



mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

**SCOPING REPORT FOR THE SUBSTITUTION OF AN
ENVIRONMENTAL MANAGEMENT PROGRAMME
(ENVIRONMENTAL AUTHORISATION), AN APPLICATION IN TERMS
OF SECTION 102 OF THE MINERAL AND PETROLEUM RESOURCE
DEVELOPMENT ACT, 28 OF 2002 WITH **A SECTION 24(G) FOR
THE STORAGE AND HANDLING, OF A DANGEROUS GOOD**
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).¹

NAME OF APPLICANT:

PMG MINING (PTY) LTD

REFERENCE NUMBER

(NC) 30/5/1/1/3/2/1/114 MR

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(NC) 30/5/1/1/3/2/1/244 MR

¹ Section 102 Application in terms of the Mineral and Petroleum Resources Development Act, 28 of 2002.

IMPORANT NOTICE

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

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

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

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

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

OBJECTIVE OF THE SCOPING PROCESS

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

SCOPING REPORT

2) Contact Person and correspondence address:

a) Details of:**i) The EAP who prepared the report:**

Name of the Practitioner: Roelien Oosthuizen
 Tel No.: 084 208 9088
 Fax No. : 086 510 7120
 e-mail address: roosthuizen950@gmail.com
 Physical Address: Farm Oberon, Kimberley; 8301
 Postal Address: P O Box 110823, Hadisonpark; 8306

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

Masters in Environmental Management (UFS)
 B-Comm in Human and Industrial- Psychology (NWU)

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

Relevant past experiences in carrying out the Environmental Impact Assessment Procedures include Environmental Impact Assessments, Environmental Management Plans/Programmes/ Reports, Performance assessments, Rehabilitation progress assessments, Environmental Liability assessments, Environmental compliance monitoring, Scoping Reports, etc. See attached CV.

b) Description of the property:

Farm Name:	Portion 1 and the Remainder of the farm Bishop No. 671
Application area (Ha)	543.3402
Magisterial district:	Kuruman
Distance and direction from nearest town	The area is located on the farm Bishop which is located 30km from Postmasburg on the R325 road to Kathu. The operations are approximately 25 km South of Kathu and approximately 80km to the South West of Kuruman.
21 digit Surveyor General Code for each farm portion	C0410000000067100000 (Remaining Extent) C0410000000067100001 (Portion 1)

c) Locality Map:

(show nearest town, scale not smaller than 1:250 000 attached as Appendix 3)

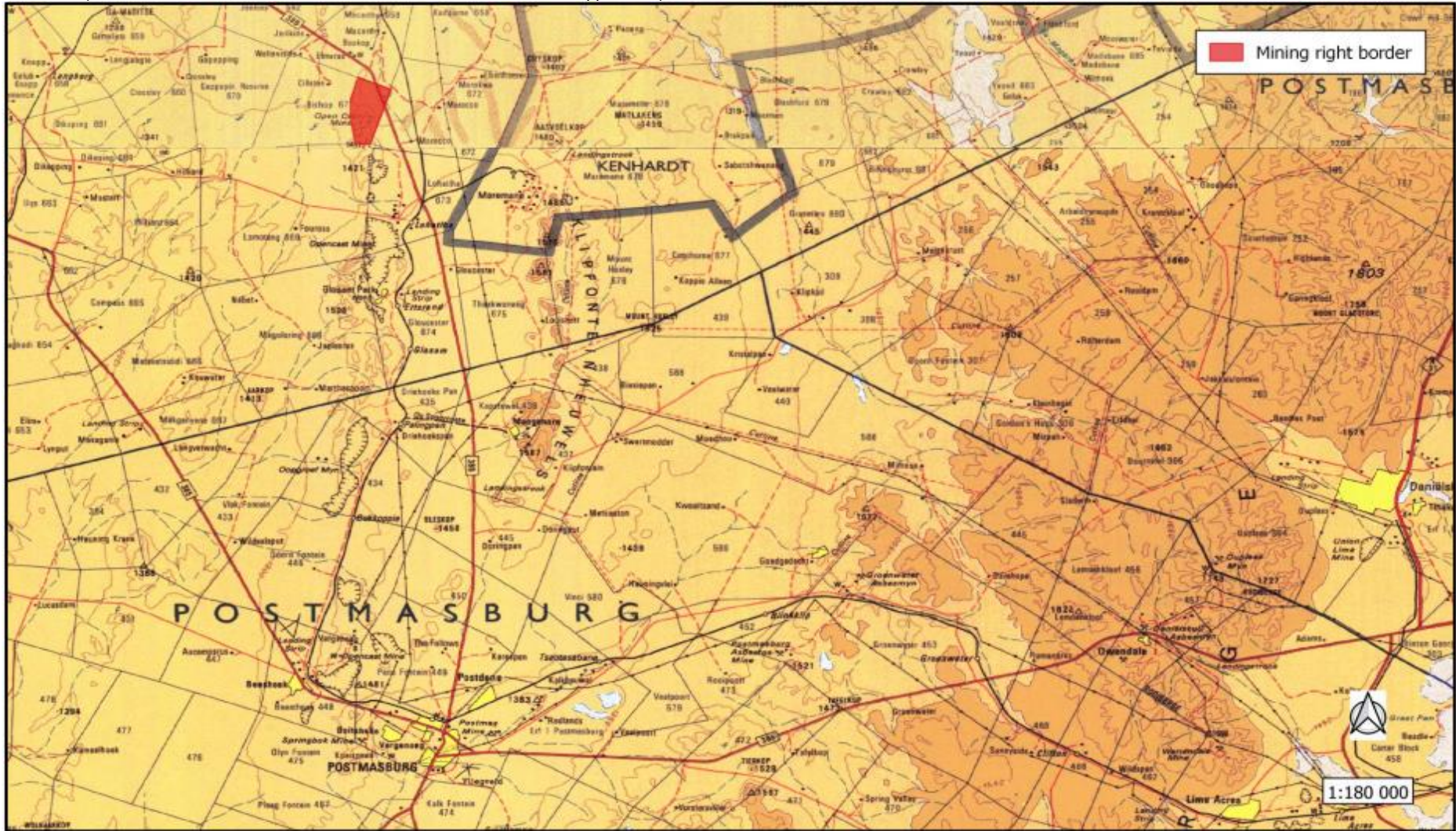


Figure 1. Locality Map

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)

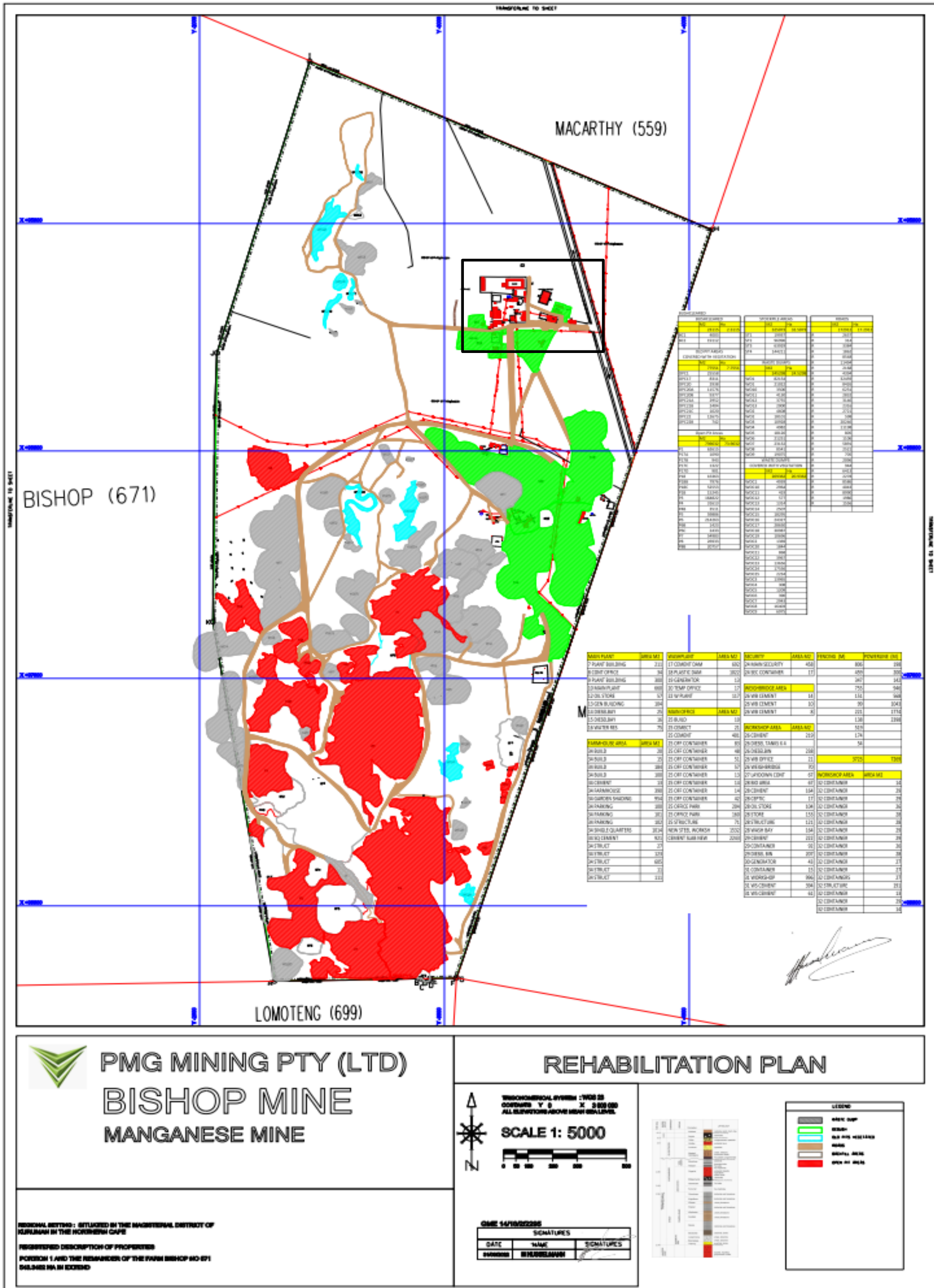


Figure 2 A: Infrastructure site layout plan



Figure 2 B: Infrastructure site layout plan

Table 1: Listed and Specified Activities

<p>NAME OF ACTIVITY</p> <p>(E.g. for prospecting – drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route, etc. ... etc. ... etc. E.g. for mining – excavations, blasing, 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.)</p>	<p>Aerial extent of the Activity Ha or m²</p>	<p>LISTED ACTIVITY</p> <p>(Mark with an X where applicable or affected).</p>	<p>APPLICABLE LISTING NOTICE</p> <p>(GNR 544, GNR 545 or GNR 546)</p>	<p>WASTE MANAGEMENT AUTHORISATION</p> <p>(Indicate whether an authorisation is required in terms of the Waste Management Act). (Mark with an X)</p>
<p>Activity 17 of NEMA Listing Notice 2</p> <p>"Any activity including the operation of that activity which requires a mining right [section 22 of MPRDA], including infrastructure, structures and earthworks, directly related to the extraction of a mineral resource ..."</p>	<p>543.3402 ha Mining Area applied for including infrastructure, structures and earthworks, directly related to the extraction of a mineral resource ..."</p>	<p>X</p>	<p>Listing Notice 2 GNR 325 GNR 984</p>	
<p>Activity 9 of NEMA Listing Notice 1</p> <p>"The development of infrastructure exceeding 1000 metres in length for the bulk transportation of water or storm water-</p> <ul style="list-style-type: none"> (i) With an internal diameter of 0,36 metres or more; or (ii) With a peak throughput of 120 litres per second or more; <p>Excluding where-</p> <ul style="list-style-type: none"> (a) Such infrastructure is for bulk transportation of water or storm water or storm water drainage inside a road reserve or railway line reserve; or (b) Where such development will occur within an urban area. 	<p>Water distribution Pipeline HDPE Pipes</p>	<p>X</p>	<p>Listing notice 1 GNR 327 GNR 983</p>	
<p>Activity 12 of NEMA Listing Notice 1</p> <p>"The development of—</p> <ul style="list-style-type: none"> (i) canals exceeding 100 square metres in size; (ii) channels exceeding 100 square metres in size; (iii) bridges exceeding 100 square metres in size; (iv) dams, where the dam, including infrastructure and water surface area, exceeds 100 square metres in size; (v) weirs, where the weir, including infrastructure and water surface area, exceeds 100 square metres in size; (vi) bulk storm water outlet structures exceeding 100 square metres in size; (x) buildings exceeding 100 square metres in size; <p>or</p> <ul style="list-style-type: none"> (xii) infrastructure or structures with a physical footprint of 100 square metres or more; <p>where such development occurs—</p> <ul style="list-style-type: none"> (a) within a watercourse; (b) in front of a development setback; or (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse" <p>Regulation GN R704, published on 4 June 1999 in terms of the National Water Act (Use of water for mining and related activities)</p>	<p>2 X Pollution Control Dams Dam 1 (142 500 m³) Dam 2 (38 800 m³)</p> <p>Please refer to hydrological Assessment report Project No. PMG-001 July 2021 by Hydrologic Consulting (Pty) Ltd</p>	<p>X</p>	<p>Listing notice 1 GNR 327 GNR 983</p>	
<p>Activity 21 of NEMA Listing Notice 2</p> <p>"Any activity including the operation of that activity associated with the primary processing of a mineral resource including winning, reduction, extraction, classifying, concentrating, crushing, screening and washing but excluding the smelting, beneficiation, refining, calcining or gasification of the mineral resource in which case activity 6 in this Notice applies."</p>	<p>The mine will consist of crushing and screening plants for mining activities associated with manganese / iron ore production which include crushing, screening and washing.</p>	<p>X</p>	<p>Listing Notice 2 GNR 325 GNR 984</p>	
<p>Activity 24(ii) of NEMA Listing Notice 1</p> <p>"The development of – (ii)a road with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 meters."</p>	<p>Roads on the mine calculate to 17,2912 ha however future development may increase the footprint of roads to ±250 000m² or 25ha</p> <p>Additional mine haul roads might be constructed if mining areas are mined out and new areas are developed.</p>	<p>X</p>	<p>Listing Notice 1 GNR 327 GNR 983</p>	
<p>Activity 25 of NEMA Listing Notice 1</p> <p>"The development and related operation of facilities or infrastructure for the treatment of effluent, wastewater or sewage with a daily throughput capacity of more than 2000 cubic metres but less than 15000 cubic metres."</p>	<p>Sewage facilities Buildings with septic tanks</p> <p>24 tanks 6000l (each)</p>	<p>X</p>	<p>Listing Notice 1 GNR 327 GNR 983</p>	
<p>Activity 27 of NEMA Listing Notice 1</p> <p>"The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for—</p>	<p>Blasting if it is required will be in blast blocks with a typical dimension of 25m x 50 m x 10 m.</p>	<p>X</p>	<p>Listing Notice 1 GNR 327 GNR 983</p>	

(i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan."				
Activity 30 of NEMA Listing Notice 1 "Any process or activity identified in terms of section 53(1) of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)."	543.3402 ha The proposed mining site falls within critical biodiversity areas, as defined by the Northern Cape Critical Biodiversity Areas Map (Holness and Oosthuysen 2016) No Critical Biodiversity Areas One or Critical Biodiversity Areas Two occur on site, but the pristine areas comprise of Ecological Support Areas. The remainder of the study area comprise of Other Natural Areas or transformed habitat. No Protected Areas occur in on near the study area (Taken out of the Ecological Study).	X	Listing Notice 1 GNR 327 GNR 983	
Activity 56(ii) of NEMA Listing Notice 1 "The widening of a road by more than 6 meters, or the lengthening of a road by more than 1 kilometer – (ii) where no reserve exists, where the existing road is wider than 8 meters..."	Mine haul roads might be widened or lengthened.	X	Listing Notice 1 GNR 327 GNR 983	
Activity 15 of NEMA Listing Notice 2 "The clearance of an area of 20 hectares or more of indigenous vegetation, excluding where such clearance of indigenous vegetation is required for- (i) The undertaking of a linear activity; or (ii) Maintenance purposes undertaken in accordance with a maintenance management plan."	543.3402 ha application area including infrastructure, structures and earthworks, directly related to the extraction of a mineral resource ..."	X	Listing Notice 2 GNR 325 GNR 984	
Activity 27(iv) of NEMA Listing Notice 2 "The development of — (iv) a road catering for more than one lane of traffic in both directions;"	Roads on the mine calculate to ±200 000m ² or 20ha Additional mine haul road might be constructed if mining areas are mined out and new areas is developed.	X	Listing Notice 2 GNR 325 GNR 984	
Activity 14 of NEMA Listing Notice 1: " The development and related operation of facilities or infrastructure, for the storage, or for the storage and handling, of a dangerous good, where such storage occurs in containers with a combined capacity of 80 cubic metres or more but not exceeding 500 cubic metres." Section 24 G rectification application	Total dangerous goods storage capacity of 223 820lt is applied for to be stored on site.	X	Listing Notice 1 GNR 327 GNR 983	
NEMWA: Category B GNR 632: Activity 11: "The establishment or reclamation of a residue stockpile or residue deposit resulting from activities which require a mining right ..."	Product Stockpile area Provision is made for a maximum footprint (at full production) of 17 000 m ² for the stockpile area at any one time. Ore Stockpile dumps 16 000m ² Run of Mine dumps Subgrade stockpile area Provision is made for a maximum footprint (at full production) of 45 000m ² for this stockpile area at any one time. Topsoil storage area (temporary) Topsoil dumps X3 Provision is made for a maximum footprint (at full production) of 50 000m ³ or 5 hectare for this area at any one time. New Waste Dumps 260 000m ² or 26ha Waste Dumps covered with vegetation 230 000m ² or 23 ha		NEMWA: Category B GNR 632: Activity 11:	X

<p>OTHER ACTIVITIES (Associated infrastructure not considered to be listed activities) but included under listed activity 17 which states "Any activity including the operation of that activity which requires a mining right [section 22 of MPRDA], including infrastructure, structures and earthworks, directly related to the extraction of a mineral resource ..."</p>	<p>Please refer to Figure 2 for the current mine plan and infrastructure plans from the current operational mine</p>		<p>NOT LISTED</p>	
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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.)

