluded that the study area lies on some ancient non-fossiliferous rocks and mostly on windblown sands and sand dunes of the Quaternary Kalahari Group sands. It is very unlikely that these sands preserve in situ fossils because the sands have been transported and there are no pans or springs in the area. Fossils have been recovered from similar sediments in other parts of the country, so a Fossil Chance Find Protocol will have to be added to the EMPR. Based on the findings, Prof Bamford believed (in 2019) no palaeontological site visit was required unless fossils are discovered. It was also noted that the Makganyane Formation diamictites do not contain fossils although they are indicated as such by the SAHRIS palaeosensitivity map.

Based on the results of the field work done in 2019 and previous studies conducted in the area cultural layering dating back to the Stone Age with scatters and sites dating to the ESA, MSA and LSA are on record for the larger area. The known distribution of finds in the study area in relation to site distribution associated with landscape features was used in 2019 as the main criteria for generating a three-tier sensitivity map of the study area as presented below.

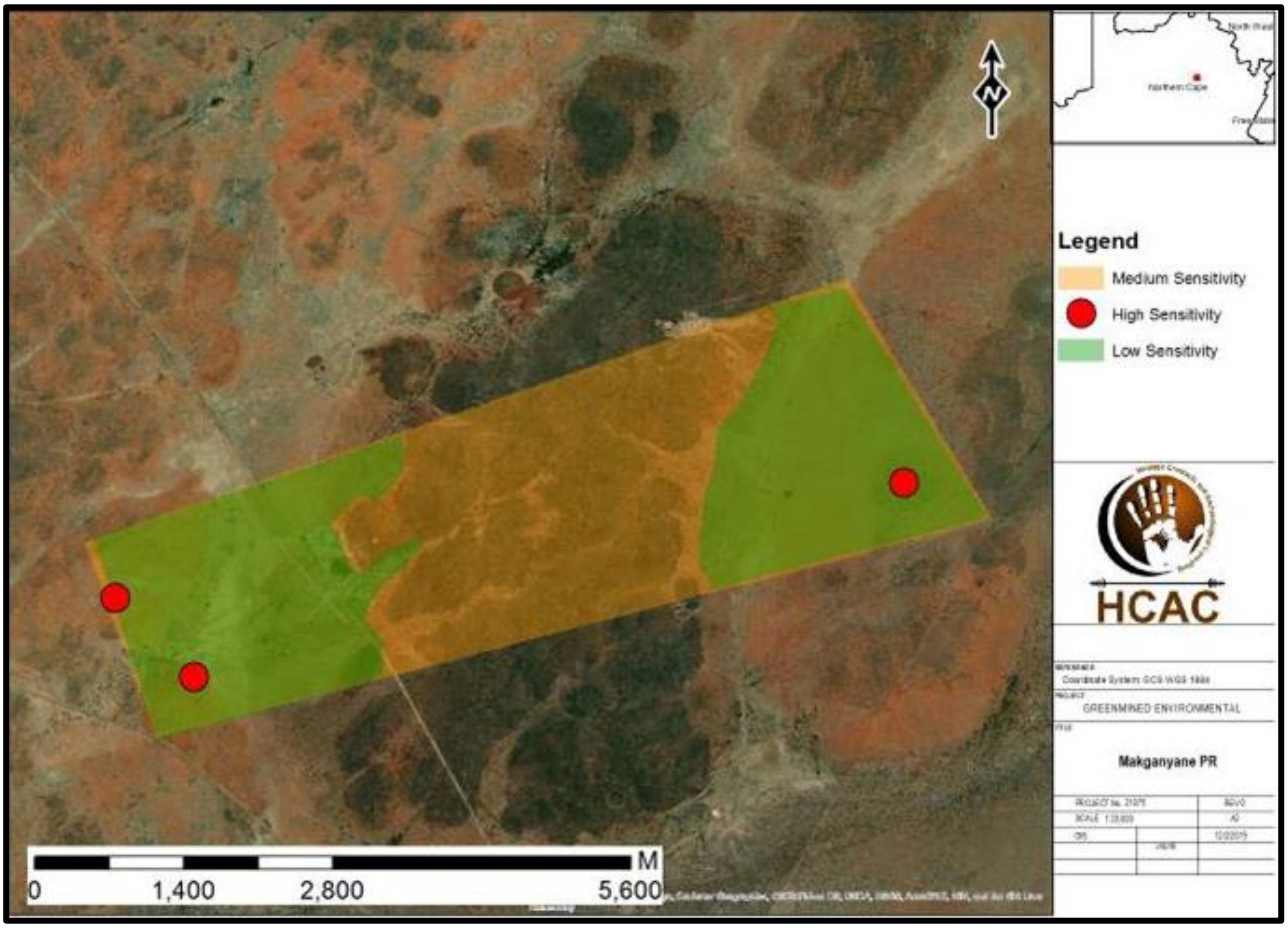

Figure 44: Heritage sensitivity map compiled after assessment of the prospecting right footprint by the specialist.

The HIA of the prospecting right (2019) noted that the chances of impacting unknown archaeological sites of significance in the study area is of low concern and will not have significant impact on the heritage resources of the Northern Cape provided that SAHRA approved the proposal, and the recommendations of the report were implemented.

For this mining right application, the cultural and heritage environment with specific reference to archaeological- and palaeontological aspects will be reviewed by appropriately qualified specialists and the findings updated (if necessary) and discussed in the DEIAR.

SITE SPECIFIC SOCIO-ECONOMIC ENVIRONMENT

A draft Social and Labour Plan (SLP) (Appendix 7) accompanied the MR application and will be further discussed in the DEIAR. The SLP forms the basis for the implementation of programmes and projects as key activity drivers of the development and operation of the mining activity in the Tsantsabane area. It offers the building blocks for future economic development and growth of the local area. The scope of the document offers the Applicant a platform to engage in the development of the local economy and community through a basis of human resource development, economic delivery, business development and community participation. The nature of the document is therefore aimed at the widest possible comprehension and stimulation for inputs.

The SLP notes that as production will only commence during the fifth year of the mining right it is estimated that for the first three years of the mining right there will be no employees. The estimated number of positions available from year four is 50 permanent employees, and provision was made for ±30 contract workers. Since most of the employees will reside within Postmasburg/Olifantshoek area, it is fair to presume that most of the monthly earned salaries will be spent in the local area. Indirectly, through the payment for services and suppliers the mine also supports employment of the procurement partners.

An appropriately qualified specialist will investigate and assess the potential socio-economic impact of the proposed project on the receiving environment.

SITE SPECIFIC EXISTING INFRASTRUCTURE

Apart from farm roads and fences, Makganyene RE/667 also has a farm yard with a house and outbuildings. Various dams are present in the study area and ruins remained after the old diamond pit (Portion 2 of Makganyene No 667) was abandoned. A power line is

present in the R385 road reserve, and the IOEC railway line passes the most south-western corner of the proposed mining footprint.

(d) Environmental and current land use map

(Show all environmental, and current land use features)

The environmental and current land use map is attached as Appendix 6.

i) Impacts Identified

(Provide a list of the potential impacts identified of the activities described in the initial site layout that will be undertaken, as informed by both the typical known impacts of such activities, and as informed by the consultants with affected parties together with the significance, probability and duration of the impacts)

The following potential impacts were identified of each main activity in each phase of the proposed project. The listed impacts must be treated as **preliminary**, to be expanded upon proper assessment of the study area during the EIA process. The significance rating was determined using the methodology as explained under *j) Methodology used in determining and ranking the significance of environmental impacts*. The impact rating listed below was determined for each impact **prior** to bringing the proposed mitigation measures into consideration. The degree of mitigation indicates the possibility of partial, full or no mitigation of the identified impact.

SITE ESTABLISHMENT AND INFRASTRUCTURE DEVELOPMENT

Loss of grazing for duration of mining activities with special reference to the Remainder (Central Section), and Remainder Portion of Portion 1 of Makganyene No 667.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium-High			**Preferred Proposal**			**Degree of Mitigation: Partial**	
4	5	1	3.3	5	5	5	**16.5**
Significance to be corroborated by the specialist – Agricultural Impact Assessment.							

Increased traffic on the R385

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: High			**Present Proposal**			**Degree of Mitigation: Partial**	
3	5	4	4	5	5	5	**20**
Significance to be corroborated by the specialist – Traffic Impact Assessment.							

Increased dust emissions along the R385

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: High			**Present Proposal**			**Degree of Mitigation: Full**	
4	5	4	4.3	5	5	5	**21.5**
Significance to be corroborated by the specialist – Air Quality Impact Assessment.							

Visual impact due to site establishment

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Medium-High			**Present Proposal**			**Degree of Mitigation: Partial**	
2	5	4	3.6	5	5	5	**18**
Significance to be corroborated by the specialist – Visual Impact Assessment.							

Impact on biodiversity sensitive areas, and/or species of concern

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Medium			**Present Proposal**			**Degree of Mitigation: Partial**	
3	5	4	4	5	1	3	**12**
Significance to be corroborated by the specialist – Terrestrial Biodiversity Impact Assessment.							

Potential negative impact on the stormwater drainage of the affected area

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Medium			**Present Proposal**			**Degree of Mitigation: Full**	
4	5	4	4.3	4	1	2.5	**10.7**
Significance to be corroborated by the specialist – Hydrology Assessment and Stormwater Management Plan.							

Potential impact on terrestrial fauna within mining footprint

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Low-Medium			**Present Proposal**			**Degree of Mitigation: Partial**	
2	5	2	3	4	1	2.5	**7.5**
Significance to be corroborated by the specialist – Terrestrial Biodiversity Impact Assessment.							

Potential impact on areas/infrastructure of heritage or cultural concern

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Low-Medium			**Present Proposal**			**Degree of Mitigation: Full**	
5	5	5	5	2	1	1.5	**7.5**
Significance to be corroborated by the specialist – Heritage Impact Assessment.							

Increased work opportunities to community members **(Positive Impact)**

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Medium-High (+)			**Present Proposal**			**Degree of Mitigation: N/A**	
1	5	5	3.6	5	5	5	**18**
Significance to be corroborated by the specialist – Socio-Economic Impact Assessment.							

STRIP AND STOCKPILE OF TOPSOIL AND OVERBURDEN TO ACCESS THE ORE

Dust nuisance caused by the disturbance of the soil and transport of material.

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Medium-High			**Present Proposal**		**Degree of Mitigation: Full**		
3	5	2	3.3	5	5	5	**16.5**
Significance to be corroborated by the specialist – Air Quality Impact Assessment.							

Noise nuisance caused by earthmoving machinery.