Notice is given of an application submitted on behalf of the applicant (i.e. PMG Mining (Pty) Ltd) to the Department of Mineral Resources and Energy (DMRE) in terms of Section 24 G and Section 102 to upgrade and amend the existing Environmental Authorization in terms of the National Environmental Management Act (Act 107 of 1998) for Environmental Authorisation in order to rectify the diesel storage on the mining activities on the Remainder of the Farm Bishop 671 (mining right NC 0114 MR).

PMG Mining (Pty) Ltd is currently the holder of a Mining Right with reference number NC30/5/1/1/3/2/1/114MR, executed on behalf of the Minister of Mineral Resources ("Minister") on 10 January 2008 before Mr Noel Henry Kriel, a Notary Public, under Protocol Number 829/2008, consisting of the sole and exclusive right to mine for iron ore and manganese in, on and under Portion 1 and the Remainder of the farm Bishop no. 671, situated in the magisterial district of Kuruman, Northern Cape Province.

The Mining Right was issued for a period of 15 years and will expire on 9 January 2023. A renewal application was lodged on 1 April 2022 under reference number NC30/5/1/2/2/10208 MR for a further 23 years. The acknowledgement of receipt for the renewal from the DMRE is dated 7 June 2022

The PMG Mining (Pty) Ltd. Bishop project is situated approximately 40km from Postmasburg on the R325 to Kathu/ Kuruman and is approximately 250km from Kimberley in the Northern Cape Province of South Africa, the property under the mining right consists of the Portion 1 and the Remaining Extent of Portion 1 of the farm Bishop № 671, (543.3402 ha) District of Kuruman.

The applicant and practised mining activities are authorised in terms of the Mineral and Petroleum Resources Development of 2002 (MPRDA Act 28 of 2002) but still require an Environmental Authorisation in order to be compliant with the NEMA Act 107 of 1998.

The original application for environmental authorization, the environmental management plan (EMP) submitted in 2007, did not make provision for the large scale/bulk storage of diesel. Over time, as our mining operations developed and the fleet of the operation grew, so did the provisions for the maintenance of such scale of operations. The increase in volume of storage capacity of diesel was undertaken instinctively at the time and, as our environmental management of the associated risks continued in tandem with the increase in storage capacity, we did not appreciate the need for environmental authorisation. In this regard, we confirm that notwithstanding the fact that we did not have the authorisation, we operated in full compliance with how we would have been expected to operate had we had the required authorisation.

Following inspections by the Department of Mineral Resources and Energy (DMRE) in 2018 and 2019, PMG applied in terms of section 24G of the

National Environmental Management Act 107 of 1998 (NEMA) to authorise the unlawful activity.

In 2021, following a further inspection, the DMRE informed PMG that the application in terms of section 24G of the NEMA submitted in 2019, was neither considered nor attended to by the DMRE. The DMRE issued a verbal instruction to PMG to submit an additional application in accordance with section 24G of the NEMA for an environmental authorisation regarding the unlawful activity.

The following listed activity are taking place in the mining area and is being applied for:

Activity 14 NEMA: LN1 (GNR327): The development and related operation of facilities or infrastructure for the storage and handling of dangerous goods (fuel), where such storage occurs in containers with a combined capacity of 80 cubic metres or more but not exceeding 500 cubic meters.

The mining activities at Bishop comprise of the following:

The Bishop Mine produces High grade manganese ore removed by Excavators and transported to the processing plant for processing.

The manganese ore will be mined selectively to ensure that only on grade material is transported to the Run of Mine (ROM) stockpile at the plant. The mining equipment selected for the mine will enable the mine to carry out the selective mining process. The selective mining process will be controlled by the mine's geologists. From the mine the manganese ore will be transported to the plant. The plant process is a standard crushing and screening process that produce a marketable product with a particle sizing of -70mm +0mm. Ancillary mining infrastructure include components such as offices, workshops, access and haul roads, staff accommodation, a laboratory, ROM stockpiles and product stockpiles.

Further a result of the size of its operations, the Mine plays a significant role in the manganese industry, both in South Africa and globally. Since the inception of the EMP, PMG's mining operations have increased significantly. As a result, the storage capacity of diesel at the Mine have instinctively been increased and a storage capacity of at least [223 820 of litres] is currently necessary to conduct the mining operations/to meet PMG's daily operational needs, in accordance with the following:

There are various related operation of facilities or infrastructure, for the storage, or for the storage and handling, of a dangerous good at the Bishop site. These consist of:

No	Facility	Tank Capacity Liters
1	Lab chemical storage	2 240
2	Plant diesel tank 1(Silver)	25 000
3	Plant Diesel Tank 2	20 000
4	Plant Oil store	9 000
5	Plant Generator storage	920
6	Plant Transformer	400
7	Workshop diesel bay	86 000
8	Workshop Salvage Yard Bundwall	
9	Workshop Oil Store	17 000
10	Backup Generator 1	470
11	Back Up Generator 2	440
12	Workshop Bundwall	
	TOTAL	161,470

All equipment is diesel driven and used for the excavation and transportation of raw material to the processing plant where electricity will be used. Electrical reticulation will be established from a transformer to the mining infrastructure, as required. A portable generator will be provided on site as a back-up electricity supply.

No	Vehicles and Equipment on site	Number of Vehicles / Equipment	Average Tank Capacity of Machine	Liters on Site
1	Excavators	14	1 500	21 000
2	Dumpers	28	950	26 600
3	Front End Loaders	7	750	5 250
4	Bulldozers	2	1 650	3 300
5	Graders	1	670	670
6	Other(Crane,Forklift, TLB,firetruck)	8	500	4 000
7	Vehicles	18	85	1 530
	TOTAL	78	6 105	62 350

Total dangerous goods storage capacity of 223 820lt is applied for to be stored on site.

Cognisance must be taken that the filling of all machines on site is equal to approximately 62350 litres with a frequency of filling every machine at least once per week which means that with the current capacity of diesel tanks (131000l) machines can be filled up twice meaning diesel for 14 days approximately.

Water is sourced from boreholes supported by a Water Use License as well as from the Sedibeng Water Users Association.

All infrastructure and activities have been completed and already commenced with.

Mining

Mining in the opencast sections will be carried out by PMG Mining utilising their own plant and equipment. Mining operations make use of Excavators to open the ore body after being drilled by rigs to identify the orebody. Dumper trucks are used to haul the ore to a crushing and screening plant where it is crushed, screened and sorted to size. Although drilling and blasting has not been used by PMG Mining at this stage in the mining process it might be required at a later stage of the mining operations.

Strip Mining

High grade manganese ore will be removed by Excavators and transported to the processing plant for processing. The open areas will only be backfilled if all manganese material is removed. Pits with lower grade manganese may not be backfilled immediately as future demand for such product may increase at a later stage. Overburden etc. will in this case be stored on close proximity to the open pit as is allowed in terms of safety regulations. Other pits will be backfilled where possible with waste material but cognisance must be taken that a large quantity of the mined product is removed and sold which means that some open excavations/pits will be made safe and dumps will be sloped to meet closure objectives described in the Environmental Management Plan.

Technique

During the mining process overburden (waste material) will be removed from the manganese ore. The manganese ore will be mined selectively to ensure that only on grade material is transported to the Run of Mine (ROM) stockpile at the plant. The mining equipment selected for the mine will enable the mine to carry out the selective mining process. The selective mining process will be controlled by the mine's geologists. From the mine the manganese ore will be transported to the plant. The plant process is a standard crushing and screening process that produce a marketable product with a particle sizing of -70mm +0mm.

Technology

The technology applied will be a jaw crusher, a multi-deck screen, and a cone crusher. The final product will have a particle sizing of -70mm to +0 mmm and a manganese content of between 30% and 33%Mn. A laboratory on site supply chemical values geology, production grade control, and final product grade control. The laboratory will utilise an xrf-analyser (x-ray fluorescence)

to determine the manganese content for samples from above mentioned processes.

Production Rates

The plant will operate for 264 days per year for 16 hours per day (Sundays, public holidays and days when rain prevent production have been taken in consideration). The average estimated uptime per day will be 16hrs taking the availability and the utilisation of the plant into consideration). The plant production per day will thus be 3788 tons/day and an average of 118 tons/hour.

Contractors

All the mining and processing operations will be done in-house by PMG Mining (Pty) Ltd.

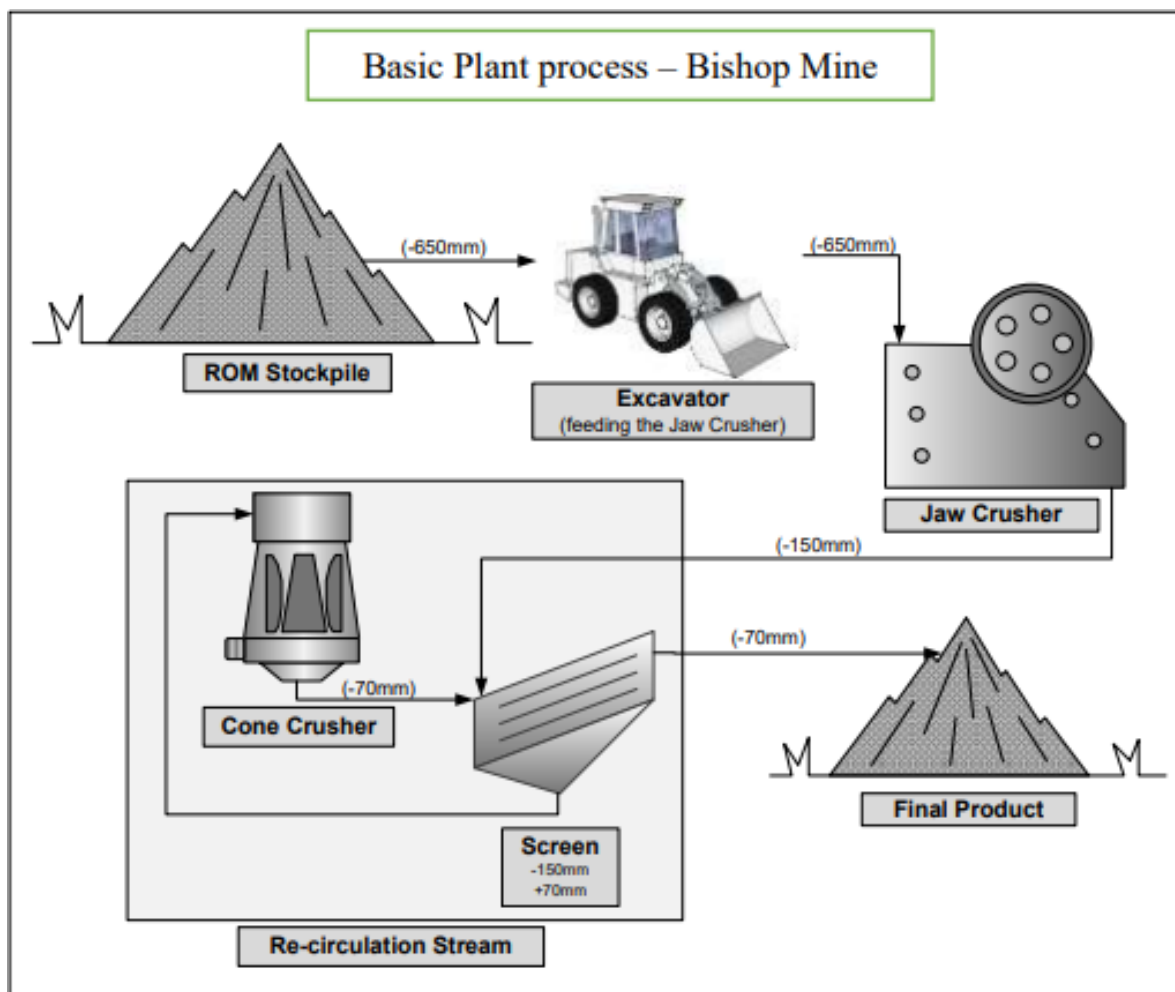


Figure 3. Conceptual schematic flow diagram of the plant.

e) Policy and Legislative Context

<p>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.)</p>	<p>Reference where applied</p>	<p>HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE POLICY AND LEGISLATIVE CONTEXT (E.g In terms of the National Water Act:-Water Use License has/has not been applied for).</p>
<p>Conservation of Agricultural Resources Act (Act 43 of 1983) and Regulations (CARA)</p>	<ul style="list-style-type: none"> - Section 5: Implementation of control measures for alien and invasive plant species; - Section 6: Control measures. - Regulation GN R1048, published on 25 May 1984, in terms of CARA 	<ul style="list-style-type: none"> - Control measures are to be implemented upon the approval of the EMPR.
<p>Constitution of South Africa (Act 108 of 1996)</p>	<ul style="list-style-type: none"> - Section 24: Environmental right - Section 25: Rights in Property - Section 27: Water and sanitation right 	<ul style="list-style-type: none"> - To be implemented upon the approval of the EMPR.
<p>Environment Conservation Act (Act 73 of 1989) and Regulations (ECA)</p>	<ul style="list-style-type: none"> - Sections 21, 22, 25, 26 and 28: EIA Regulations, including listed activities that still relate to the existing section of ECA. - Section 28A: Exemptions. 	<ul style="list-style-type: none"> - To be implemented upon the approval of the EMPR.
<p>Fencing Act (Act 31 of 1963)</p>	<ul style="list-style-type: none"> - Section 17: States that any person erecting a boundary fence may clean any bush along the line of the fence up to 1.5m on each side thereof and remove any tree standing in the immediate line of the fence. However, this provision must be read in conjunction with the environmental legal provisions relevant to protection of flora. 	<ul style="list-style-type: none"> - Control measures are to be implemented upon the approval of the EMPR.
<p>Hazardous Substances Act (Act 15 of 1973) and Regulations read together with NEMA and NEMWA</p>	<ul style="list-style-type: none"> - Definition, classification, use, operation, modification, disposal or dumping of hazardous substances. 	<ul style="list-style-type: none"> - Noted and Considered measures are to be implemented upon the approval of the EMPR.
<p>Intergovernmental Relations Act (Act 13 of 2005)</p>	<ul style="list-style-type: none"> - This Act establishes a framework for the National, Provincial and Local Governments to 	

	promote and facilitate intergovernmental relations.	
Mine, Health and Safety Act (Act 29 of 1996) and Regulations	- Entire Act.	- Control measures are to be implemented upon the approval of the EMPR.
Mineral and Petroleum Resources Development Act (Act 28 of 2002) and Regulations as amended	- Entire Act. - Regulations GN R527	- A Mining Right has been granted and this is an application for revision in terms of Section 102 as well as a rectification application in terms of Section 24(G) for diesel storage ((NC) 30/5/1/2/2/114 MR). - Rights and obligations to be adhered to.
National Environmental Management Act (Act 107 of 1998) and Regulations as amended	- Section 2: Strategic environmental management principles, goals and objectives. - Section 24: Foundation for Environmental Management frameworks. - Section 24N: - Section 24O: - Section 28: The developer has a general duty to care for the environment and to institute such measures to demonstrate such care. - Regulations GN R547, more specifically Chapters 5 and 7, where applicable (the remainder was repealed) published on 18 June 2010 in terms of NEMA (Environmental Management Framework Regulations) - Regulations GN R982 to R985, published on 4 December 2014 in terms of NEMA (Listed Activities) - Regulations GN R993, published on 8 December 2014 in terms of NEMA (Appeal) - Regulations GN R994, published on 8 December 2014 in terms of NEMA (exemption)	- The approved Environmental Management Programme that had been approved with the Mining Right application. As a result of the mining operations over many years and subsequent changes an application for the substitution of the environmental authorisation has commenced and is to be lodged and this document is being compiled in order to fulfil the requirements thereof.

	<ul style="list-style-type: none"> - Regulations GN R205, published on 12 March 2015 in terms of NEMA (National appeal Amendment Regulations) - Regulations GN R1147, published on 20 November 2015 in terms of NEMA (Financial Provision) 	
National Environmental Management: Air Quality Act (Act 39 of 2004)	<ul style="list-style-type: none"> - Section 32: Control of dust - Section 34: Control of noise - Section 35: Control of offensive odours - Regulation GN R551, published on 12 June 2015 (amended Categories 1 to 5 of GN 983) in terms of NEM:AQA (Atmospheric emission which have a significant detrimental effect on the environment) - Regulation GN R283, published on 2 April 2015 in terms of NEM:AQA (National Atmospheric Emissions Reporting Regulations) (Group C-Mines) 	<ul style="list-style-type: none"> - Control measures are to be implemented upon the approval of the EMPR. - This is also legislated by Mine Health and Safety from DMR and is to be adhered to.
National Environmental Management: Biodiversity Act (Act 10 of 2004)	<ul style="list-style-type: none"> - Section 52 of The National Environmental Management Act: Biodiversity Act (NEMBA) (Act 10 of 2004) states that the MEC/Minister is to list ecosystems that are threatened and in need of protection. - Section 53 states that the Minister may identify any process or activity in such a listed ecosystem as a threatening process. - A list of threatened and protected species has been published in terms of Section 56(1) GG 29657 GNR 151 and GNR 152, Threatened or Protected Species Regulations. 	<ul style="list-style-type: none"> - A permit application regarding protected plant species needs to be lodged with DENC which is in process to be lodged. - Control measures are to be implemented upon the approval of the EMPR.

	<p>Commencement of Threatened or Protected Species Regulations 2007: 1 June 2007 GNR 150/GG 29657/23-02-2007</p> <p>Publication of lists of critically endangered, vulnerable and protected species GNR 151/GG 29657/23-02-2007 *</p> <p>Threatened or Protected Species Regulations GNR 152/GG 296547/23-02-2007 *</p> <ul style="list-style-type: none"> - Sections 65 – 69: These sections deal with restricted activities involving alien species; restricted activities involving certain alien species totally prohibited; and duty of care relating to alien species. - Sections 71 and 73: These sections deal with restricted activities involving listed invasive species and duty of care relating to listed invasive species. - Regulation GN R151, published on 23 February 2007 (List fo Critically Endangered, Vulnerable and Protected Species, 2007) in terms of NEM:BA - Regulation GN R152, published on 23 February 2007 (TOPS) in terms of NEM:BA - Regulations GN R507 to 509 of 2013 and GN 599 of 2014 in terms of NEM:BA (Alien Species) 	
<p>The National Environmental Management Act: Protected Areas Act (NEMPAA) (Act 57 of 2003) provides for the protection of ecologically viable areas that are representative of South Africa"s</p>	<ul style="list-style-type: none"> - Chapter 2 lists all protected areas. 	<ul style="list-style-type: none"> - Not applicable. The mining operation does not fall within any protected area.

natural biodiversity and its landscapes and seascapes.		
National Environmental Management: Waste Management Act (Act 59 of 2008)	<ul style="list-style-type: none"> - Chapter 4: Waste management activities - Regulations GN R634 published on 23 August 2013 in terms of NEM:WA (Waste Classification and Management Regulations) - Regulations GN R921 published on 29 November 2013 in terms of NEM:WA (Categories A to C – Listed activities) - National Norms and Standards for the Remediation of contaminated Land and Soil Quality published on 2 May 2014 in terms of NEM:WA (Contaminated land regulations) - Regulations GN R634 published on 23 August 2013 in terms of NEM: WA (Waste Classification and Management Regulations) - Regulations GN R632 published on 24 July 2015 in terms of NEM: WA (Planning and Management of Mineral Residue Deposits and Mineral Residue Stockpiles) - Regulations GN R633 published on 24 July 2015 in terms of NEM: WA (Amendments to the waste management activities list published under GN921) 	<ul style="list-style-type: none"> - To be implemented upon the approval of the EMPR.
National Forest Act (Act 84 of 1998) and Regulations	<ul style="list-style-type: none"> - Section 15: No person may cut, disturb, damage, destroy or remove any protected tree; or collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree, except under a licence granted by the Minister. 	<ul style="list-style-type: none"> - A permit application regarding protected tree species need to be lodged with DAFF which is in process to be lodged. - Control measures are to be implemented upon the approval of the EMPR.
National Heritage Resources Act (Act 25 of 1999) and Regulations	<ul style="list-style-type: none"> - Section 34: No person may alter or demolish any structure or part of a structure which is older 	<ul style="list-style-type: none"> - Control measures are to be implemented upon the approval of the EMPR.

	<p>than 60 years without a permit issued by the relevant provincial heritage resources authority.</p> <ul style="list-style-type: none"> - Section 35: No person may, without a permit issued by the responsible heritage resources authority destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or paleontological site. - Section 36: No person may, without a permit issued by SAHRA or a provincial heritage resources authority destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a forma cemetery administered by a local authority. - Section 38: This section provides for HIA which are not already covered under the ECA. Where they are covered under the ECA the provincial heritage resources authorities must be notified of a proposed project and must be consulted during HIA process. - Regulation GN R548 published on 2 June 2000 in terms of NHRA 	
<p>National Water Act (Act 36 of 1998) and regulations as amended, <i>inter alia</i> Government Notice No. 704 of 1999</p>	<ul style="list-style-type: none"> - Section 4: Use of water and licensing. - Section 19: Prevention and remedying the effects of pollution. - Section 20: Control of emergency incidents. - Section 21: Water uses In terms of Section 21 a licence is required for: <ul style="list-style-type: none"> (a) taking water from a water resource; (b) storing water; (c) impeding or diverting the flow of water in a watercourse; (f) Waste discharge related water use; 	<ul style="list-style-type: none"> - A water use application is in the final stages of preparation and will be lodged with Department of Water and Sanitation (DWS). - Control measures are to be implemented upon the approval of the EMPR.

	<p>(g) disposing of waste in a manner which may detrimentally impact on a water resource; (i) altering the bed, banks, course or characteristics of a watercourse; (j) removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people; and;</p> <ul style="list-style-type: none"> - Regulation GN R704, published on 4 June 1999 in terms of the National Water Act (Use of water for mining and related activities) - Regulation GN R1352, published on 12 November 1999 in terms of the National Water Act (Water use to be registered) - Regulation GN R139, published on 24 February 2012 in terms of the National Water Act (Safety of Dams) - Regulation GN R398, published on 26 March 2004 in terms of the National Water Act (Section 21 (j)) - Regulation GN R399, published on 26 March 2004 in terms of the National Water Act (Section 21 (a) and (b)) - Regulation GN R1198, published on 18 December 2009 in terms of the National Water Act (Section 21 (c) and (i) – rehabilitation of wetlands) - Regulations GN R1199, published on 18 December 2009 in terms of the National Water Act (Section 21 (c) and (i)) - Regulations GN R665, published on 6 September 2013 in terms of the National Water Act (Amended GN 398 and 399 – Section 21 (e), (f), (h), (g), (j)) 	
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Nature Conservation Ordinance (Ord 19 of 1974)	- Chapters 2, 3, 4 and 6: Nature reserves, miscellaneous conservation measures, protection of wild animals other than fish, protection of Flora.	- Control measures are to be implemented upon the approval of the EMPR.
Northern Cape Nature Conservation Act (Act 9 of 2009)	- Addresses protected species in the Northern Cape and the permit application process related thereto.	- A permit application regarding provincially protected plant species as well as for large-scale harvesting of indigenous flora need to be lodged with DENC which is in process. - Control measures are to be implemented upon the approval of the EMPR.
Occupational Health and Safety Act (Act 85 of 1993) and Regulations	- Section 8: General duties of employers to their employees. - Section 9: General duties of employers and self-employed persons to persons other than their employees.	- Control measures are to be implemented upon the approval of the EMPR.
Road Traffic Act (Act 93 of 1997) and Regulations	- Entire Act.	- Control measures are to be implemented upon the approval of the EMPR.
Water Services Amendment Act (Act 30 of 2007)	- It serves to provide the right to basic water and sanitation to the citizens of South Africa (giving effect to section 27 of the Constitution).	- Control measures are to be implemented upon the approval of the EMPR.
National Land Transport Act, (Act 5 of 1998)		- To take note.
Northern Cape Planning and Development Act (Act 7 of 1998)	- To control planning and development	- To be implemented upon the approval of the EMPR.
Spatial Planning and Land Use Management (Act 16 of 2013 (SPLUMA) and regulations	- To provide a framework for spatial planning and land use management in the Republic; - To specify the relationship between the spatial planning and the land use management, amongst others - Regulations GN R239 published on 23 March 2015 in terms of SPLUMA	- To be implemented upon the approval of the EMPR.
Subdivision of Agricultural Land Act, 70 of 1970 and regulations	- Regulations GN R373 published on 9 March 1979 in terms of Subdivision of Agricultural Land	- To take note.

Basic Conditions of Employment Act (Act 3 of 1997) as amended	- To regulate employment aspects	- To be implemented upon the approval of the EMPR
Community Development (Act 3 of 1966)	- To promote community development	- To be implemented upon the approval of the EMPR
Development Facilitation (Act 67 of 1995) and regulations	- To provide for planning and development	- To take note.
Development Facilitation (GN24, PG329, 24/07/1998)	- Regulations re Northern Cape LDO's	- To take note.
Development Facilitation (GNR1, GG20775, 07/01/2000)	- Regulations re application rules S26, S46, S59	- To take note.
Development Facilitation (GN732, GG14765, 30/04/2004)	- Determines amount, see S7(b)(ii)	- To take note.
Land Survey Act (Act 8 of 1997) and regulations, more specifically GN R1130	- To control land surveying, beacons etc. and the like; - Agriculture, land survey S10	- To take note.
National Veld and Forest Fire Act (Act 101 of 1998)) and regulations, more specifically GN R1775	- To regulate law on veld and forest fires - (Draft regulations s21)	- To be implemented upon approval of the EMPR
Municipal Ordinance, 20/1974	- To control pollution, sewers etc.	- To be implemented upon approval of the EMPR
Municipal Ordinance, PN955, 29/08/1975	- Nature conservation Regulations	- To be implemented upon approval of the EMPR
Cape Land Use Planning Ordinance, 15/85	- To control land use planning	- To take note.
Cape Land Use Planning Ordinance, PN1050, 05/12/1988	- Land use planning Regulations	- To take note.

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.)

This application was preceded by a Prospecting Right in 2006 but the mine is currently operating on a Mining Right which is under renewal.

PMG Mining (Pty) Ltd is currently the holder of a Mining Right with reference number NC30/5/1/1/3/2/1/114MR, executed on behalf of the Minister of Mineral Resources ("Minister") on 10 January 2008 before Mr Noel Henry Kriel, a Notary Public, under Protocol Number 829/2008, consisting of the sole and exclusive right to mine for iron ore and manganese in, on and under Portion 1 and the Remainder of the farm Bishop no. 671, situated in the magisterial district of Kuruman, Northern Cape Province.

The Mining Right was issued for a period of 15 years and will expire on 9 January 2023. A renewal application was lodged on 1 April 2022 under reference number NC30/5/1/2/2/10208 MR for a further 23 years. The acknowledgement of receipt for the renewal from the DMRE is dated 7 June 2022.

The original application for environmental authorization, the environmental management plan (EMP) submitted in 2007, did not make provision for the large scale/bulk storage of diesel. Over time, as our mining operations developed and the fleet of the operation grew, so did the provisions for the maintenance of such scale of operations. The DMRE issued a verbal instruction to PMG to submit an additional application in accordance with section 24G of the NEMA for an environmental authorisation regarding the unlawful activity.

This application is therefore for the amendment of the existing approved Environmental Management Programme for PMG Mining in terms of **Section 102 of the MPRDA with an additional Section 24 G application for the storage, or for the storage and handling, of a dangerous good on site.**

Total dangerous goods storage capacity of 223 820lt is applied for to be stored on site.

It is confirmed that the way forward is to do a substitution of the current Environmental Management Programme in terms of section 102 of the Mineral and Petroleum Resources Development Act, 28 of 2002 and the process to be followed is in terms of sections 31 and 32 of the National Environmental Management Act, 107 of 1998.

Thus the timeframes (as mentioned in the Department of Mineral Resources' form for Environmental Authorisations) should be aligned with the National Environmental Management Act as well as with the prescribed timeframes for the submission of documents as regulated by the National Environmental Management Act's EIA (Environmental Impact Assessment) Regulations (2014) and it should be strictly adhered thereto.

The process that was proposed to the Department was agreed to by the Department is as follows:

- The amendment should be an application in terms of Part 2, Section 31, of the EIA Regulations (2014) and the process to be followed should be in terms of Section 32 of same;

- The amendment should be submitted, along with the amended Mining Work Programme, in terms of Section 102 of the Mineral and Petroleum Resources Development Act.
- A Section 24(G) application needs to accompany this Section 102 application for storage, or for the storage and handling, of a dangerous good on site.
- Need:

Global manganese reserves averaged 680 million tons (Mt) in 2017, with South Africa leading at 29.4 percent, followed by Ukraine and Brazil at 20.6 percent and 17.6 percent, respectively (Table 2). Global manganese ore production averaged 22.7 Mt, a 42.1 percent increase compared with 2016, with South Africa contributing 62.1 percent, followed by China and Australia at 15.6 percent and 9.7 percent respectively. The increase in global manganese ore production was due to an increase in South Africa’s production by 3.1 percent from 13.4kt in 2016.

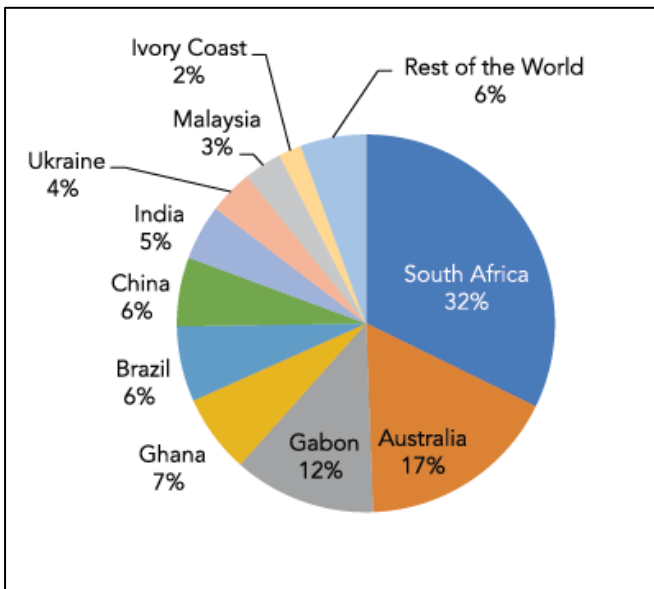


Figure 4. Top ore producing countries in dry metric tonnes contained manganese (2018). (Source: International Manganese Institute)

Table 2: World Manganese ore reserves, production and exports 2016-7

COUNTRY	RESERVES#			PRODUCTION*			EXPORTS#		
	MT	%	Rank	Mt	%	Rank	Mt	%	Rank
South Africa	200	29.4	1	14.1*	62.1	1	13.4	38.1	1
China	48	7.1	5	2.5	15.6	2	0.36	1.7	7
Australia	94	13.8	4	2.2	9.7	3	5.5	15.6	2
Gabon	20	2.9	7	1.6	7.0	4	4.3	12.2	3
India	34	5.1	6	0.79	3.5	6	1.1	3.1	5
Brazil	120	17.6	3	1.2	5.3	5	2.6	7.4	4
Ukraine	140	20.6	2	0.38	1.7	7	0.8	2.3	6
Other	24	3.5		0.76	3.3		7.1		
2017	680	100		22.7	100		35.2	100	
2016	690			16			21.6		

Source: +USGS 2018 # CRU Group 2017 # Directorate Mineral Economics, DMR*

South Africa's manganese ore production increased by 2.9 percent to 14.1Mt in 2017 compared to 13.7 Mt in 2016. Export mass increased by 19.2 percent, due to demand for lower grade ore, especially from China. Mines such as Tshipi e Ntle, exported most of the lower grade manganese ore (35 percent and lower manganese ore content), which was previously considered as waste, and formed part of the mine's stockpiles, apart from their higher-grade ore export, thus increasing export mass. South Africa's manganese alloys are dominated by high carbon ferromanganese (HCFEMn), which accounts for about 57.5 percent of the total alloy production, followed by silico-manganese (SiMn) and medium carbon ferromanganese (MCFEMn), at about 34.9 percent and 12.9 percent respectively.

Table 3: South Africa's Manganese Ore Production and Sales 2008 to 2017

Year	Production Kt	Local sales		Export sales	
		Mass Kt	Value R'000	Mass kt	Value R'000
2008	6 807	*	1 761	4 689	15 581
2009	4 578	*	583	3 975	5 003
2010	7 171	*	1 320	5 986	9 340
2011	8 651	*	1 325	6 772	8 569
2012	8 943	*	1 134	7 497	9 685
2013	10 957	*	1 506	7 961	12 969
2014	14 051	*	1 644	9 644	14 734
2015	15 952	*	703	10 026	12 657
2016	13 735	*	827	11 245	18 861
2017	14 140	*	1 671	13 403	30 403

Source: DMR, Mineral Economics, 2017, (*) – withheld

The country's manganese alloys output increased by 23.8 percent to 458 kt in 2017, compared with 2016. Similarly, local sales mass increased by 52 percent, while export sales mass saw a decline of 20.5 percent over the same period.

Table 4: South Africa's Manganese Alloys Production and Sales : 2008 to 2017

Year	Production		Local sales		Export sales		
	mass Kt	Mass kt	Value R'million	Unit Value R/kt	Mass kt	Value R'million	Unit value R/kt
2008	762	126	1 767	14 037	682	1 190	17 451
2009	404	68	597	8 839	413	3 624	8 772
2010	790	65	600	9 264	751	7 015	9 338
2011	1 064	54	482	8 927	854	7 407	8 673
2012	882	60	526	8 749	681	6 158	9 037
2013	787	82	737	8 955	577	4 927	8 539
2014	970	104	1 020	9 780	659	6 334	9 619
2015	614	34	365	10 557	496	4 756	9 572
2016	370	25	249	9597	341	3095	9056
2017	458	38	592	15464	271	4068	14968

Source: DMR Directorate, Mineral Economics, 2017

The world's output of manganese ore increased in 2018 for the second consecutive year, on rising demand from manganese alloy smelters. It reached 20.3 million dry mt (Mn contained), up by 6% or 1.2 million dry mt from 2017, exceeding 2014 production of 19.3 million mt and marking a new record high. The additional supply mostly came from Africa and Australia, driven by China, where output decreased because of mine depletion and stricter safety regulations.