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Medium			**Present Proposal**		**Degree of Mitigation: Partial**		
2	5	2	3	3	5	4	**12**

Potential infestation of the topsoil heaps with weeds or invader plant species

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Low-Medium			**Present Proposal**		**Degree of Mitigation: Full**		
3	5	2	3.3	4	2	3	**9.9**

Loss/contamination of stockpiled topsoil

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Low-Medium			**Present Proposal**		**Degree of Mitigation: Full**		
3	5	1	3	4	2	3	**9**

Potential contamination of area due to hydrocarbon spillages

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Medium			**Present Proposal**		**Degree of Mitigation: Full**		
4	4	2	3.3	4	3	3.5	**11.6**

Potential erosion of denuded areas

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Low-Medium			**Present Proposal**		**Degree of Mitigation: Full**		
3	5	1	3	4	2	3	**9**
Significance to be corroborated by the specialist – Stormwater Management Plan.							

Visual impact due to excavation activities

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Medium-High			**Present Proposal**		**Degree of Mitigation: Partial**		
2	5	4	3.6	5	5	5	**18**
Significance to be corroborated by the specialist – Visual Impact Assessment.							

Potential impact on areas of palaeontological concern

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Low-Medium					**Degree of Mitigation: Full**		
5	5	5	5	2	1	1.5	**7.5**
Significance to be corroborated by the specialist – Palaeontological Assessment.							

OPENCAST MINING (INCLUDING DRILLING AND BLASTING)

Health and safety risk posed by blasting activities.

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Medium			**Present Proposal**		**Degree of Mitigation: Full**		
5	5	5	5	3	1	2	**10**

Dust nuisance because of blasting and mining activities.

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Medium-High			**Present Proposal**		**Degree of Mitigation: Partial**		
4	5	4	4.3	5	4	4.5	**19.3**
Significance to be corroborated by the specialist – Air Quality Impact Assessment.							

Noise nuisance caused by blasting and mining activities.

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Medium			**Present Proposal**		**Degree of Mitigation: Partial**		
2	5	2	3	3	4	3.5	**10.5**

Light pollution due to shift work

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Medium-High			**Present Proposal**		**Degree of Mitigation: Partial**		
2	5	2	3	5	5	5	**15**
Significance to be corroborated by the specialist – Visual Impact Assessment.							

Potential impact on the surrounding environment (including groundwater users) if dewatering cause a groundwater depression cone.

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: TBD			**Present Proposal**		**Degree of Mitigation: TBD**		
Impact to be assessed as part of the Aquatic Biodiversity and Hydrological Impact Assessment during the following EIA phase.							

Potential impact on the surrounding groundwater users if mining activities contaminate groundwater.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: TBD			**Present Proposal**		**Degree of Mitigation: TBD**		
Impact to be assessed as part of the Aquatic Biodiversity and Hydrological Impact Assessment during the following EIA phase.							

TRANSPORT, STOCKPILE AND CRUSHING OF ROM

Dust nuisance due to the movement of earthmoving equipment and denuded stockpile area

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium-High			**Present Proposal**		**Degree of Mitigation: Full**		
3	5	2	3.3	5	5	5	**16.5**
Significance to be corroborated by the specialist – Air Quality Impact Assessment.							

Noise nuisance generated by earthmoving equipment.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Present Proposal**		**Degree of Mitigation: Partial**		
2	5	2	3	3	5	4	**12**

Light pollution due to shift work

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium-High			**Present Proposal**		**Degree of Mitigation: Partial**		
2	5	2	3	5	5	5	**15**
Significance to be corroborated by the specialist – Visual Impact Assessment.							

Potential contamination of surface runoff because of hydrocarbon spillages

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Present Proposal**		**Degree of Mitigation: Full**		
4	4	2	3.3	4	3	3.5	**11.6**

TRANSPORT OF CRUSHED ORE TO BEESHOEK MINE

Increased traffic along the R385

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: High			**Present Proposal**		**Degree of Mitigation: Partial**		
3	5	4	4	5	5	5	**20**
Significance to be corroborated by the specialist – Traffic Impact Assessment.							

Overweight trucks impacting road infrastructure.

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Medium-High			**Present Proposal**			**Degree of Mitigation: Full**	
3	5	5	4.3	4	5	4.5	**19.4**
Significance to be corroborated by the specialist – Traffic Impact Assessment.							

Increased income generated within the Tsantsabane area **(Positive Impact)**

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Medium-High (+)			**Present Proposal**			**Degree of Mitigation: N/A**	
1	5	5	3.6	5	5	5	**18**
Significance to be corroborated by the specialist – Socio-Economic Impact Assessment.							

Contribution to local economic development by the mine **(Positive Impact)**

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Medium-High (+)			**Present Proposal**			**Degree of Mitigation: N/A**	
1	5	5	3.6	5	5	5	**18**
Significance to be corroborated by the specialist – Socio-Economic Impact Assessment.							

CUMULATIVE IMPACTS

Loss of agriculture generated income during the operational phase of the mine (change of land use)

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: High			**Present Proposal**			**Degree of Mitigation: Partial**	
4	5	5	4.6	5	5	5	**23**
Significance to be corroborated by the specialist – Agricultural Impact Assessment.							

Potential impact of the mine on food security and/or climate change

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: TBD			**Present Proposal**			**Degree of Mitigation: TBD**	
Impact to be assessed as part of the Agricultural Impact Assessment during the following EIA phase.							

Potential impact on the sense of place of the receiving environment

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: High			**Present Proposal**			**Degree of Mitigation: TBD**	
4	5	5	4.6	5	5	5	**23**

Potential of mining employees trapped in the area upon closure of the mine.

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Medium-High			**Present Proposal**			**Degree of Mitigation: Full**	
4	4	4	4	4	5	4.5	**18**
Significance to be corroborated by the specialist – Socio-Economic Impact Assessment.							

Contribution of the proposed mine to the South African iron ore market and economy **(Positive Impact)**

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: High (+)			**Present Proposal**			**Degree of Mitigation: N/A**	
5	5	5	5	5	5	5	**25**

REHABILITATION UPON CLOSURE OF THE SITE

Dust nuisance generated because of the rehabilitation/landscaping activities.

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Low-Medium			**Present Proposal**			**Degree of Mitigation: Full**	
2	3	4	3	4	2	3	**9**
Significance to be corroborated by the specialist – Air Quality Impact Assessment.							

Noise nuisance caused by machinery during the decommissioning phase.

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Low-Medium			**Present Proposal**			**Degree of Mitigation: Partial**	
3	2	3	2.6	4	2	3	**7.8**

Potential safety risk posed by unrehabilitated (unsloped) areas.

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Medium			**Present Proposal**			**Degree of Mitigation: Full**	
4	5	1	3.3	4	5	4.5	**14.9**
Significance to be corroborated by the specialist – Mine Rehabilitation Plan.							

Potential increase in the risk of soil erosion from reinstated but denuded areas

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Medium			**Present Proposal**			**Degree of Mitigation: Full**	
4	4	1	3	4	5	4.5	**13.5**
Significance to be corroborated by the specialist – Mine Rehabilitation Plan.							

Potential infestation of the reinstated areas by weeds and invader plant species

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Present Proposal**		**Degree of Mitigation: Full**		
4	4	1	3	5	2	3.5	**10.5**

Potential contamination of environment because of improper waste disposal

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Present Proposal**		**Degree of Mitigation: Full**		
4	4	2	3.3	4	5	4.5	**14.9**

Return of the rehabilitated area to agricultural land use **(Positive Impact)**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium-High			**Present Proposal**		**Degree of Mitigation: N/A**		
1	5	5	3.6	5	5	5	**18**
Significance to be corroborated by the specialist – Agricultural Impact Assessment.							

j) Methodology used in determining the significance of environmental impacts

(Describe how the significance, probability, and duration of the aforesaid identified impacts that were identified through the consultation process was determined to decide the extent to which the initial site layout needs revision)

Methodology for the assessment of the potential environmental, social and cultural impacts

DEFINITIONS AND CONCEPTS

Environmental Significance

The concept of significance is at the core of impact identification, evaluation and decision-making. The concept remains largely undefined and there is no international consensus on a single definition. The following common elements are recognized from the various interpretations:

- δ Environmental significance is a value judgment
- δ The degree of environmental significance depends on the nature of the impact
- δ The importance is rated in terms of both biophysical and socio-economic values
- δ Determining significance involves the amount of change to the environment perceived to be acceptable to affected communities.

Significance can be differentiated into impact magnitude and impact significance. Impact magnitude is the measurable change (i.e. intensity, duration and likelihood). Impact significance is the value placed on the change by different affected parties (i.e. level of acceptability) (DEAT (2002) Impact Significance, Integrated Environmental Management, Information Series 5).

The concept of risk has two dimensions, namely the consequence of an event or set of circumstances, and the likelihood of particular consequences being realised (Environment Australia (1999) Environmental Risk Management).

Impact

The positive or negative effects on human well-being and / or the environment.

Consequence

The intermediate or final outcome of an event or situation OR it is the result, on the environment, of an event.

Likelihood

A qualitative term covering both probability and frequency.

Frequency

The number of occurrences of a defined event in a given time or rate.

Probability

The likelihood of a specific outcome measured by the ratio of a specific outcome to the total number of possible outcomes.

Environment

Surroundings in which an organisation operates, including air, water, land, natural resources, flora, fauna, humans and their interrelation (ISO 14004, 1996).

Methodology that will be used

The environmental significance assessment methodology is based on the following determination:

Environmental Significance = Overall Consequence x Overall Likelihood

Determination of Overall Consequence

Consequence analysis is a mixture of quantitative and qualitative information, and the outcome can be positive or negative. Several factors can be used to determine consequence. For the purpose of determining the environmental significance in terms of consequence, the following factors were chosen: Severity/Intensity, Duration and Extent/Spatial Scale. Each factor is assigned a rating of 1 to 5, as described in the tables below.

Determination of Severity / Intensity

Severity relates to the nature of the event, aspect or impact to the environment and describes how severe the aspects impact on the biophysical and socio-economic environment.

Table 12: Table to be used to obtain an overall rating of severity, taking into consideration the various criteria.

TYPE OF CRITERIA	RATING				
	1	2	3	4	5
Quantitative	0-20%	21-40%	41-60%	61-80%	81-100%
Qualitative	Insignificant / Non-harmful	Small / Potentially harmful	Significant/ Harmful	Great/ Very harmful	Disastrous Extremely harmful
Social/ Community response	Acceptable / I&AP satisfied	Slightly tolerable / Possible objections	Intolerable/ Sporadic complaints	Unacceptable / Widespread complaints	Totally unacceptable / Possible legal action
Irreversibility	Very low cost to mitigate/ High potential to mitigate impacts to level of insignificance/ Easily reversible	Low cost to mitigate	Substantial cost to mitigate/ Potential to mitigate impacts/ Potential to reverse impact	High cost to mitigate	Prohibitive cost to mitigate/ Little or no mechanism to mitigate impact Irreversible
Biophysical (Air quality, water quantity and quality, waste production, fauna and flora)	Insignificant change / deterioration or disturbance	Moderate change / deterioration or disturbance	Significant change / deterioration or disturbance	Very significant change / deterioration or disturbance	Disastrous change / deterioration or disturbance

Determination of Duration

Duration refers to the amount of time that the environment will be affected by the event, risk or impact, if no intervention e.g. remedial action takes place.