Industrial Application Manganese

Approximately 85% of the manganese units mined from the ground is used in the production mild and carbon steels. The other more minor uses of manganese are in the manufacture of non-ferrous alloys, dry cell batteries, chemicals and agricultural products. Recently the use of manganese in steel making was extended into the production of speciality steels, valve and engineering steels and in the Series Stainless Steels, in which a combination of manganese and nitrogen replace nickel as the austenitising agent. In its use in steelmaking, manganese is mainly used in the form of bulk alloys (High-Carbon Ferromanganese and Silico Manganese) or in speciality sheets as refined alloy (Medium-Carbon Ferromanganese or Low-Carbon Ferromanganese). Electrolytic Manganese Metal is used as an alloying agent in non-ferrous alloys or as a substitute for refined manganese alloys in the steel industry.

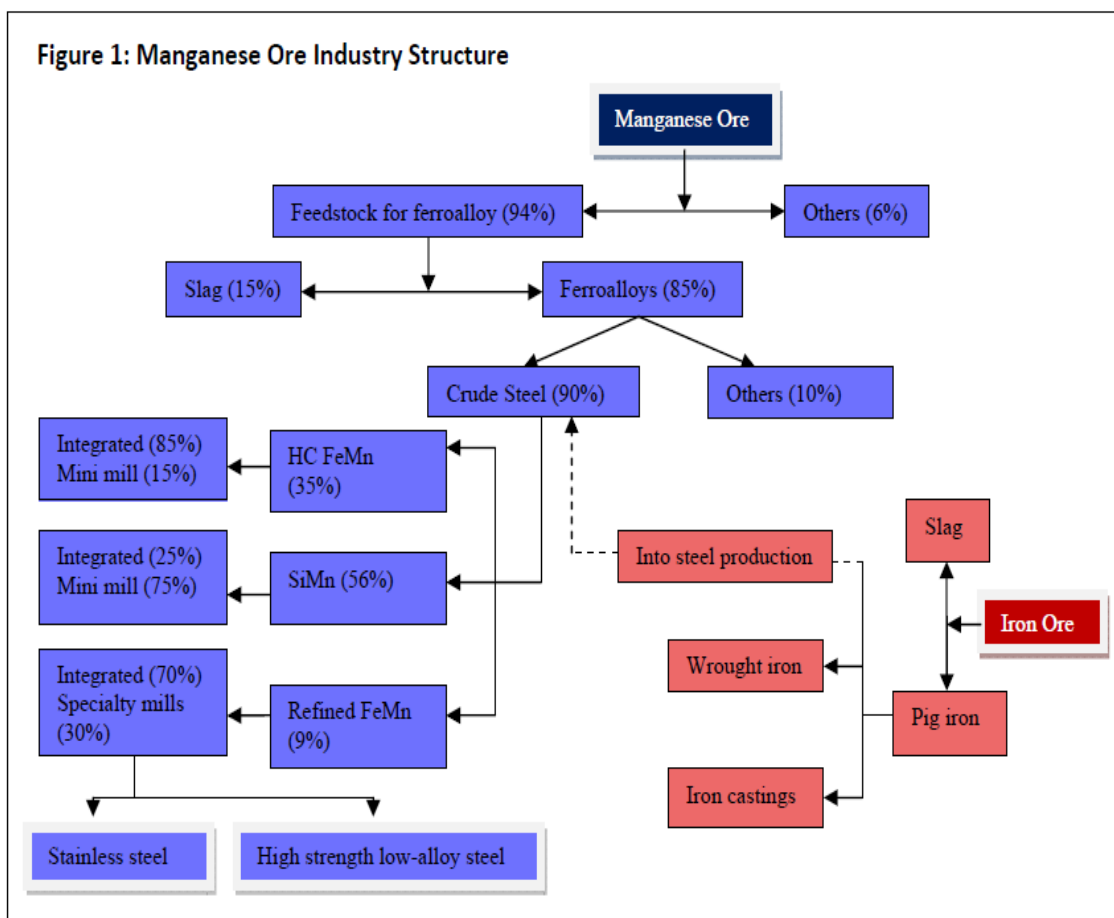


Figure 5. African Development Bank Group: Working Paper Series no 132

In its use in crude steel production, the manganese serves to desulphurise the molten steel as well as to control the shape of the residual sulphur inclusions in rolled steel products. In addition, manganese is used as an alloying agent, which imparts toughness and hardness to the steel. The extreme example of the application of manganese in this respect is the ultra-hard Hadfield and Rail Steels, which contain 15% manganese.

Local markets for non-ferrous alloys (manganese)

The major markets for manganese products are steelmakers and there are no significant local markets. It is therefore envisaged that all of the product will be exported.

Global Steel Market

World crude steel production reached 1 691.2 million tons (Mt) for the year 2017, increasing by 4.0 percent compared to 2016. Crude steel production increased in all regions in 2017, except in the CIS, which remained stable. China's crude steel production in 2017 reached 831.7 Mt, up by 5.7 percent, compared with 2016, with the countries share in steel production increasing to 49.6 percent compared from 49.4 percent. The European Union, an economic and political block, which consists of 28 countries, Belgium, Bulgaria, Czech Republic, Denmark, Germany, Estonia, Ireland, Greece, Spain, France, Croatia, Italy, Cyprus, Latvia, Lithuania, Luxembourg, Hungary, Malta, Netherlands, Austria, Poland, Portugal, Romania, Slovenia, Slovakia, Finland, Sweden, United Kingdom, (EU-28), produced 168.7 Mt of crude steel, an increase of 4.1 percent compared to the previous year.

There are in excess 700 Steel Producers world-wide producing a total of 1.02 billion tons of steel in total. Based on manganese pre-dominant use in steel making, manganese market trends closely follow that of the steel market. However, in the last fifteen years, the production of steel has grown by one to 1.5% while the growth in the use of manganese remained static as a result of increased efficiencies in the application of manganese in the steel making process. At present, further increases in the efficiency of manganese application are limited and thus the market for manganese should closely follow that of steel as there is no current or potential substitute for manganese in steelmaking.

In modern steel making practice approximately seven (7) kilograms of manganese alloys are added per ton of crude steel produced. High rates of growth in China has resulted a recent increase in the Global unit consumption of manganese to 10.4 kilograms per ton steel.

The current market for manganese alloys (High-Carbon Ferromanganese, Silico manganese and Medium-Carbon Ferromanganese) is approximately 7.4 Mt of contained manganese per annum (10 Mt of alloy). The production of alloys follows demand fairly closely as stocking and de-stocking cycles as well as scrap returns do not have a major influence within the industry, although purchases from the National Defence Stockpile in the United States of America have an influence on the industry. Manganese ore and alloy production is dominated by the high grade manganese ore producers namely, BHP Billiton (Samancor), Eramet, CVRD and Assmang although the influence of the low grade ore producers, particularly China, has grown in recent years.

The importance of the non-integrated alloy producers is also diminishing as the major producers increase their level of integration. The production volumes in the industry are summarised in Table 5.

Table 5: Production Summary of the Manganese Industry – CPR Report December 2021

Production	2019			2020			Reserves		
	Mt	%	Rank	Mt	%	Rank	Mt	%	Rank
Australia	3,180	16.2	2	3,300	17.8	2	230,000	17.7	3
Brazil	1,740	8.9	4	1,200	6.5	6	270,000	20.8	2
Burma	430	2.2	10	400	2.2	10	NA		
China	1,330	6.8	6	1,300	7	5	54,000	4.2	6
Cote d'voire	482	2.5	9	460	2.5	9	NA		
Gabon	2,510	12.8	3	2,800	15.1	3	61,000	4.7	5
Georgia	116	0.6	16	150	0.8	14	NA		
Ghana	1,550	7.9	5	1,400	7.6	4	13,000	1	8
India	801	4.1	7	640	3.5	7	34,000	2.6	7
Kazakhstan	140	0.7	15	130	0.7	15	5,000	0.4	9
Malaysia	390	2	11	350	1.9	11	NA		
Mexico	202	1	13	190	1	13	5,000	0.4	9
South Africa	5,800	29.6	1	5,200	28.1	1	520,000	40	1
Ukraine	500	2.6	8	550	3	8	140,000	10.8	4
Vietnam	158	0.8	14	150	0.8	14	NA		
Other Countries	270	1.4	12	270	1.5	12	Small		
World total	19,600			18,500			1,300,000		

Summary of product consumers

The manganese value chain consists of three segments namely:

- Ore Producers
- Alloy Producers
- Steel Producers

The ore industry is segmented by ore characteristics and comprises of:

- High grade ore (Typically ore with more than 35% manganese contents – producers account for two thirds of production)
- Low grade ore (Contributing to a third of production)

The end use customers are primarily steel producers (94%) of demand. Chemical and specialist metallurgical segments contribute the balance of the demand.

The chemical market demand is for the following:-

- Dry Cell Manufacture
- Glass Industry
- Pigments and Dyeing Material
- Paint and Varnish Driers
- Fertiliser
- Uranium Industry

The chemical market is a very small proportion of ore used and as the ore produced at Bishop is not intended for this market the main focus will be placed on the Metallurgical Market. Both iron and manganese are used to manufacture steel, ferrous and non-ferrous alloys and pigirion. At least 95% of all ore mined are used in these processes.

The main buyers of raw iron and manganese ore in Japan and China with South Africa having a small local market that is already oversupplied.

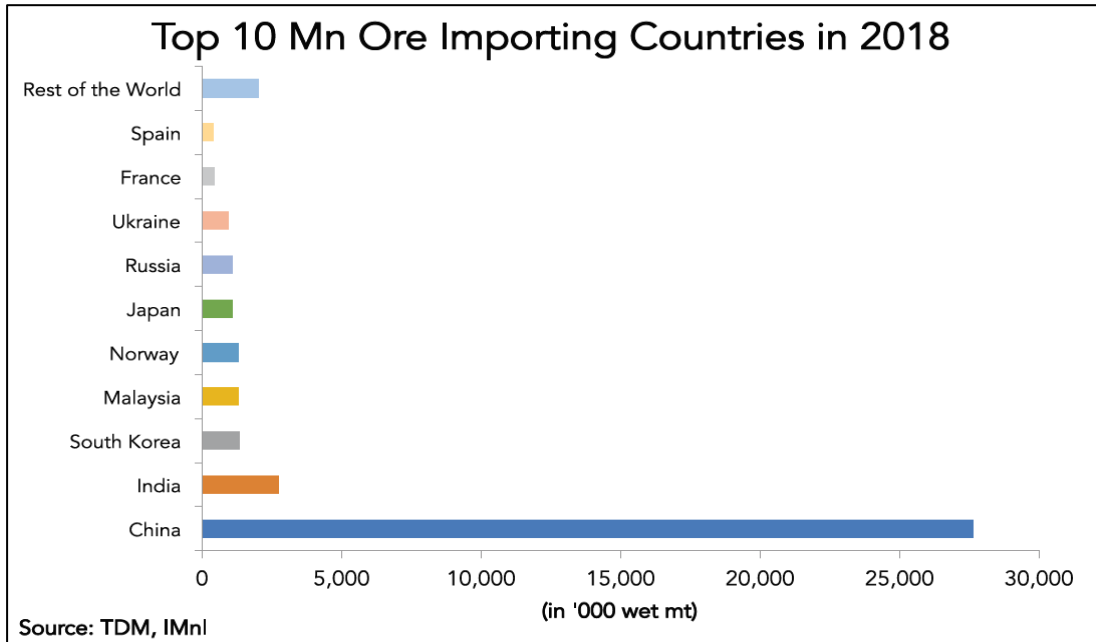


Figure 6. Top ten Mn Ore importing Countries in 2018

- Desirability:

No	Description	Yes/No
1	Does the proposed land use / development fit the surrounding area?	Yes
2	Does the proposed land use / development conform to the relevant structure plans, SDF and planning visions for the area?	Yes
3	Will the benefits of the proposed land use / development outweigh the negative impacts of it?	Yes
4	Will the proposed land use / development impact on the sense of place?	Yes
5	Will the proposed land use / development set a precedent?	No
6	Will any person's rights be affected by the proposed land use / development?	Yes
7	Will the proposed land use / development compromise the "urban edge"?	No

- Benefits:

No	Description	Yes/No
1	Will the land use / development have any benefits for society in general?	Yes
2	Will the land use / development have any benefits for the local communities where it will be located?	Yes

g) Period for which the environmental authorisation is required:

The Mining Right was issued for a period of 15 years and will expire on 9 January 2023. A renewal application was lodged on 1 April 2022 under reference number NC30/5/1/2/2/10208 MR for a further 23 years. The acknowledgement of receipt for the renewal from the DMRE is dated 7 June 2022.

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 issued 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:

The registered description of the land to which the mining right application relates:

Farm Name	Title Deed	In Extent
Remaining Extent and Portion 1 of the Farm Bishop 671, Kuruman in the Northern Cape Province	T2097/2005	519.6442ha
	T450/2015	23.4305ha

The property on which the Mining Right was granted is determined by the geological location of the mineral resource. Therefore, there are no alternatives for the location of the activity, except for not proceeding with the operation. This will however cause the underutilisation of a national economic resource.

ASSMANG Proprietary Limited held mining rights on the project area, leased annually from the state until 1996. No exploration data is available from ASSMANG. PMG acquired a prospecting licence in 2006 and then obtained mining rights for the project area and since the acquisition of prospecting rights; the consortium conducted numerous exploration programmes in two phases. Phase one of the exploration conducted non-invasive activities such as topographical and geological mapping and trenching. Phase two conducted diamond drilling followed by reverse circulation. A summary of the geological work undertaken by PMG at the project area is presented table 6.

Table 6: Project area work programme summary.

Phase	Period	Activity	Outcome
1	2011	Desktop Studies	Report
1	2011	Geological mapping	1:2000 map
1	2012	Topographical mapping	1:2000 map
1	2012	Trenching	Exposed Bedrock
2	2012/2014	Diamond drilling	111 drill cores
2	2014	Reverse Circulation	10 RC
2	2015	Diamond drilling/reverse Circulation	10 RC/Core
2	2015	Pit construction	Production Pit
3	2015	Cataloguing work	Database

The property is accessible via good roads from different directions.

Infrastructure in the area is well developed with good road and rail networks, electricity grid and water. Experienced labour is available in the area as is an extensive network of secondary industries geared towards small and large-scale mining. ESKOM power is available on site.

The surrounding areas rely on groundwater for both domestic and livestock watering purpose. The rest of the water sources are used primarily for game and livestock watering and to a lesser extent for domestic purpose.

Alternatives considered:-

As there is an existing Mining Right that had been granted over the said area from 10 January 2008 to 9 January 2023 for 13 years and a renewal lodged and acknowledged for another 23 years, it would not be viable to consider an alternative site for the Section 102 application to align the Environmental Management Programme of the Mining Right. Alternatives for land are thus not available, as the mining right was granted and have been in existence for many years over this area.

Therefore there are no alternatives to the area.

SECTION 24 G FOR the storage, or for the storage and handling, of a dangerous good on site.

It is not feasible to consider other sites in terms of location alternatives as the property has existing operational fuel facilities.

Alternative locations are therefore currently not available and would involve the disturbance of another area. The existing diesel tanks is compatible with the surrounding mining operation and workshops that is also existing land uses and should blend in well with the predominant mining character of the surrounding developments.

(b) The type of activity to be undertaken:

Opencast Mining activities for Manganese Ore and Iron Ore.

Alternatives considered:-

Bishop site is situated in a rural area, with major land uses in the region including mining and agriculture. According to AGIS, the land capability for the study site is non-arable, with the hills considered to be wilderness, while the plains are suitable for grazing. The agricultural region is demarcated for cattle farming, with the grazing capacity estimated at 14 Ha/LSU.

The study area is divided by the R325 road. The large portion west of this road has been mined extensively between the 1930's to 1960's and forms the core mining area for the current operation. As a result, substantial evidence of the mining associated disturbances is visible on site. The smaller section in the east is presumably utilised for grazing. A watering point and a few kudus were observed here. The only alternative land use is livestock and game farming; however, the applicant's main economic

activity is mining and for this reason does not favour any other alternative land use.

Further, since a mining right has been granted and executed on 10 January 2008 to 9 January 2023 for 13 years and a renewal lodged and acknowledged for another 23 years, the option of amending the mining area or the type of activity is not available nor considerable.

SECTION 24 G FOR the storage, or for the storage and handling, of a dangerous good on site.

The site is in an area that has been approved for mining purposes. Several other mining developments exist within this area thus setting the precedent and need for this facility.

The proposed development can be deemed desirable and in line with future mining development trends for the area:

- The character of the area has changed over time as a result of continuous development, and supporting mining logistics and industrial uses.
- The impact of the proposed expansion will consequently not affect the character of the area, and it is further felt that the site is ideally suited for the proposed use.
- It will support the existing mining commercial and industrial development in the area.
- Noises caused by the development will be in accordance with the uses within the area.

Based on the above, the diesel tanks are regarded as the preferred land use alternative.

(c) The design or layout of the activity:

The site infrastructure is already placed and part of an operational mine, and can therefore not be moved.

Alternatives considered:-

Summary of infrastructure requirements such as roads, rail, electricity and water

Large scale mining in the past has disturbed the area extensively, with open mining pits, access roads and mining infrastructure found throughout. The property is accessible via good roads from different directions.

Infrastructure in the area is very well developed with good road and rail networks, electricity grid and water. Experienced labour is available in the area as is an extensive network of secondary industries geared towards small and large-scale mining. ESKOM power is available on site.

In terms of power generation, the options available was for ESKOM power or generators. It was decided to go with ESKOM with diesel generators as backup power given the unreliability of ESKOM.

The surrounding areas rely on groundwater for both domestic and livestock watering purpose. The rest of the water sources are used primarily for game and livestock watering and to a lesser extend for domestic purpose.