Table 13: Criteria for the rating of duration.

RATING	DESCRIPTION
1	Up to ONE MONTH
2	ONE MONTH to THREE MONTHS (QUARTER)
3	THREE MONTHS to ONE YEAR
4	ONE to TEN YEARS
5	Beyond TEN YEARS

Determination of Extent/Spatial Scale

Extent or **spatial scale** is the area affected by the event, aspect or impact.

Table 14: Criteria for the rating of extent / spatial scale.

RATING	DESCRIPTION
1	Immediate, fully contained area
2	Surrounding area
3	Within Business Unit area of responsibility
4	Within the farm/neighbouring farm area
5	Regional, National, International

Determination of Overall Consequence

Overall consequence is determined by adding the factors determined above and summarized below, and then dividing the sum by 3.

Table 15: Example of calculating overall consequence.

CONSEQUENCE	RATING
Severity	Example 4
Duration	Example 2
Extent	Example 4
SUBTOTAL	**10**
TOTAL CONSEQUENCE: (Subtotal divided by 3)	**3.3**

Determination of Likelihood

The determination of likelihood is a combination of Frequency and Probability. Each factor is assigned a rating of 1 to 5, as described below.

Determination of Frequency

Frequency refers to how often the specific activity, related to the event, aspect or impact, is undertaken.

Table 16: Criteria for the rating of frequency.

RATING	DESCRIPTION
1	Once a year or once/more during operation
2	Once/more in 6 Months
3	Once/more a Month
4	Once/more a Week
5	Daily

Determination of Probability

Probability refers to how often the activity or aspect has an impact on the environment.

Table 17: Criteria for the rating of probability.

RATING	DESCRIPTION
1	Almost never / almost impossible
2	Very seldom / highly unlikely
3	Infrequent / unlikely / seldom
4	Often / regularly / likely / possible
5	Daily / highly likely / definitely

Overall Likelihood

Overall likelihood is calculated by adding the factors determined above and summarized below, and then dividing the sum by 2.

Table 18: Example of calculating overall likelihood.

CONSEQUENCE	RATING
Frequency	Example 4
Probability	Example 2
SUBTOTAL	**6**
TOTAL LIKELIHOOD (Subtotal divided by 2)	**3**

Determination of Overall Environmental Significance

The multiplication of overall consequence with overall likelihood will provide the environmental significance, which is a number that will then fall into a range of **LOW, LOW-MEDIUM, MEDIUM, MEDIUM-HIGH** or **HIGH**, as shown in the table below.

Table 19: Determination of overall environmental significance.

SIGNIFICANCE OR RISK	LOW	LOW-MEDIUM	MEDIUM	MEDIUM-HIGH	HIGH
Overall Consequence X Overall Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25

Qualitative description or magnitude of Environmental Significance

This description is qualitative and is an indication of the nature or magnitude of the Environmental Significance. It also guides the prioritizations and decision making process associated with this event, aspect or impact.

Table 20: Description of environmental significance and related action required.

SIGNIFICANCE	LOW	LOW-MEDIUM	MEDIUM	MEDIUM-HIGH	HIGH
Impact Magnitude	Impact is of very low order and therefore likely to have very little real effect. Acceptable.	Impact is of low order and therefore likely to have little real effect. Acceptable.	Impact is real, and potentially substantial in relation to other impacts. Can pose a risk to company	Impact is real and substantial in relation to other impacts. Pose a risk to the company. Unacceptable	Impact is of the highest order possible. Unacceptable. Fatal flaw.
Action Required	Maintain current management measures. Where possible improve.	Maintain current management measures. Implement monitoring and evaluate to determine potential increase in risk. Where possible improve	Implement monitoring. Investigate mitigation measures and improve management measures to reduce risk, where possible.	Improve management measures to reduce risk.	Implement significant mitigation measures or implement alternatives.

Based on the above, the significance rating scale has been determined as follows:

HIGH Of the highest order possible within the bounds of impacts which could occur. In the case of negative impacts, there would be no possible mitigation and / or remedial activity to offset the impact at the spatial or time scale for which it was predicted. In the case of positive impacts, there is no real alternative to achieving the benefit.

MEDIUM-HIGH Impacts of a substantial order. In the case of negative impacts, mitigation and / or remedial activity would be feasible but difficult, expensive, time-consuming or some combination of these. In the case of positive impacts, other means of achieving this benefit would be feasible, but these would be more difficult, expensive, time-consuming or some combination of these.

MEDIUM Impact would be real but not substantial within the bounds of those, which could occur. In the case of negative impacts, mitigation and / or remedial activity would be both feasible and fairly easily possible, In case of positive impacts; other means of achieving these benefits would be about equal in time, cost and effort.

LOW-MEDIUM Impact would be of a low order and with little real effect. In the case of negative impacts, mitigation and / or remedial activity would be either easily achieved of little would be required, or both. In case of positive impacts alternative means for achieving this benefit would likely be easier, cheaper, more effective, less time-consuming, or some combination of these.

LOW Impact would be negligible. In the case of negative impacts, almost no mitigation and or remedial activity would be needed, and any minor steps, which might be needed, would be easy, cheap, and simple. In the case of positive impacts, alternative means would almost all likely be better, in one or a number of ways, than this means of achieving the benefit.

INSIGNIFICANT There would be a no impact at all – not even a very low impact on the system or any of its parts.

k) The positive and negative impacts that the proposed activity (in terms of the initial site layout) and alternatives will have on the environment and the community that may be affected.

(Provide a discussion in terms of advantages and disadvantages of the initial site layout compared to alternative layout options to accommodate concerns raised by affected parties)

PRELIMINARY LIST OF POSITIVE IMPACTS ASSOCIATED WITH THE PROJECT PROPOSAL

- δ Increased work opportunities to ±80 community members,
- δ Increased income generated within the Tsantsabane area,
- δ Contribution to local economic development by the mine,
- δ Contribution of the proposed mine to the South African iron ore market and economy,
- δ Return of the rehabilitated area to agricultural land use.

PRELIMINARY LIST OF NEGATIVE IMPACTS ASSOCIATED WITH THE PROJECT PROPOSAL

The following table lists the potential negative impacts associated with the present project proposal:

Table 21: List of potential negative impacts associated with the present project proposal.

ACTIVITY	POTENTIAL IMPACT	SIGNIFICANCE (BEFORE MITIGATION)
δ Site establishment and infrastructure development. δ Cumulative Impacts.	δ Loss of grazing for duration of mining activities with special reference to the Remainder (Central Section), and Remainder Portion of Portion 1 of Makganyene No 667.	δ Medium-High
	δ Loss of agriculture generated income during the operational phase of the mine (change of land use).	δ High
	δ Potential impact of the mine on food security and/or climate change.	δ Specialist to determine.

ACTIVITY	POTENTIAL IMPACT	SIGNIFICANCE (BEFORE MITIGATION)
	δ Potential impact on the sense of place of the receiving environment.	δ High
δ Site establishment and infrastructure development. δ Transport of crushed ore to Beeshoek Mine.	δ Increased traffic on the R385. δ Increased traffic along the R385.	δ High δ High
δ Site establishment and infrastructure development. δ Strip and stockpile of topsoil and overburden to access the ore. δ Opencast mining (including drilling and blasting). δ Transport, stockpile and crushing of RoM. δ Rehabilitation upon closure of the site.	δ Increased dust emissions along the R385. δ Dust nuisance caused by the disturbance of the soil and transport of material. δ Dust nuisance because of blasting and mining activities. δ Dust nuisance due to the movement of earthmoving equipment and denuded stockpile area. δ Dust nuisance generated because of the rehabilitation/landscaping activities.	δ High δ Medium-High δ Medium-High δ Medium-High δ Low-Medium
δ Site establishment and infrastructure development. δ Strip and stockpile of topsoil and overburden to access the ore.	δ Visual impact due to site establishment. δ Visual impact due to excavation activities.	δ Medium-High δ Medium-High
δ Site establishment and infrastructure development.	δ Impact on biodiversity sensitive areas and/or species of concern.	δ Medium
δ Site establishment and infrastructure development. δ Strip and stockpile of topsoil and overburden to access the ore. δ Rehabilitation upon closure of the site.	δ Potential negative impact on the stormwater drainage of the affected area. δ Potential erosion of denuded areas. δ Potential increase in the risk of soil erosion from reinstated but denuded areas.	δ Medium δ Low-Medium δ Medium
δ Site establishment and infrastructure development.	δ Potential impact on terrestrial fauna within mining footprint.	δ Low-Medium
δ Site establishment and infrastructure development.	δ Potential impact on areas/infrastructure of heritage or cultural concern.	δ Low-Medium

ACTIVITY	POTENTIAL IMPACT	SIGNIFICANCE (BEFORE MITIGATION)
δ Strip and stockpile of topsoil and overburden to access the ore.	δ Potential impact on areas of palaeontological concern.	δ Low-Medium
δ Strip and stockpile of topsoil and overburden to access the ore. δ Opencast mining (including drilling and blasting). δ Transport, stockpile and crushing of RoM. Rehabilitation upon closure of the site.	δ Noise nuisance caused by earthmoving machinery. δ Noise nuisance caused by blasting and mining activities. δ Noise nuisance generated by earthmoving equipment. δ Noise nuisance caused by machinery during the decommissioning phase.	δ Medium δ Medium δ Medium δ Low-Medium
δ Strip and stockpile of topsoil and overburden to access the ore. δ Rehabilitation upon closure of the site.	δ Potential infrestation of the topsoil heaps with weeds or invader plant species. δ Potential infestation of the reinstated areas by weeds and invader plant species.	δ Low-Medium δ Medium
δ Strip and stockpile of topsoil and overburden to access the ore. δ Transport, stockpile and crushing of ore. δ Rehabilitation upon closure of the site.	δ Loss/contamination of stockpiled topsoil. δ Potential contamination of area due to hydrocarbon spillages. δ Potential contamination of surface runoff because of hydrocarbon spillages. δ Potential contamination of environment because of improper waste disposal.	δ Low-Medium δ Medium δ Medium δ Medium
δ Opencast mining (including drilling and blasting). δ Rehabilitation upon closure of the site.	δ Health and safety risk posed by blasting activities. δ Potential safety risk posed by unrehabilitated (unsloped) areas.	δ Medium δ Medium
δ Opencast mining (including blasting). δ Transport, stockpile and crushing of RoM.	δ Light pollution due to shift work. δ Light pollution due to shift work.	δ Medium-High δ Medium-High
δ Opencast mining (including drilling and blasting).	δ Potential impact on the surrounding environment (including groundwater users) if dewatering cause a groundwater depression cone.	δ Specialist to determine significance.

ACTIVITY	POTENTIAL IMPACT	SIGNIFICANCE (BEFORE MITIGATION)
	δ Potential impact on the surrounding groundwater users if mining activities contaminate groundwater.	
δ Transport of crushed ore to Beeshoek Mine.	δ Overweight trucks impacting road infrastructure.	δ Medium-High
δ Cumulative Impacts	δ Potential of mining employees trapped in the area upon closure of the mine.	δ Medium-High

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

(With regard to the issues and concerns raised by affected parties provide a list of the issues raised and an assessment/discussion of the mitigations or site layout alternatives available to accommodate or address their concerns, together with an assessment of the impacts or risks associated with the mitigation or alternatives considered).

Considering the above listed impacts that may have a negative impact on the study area, the following preliminary mitigation measures are proposed to address/minimize the resulting impacts. It must be noted that the following list should be treated as initial mitigation measures that will be expanded upon should the scoping report be approved, and the specialist recommendations be received.

TOPOGRAPHY

Rehabilitation of the Excavations

- δ Waste rocks and coarse material removed during the operational phase can be dumped into the excavation.
- δ No general/hazardous waste may be permitted to be deposited into the excavations.
- δ Once overburden, rocks and coarse natural materials have been added to the excavation and it was profiled with acceptable contours and erosion control measures, the topsoil previously stored must be returned to its original depth over the area.
- δ The area must be fertilized if necessary to allow vegetation to establish rapidly. The site must be seeded with a local or adapted indigenous seed mix to propagate the locally or regionally occurring flora, should natural vegetation not re-establish within 6 months from closure of the site.
- δ If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a vegetation seed mix to his or her specification.

The aspects associated with the decommissioning of the mine will be expanded upon receipt of the Mine Rehabilitation Plan recommendations to be discussed in the EIAR & EMPR.

Rehabilitation of the Mining Related Infrastructure

- δ Rehabilitation of the surface area shall entail landscaping, levelling, top dressing, land preparation, seeding (if required) and maintenance, and weed / alien clearing.
- δ All infrastructure, temporary equipment and other items used during the mining period shall be removed from the site (section 44 of the MPRDA).
- δ Waste material of any description, including receptacles, scrap, rubble, and tyres, shall be removed entirely from the mining area, and disposed of at a recognized landfill facility. It will not be permitted to be buried or burned on the site.
- δ Weed / alien clearing will be done in a sporadic manner during the life of the mining activities. Species regarded as Category 1a and 1b invasive species in terms of NEM:BA (National Environmental Management: Biodiversity Act 10 of 2004 and regulations applicable thereto) must be managed and controlled on site on an ongoing basis.
- δ Final rehabilitation shall be completed within a period specified by the Regional Manager.

The aspects associated with the decommissioning of the mine will be expanded upon receipt of the Mine Rehabilitation Plan recommendations to be discussed in the EIAR & EMPR.

VISUAL CHARACTERISTICS

Visual Mitigation

- δ The site must have a neat appearance and always be kept in good condition.
- δ Mining equipment must be parked neatly in a dedicated area when not in use.
- δ The MR holder must limit vegetation removal, and stripping of topsoil may only be done immediately prior to the mining/use of a specific area.
- δ Upon closure the benches must be stabilised with proper vegetation cover to ensure that the visual impact on the aesthetic value of the area is kept to a minimum.

The mitigation measures associated with this impact will be expanded upon in the EIAR & EMPR once the recommendations of the Visual Impact Assessment are available.

GEOLOGY AND SOIL

Topsoil Management

- The first 300 mm of topsoil (if available) must be removed and stored within a designated, signposted stockpile area. Stockpiled topsoil must be protected from erosion and mixing with other material. The topsoil must be used to cover the rehabilitated area and improve the establishment of natural vegetation;
- Topsoil stripping, stockpiling, and re-spreading must be done in a systematic way. The mining plan must be such that topsoil is stockpiled for the minimum possible time.
- The topsoil must be placed on a levelled area, within the mining footprint.
- Topsoil stockpiles must be positioned so as not to be vulnerable to erosion by wind and water. The establishment of plants (weeds or a cover crop) on the stockpiles will help to prevent erosion.
- Topsoil heaps may not exceed 2 m to preserve micro-organisms within the topsoil, which can be lost due to compaction and lack of oxygen.
- The temporary topsoil stockpiles must be kept free of invasive plant species.
- Storm- and runoff water must be diverted around the stockpile area to prevent erosion.
- The stockpiled topsoil must be evenly spread, to a depth of 300 mm, over the rehabilitated area upon closure of the site.
- The Applicant must strive to re-instate topsoil at a time of year when vegetation cover can be established as quickly as possible afterwards, so that erosion of returned topsoil by both rain and wind, before vegetation is established, is minimized. The best time of year is at the end of the rainy season, when there is moisture in the soil for vegetation establishment and the risk of heavy rainfall events is minimal.
- A cover crop must be planted, irrigated, and established immediately after spreading of topsoil, to stabilize the soil and protect it from erosion. The cover crop must be fertilized for optimum biomass production, and any soil deficiencies must be corrected, based on a chemical analysis of the re-spread soil (if deemed necessary). It is important that rehabilitation be taken up to the point of cover crop stabilization. Rehabilitation cannot be considered complete until the first cover crop is well established.
- The rehabilitated area must be monitored for erosion, and appropriately stabilized if any erosion occurs for at least 12 months after reinstatement.

HYDROLOGY

Mitigating the Potential Impact on Drainage Lines and Surface Water

- δ No activities may take place, without the necessary authorisation from the DWS, within a horizontal distance of 100 m from any watercourse or estuary or within a 500 m radius from a delineated boundary of any wetland or pan.
- δ Proper stormwater control measures must be implemented for the life of the mine.
- δ Any channelized flow from mining areas must be slowed, and storm water management infrastructure must be implemented.

The mitigation measures associated with this impact will be expanded upon in the EIAR and EMPR once the recommendations of the Hydrological Impact Assessment are available.

Erosion Mitigation / Storm Water Control

- δ A Stormwater Management Plan must be compiled and implemented on site for the duration of the mining activities.
- δ Storm water must be diverted around the topsoil heaps, mining areas and access roads to prevent erosion.
- δ Drainage must be controlled to ensure that runoff from the mining area does not culminate in off-site pollution, flooding or result in any damage to properties downstream or any storm water discharge points.
- δ Silt traps must be used where there is a danger of topsoil or material stockpiles eroding and entering the river and/or other sensitive areas.
- δ Mining must be conducted in accordance with the Best Practice Guideline for small scale mining that relates to storm water management, erosion and sediment control and waste management, developed by the Department of Water and Sanitation (DWS), and any other conditions which that Department may impose:
  - ε Clean water (e.g. rainwater) must be kept clean and be routed to a natural watercourse by a system separate from the dirty water system. You must prevent clean water from running or spilling into dirty water systems.
  - ε Dirty water must be collected and contained in a system separate from the clean water system.
  - ε Dirty water must be prevented from spilling or seeping into clean water systems.
  - ε A storm water management plan must apply for the entire life cycle of the mining activity and over different hydrological cycles (rainfall patterns).

- ε The statutory requirements of various regulatory agencies and the interests of stakeholders must be considered and incorporated into a storm water management plan.

The mitigation measures associated with this impact will be expanded upon in the EIAR and EMPR once the Stormwater Management Plan was compiled.

Groundwater Related Matters

- δ Groundwater quality and level monitoring must be implemented for the duration of the operational phase:
  - ε The right holder must take an initial water sample from the existing borehole/s on the farm, of which the results will serve as baseline information.
  - ε Thereafter quarterly water samples from the same borehole/s must be tested for changes in water quality and/or level.
  - ε Should the monitoring information show any significant changes, the opinion of a geohydrologist must be obtained (within a week from receipt of the results) and the findings must be submitted to DWS for further consideration.
- δ Upon closure of the mining activities a final water sample must be tested. The results must be submitted to DWS and filed for auditing purposes.

The mitigation measures associated with this impact will be expanded upon in the EIAR and EMPR once the recommendations of the Hydropedology/Geohydrological Assessment are available.

AIR QUALITY AND NOISE AMBIANCE

Mitigation of Fugitive Dust Emissions

- δ The liberation of dust into the surrounding environment must be effectively controlled using, inter alia, water spraying and/or environmentally friendly dust-allaying agents.
- δ The roads and stockpile areas must be sprayed with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits.
- δ The mine manager must ensure continuous assessment of the dust suppression equipment to confirm its effectiveness in addressing dust suppression.
- δ Speed on the access road must be controlled to prevent the generation of excess dust.
- δ The crusher plant must have operational water sprayers to alleviate dust generation from the conveyor belts;
- δ Areas devoid of vegetation, which could act as a dust source, must be minimized and vegetation removal may only be done immediately prior to mining.

- δ Topsoil stockpiles must be planted with indigenous grass species to minimize exposed surface areas and reduce windblown dust from the site. The vegetation will further assist in capturing wind born dust and minimizing the spread of dust from the site.
- δ Fines, blowing from the drop end of the crusher plant, must be minimized by attaching strips of used conveyor belts to the conveyor's end.
- δ Compacted dust must weekly be removed from the crusher plant to eliminate the dust source.
- δ The MR Holder must implement a dust management plan and conduct fall-out dust monitoring on site to accurately determine the site specific dust levels.
- δ All dust generating activities shall comply with the National Dust Control Regulations, GN No R827 promulgated in terms of NEM:AQA (Act 39 of 2004) and ASTM D1739 (SANS 1137:2012).
- δ Loads must be flattened and covered to prevent spillage during transportation, also minimising windblown dust.
- δ Weather conditions must be considered upon commencement of daily operations. Limiting dust emitting operations during very windy periods would reduce airborne dust and resulting impacts.
- δ Best practice measures shall be implemented during the stripping of topsoil, loading, and transporting of the products from site to minimize potential dust impacts.

The mitigation measures associated with this impact will be expanded upon in the EIAR and EMPR once the Air Quality Impact Assessment recommendations are available.

Noise Management

- δ The Applicant must ensure that the employees and visitors to the site conduct themselves in an acceptable manner while on site.
- δ No loud music may be permitted at the mining area.
- δ All mining vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the National Road Traffic Act, 1996 (Act No 93 of 1996).
- δ Best practice measures shall be implemented to minimize potential noise impacts.
- δ A qualified occupational hygienist must be contracted to quarterly monitor and report on the personal noise exposure of the employees working at the mine. The monitoring must be done in accordance with the SANS 10083:2004 (Edition 5) sampling method as well as NEM:AQA, 2004, SANS 10103:2008.
- δ Employees will not be allowed to reside on site.
- δ Drilling and blasting may only take place from Monday – Friday during normal work hours (8:00 to 17:00).