In terms of water use alternatives; the operation is not located near any perennial rivers and therefore groundwater is the best water source for the operation. Alternatives include sourcing from service providers, if available and feasible. Plastic pipelines are considered to be the best long term option for transferring water, due to their temporary nature which causes minimum environmental disturbances.

Therefore, a pipeline route was put down and is in use.

Alternatives for fuel storage include surface storage, underground storage and the storage of fuel in mobile tanks with a metal bund wall. Underground storage has an adverse negative pollution potential, because it is not easy to monitor leakages. Remediation measures are also not as effective as compared to surface storage tanks. Mobile tanks are viable option for infield screening activities, but the best viable long-term option is the instalment of fuel tanks within a concrete bund wall. The final location of the fuel storage tanks will be determined based on proximity to site operations.

SECTION 24 G FOR the storage, or for the storage and handling, of a dangerous good on site.

No technology alternatives are being considered for this diesel storage project as no alternatives which are feasible or reasonable are available. The above ground storage of fuel for dispensing is governed by SANS 10089-1 and the installation of the storage tanks and associated fuel handling infrastructure will need to conform to these standards. This requirement limits the opportunity to implement alternate technology or design.

(d) The technology to be used in the activity:

- Technique

During the mining process overburden (waste material) will be removed from the manganese ore. The manganese ore will be mined selectively to ensure that only on grade material is transported to the Run of Mine (ROM) stockpile at the plant. The mining equipment selected for the mine will enable the mine to carry out the selective mining process. The selective mining process will be controlled by the mine's geologists. From the mine the manganese ore will be transported to the plant. The plant process is a standard crushing and screening process to create a marketable product with a particle sizing of -70mm +0mm.

- Technology

The technology applied will be a jaw crusher, a multi-deck screen, and a cone crusher. The final product will have a particle sizing of -70mm to +0 mm and a manganese content of 34% Mn (Manganese). A laboratory will be established on site to supply chemical values geology, production

grade control, and final product grade control. The laboratory will utilise an xrf-analyser (x-ray fluorescence) to determine the manganese content for samples from above mentioned processes.

Alternatives considered:-

The planned mining activities, include the excavation of pits with continued backfilling if possible. The operation is also associated with processing techniques that make use of modern technologies. These are the most economic viable method currently being used by the manganese fraternity. There is no other feasible, alternative mining method for the mining and extraction of manganese.

SECTION 24 G FOR the storage, or for the storage and handling, of a dangerous good on site.

No technology alternatives are being considered for this diesel storage project as no alternatives which are feasible or reasonable are available. The above ground storage of fuel for dispensing is governed by SANS 10089-1 and the installation of the storage tanks and associated fuel handling infrastructure will need to conform to these standards. This requirement limits the opportunity to implement alternate technology or design.

(e) The operational aspects of the activity:

The manganese ore deposits on the Farm Bishop are relatively shallow, located primarily on the hills and ridges on the property. The ore is mined by means of conventional opencast selective mining techniques and requires heavy earth-moving equipment. Vegetated soil is stripped. The Run of Mine (ROM) will be crushed and screened by using the crushing and screening plant. The manganese rock is loaded with excavators into articulated dump trucks and the ore is hauled to the crusher and ore stockpiles. The expected lifespan of the mine is 23 years.

Alternatives considered:-

The conventional opencast selective-mining method has been proven to be the most economic viable method currently being used by the manganese fraternity. There is no other feasible, alternative mining method for the mining and extraction of manganese.

SECTION 24 G FOR the storage, or for the storage and handling, of a dangerous good on site.

The diesel storage site is in an area that has been approved for mining purposes. Several other developments exist within this area thus setting the precedent and need for this facility.

The proposed development can be deemed desirable and in line with future development trends for the area:

- The character of the area has changed over time as a result of continuous mining development, and supporting mining logistics and industrial uses.
- The area appears to be vibrant and dynamic due to the establishment of the Mining Operations.

- The impact of the proposed expansion will consequently not affect the character of the area, and it is further felt that the diesel storage site is ideally suited for the proposed use.
- It will support the existing mining commercial and industrial development in the area.
- Noises caused by the development will be in accordance with the uses within the area.

(f) The option of not implementing the activity:

Potential land use includes grazing and mining. The majority of the area is classified to have low to moderate potential for grazing land and no suitability for crop yield. Apart from the manganese deposits, there are also potential for iron ore mining on the property. Therefore, mining activities are believed to be the most economically beneficial option for the area. Whether the iron ore mining operation continues or not, the other mining operations already granted will most likely persist. The farming of livestock will only be able to continue in areas not affected by mining operations. The most significant impacts associated with grazing activities include the provision of water. These are not expected to have a serious impact on the existing groundwater features. Cumulative impacts associated to grazing include overgrazing and destruction of natural vegetation, but the cumulative effect of mining activities on the property are expected to outweigh any potential negative effects that agriculture might have.

The PMG Mining project aims to uplift the local community. If the operation does not continue it would hold back any potential employment for the region and the families who are likely to benefit from the positive employment opportunities. Simultaneously, it may have a stagnant effect on the economy of South Africa and the manganese industry as a whole. Substantial tax benefits to the State and Local Government will also be inhibited.

Mining forms an integrated part of the social and economic growth of South Africa and more specifically the Northern Cape Province.

NO-GO ALTERNATIVE FOR SECTION 24 G FOR the storage, or for the storage and handling, of a dangerous good on site.

This environmental application is made in terms of Section 24G of NEMA to recertify and undertake the listed activities in terms of Activity 14 of NEMA Listing Notice 1 GNR 372 of the EIA regulations.

It is suggested that to maintain the status quo is the best option for the micro and macro environment. The do-nothing (“no go”) option would entail maintaining the site as is. From certain perspectives this is a viable option as the site is situated within an operational mining area. By not developing the site, the site will be anomalous in the context of the surrounding land-uses, and some of the direct and indirect socio-economic benefits (i.e. job creation, etc.) will not materialize.

The expansion of our operations to its current capacity has also enabled us to provide stable socio-economic upliftment to the surrounding community by way of employment opportunities and the development of the community

in respect of our Social and Labour Plan obligations. An unfavourable consideration, would require us to downscale our operations a significant amount and may create potential risk of retrenchment, which would negatively impact on the local economy and community.

From an environmental perspective, most of the site is assessed to be of LOW sensitivity. No Highly Sensitive or 'No-Go' habitats or environments occur on the DIESEL site. The DIESEL site is totally transformed with no sensitive habitats present. There are no priority faunal or floral species present on the DIESEL site; no watercourses present and no wetlands within a 500m radius of the diesel site.

The No-Go development alternative could therefore not be considered the responsible way to manage the site.

(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 required level of Public Participation will be considered based on the:

- scale of anticipated impacts,
- public and environmental sensitivity of the project,
- Potentially affected parties.

The minimum requirement for public participation in accordance to EIA regulations will always be met.

The landowner and the neighbours will be identified and consulted. An advert will be published in the local newspaper for comments and notices will be placed to invite any in-identified parties which might like to register. Information will be sent via Registered post and emails where relevant to all affected government departments and any person who registers during the application process.

This application is for the amendment of the existing approved Environmental Management Programme for PMG Mining in terms of Section 102 of the MPRDA with an additional Section 24 G application for the storage, or for the storage and handling, of a dangerous good on site.

The original application for environmental authorization, the environmental management plan (EMP) submitted in 2007, did not make provision for the large scale/bulk storage of diesel. Over time, as our mining operations developed and the fleet of the operation grew, so did the provisions for the maintenance of such scale of operations. The DMRE issued a verbal instruction to PMG to submit an additional application in accordance with section 24G of the NEMA for an environmental authorisation regarding the unlawful activity.

Site notices will be placed at the entrance to the site and nearby sites or public places if any is available at the nearest town.

Public meetings will only be conducted where activities will directly impact close communities or when instructed by any competent authority or upon a specific request from interested and affected parties.

- Notification letters were sent to all identified interested and / or affected parties on the 13 March 2023. Attached to each of these letters was a scoping report containing information relating to the proposed Section 102 application and Section 24G to revise the Environmental Authorisation.
- A newspaper advert was placed in the Kathu Gazette local newspaper on the March 2023.
- Notices were placed at the entrance to the mine and at the library in Postmasburg as well as at the fuel station on way to the mine on 8 March 2023.

Proof of notification is attached as Appendix '3'.

- (iii) Summary of issues raised by I&AP's
(Complete the table summarising comments and issues raised, and reaction to those responses.)

Please refer to Appendix 3 attached.

(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.)

▪ Geology:

The project area is underlain by the rocks of the Transvaal Supergroup. The Transvaal Supergroup is subdivided into two groups, namely the Ghaap Group and the Postmasburg Group. The Ghaap Group is composed of mainly chemical sedimentary rocks. The Postmasburg group overlies the Ghaap Group and is mainly composed of a mixed chemi-sedimentary and volcanic succession (Beukes, 1986).

The Ghaap Group consist of three subgroups, namely Schmidtsdrif Subgroup (interbedded siliciclastics and carbonate rocks), Campbell Rand Subgroup (limestones and dolomites) and Koegas Subgroup (interbedded siliciclastics and iron-formation) and the Asbesheuwels Subgroup (iron formation). The Postmasburg Group consist of Makganyene Formation (diamictite), Ongeluk Formation (thick succession of andesitic flood basalts) and the Hotazel iron- and manganese- Formation and the Moodraai formation. The Transvaal Supergroup is overlain by the Olifantshoek Group and underlain by the Ventersdorp Supergroup. The Olifants Group is subdivided into the Mapedi/Gamagara Formation (basal hematite pebble conglomerate and illitic shales interbedded with fine-grained quartzites), Lucknow Formation (quartzites), Hartley Formation (volcanogenic-sedimentary geology) and the Volop Group (coarse quartzites and conglomerates) (Gutzmer, 1996).

Two major fields of manganese deposits exist in the Northern Cape of South Africa. These are the Postmasburg Manganese Field (PMF) and the Kalahari Manganese Field (KMF). The PMF is located in two distinct deposit belts which extend along strike for about 60 km. These deposits are known as the Western and Eastern Belts of Postmasburg. The deposits are located from Postmasburg (South) to Sishen (North). The potential iron-ore and manganese deposits of the Paling Farm no. 434 belong to the western belt of the PMF (Kaibatla, 2010).

The PMF is situated on the Maremane dome which is defined by the iron formation of the Asbestos Hills Subgroup and the dolomites of the Campbellrand Subgroup. Manganese ores occur immediately below the Gamagara unconformity and is associated with the hematization of Asbestos Hills iron-formation and reworked equivalents of the Doornfontein conglomerate. These ores are preserved in karstic sinkhole depressions as infills (Van Wyk, 1980). The Western belt is associated with ferruginous ores whilst the Eastern belt is associated with siliceous manganese ores (Gutzmer & Beukes, 1997).

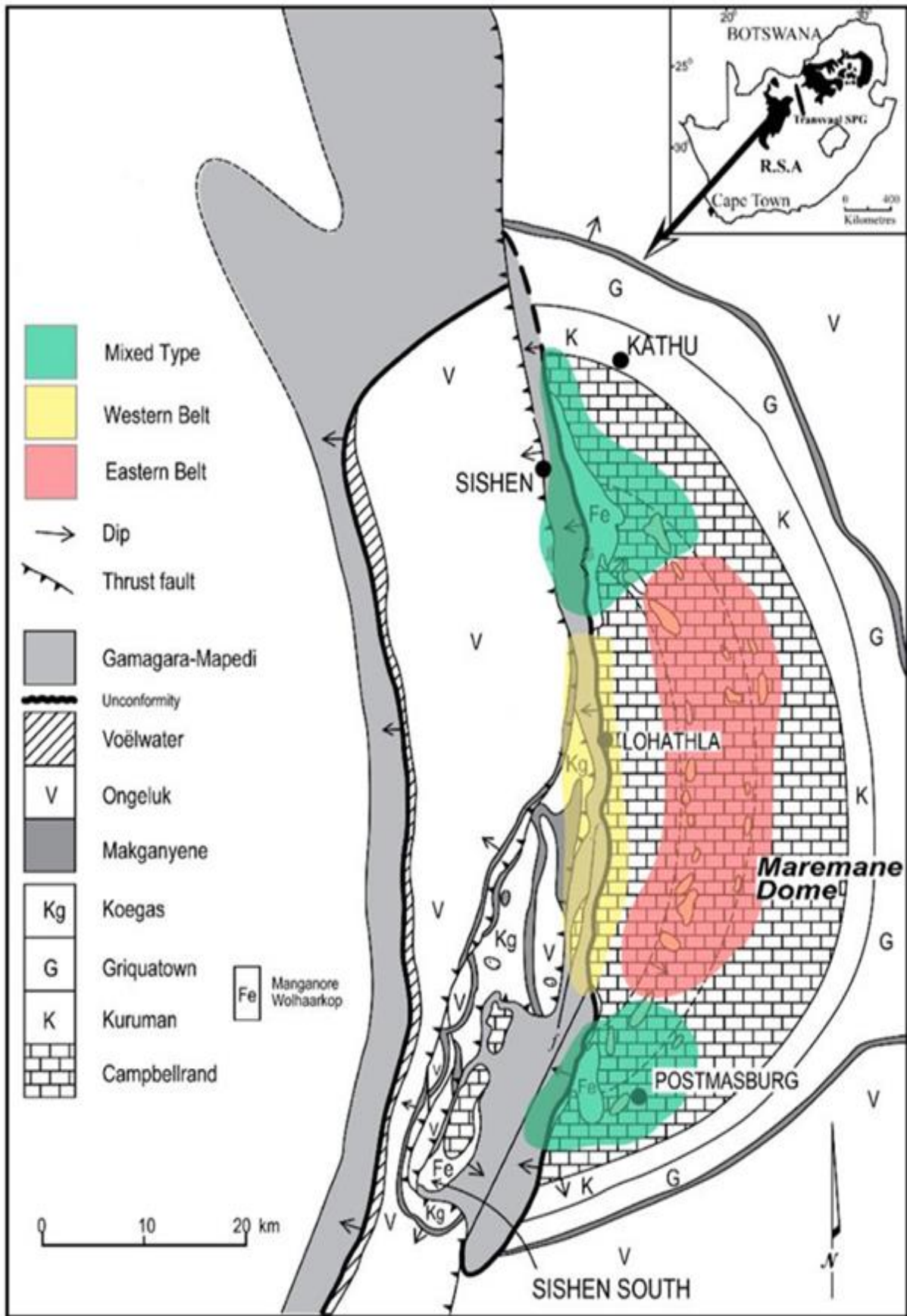


Figure 7. Geological map

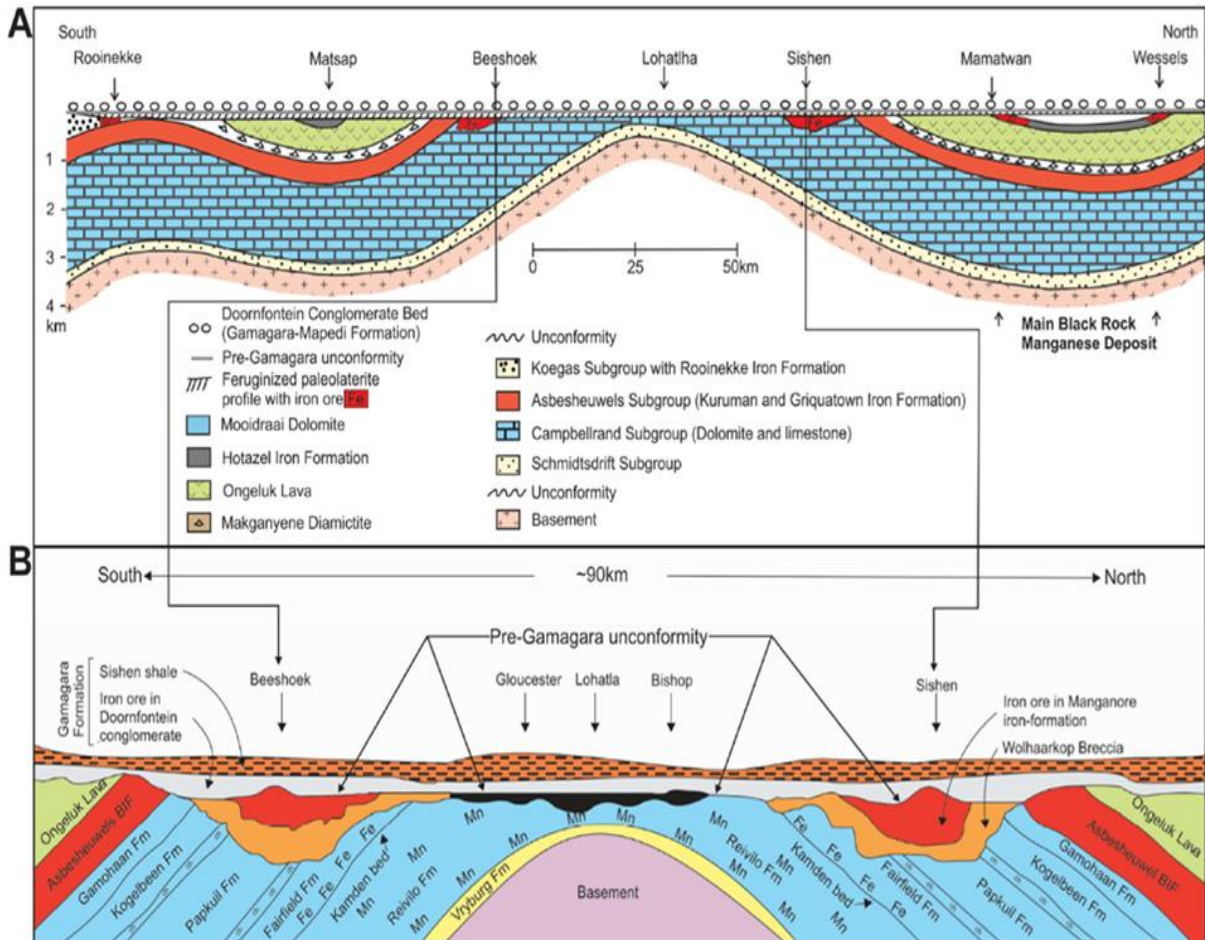


Figure 8. Cross-section of the western margin of the Griqualand West depicting its undulating nature and localities where iron and manganese are closest to the surface. (B) The Zoomed cross-sectional insert of the Maremane Dome (After Smith & Beukes 2016 –

▪ **Topography**

Dr. Betsie Milne from Boscia Ecological Consultants has been appointed by PMG Mining (Pty) Ltd to provide an ecological study in order to highlight the ecological characteristics of the proposed mining area and to determine the possible impact of mining on the diversity and ecological status of the application area. Topography was described and included in this report as part of the ecological study. The study will be appended to the Scoping report as Appendix 4.

The topography of the study area is characterised by open hills and ridges surrounded by level plains with some relief. Altitude ranges from 1 280 – 1 290 m above sea level on the plains, 1 310 m on the slopes and 1 420 m on the hill tops. The terrain is indicated by a very gentle slope of <1 % across the plains but increases to 7 - 10 % along the hill slopes.

A Hydrological Assessment study was conducted by Hydrologic Consulting dated July 2021 on the property and some extracts of

the findings is recorded in this Scoping report. The study will be appended to the Scoping report as Appendix 7. Figure 9 presents the terrain of the site, with elevations between approximately 1,390m and 1,290m AMSL. The mine is situated over a ridge, particularly towards the south, with elevations dropping to either side (west and east). Supporting infrastructure is in an area of relative flatness to the north-east.

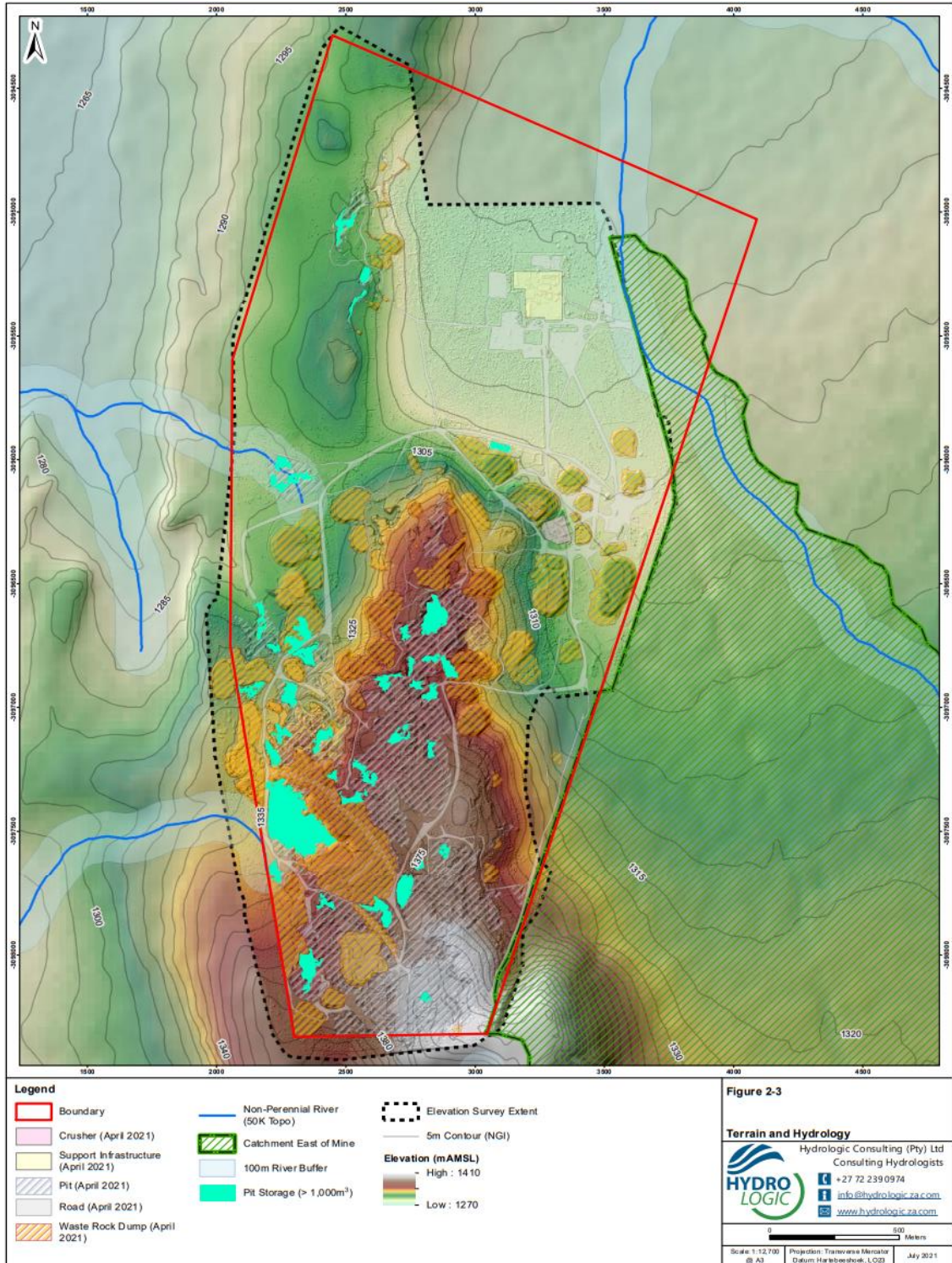


Figure 9. Terrain of the site with elevations

- **Soil**

Dr. Betsie Milne from Boscia Ecological Consultants has been appointed by PMG Mining (Pty) Ltd to provide an ecological study in order to highlight the ecological characteristics of the proposed mining area and to determine the possible impact of mining on the diversity and ecological status of the application area. Soil was described and included in this report as part of the ecological study. The study will be appended to the Scoping report as Appendix 4.

Land types found on the property include Ag111 and Ib238 (Figure 10). The plains on Bishop are typically represented by terrain unit 4 of Ag111, while the hill slopes and tops are presented by units 3 and 1, respectively of Ib238. The plains are primarily associated with red-yellow apedal, freely drained soils, with a high base status and are less than 300 mm deep. The hills are mostly rocky, with poorly developed, shallow soils.

The generally level to gently sloping land of the plains produces low water erosion risk, but it is highly susceptible to wind erosion. Erosion risks on the steeper slopes of the hills are higher in terms of water erosion, and any pure sands found here will also be highly susceptible to wind erosion. The soils also have moderately high crusting and compaction susceptibility. If badly eroded, the soils on Bishop have a very low potential to regenerate.

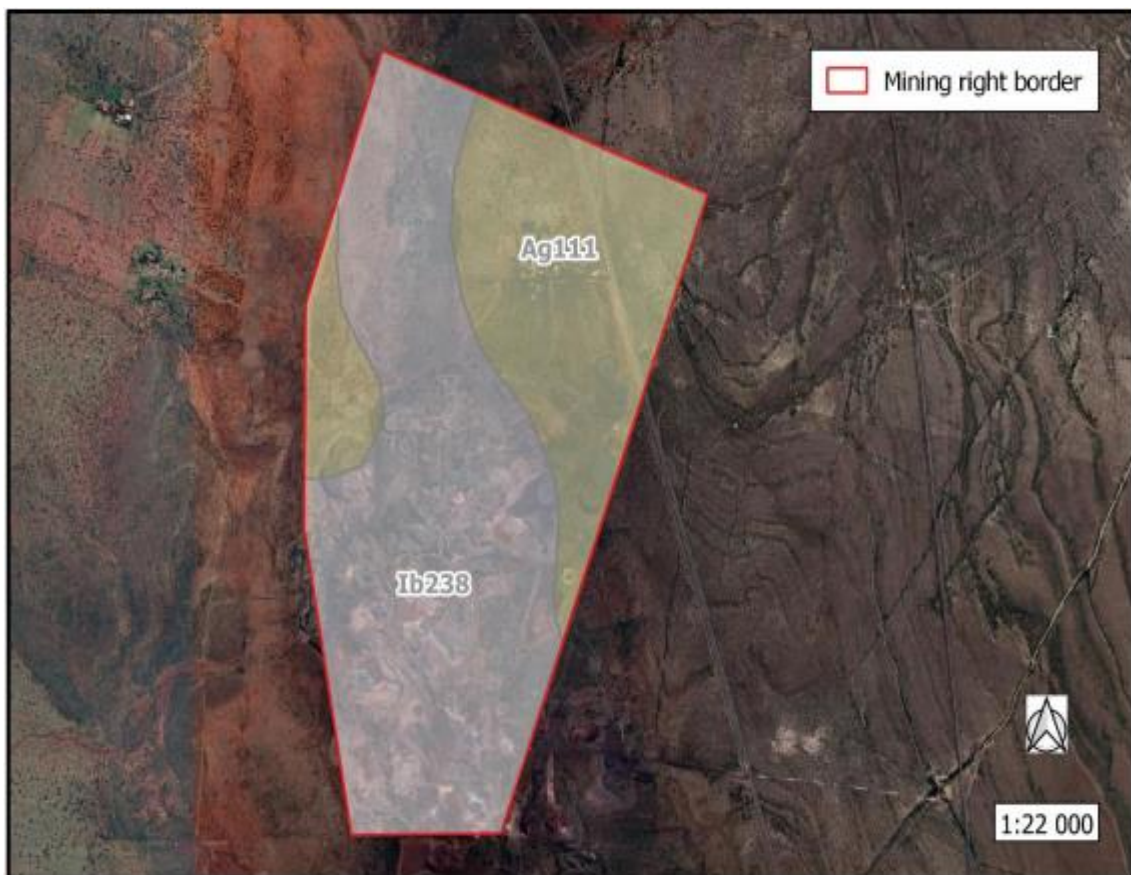


Figure 10. The distribution of land types in the study

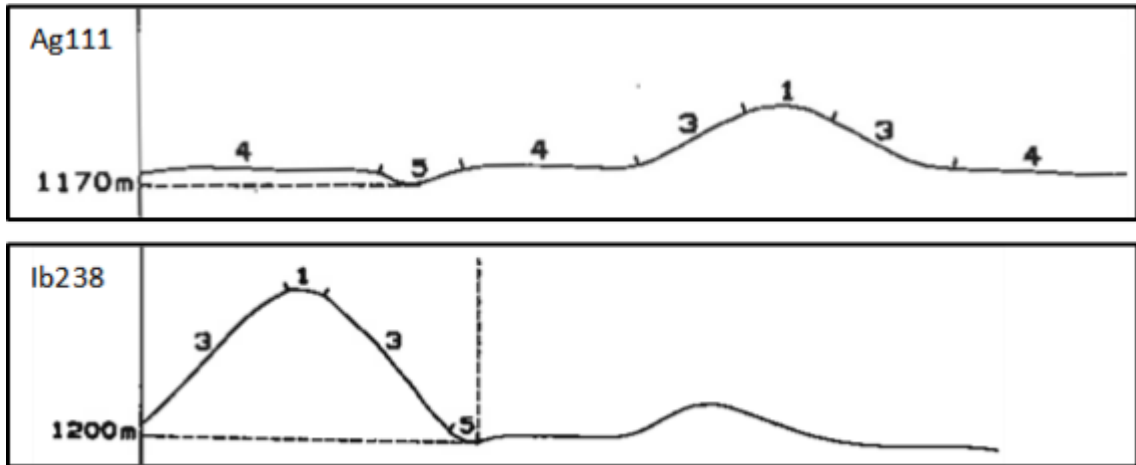


Figure 11. The distribution of land types in the study area and their associated terrain types and units.

A Hydrological Assessment study was conducted by Hydrologic Consulting dated July 2021 on the property and some extracts of the findings is recorded in this Scoping report. The study will be appended to the Scoping report as Appendix 7.

According to the high-level soils data included in the Water Resources of South Africa 2012 (WR2012) study (Bailey and Pitman, 2015), soils about the mine are classified in the majority as Sand to Loamy Sand. In considering the more detailed Soil Conservation Service for South Africa (SCS-SA) dataset covering the mine, soils are classified as being in hydrological soil group A/B (low to moderately low runoff potential) or hydrological soil group B (moderately low runoff potential).

According to the Department of Environmental Affairs (DEA) 2014 dataset, land-cover of the mine is predominantly classified as 'mines and quarries' to the south, with 'grassland' and 'shrubland' becoming more prevalent to the north.

The distributions of the SCS soil types and land-cover are illustrated in Figure 12 and Figure 13 respectively.