TERRESTRIAL BIODIVERSITY, CONSERVATION AREAS, GROUNDCOVER AND FAUNA

Mitigating the Potential Impact on Biodiversity Sensitive Areas, Vegetated Areas, and Species of Concern

- The mining boundaries must be clearly demarcated, and all operations must be contained to the approved mining area.
- The area outside the mining boundaries must be declared a no-go area, and all employees must be educated accordingly.
- Prior to bush clearance, the earmarked area must be inspected by and ecologist for the presence of sensitive and/or protected plant species. Plant removal permits must be obtained prior to the removal of any protected species. Relocation/destruction must be in accordance with the recommendations of the specialist.
- An invasive plant species management plan must be implemented on site to control weeds and invasive plants on denuded areas, topsoil heaps and reinstated areas.

The mitigation measures associated with this impact will be expanded upon in the EIAR and EMPR once the Animal, Plant and Terrestrial Biodiversity Impact Assessment recommendations are available.

Management of Invasive Plant Species

- An invasive plant species management plan must be implemented at the site to ensure the management and control of all species regarded as Category 1a and 1b invasive species in terms of NEM:BA (National Environmental Management: Biodiversity Act 10 of 2004 and regulations applicable thereto). Weed/alien clearing must be done on an ongoing basis throughout the life of the mining activities.
- All stockpiles must be kept free of invasive plant species.
- Management must take responsibility to control declared invader or exotic species on the rehabilitated areas. The following control methods can be used:
  - The plants can be uprooted, felled, or cut off and can be destroyed completely.
  - The plants can be treated chemically by a registered pest control officer (PCO) using an herbicide recommended for use by the PCO in accordance with the directions for the use of such an herbicide.

Fauna Management

- All mining must be confined to the mining footprint.
- Site management must ensure no fauna is caught, killed, harmed, sold, or played with.

- Workers must be instructed to report any animals that may be trapped in the working area.
- No snares may be set, or nests raided for eggs or young.

The mitigation measures associated with this impact will be expanded upon in the EIAR and EMPR once the Animal, Plant and Terrestrial Biodiversity Impact Assessment recommendations are available.

CULTURAL AND HERITAGE ENVIRONMENT

Archaeological, Heritage and/or Palaeontological Aspects

- All mining must be confined to the mining footprint.
- Known heritage resources must be avoided with a buffer zone of 30 m.
- If during the pre-construction phase, construction, operations or closure phases of this project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance or heritage site, this person must cease work at the site of the find and report this find to their immediate supervisor, and through their supervisor to the senior on-site manager.
- It is the responsibility of the senior on-site Manager to make an initial assessment of the extent of the find and confirm the extent of the work stoppage in that area.
- The senior on-site Manager must inform the ECO of the chance find and its immediate impact on operations. The ECO must then contact a professional archaeologist for an assessment of the finds who must notify the SAHRA.
- Work may only continue once the go-ahead was issued by SAHRA.

Mitigation measures to be expanded upon (if needed) in the EIAR and EMPR once the specialists recommendations are available.

LAND USE

Change of the Land Use / Sense of Place during the Life of the Mine

The mitigation measures associated with these impacts will be expanded upon in the EIAR and EMPR once the recommendations of the Agricultural Impact Assessment, Health Impact Assessment, and Socio-Economic Study are available.

EXISTING INFRASTRUCTURE

Road and Traffic Management

- δ The speed of all mining equipment/vehicles must be controlled on the R385.
- δ Vehicular movement must be restricted to the existing access roads and crisscrossing of tracks through undisturbed areas must be prohibited.
- δ Rutting and erosion of the access road caused as a direct result of the mining activities must be repaired by the MR Holder.
- δ Overloading of the trucks must be prevented, and proof of load weights must be filed for auditing purposes.

The mitigation measures associated with this impact will be expanded upon in the EIAR and EMPR once the recommendations of the Traffic Impact Assessment are available.

GENERAL

Waste Management

- δ Vehicle maintenance, repairs and services may only take place at the workshop and service area. If emergency repairs are needed on equipment not able to move to the workshop, drip trays must be present. All waste products must be disposed of in a closed container/bin to be removed from the emergency service area (same day) to the workshop to ensure proper disposal.
- δ Ablution facilities must be provided to all employees. The ablution facilities must not cause pollution or pose a health hazard. In addition, no form of secondary pollution should arise from the disposal of refuse or sewage. Any pollution problems arising from the above are to be addressed immediately by the MR Holder.
- δ If a diesel bowser is used on site, it must always be equipped with a drip tray. Drip trays must be used during each refuelling event. The nozzle of the bowser needs to rest in a sleeve to prevent dripping after refuelling.
- δ Site management must ensure drip trays are cleaned after each use. No dirty drip trays may be used on site.
- δ Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility.
- δ Should spillage occur, such as oil or diesel leaking from a burst pipe, the contaminated soil must, within the first hour of occurrence, be collected in a suitable receptacle and removed to the hazardous waste storage area of the workshop, either for resale or for appropriate disposal at a recognized facility. Proof must be filed.

- δ A waste management plan must be compiled by site management and implemented on site. The plan must focus on the waste hierarchy of the NEM:WA.
- δ Hazardous- and general waste must be contained in marked, sealable, refuse bins placed at a designated area, to be removed when filled to a recognised hazardous or general waste landfill site whichever is applicable.
- δ No general waste (apart from inert waste) may be buried or burned on the site.
- δ It is important that any significant spillage of chemicals, fuels etc. during the lifespan of the mining activities is reported to the Department of Water and Sanitation and other relevant authorities.

The mitigation measures associated with this impact will be expanded upon in the EIAR and EMPR once the recommendations of the Waste Classification Study area available.

Management of Health and Safety Risks

- δ The type, duration and timing of the blasting procedures must be planned with due cognizance of other land users and structures in the vicinity;
- δ The surrounding landowners must be informed ahead of every blasting event, and proof must be available;
- δ Measures to limit flyrock must be taken;
- δ Audible warning of a pending blast must be given at least 3 minutes in advance of the blast;
- δ All flyrock (of diameter 150mm and larger) which falls beyond the working area, together with the rock spill must be collected and removed;
- δ Adequate ablution facilities and water for human consumption must daily be available on site.
- δ Workers must have access to the correct personal protection equipment (PPE) as required by law.
- δ All operations must comply with the Mine Health and Safety Act, 1996 (Act No 29 of 1996).

The mitigation measures associated with these impacts will be expanded upon in the EIAR and EMPR once the recommendations of the Health Impact Assessment area available.

Light pollution due to shift work

- δ Site management must plan the positioning of exterior lighting such that lamps and reflectors are not visible from beyond the mining footprint;
- δ Lighting may not cause excessive reflected glare;
- δ Direct lighting may not illuminate the night-time sky;
- δ Illumination of the project and its immediate vicinity must be limited;

- δ Light fittings must incorporate fixture hoods/shielding with lights directed downwards or concentrated on the area to be illuminated;
- δ Lighting shall be minimum necessary brightness and lights in high illumination areas shall have switches, timers, or motion detectors so that the lights operate only when needed;
- δ The mitigation measures associated with this impact must be expanded upon as part of the engineering service report and EIA process.

m) The outcome of the site selection Matrix Final Site Layout Plan

(Provide a final site layout plan as informed by the process of consultation with interested and affected parties)

The most current site activities map was compiled upon assessment of the site specific conditions and is attached as Appendix 5 to this document.

n) Motivation where no alternative sites were considered.

Refer to *Section 1(h)(i) Description of the process followed to reach the proposed preferred site* above.

o) Statement motivating the preferred site.

(Provide a statement motivation of the final site layout that is proposed)

Presently, the project proposal entails a mining right application over ±1 550 ha of Portion 2 (portion of Portion 1), Remainder Portion, Remainder Portion of Portion 1 and Portion 3 of the farm Makganyene No 667, within the boundaries of the GPS coordinates listed in Table 4 and depicted in Figure 3. The proposed open pit mining operations were looked at in terms of primary ore for the operation, with the aim to support a sustainable mining approach that considers optimised extraction of the resources. Considering this, the proposed footprint of the MR application was founded on the footprint of the prospecting right (NC 2292 PR) backed by the prospecting results and available geological information.

The Applicant intends to mine the iron ore of the mining footprint using opencast methods as discussed in *Section 1(d)(ii) Description of the activities to be undertaken – Project Proposal*. This project does not require complex technology to allow the winning of the intended mineral/s, nor will processing take place on site.

The present project design presents the best-case scenario based on the geological and feasibility results. The (preferred) Phase 1 & 2 design scenario includes the open cast mining of Pit 1 and Pit 2, and the LoM schedule for this scenario is over 38 months.

The present operational aspects of the activity were based on the prospecting results and the optimisation of the proposed mining activity. The operational aspects will however be expanded upon

once the findings and recommendations of the specialists are available and will be considered during the EIA process as supplementary information is obtained.

2. PLAN OF STUDY FOR THE ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

a) Description of alternatives to be considered including the option of not going ahead with the activity.

Refer to *Section 1(h)(i) Description of the process followed to reach the proposed preferred site*, and *Section 1(o) Statement motivating the preferred site* above.

b) Description of the aspects to be assessed as part of the environmental impact assessment process.

(The EAP must undertake to assess the aspects affected by each individual mining activity whether listed or not, including activities such as blasting, Loading, hauling and transport, and mining activities such as Excavations, stockpiles, discard dumps or dams, water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc....etc.)

The aspects to be assessed as part of the environmental impact assessment process that will follow upon approval of the Scoping Report by the DMRE will include, but not be limited to, the following:

1. Various alternatives will be considered during the EIA process as supplementary information becomes available. Identifying viable alternatives will in turn dictate the design and layout of the proposed project as well as hone the proposed mining method.

2. The need and desirability of the proposed activity will be discussed in detail and weighed against the no-go option of upholding the *status quo* at the study area.

3. The inputs received during the public participation process (first- and second phase) will be assessed and considered by the project team during the EIA process.

4. The findings, recommendations and management measure proposed in the specialist reports will be assessed during the EIA process and incorporated into the DEIAR. The following specialists will be appointed as part of the project team:
   - δ Agricultural Impact Assessment (inclusive of a climate change discussion);
   - δ Air Quality Impact Assessment;
   - δ Aquatic Biodiversity (if needed) and Hydrological Impact Assessment;
   - δ Archaeological and Palaeontological Impact Assessment (if needed);
   - δ Geotechnical Assessment;
   - δ Health Impact Assessment;
   - δ Hydropedology / Geohydrological Assessment;

- δ Landscape / Visual Impact Assessment;
- δ Mine Rehabilitation Plan;
- δ Socio-economic Impact Assessment;
- δ Terrestrial Biodiversity Impact Assessment (inclusive of Plant- and Animal Species Assessment);
- δ Traffic Impact Assessment;
- δ Waste Classification Study.

5. The impact of the proposed project on the physical-, biological-, and human environments will be assessed. The nature, probability and significance of the potential impacts associated with the project will be determined using the above mentioned methodology.

6. Mitigation measures will be proposed to control, modify, remedy, or stop the impacts associated with the proposed activity on the surrounding environment.

7. Any additional requirements submitted by the DMRE will be incorporated into the DEIAR and treated accordingly.

c) Description of aspects to be assessed by specialists

The following specialist studies have been commissioned as part of the EIA process:

Agricultural Impact Assessment

- δ Identify and assess potential impacts (direct, indirect, and cumulative) of the proposed mine on soils, agricultural potential, and agricultural production, particularly the extent to which agricultural production may be compromised on the post mining land;
- δ Describe and map soil types across the mine lease area (soil forms and families) and characteristics (soil depth, soil colour, limiting factors, and clay content of the top and sub soil layers);
- δ Map soil survey points;
- δ Describe the topography and climate of the site, as it pertains to agricultural potential;
- δ Summarize available water sources for agriculture;
- δ Determine and map the agricultural potential across the site;
- δ Detail and map current agricultural land use across the site and quantify production levels, relating these to the soils and agricultural potential map;
- δ Compare current production to the most productive possible agricultural land use that is appropriate for the agricultural potential and limitations across the site;

- Compare current and possible production to what is likely to be possible on the rehabilitated land after mining;
- Assess the potential financial loss of compromised production due to mining;
- Discussion on the potential impact that the application may have on climate change and food security, and
- Provide recommended mitigation measures, monitoring requirements, and rehabilitation guidelines for all identified impacts and for rehabilitating the land for agricultural use after mining.

Air Quality Impact Assessment

- Gather information on the sources of emissions to conduct the air dispersion modelling study based on the purpose and objectives of the study identified (area-, line-, point-, volume-, and flair source);
- Gather information on the type of contaminants to be considered, including methods to determine appropriate pollutants emission rates;
- Assess the application and identify the best suited model to provide essential information, as well as determining model inputs;
- Collect data on the existing baseline air quality to compute the cumulative impact;
- Run model and prepare modelling output; and
- Compile a full atmospheric impact assessment report inclusive of modelling results.

Aquatic Biodiversity (if needed) and Hydrological Impact Assessment

- The scope of works includes an investigation of the watercourses within the study area, as well as the delineation of those watercourses within 500 m thereof in fulfilment of Regulation 509 of 2016 as it relates to the NWA, 1998.
- The assessment will fulfil the ecological assessment requirements of the EIA process as required in terms of the NEMA, 1998 and will provide the required information for water use licensing in terms of the NWA, 1998.
- Desktop information will be gathered to obtain background information on the project. A field assessment will be undertaken to fulfil the watercourse ecological assessment requirements of the EIA process.
- Current industry ‘best practice’ assessment methods will be applied to characterise the Present Ecological State (PES) and Ecological Importance and Sensitivity (EIS) of the freshwater ecological environment and to identify ecosystems and biological assemblages at risk (if any).
- A fact-presenting report will be generated, providing both qualitative and quantitative data on the PES of the watercourses/drainage lines associated with the study area. The studies will generate detailed site sensitivity maps, and all results will be used to inform a detailed impact assessment.

- Key mitigatory, to minimise impacts on both the local and regional wetlands and its water quality, and aquatic ecology will be highlighted.
- The report will include an assessment of the wetland ecology (if applicable) as well as aquatic ecology with specific reference to aquatic habitat units that may be impacted by the proposed mining development.
- Provide a detailed analysis of the direct, indirect, and cumulative impacts on affected ecosystems and social systems.
- Provide a detailed analysis concerning the extent to which impacts can be mitigated, the extent to which they are reversible, and most importantly, whether there will be loss of irreplaceable resources.

Archaeological and Palaeontological Impact Assessment

- The goal of the study will be to assess and update if needed the Phase 1 Heritage Impact Assessment Report (HIA) compiled for the prospecting right operations.
- The HIA will describe all archaeological and historical artefacts, structures and settlements documented in the area;
- Establish the level of sensitivity/importance of the archaeological and historical remains in the area;
- Proposed practical mitigation measures for potential impacts;
- Indicate limitations and assumptions; and
- Propose recommendations on the way forward.
- Provide a detailed analyses of how these values will be affected by the proposed development.
- Provide a detailed analysis of the direct, indirect, and cumulative impacts on affected ecosystems and social systems.
- Provide a detailed analysis concerning the extent to which impacts can be mitigated, the extent to which they are reversible, and most importantly, whether there will be loss of irreplaceable resources.

Geotechnical Study

- Data collection, and interpretation. Initial discussion with site technical departments to ensure all available information, datasets and logs are acquired.
- Validation and QAQC by spatial plotting datasets in 3D to ensure reliable datasets.
- Photo core logging of ten exploration holes of ±70 meters each.
- Based on the outcome of the geotechnical assessment the report will identify all geotechnical-related threats to pit design.
- Including all aspects considered during logging, along with gaps that may exist.

Health Impact Assessment

- The IFC differentiates between two types of health impact assessments ("HIAs"), namely, a RAHIA and a comprehensive HIA. The comprehensive HIA is recommended when the project is likely to attract or involve a significant influx of people, for example a large construction work force in a construction village. Other factors in favour of a comprehensive HIA include resettlement or relocation of local inhabitants or communities, significant construction activity, or the assessment of a large project in a rural setting. It is not anticipated that there will be a significant influx of people, and a RAHIA is thus sufficient for the purposes of this project in these settings.
- Health impacts relating to air quality and contaminants in air are assessed as far as modelled concentrations of hazardous substances are provided in the AQIR.
- It is expected that the focus should be on airborne particulate matter; therefore; the proposed RAHIA will cover PM2.5 as a measure of exposure to PM.
- A community health risk assessment is conducted to provide the health risk data on which the impact assessment for the RAHIA is based.
- Elements of the assessment, e.g., the data necessary to assess potential health impacts of the proposed development on potentially affected communities, which are extracted from existing data sources.
- Inputs required from the AQIR and data format specifications. The manner of presentation of air quality impact assessment reports generally focuses on exceedances of ambient air quality standards, whereas the health impact assessment requires ambient air concentrations of hazardous pollutants (exposure concentrations) at receptor locations and has no relationship with ambient air quality standards.
- The health impacts relating to air quality will be assessed regarding community exposures in the finalised air quality modelling domain.

Hydropedology / Geohydrological Assessment

- The study will include an assessment of the immediate and long term effects of groundwater abstraction/dewatering.
- Describe and assess potential sources that could cause the contamination of groundwater and aquifers.
- Provide a risk assessment to investigate and assess the potential risk to the main aquifer and impacts on boreholes that are within proximity of the proposed mining right area.
- Provide a detailed analysis of the direct, indirect, and cumulative impacts on affected ecosystems and social systems.
- Provide a detailed analysis concerning the extent to which impacts can be mitigated, the extent to which they are reversible, and most importantly, whether there will be loss of irreplaceable resources (either directly or indirectly).

Landscape / Visual Impact Assessment

- The Visual Impact Assessment will provide a comprehensive description and characterization of the receiving environment.
- The study will identify the impacts (including cumulative impacts) and utilize modelling techniques that establish visual intrusion, visibility, and visual exposure of the project components.
- The significance of the impacts will be determined.
- Aspects to be discussed in the study include (but not limited to) the landscape character, -quality, sense of place, visual resource, visual characteristics, -intrusion, -exposure, -impact, and proposed mitigation measures.

Mine Rehabilitation Plan

- The Mine Rehabilitation Plan will include an Annual Rehabilitation Plan in accordance with Appendix 3 to the Financial Provision Regulations, 2015 (as amended).
- The plan will further include a Rehabilitation, Decommissioning and Mine Closure Plan in accordance with Appendix 4 of the Financial Provision Regulations, 2015 (as amended).
- The plan will further include an Environmental Risk Assessment Report.

Socio-economic and Health Impact Assessment

- Establish the socio-economic context of the Makganyane area.
- Review of planning documents and assess alignment of the proposed mine with the existing planning documents.
- Consultation with key stakeholders, and review of comments received during the EIA public participation process.
- Compilation of a report that elaborates on both the economic and socio impact of the proposed project on the receiving environment.
- The economic impact assessment will contextualise the proposed mining project in the situation of the regional economy and its outlook, will include results of consulted local and international literature detailing the expected benefits of mining projects, interpret the results of the Economic Impact Assessment and, in particular provide a clear analysis of the contribution and impact of the major sub-categories (e.g. construction, transport etc.) of the project's budget expenditure to the regional economy.
- Further to this the economic impact assessment report will provide a clear quantification of the overall contribution and impact of the project to the regional economy will be provided and compared to the economic potential of the affected area in a scenario "without the project". Where relevant and viable, national economic impacts will also be highlighted.

- The socio-section of the study will describe the socio context of the affected area, identify, assess, and discuss socio-economic potential issues and perceived issues identified during the construction and operational period.
- The study will also investigate the existing eco-tourism (if any) and related investments into the region and consider sustainable livelihoods and economic opportunities.
- Provide recommendations to avoid (or minimize) potential negative impacts.
- Develop a monitoring and evaluation programme.
- Provide a detailed analysis of the direct, indirect, and cumulative impacts on affected social systems.
- Provide a detailed analysis concerning the extent to which impacts can be mitigated, the extent to which they are reversible, and most importantly, whether there will be loss of irreplaceable resources.

Terrestrial Biodiversity Impact Assessment (inclusive of an Animal and Plant Study)

- Describe the vegetation and terrestrial fauna communities present within the proposed mining footprint;
- Identify ESA, CBA, or similar areas of concern within the study area and collate the information in a sensitive map overlain by the proposed mining footprint;
- Compile a list of endangered, red data, or otherwise protected plants and fauna observed during the study;
- Assess the potential impacts that the proposed activity may have on the receiving ecology;
- Compile recommendations, proposed management actions and mitigation measures to alleviate identified impacts.
- Provide a detailed analysis of the direct, indirect, and cumulative impacts on affected ecosystems and social systems.
- Provide a detailed analysis concerning the extent to which impacts can be mitigated, the extent to which they are reversible, and most importantly, whether there will be loss of irreplaceable resources.
- The animal species assessment will be compiled by a qualified zoologist, while the plant species assessment will be undertaken by a qualified ecologist.