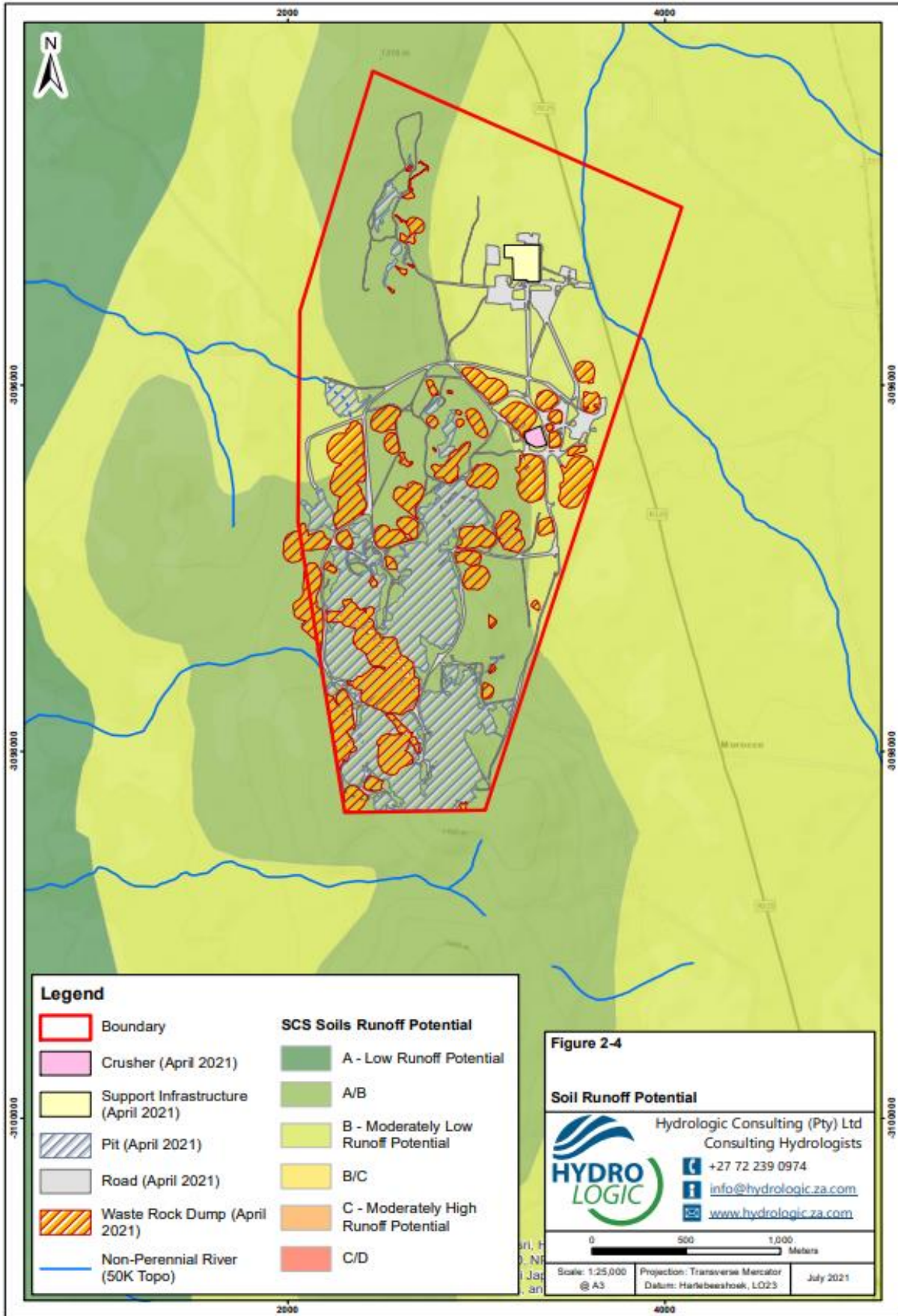


Figure 12. Soil Runoff Potential

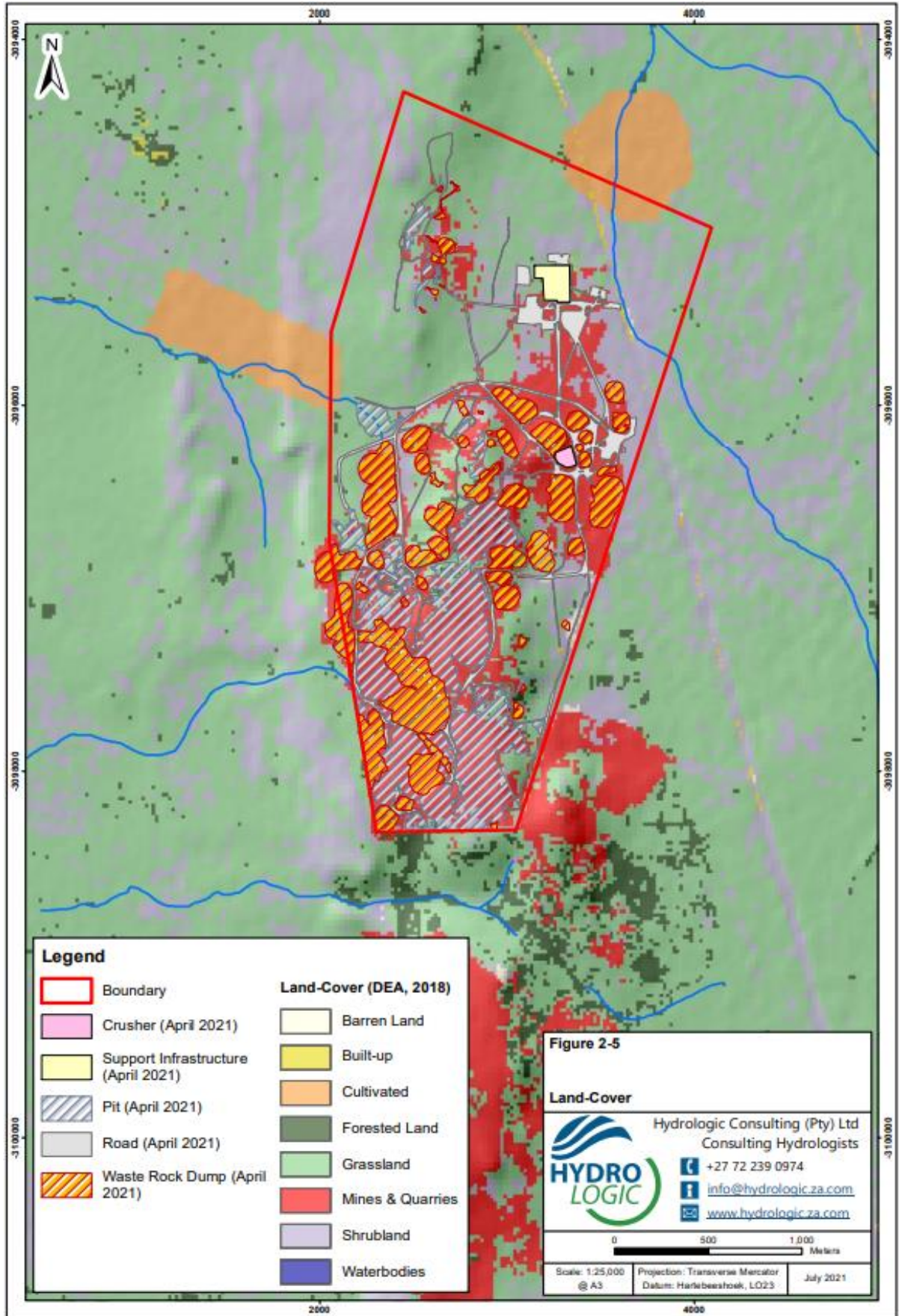


Figure 13. Land Cover

- **Land use and Land Capacity**

Dr. Betsie Milne from Boscia Ecological Consultants has been appointed by PMG Mining (Pty) Ltd to provide an ecological study in order to highlight the ecological characteristics of the proposed mining area and to determine the possible impact of mining on the diversity and ecological status of the application area. Current and historic land use was described and included in this report as part of the ecological study. The study will be appended to the Scoping report as Appendix 4.

Bishop site is situated in a rural area, with major land uses in the region including mining and agriculture. According to AGIS, the land capability for the study site is non-arable, with the hills considered to be wilderness, while the plains are suitable for grazing. The agricultural region is demarcated for cattle farming, with the grazing capacity estimated at 14 Ha/LSU.

The study area is divided by the R325 road. The large portion west of this road has been mined extensively between the 1930's to 1960's and forms the core mining area for the current operation. As a result, substantial evidence of the mining associated disturbances is visible on site (Figure 14). The smaller section in the east is presumably utilised for grazing. A watering point and a few kudus were observed here.

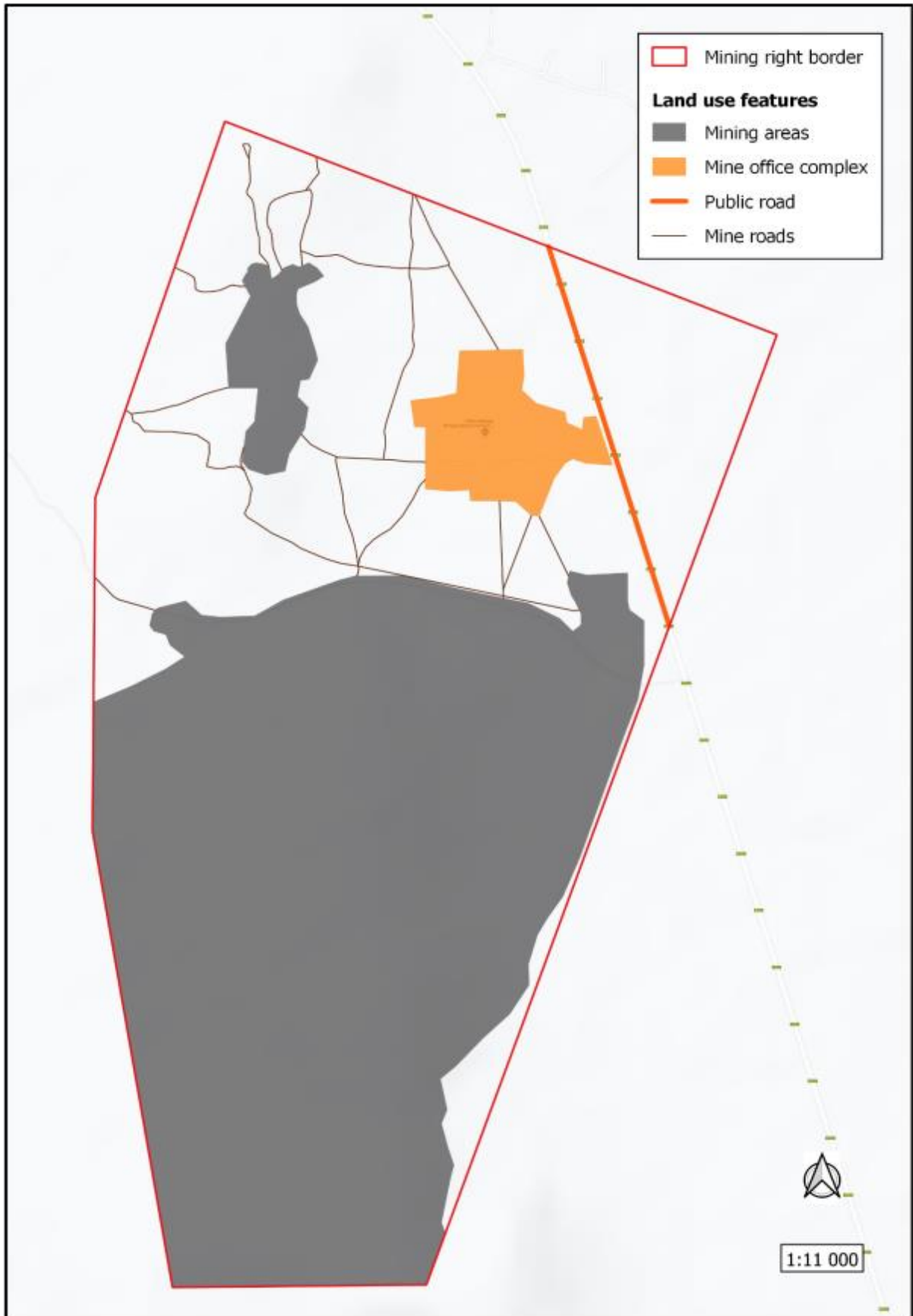


Figure 14. The existing land use features on the mining right area

▪ **Climate:**

Hydrologic Consulting (Pty) Ltd has been appointed by PMG Mining (Pty) Ltd to undertake a hydrological assessment for the Bishop Mine situated on Portion 1 of Farm Bishop 671, approximately 37km north of the town of Postmasburg in the Northern Cape. The hydrological assessment is aimed at informing compliance with Government Notice 704 (Government Gazette 20118 of June 1999 GN 704) to mitigate the potentially adverse impacts to surface water resources from the currently operational mine. It is also intended as a supporting document for Section 21 water uses as defined by the National Water Act (Act No.36 of 1998), July 2021. The following climatic information is taken out of the study appended as Appendix 7

Rainfall

Various weather stations managed by both the South African Weather Services (SAWS) and the Department of Water and Sanitation (DWS) are positioned about the site. The closest weather station is SAWS station 321032 W, located approximately 5km south-east of the site boundary. Pegram (2016) provides a dataset of South African rainfall stations including both SAWS and DWS data which has subsequently been interpolated to provide a continuous gridded dataset of average monthly rainfall for South Africa. Since average monthly rainfall is of interest in this study, this site-specific data was prioritized for use.

AVERAGE MONTHLY RAINFALL DISTRIBUTION (MM)

Month	Pegram (2016) *
Jan	58
Feb	64
Mar	70
Apr	39
May	18
Jun	7
Jul	4
Aug	7
Sep	9
Oct	22
Nov	32
Dec	44
Total	374

* Estimates sourced at the location of the administration buildings

EVAPORATION

Evaporation data was sourced from the South African Atlas of Climatology and Agrohydrology (Schulze and Lynch, 2006) in the form of A-Pan equivalent potential evaporation. The average monthly evaporation distribution is presented in Table 7 and shows the site has an annual A-Pan equivalent potential evaporation of 2,780mm, which is considered high in comparison to other areas in South Africa.

TABLE 7: MONTHLY A-PAN EQUIVALENT EVAPORATION (SCHULZE AND LYNCH, 2006)

Month	Evaporation(mm) A-Pan Equivalent
Jan	357
Feb	266
Mar	228
Apr	168
May	137
Jun	102
Jul	118
Aug	165
Sep	229
Oct	297
Nov	351
Dec	362
Total	2780

AVERAGE CLIMATE

The average climate for the mine is presented in Figure 15 using the outcome of the investigation into rainfall and evaporation. While evaporation is showing as greatly exceeding rainfall, this is representative of the maximum APan equivalent potential evaporation that could occur assuming no limitations are placed on evaporative demand. The combination of rainfall, evaporation and temperature result in a hot arid steppe climate according to the Köppen-Geiger climate classification¹

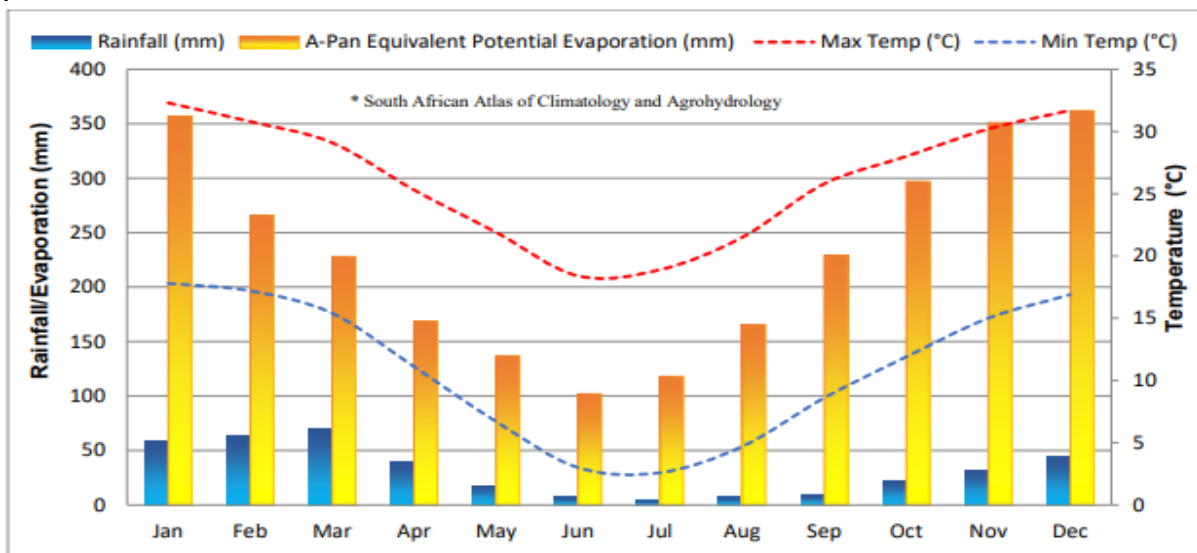


FIGURE 15. AVERAGE MONTHLY CLIMATE

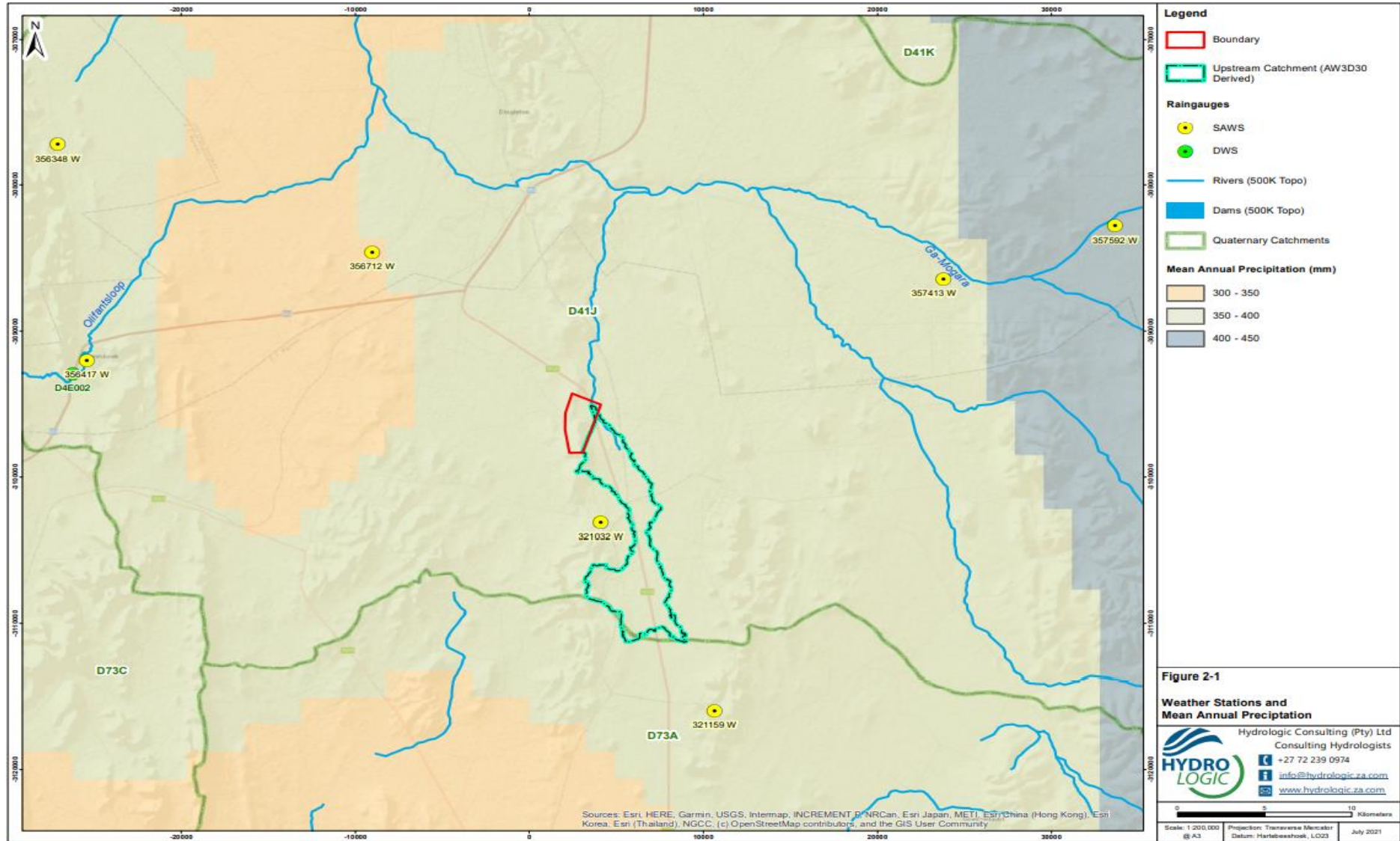


Figure 16. Mean annual precipitation

▪ **Air quality:**

Current sources of air pollution in the area stems mainly from:

- Wind blown dust from topsoil, ROM and product stockpiles will be the main contributing sources to ground level. Crushing and screening and in pit mining activities will be the second and third largest sources.
- Mining operations in close proximity of the application area:
 - Mine;
 - Mine; and
 - Mine.
- Dust from the gravel (farm) roads transecting the property.
- Dust induced by wind and wind gusts.

While many factors affect the precipitation rate, the main factors are related to wind velocity, air humidity, particulate size and dynamic shape, and prevailing ground cover.

Aquatico Scientific Pty Ltd monitors the fall out dust from the Bishop mine monthly.

There are 14 buckets that have been placed around the mine area and which is monitored monthly.