Traffic Impact Assessment

- The traffic impact assessment will identify the potential impact of the proposed activity on the road infrastructure of the study area.
- The TIA will include traffic counts, analysis of the data, propose scenario data and conclude with recommendations to mitigate the identified impacts.

Waste Classification Study

- Waste classification will be in terms of GN R. 634 of 23 August 2013 read together with SANS 10234;
- Waste Assessment as per the National Norms and Standards for the Assessment of Waste for Landfill Disposal in terms of GN R. 635 of 23 August 2013 will be performed;
- A Report on Waste Assessment and Classification will be compiled and will include the supporting documents as mentioned in the above tasks including original laboratory results.

d) Proposed method of assessing the environmental aspects including the proposed method of assessing alternatives

The impact assessment component of the EIA is subdivided into several environmental aspects to be studied as listed below (preliminary list):

- Topography;
- Visual Characteristics;
- Geology and Soils;
- Hydrology;
- Air Quality and Noise Ambiance;
- Terrestrial Biodiversity, Conservation Areas, Groundcover and Fauna;
- Cultural and Heritage Environment;
- Socio-economic Environment / Land Use;
- Existing Infrastructure; and
- Preferred Project Proposal including the No-go Option.

Greenmined will use a team of specialists to review the environmental aspects which will be assessed as part of the environmental impact assessment process. The environmental aspects briefly described in the Scoping Report will be updated, and site and technology specific impacts and mitigation recommendations will be proposed to be reviewed by the project team, registered stakeholders and I&AP's and competent authority (DMRE). Presently it is expected that the significance of the impacts will be assessed in terms of the methodology described in *Section 1 j) Methodology Used in Determining and Ranking the Significance*.

e) The proposed method of assessing duration significance.

The significance of the identified impacts will be determined using the approach outlined in *Section 1 j) Methodology Used in Determining and Ranking the Significance*. The environmental significance assessment methodology is based on the Overall Consequence x Overall Likelihood.

Consequence analysis is a mixture of quantitative and qualitative information, and the outcome can be positive or negative. For the purpose of determining the environmental significance in terms of consequence, the following factors were chosen: Severity/Intensity, Duration and Extent/Spatial Scale.

The determination of likelihood is a combination of Frequency and Probability.

The multiplication of overall consequence with overall likelihood will provide the environmental significance, which is a number that will then fall into a range of LOW, LOW-MEDIUM, MEDIUM, MEDIUM-HIGH or HIGH.

Qualitative description or magnitude of Environmental Significance is qualitative and is an indication of the nature or magnitude of the Environmental Significance. It also guides the prioritizations and decision making process associated with this event, aspect, or impact.

Assessing duration significance forms part of the environmental significance determination of the impacts and will be assessed accordingly.

f) The stages at which the competent authority will be consulted.

The environmental authorization- and mining right application in terms of the NEMA: EIA Regulations, 2014 (as amended) and the MPRDA, 2002 were simultaneously submitted to the DMRE on 12 August 2024 for which acceptance was received from the DMRE on 05 November 2024. As competent authority the DMRE will be invited to comment on the Draft Scoping Report (DSR), and any comments received will be incorporated into the FSR to be considered for approval.

Should the DMRE approve the Final Scoping Report, the draft EIA report, including all investigations, assessments, and the specialist studies, will be circulated for a 30-day commenting period. Any additional requirements received from the DMRE will be added to the Final EIA report to be submitted for approval.

As stipulated in the NEMA EIA Regulations, 2014 (as amended) read with the MPRDA, 2002, the EIA process will comprise of the following:

1. Application for Environmental Authorization and a Mining Right filed with supporting documentation on the online SAMRAD system;
2. The DMRE responds with reference number and accepts the application;
3. Draft Scoping Report circulated for perusal by I&AP's and stakeholders (including the DMRE);
4. Final Scoping Report (FSR) submitted to the DMRE;
5. The DMRE decision on FSR;

6. If the FSR is approved, the Draft EIA report is circulated for perusal by I&AP's and stakeholders (including the DMRE);
7. Final EIA report submitted to DMRE;
8. DMRE decision on Final EIA report;
9. Submission of the Financial Provision amount need for Rehabilitation;
10. If the FEAR is approved, the DMRE issues the Environmental Authorizations;
11. Appeal period;
12. Approval of supporting documentation including, but not limited to, the Mining Work Programme, and Social and Labour Plan; and
13. Decision on the Mining Right Application.

g) Particulars of the public participation process with regard to the Impact Assessment process that will be conducted

i) Steps to be taken to notify interested and affected parties.

(These steps must include the steps that will be taken to ensure consultation with the affected parties identified in (h) (ii) herein).

The aspects to be assessed as part of the environmental impact assessment process were added to the Draft Scoping Report that will be distributed to all registered I&AP's and stakeholders for a 30-day commenting period.

The I&AP’s and stakeholders will be informed of the project and availability of the DSR for perusal and commenting through:

1. Email notifications, with a direct link to the electronic copy of the DSR and appendices, sent to all persons with email access;
2. Advertisements placed in the Gemsbok and the Noordkaap Bulletin will invite the public to comment on the project.
3. On-site notices placed at conspicuous places inviting the public to comment on the project.

The registrations, comments, concerns, and recommendations received on the Draft Scoping Report will be added to the Final Scoping Report to be submitted to the DMRE for consideration. The project will be advertised in Afrikaans and English.

ii) Details of the engagement process to be followed

(Describe the process to be undertaken to consult interested and affected parties including public meetings and one on one consultation. NB the affected parties must be specifically consulted regardless of whether or not they attended public meetings and records of such consultation will be required in the EIA at a later stage).

Public participation during the impact assessment phase of the EIA will entail a review of the findings of the EIA, presented in the Draft Scoping Report and Draft EIA and EMPr Reports. These reports will be made available for public comment as described above.

I&APs will be advised of the availability of these reports and how to obtain them. They will be encouraged to comment in writing (mail or email). Any issues, comments or suggestions raised during the comment period will be added to the Comments and Response Report (CRR) that will accompany the Final Scoping Report.

iii) Description of the information to be provided to Interested and Affected Parties.

(Information to be provided must include the initial site plan and sufficient detail of the intended operation and the typical impacts of each activity, to enable them to assess what impact the activities will have on them or on the use of their land.)

Upon approval of the Final Scoping Report, the Draft EIA report will be compiled. The Draft EIA & EMPR report will be circulated to the registered I&AP's and stakeholders for their perusal over a 30-days period.

The Environmental Impact Assessment Report and Environmental Management Programme Report templates prescribed by the DMRE in terms of the National Environmental Management Act, 1998 in respect of listed activities that have been trigger by this application will be used to assess the information regarding the proposed project.

The research and analysis regarding the project will be processed and interpreted to compile the information required in the abovementioned template to be distributed for public comment.

h) Description of the tasks that will be undertaken during the environmental impact assessment process

The EIA process for the proposed project is depicted below:

1. Application for Environmental Authorization and Mining Right to the DMRE;
2. The DMRE responds with reference number and accepts the application;
3. Draft Scoping Report circulated for perusal by I&AP's and stakeholders;
4. Final Scoping Report (FSR) submitted to DMRE;
5. DMRE takes a decision on the FSR;
6. Impact Assessment Process:
   - δ Project description and site environmental baseline;

- δ Impact assessment;
- δ Mitigation measures and recommendations;
- δ EMPr compilation;

7. Draft EIA report circulated for perusal by registered I&AP's and stakeholders;
8. Final EIA report submitted to DMRE;
9. DMRE takes a decision on the Final EIA report;
10. Submission of Financial Provision amount;
11. Announcement of Environmental Authorization and Appeal Procedure;
12. Opportunity to Appeal;
13. Execution of the Mining Right.

i) 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

Table 22: Table listing the identified impacts, residual risks to be managed and monitored.

ACTIVITY Whether listed or not listed (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply, dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc)	POTENTIAL IMPACT (e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc...etc..)	MITIGATION TYPE (modify, remedy, control or stop) Through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc...etc) E.g. Modify through alternative method. Control through noise control Control through management and monitoring through rehabilitation.	POTENTIAL FOR RESIDUAL RISK
δ Demarcation of site with visible beacons.	δ No impact could be identified other than the beacons being outside the boundaries of the approved mining area.	Control: Implementation of proper housekeeping and site management.	LOW
δ Site establishment and infrastructure development. δ Cumulative Impacts.	δ Loss of grazing for duration of mining activities with special reference to the Remainder (Central Section), and Remainder Portion of Portion 1 of Makganyene No 667 δ Loss of agriculture generated income during the operational phase of the mine (change of land use). δ Potential impact of the mine on food security and/or climate change.	Should the proposed project be approved, the operation will temporarily interrupt the agricultural activities of the mining footprint, only to be reversed upon the closure of the mine. The mitigation type will be advised upon by the specialists.	HIGH

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	POTENTIAL FOR RESIDUAL RISK
	δ Potential impact on the sense of place of the receiving environment.		
δ Site establishment and infrastructure development. δ Transport of crushed ore to Beeshoek Mine.	δ Increased traffic on the R385. δ Increased traffic along the R385. δ Overweight trucks impacting road infrastructure.	Control: Road and traffic management	LOW-MEDIUM
δ Site establishment and infrastructure development. δ Strip and stockpile of topsoil and overburden to access the ore. δ Opencast mining (including drilling and blasting). δ Transport, stockpile and crushing of RoM. δ Rehabilitation upon closure of the site.	δ Increased dust emissions along the R385. δ Dust nuisance caused by the disturbance of the soil and transport of material. δ Dust nuisance because of blasting and mining activities. δ Dust nuisance due to the movement of earthmoving equipment and denuded stockpile area. δ Dust nuisance generated because of the rehabilitation/landscaping activities.	Control: Dust suppression methods and proper housekeeping.	NONE
δ Site establishment and infrastructure development. δ Strip and stockpile of topsoil and overburden to access the ore.	δ Visual impact due to site establishment. δ Visual impact due to excavation activities.	Modify: Consideration of alternatives and specialist recommendations. Control: Proper housekeeping.	HIGH

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	POTENTIAL FOR RESIDUAL RISK
δ Site establishment and infrastructure development.	δ Impact on biodiversity sensitive areas and/or species of concern.	Modify: Consideration of alternatives and specialist recommendations. Control: Demarcation of no-go areas	MEDIUM
δ Site establishment and infrastructure development. δ Strip and stockpile of topsoil and overburden to access the ore. δ Rehabilitation upon closure of the site.	δ Potential negative impact on the stormwater drainage of the affected area. δ Potential erosion of denuded areas. δ Potential increase in the risk of soil erosion from reinstated but denuded areas.	Control & Remedy: Proper housekeeping and implementation of a stormwater management plan.	LOW-MEDIUM
δ Site establishment and infrastructure development.	δ Potential impact on terrestrial fauna within mining footprint.	Modify: Consideration of alternatives and specialist recommendations. Stop & Control: Demarcation of no-go areas, and proper site management.	LOW
δ Site establishment and infrastructure development. δ Strip and stockpile of topsoil and overburden to access the ore.	δ Potential impact on areas/infrastructure of heritage or cultural concern. δ Potential impact on areas of palaeontological concern.	Modify: Consideration of alternatives and specialist recommendations. Stop & Control: Demarcation of no-go areas.	LOW
δ Strip and stockpile of topsoil and overburden to access the ore. δ Opencast mining (including drilling and blasing). δ Transport, stockpile and crushing of RoM.	δ Noise nuisance caused by earthmoving machinery. δ Noise nuisance caused by blasting and mining activities.	Control: Noise suppression methods and proper housekeeping.	NONE

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	POTENTIAL FOR RESIDUAL RISK
δ Rehabilitation upon closure of the site.	δ Noise nuisance generated by earthmoving equipment. δ Noise nuisance caused by machinery during the decommissioning phase.		
δ Strip and stockpile of topsoil and overburden to access the ore. δ Rehabilitation upon closure of the site.	δ Potential infrestation of the topsoil heaps with weeds or invader plant species. δ Potential infestation of the reinstated areas by weeds and invader plant species.	Control & Remedy: Implementation of an invasive plant species management plan.	MEDIUM
δ Strip and stockpile of topsoil and overburden to access the ore. δ Transport, stockpile and crushing of RoM. δ Rehabilitation upon closure of the site.	δ Loss/contamination of stockpiled topsoil. δ Potential contamination of area due to hydrocarbon spillages. δ Potential contamination surface runoff because of hydrocarbon spillages. δ Potential contamination of environment because of improper waste disposal.	Control & Remedy: Proper housekeeping and implementation of an emergency response plan.	MEDIUM
δ Opencast mining (including drilling and blasting) δ Rehabilitation upon closure of the site.	δ Health and safety risk posed by blasting activities. δ Potential safety risk posed by unrehabilitated (unsloped) areas.	Control: Site management and proper housekeeping.	HIGH
δ Opencast mining (including drilling and blasting).	δ Light pollution due to shift work.	Control: Site management and proper housekeeping.	NONE

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	POTENTIAL FOR RESIDUAL RISK
δ Transport, stockpile and crushing of RoM.	δ Light pollution due to shift work.		
δ Opencast mining (including drilling and blasting)	δ Potential impact on the surrounding environment (including groundwater users) if dewatering cause a groundwater depression cone. δ Potential impact on the surrounding groundwater users if mining activities contaminate groundwater.	Modify: Consideration of alternatives and specialist recommendations. Stop & Control: Water quality and level testing.	MEDIUM - HIGH
δ Cumulative Impacts	δ Potential of mining employees trapped in the area upon closure of the mine.	Control: Site management and control of social matters.	HIGH

j) Other Information required by the competent Authority

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

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

(Provide the results of Investigation, assessment, and evaluation of the impact of the mining, bulk sampling or alluvial diamond prospecting on any directly affected person including the landowner, lawful occupier, or, where applicable, potential beneficiaries of any land restitution claim, attach the investigation report as **Appendix 2.19.1** and confirm that the applicable mitigation is reflected in 2.5.3, 2.11.6 and 2.12 herein)

The following preliminary potential impacts were identified that may have an impact on the socio-economic conditions of directly affected persons:

- **Increased traffic on the R385:**

  Is expected that the proposed project will increase the present traffic load on the R385 with ±15 trucks per 24 hour period transporting material from MIOM to Beeshoek Mine. The degree of impact as well as the significance of increased traffic on the R385 will be assessed by the road engineer as part of the Traffic Impact Assessment and recommendations and mitigation measures will be discussed in the EIAR.

- **Visual intrusion associated with the mining:**

  The presence of mining related infrastructure (i.e. crushing infrastructure) as well as the opencast pits and waste rock dump to be established will impact the visual character of the study area. The significance of this impact will be fully assessed during the EIA process taking site-, project-, design alternatives and screening methods into consideration to reduce the impact as much as possible.

- **Impact on the air quality and noise ambiance of the study area:**

  The presence of the crushing and screening infrastructure, opencast mining and the use of earthmoving equipment all increase the possibility of dust and noise generation because of the proposed mining activities. The air quality specialist must consider this when conducting the assessment and proposing mitigation measures. By nature these impacts require constant monitoring to be implemented throughout the site establishment-, operational-, and decommissioning phases of a project.

- **Light pollution due to shift work:**

  Bettering the illumination of an area is commonly associated with improved safety and security. Excessive lighting or inconsiderate reflections however contribute more towards a negative impact than the above mentioned positive adjustment. Artificial illumination of the night sky within a protected environment is also highly undesirable. This impact must

therefore be addressed as part of the visual impact assessment report and viable alternatives must be proposed that will minimize the significance of the impact on the receiving environment.

- **Loss of agricultural generated income during the operational phase of the mine (change of land use):**
  The Applicant applied for the mining right to be approved for a 30-year period during which (should the MR be granted) the proposed footprint becomes unavailable for permanent farming. The significance that the proposed mining activity will have on the receiving agricultural sectors must be assessed as part of the Socio-Economic and Agricultural Impact Assessments, upon which the conclusions will be presented in the DEIAR.

The following potential positive impacts were identified that are highly likely to impact the socio-economic setting of directly affected persons:

- **Employment opportunities and socio-economic impact:**
  The proposed labour component of the project is expected to be ±80 persons. As a result of the multiplier effect it is expected that the income of 80 employees will support ±272 dependents, and since most of the employees will reside within the Tsantsabane area, it is fair to presume that most monthly earned salaries will be spent within the local area. Indirectly, through the payment for services and suppliers, the mine will also support employment of the procurement partners.

- **Increased income generated within the area:**
  The potential increase in income generated within the Tsantsabane area because of the change of land use from agriculture to mining must be assessed by the socio-economic specialist during the EIA process. Should the proposed mine however generate a higher income than the current land use of the area, the multiplier effect will once again come into play through an increase in wages, improved socio-character of employees, support of the local economy and overall growth of the receiving community.

- **Contribution of mine to local economic development**
  A mining right holder is required by law to contribute to the local economic development (LED) of the local community. The presence of a mine will therefore generate funds that can be used in the development of the area. Identifying a suitable LED project will be conducted in consultation with the local municipality, to be committed to in the Social and Labour Plan that needs to be approved prior to the granting of a mining right.

- **Potential use of decommissioned mine infrastructure/areas for alternative purposes such as water storage:**

  Upon closure of the mining area the MR Hholder has an obligation in terms of the MPRDA, 2002 and NEMA, 1998 to rehabilitate the affected area to the satisfaction of the Regional Manager (DMRE). The likelihood and significance that decommissioned infrastructure can be implemented for future use by landowners must be assessed during the EIA process. These possibilities must form part of the Mine Rehabilitation Plan to be approved for the mining area, and must include options such as, but not limited to, the possible use of the opencast pits for water storage, use of warehouses and internal roads by the landowner etc.

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

(Provide the results of Investigation, assessment, and evaluation of the impact of the mining, bulk sampling or alluvial diamond prospecting on any national estate referred to in section 3(2) of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) with the exception of the national estate contemplated in section 3(2)(i)(vi) and (vii) of that Act, attach the investigation report as **Appendix 2.19.2** and confirm that the applicable mitigation is reflected in 2.5.3, 2.11.6 and 2.12 herein)

The presence of national estate as referred to in section 3(2) of the NHRA, 1999 will be reassessed by the archaeologist as part of the phase 1 heritage impact assessment review to follow during the EIA process.

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

(the EAP managing the application must provide the competent authority with detailed, written proof of an investigation as required by section 24(4)(b)(i) of the Act and motivation if no reasonable or feasible alternatives as contemplated in sub-regulation 22(2)(h), exist. The EAP must attach such motivation as **Appendix 4)**

The alternatives to be considered during the impact assessment process will be done at the hand of information obtained during the site investigation, public participation process, desktop studies as well as the specialist studies of the earmarked area. As discussed earlier the following alternatives may need to be assessed in the EIAR:

A) <u>THE PROPERTY ON WHICH, OR LOCATION WHERE, IT IS PROPOSED TO UNDERTAKE THE ACTIVITY</u>

A Locality/Site Alternative that could be applicable to this application is the possible omission of some of the Makganyene farm portions from the application. Based on the present pit design and supporting infrastructure layout the only farm portion not earmarked for development is the most south-western portion (±292 ha) of the Remainder of Makganyene No 667. The possibility of omitting this portion of the farm from the application footprint will be discussed with the Applicant and the specialists will be tasked to consider the positive and negative aspects of both

options (including and excluding the specific section). The findings of the project team and specialists will be presented and assessed in the DEIAR that will also be available for public input.

B) TYPE OF ACTIVITY TO BE UNDERTAKEN

An alternative land use that can be considered is using the area for agricultural purposes such as game farming and grazing instead of mining. The specialist responsible for the agricultural impact assessment report will consider the potential losses to agriculture that may occur should the area be mined and compare the agricultural potential of the earmarked area with the income that may be generated through mining. Should viable activity alternatives be identified it will be discussed during the EIA process of the application and included in the DEIAR to be distributed for public comments.

C) DESIGN AND LAYOUT OF THE ACTIVITY

Apart from the two scenarios discussed in this report, it is expected that the present mine design/layout may have to be altered upon receipt of the specialist reports. The final design/layout alternatives will be considered during the EIA process as supplementary information is obtained from the specialist studies, and the stakeholders and I&AP's contribute their knowledge towards the proposed project.

E) OPERATIONAL ASPECTS OF THE ACTIVITY

The present operational aspects of the activity were based on the prospecting results and the optimisation of the proposed mining activity. The operational aspects will however be expanded upon once the findings and recommendations of the specialists are available and will be considered during the EIA process as supplementary information is obtained.

F) OPTION OF NOT IMPLEMENTING THE ACTIVITY (NO-GO ALTERNATIVE)

Amongst others, the socio-ecological and socio-economic impacts of mining on the current and future land uses of the study area will be compared to the *status quo* and will be considered as part of the EIA process and discussed in the DEIAR.

l) UNDERTAKING REGARDING CORRECTNESS OF INFORMATION

I Christine Fouché **herewith undertake that the information provided in the foregoing report is correct, and that the comments and inputs form stakeholders and Interested and Affected parties has been correctly recorded in the report.**

Signature of the EAP
DATE: 07 November 2024

m) UNDERTAKING REGARDING LEVEL OF AGREEMENT

I Christine Fouché **herewith undertake that the information provided in the foregoing report is correct, and that the level of agreement with interested and Affected Parties and stakeholders has been correctly recorder and reported herein.**

Signature of the EAP
DATE: 07 November 2024

- END -