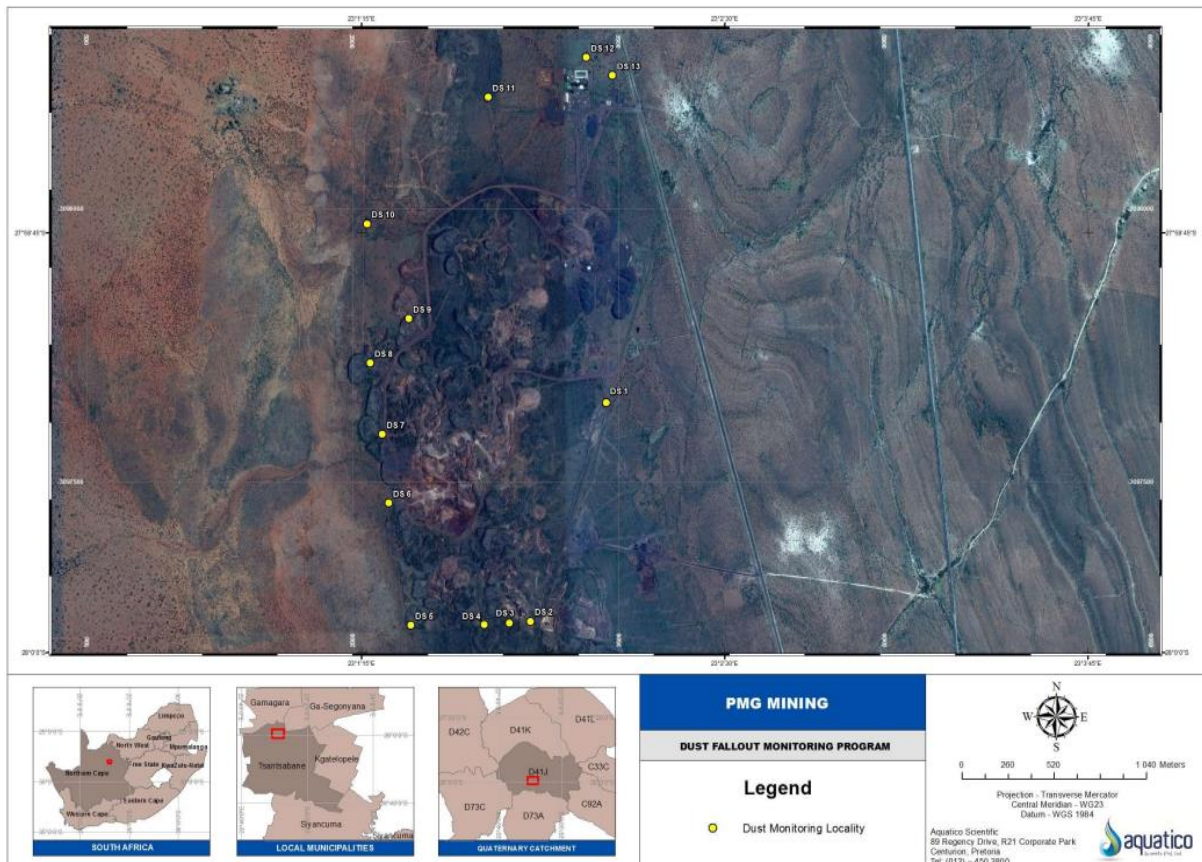


Figure 17. Dust Monitoring localities

▪ Noise:

The main current noise sources in the area include:

- Mining activities (blasting, hauling, crushing & screening) by mining operations situated in proximity of the application area.
- Traffic noise from the R325 between Postmasburg and Kuruman and secondary roads serving the area.
- Railway noise from the railway line crossing through the property.

A specialist company Vector Ventilation and Hygiene Services and Consulting Pty Ltd is conducting monthly Noise screening on the mine.

Section 11 of the Mine Health and Safety Act requires the employer to "Assess, Record and Respond to Health Risks " that the employees might be exposed to while working on the mine. The objective in this case will be to Identify all relevant Occupational Hygiene health Hazards, promote mitigating measures and to rate the outcome. This Risk Assessment is solely to propose expected values for all stressors based on experience and inspection and it will be measured against the active sampling results in the months and years to come.

Due to insufficient quantitative Occupational Hygiene exposure data this risk assessment was conducted using qualitative methods in some instances.

Issue based Risk assessments might be incorporated where major hazards with ineffective controls are experienced or observed. Continuous risk assessments will be conducted monthly by means of monthly compliance sampling and inspections.

This risk assessment will be revised Annually when new data becomes available and/or under the following circumstances:

- New equipment/machinery introduced
- After any serious incident accident
- New information available
- Any changes to mining parameters, layout, methods ect.
- New or revised legislation
- Continuous employee complaints
- Adverse illnesses

▪ Archaeological, cultural & heritage environment:

Various Specialist companies have conducted various studies and completed reports on National Heritage sites on the identified area. The findings of these reports will be included in the EIA/EMPR document.

A list of the Various Archaeological, cultural & heritage assessments that have been conducted on the property follows:

A 2nd report on a heritage impact assessment for the upgrade of Transnet's Glosam siding for PMG's Bishop Mine (Loading Bay) on Portion 2 and the Remainder of Gloucester 674 near

Postmasburg, Tsantsabane Local Municipality, Northern Cape Report No AE01236P by AJ Pelser Accredited member of ASAPA Professional Member SASCH dated June 2012

A Report on a cultural heritage impact assessment for the Bishop Mine, close to Kathu, Northern Cape Province Report No AE01854V by Prof AC van Vollenhoven (L.AKAD.SA) Accredited member of ASAPA (Accreditation number 166) Accredited member of SASCH (Accreditation number: CH001) dated 9 November 2018.

Archaetnos cc was requested by Wadala Mining and Consulting (Pty) Ltd. to conduct a cultural heritage impact assessment (HIA) for the Bishop Mine. The mine is located on the farm Bishop 671, close to Dingleton and Kathu, in the Kuruman District, Northern Cape Province, November 2018.

Project description:

Bishop mine is a manganese mining activity. During work for the revised EMP, it was realized that an HIA had never been done on the farm. As a result an HIA was commissioned for the entire farm. This report is the result of the HIA study.

Methodology:

The methodology for the study includes a survey of literature followed by a field assessment. The latter was conducted according to generally accepted HIA practices and was aimed at locating all possible objects, sites and features of cultural significance in the area of proposed development.

If required, the location/position of any site was determined by means of a Global Positioning System (GPS), while photographs were also taken where needed. The survey was undertaken by doing a physical survey via off-road vehicle and on foot and covered as much as possible of the area to be studied. Certain factors, such as accessibility, density of vegetation, etc. may however influence the coverage.

All sites, objects, features and structures identified were documented according to the general minimum standards accepted by the archaeological profession. Co-ordinates of individual localities were determined by means of the Global Positioning System (GPS). The information was added to the description in order to facilitate the identification of each locality.

Findings:

During the survey one site (graves) of cultural heritage significance were identified.

The following is recommended:

- The one site identified consist of approximately 24 graves.

Usually there are two options when dealing with graves:

- o The first option is to leave the graves in situ. This would be possible should there be no direct impact on the graves. However, the possibility of secondary impacts due to dust etc. remains.
- o The second option is to exhume the graves and have the bodies reburied. This usually is only allowed if there is a direct impact on the site. Graves younger than 60 years are handled by a registered undertaker. Graves older than 60 years and those of an unknown date is regarded as heritage graves. In such a case an archaeologist is also involved in the process.
 - It is recommended that Option 1 be implemented as mitigation measure. The site should remain in situ. It should be fenced in and a management plan drafted for the sustainable preservation thereof. **A buffer zone of at least 20 m** should be implemented.
 - After implementation of the mitigation measures proposed above, the development may proceed.
 - It should also be noted that the subterranean presence of archaeological and/or historical sites, features or artifacts is always a distinct possibility. Due to the density of vegetation in certain areas it also is possible that some sites may only become known later. Operating controls and monitoring should therefore be aimed at the possible unearthing of such features. Care should therefore be taken when development commences that if any of these are discovered, a qualified archaeologist be called in to investigate the occurrence.

In this regard the following 'Chance find Procedure' should be followed:

- Upon finding any archaeological or historical material all work at the affected area must cease.
- The area should be demarcated to prevent any further work there until an investigation has been completed.
- An archaeologist should be contacted immediately to provide advice on the matter.
- Should it be a minor issue, the archaeologist will decide on future action.

Depending on the nature of the find, it may include a site visit.

- SAHRA's APM Unit may also be notified.
- If needed, the necessary permit will be applied for with SAHRA. This will be done in conjunction with the appointed archaeologist.
- The removal of such archaeological material will be done by the archaeologist in lieu of the approval given by SAHRA, including any conditions stipulated by the latter.
- Work on site will only continue after the archaeologist/ SAHRA has agreed to such a matter.

(AHS) Archaeological and Heritage Services Africa was requested by Wadala Mining and Consulting (Pty) Ltd. to conduct a cultural heritage impact assessment (HIA) for the Bishop Mine. The mine is located on the farm Bishop 671, close to Dingleton and

Kathu, in the Kuruman District, Northern Cape Province, June 2022.

1. This report contains the results of a Heritage Impact Assessment (HIA) study conducted in support of mining right application at Bishop Mine on the farm Bishop No 671 near Glosam in the Tsantsabane Local Municipality, Northern Cape Province.
2. Mine dumps, discard stockpile and other waste represent an evolving mining landscape occupying a large portion of the property. In archaeological terms this area is considered as disturbed and no old relics can be expected to be found in their original context. Nevertheless, it is a cultural landscape of old and new discard stockpiles and mining waste in which the different patinas of the waste heaps capture the timeline of mining in the area. But in terms of parameters used at the present time to denote cultural significance, there is no outstanding heritage significance in the mine dumps.
3. **Stone Age**
No Stone Age artefacts were found in patches of undisturbed ground examined.
4. **The Iron Age**
No sites or relics dating to the Iron Age were recorded.
5. **Burial grounds**
There is burial ground on Bishop Mine holding c. 24 graves. A rectangular steel palisade has been erected around the graves, which provides adequate insurance from possible inadvertent encroachment. No historical information was provided about the graves.
6. Interestingly at Kitso Mine, 6 km north of Bishop Mine on the same manganese ridge, there is a large burial ground holding more than 400 graves. In a book published in 1983, A. Hocking writes that South African Manganese (Ltd) operated a mine on the ridge from the mid-1930s until it was closed in the 1950s. The mine employed a labour force of which according to records 600 succumbed to a mystery fever in the 1930s, which was later diagnosed as relapsing fever. It is tempting to speculate that those buried at Bishop were possibly victims of the mysterious ailment.
7. **Recommendations and conclusions**
The proposed mining activities can go ahead in light of the low probability of occurrence of heritage resources above and below the surface due to a long history of surface mining. The burial ground is sufficiently protected. Steel fencing around the graves is clearly visible and it is not likely that machinery will inadvertently encroach into the burial ground. As a standard precaution in the event of other heritage resources being discovered in future phases of the project, the Provincial

Heritage Resources Authority or SAHRA must be alerted immediately and an archaeologist or heritage expert called to attend.



Figure 18. The burial ground is enclosed in a steel palisade

(AHTSA) Archaeological and Heritage Services Africa was requested by Wadala Mining and Consulting (Pty) Ltd. to conduct a cultural heritage impact assessment (HIA) for the Bishop Mine. The mine is located on the farm Bishop 671, close to Dingleton and Kathu, in the Kuruman District, Northern Cape Province, June 2022.

Palaeontological

This report has been compiled by Professor Marion Bamford, of the University of the Witwatersrand, sub-contracted by Archaeological and Heritage Services Africa (Pty) Ltd, Pretoria, South Africa.

Palaeontological Impact Assessment Desktop Study (Phase 1) for the proposed Mining Right Application on Portion 1 and the Remainder of the Farm Bishop No 671, near Dingleton in the Tsantsabane Local Municipality, Northern Cape Province, 5 June 2022

To comply with the regulations of the South African Heritage Resources Agency (SAHRA) in terms of Section 38(8) of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA), a desktop Palaeontological Impact Assessment (PIA) was completed for the proposed development.

The palaeontological sensitivity of the area under consideration is presented in Figure 19. Most of the area is indicated as moderately sensitive (green) and this applies to the Gamogara Formation shales and quartzites and the Kalahari sands. The former has been interpreted as a synsedimentary feature of the Maremane Anticline with localised erosion and redeposition (Moen, 2006). No fossils have been recorded from this lithology.

The Kalahari sands have been transported by wind or water and so would not preserve fossils but they might have entrained more robust fossils such as bone fragments or silicified wood fragments. These fragments, however, would be out of context and so of minimal scientific interest.

Very highly sensitive rocks are indicated along the eastern margin and this applies to the Ghaap Group, but no formations have been distinguished. This group is divided into the lower Campbell Rand Subgroup dolomites, limestones and cherts and upper Asbestos Hills Subgroup iron formation. Only the Campbell Rand (Ghaap Group) dolomites and limestones can preserve trace fossils such as stromatolites that are layers of mineral sediments deposited by the photosynthetic activity of green and blue-green algal colonies. The algal cells, however, are very rarely preserved. A variety of types and forms of stromatolites have been described by Beukes (1987). Banded iron and haematite in the Asbestos Hills Subgroup were formed by the seasonal oxidation of iron but these are not a trace fossils. The SAHRIS mapping appears to have taken the conservative approach and indicated all of the Ghaap Group as potentially fossiliferous.

The Ongeluk Formation outcrops in the northwestern part of the Farm Bishop. These rocks are of volcanic origin and do not preserve fossils.

Kalahari Group sands of Quaternary age are windblown and weathered so they do not preserve fossils. Only such features as palaeo-pans or palaeo-springs might entrap bones or robust plant material in the Later Tertiary and Quaternary settings (Goudie & Wells, 1995; Holmes et al., 2017; Walker et al., 2014).

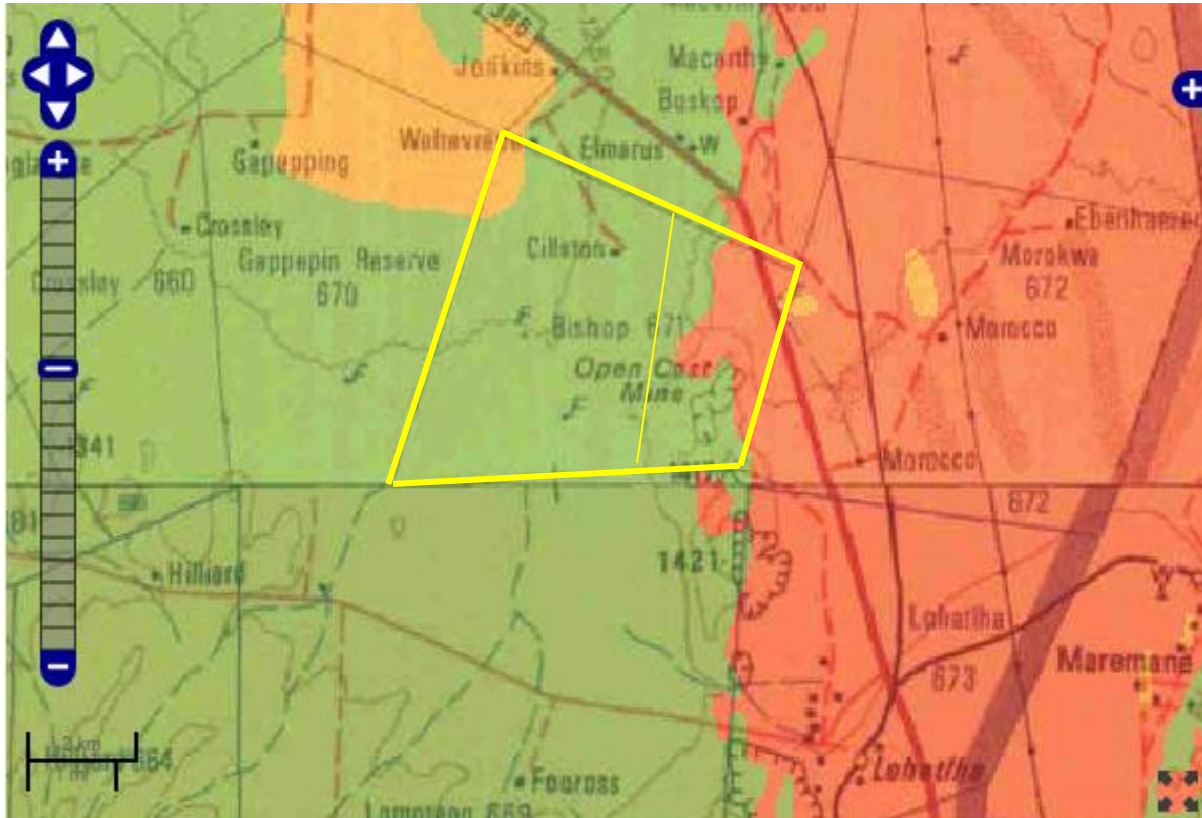


Figure 19. SAHRIS palaeosensitivity map for the site for the proposed MRA on portions of the eastern half of Farm Bishop 671 shown within the yellow rectangle. Background colours indicate the following degrees of sensitivity: red = very highly sensitive; orange/yellow = high; green = moderate; blue = low; grey = insignificant/zero.

From the SAHRIS map above the area is indicated as mostly moderately sensitive (green) with the northeastern section as very highly sensitive (red) but it is unlikely that the dolomites will be part of the mining endeavour.

Based on the nature of the project, surface activities may impact upon the fossil heritage if preserved in the development footprint. The geological structures suggest that the rocks are either much too old to contain fossils or are the incorrect type. Furthermore, the material to be mined does not preserve fossils. Since there is an extremely small chance that fossils from the nearby Ghaap Group may be disturbed a Fossil Chance Find Protocol has been added to this report. Taking account of the defined criteria, the potential impact to fossil heritage resources is extremely low.

Assumptions and uncertainties

Based on the geology of the area and the palaeontological record as we know it, it can be assumed that the formation and layout of the dolomites, sandstones, shales and sands are typical for the country and only some contain trace fossils such as stromatolites. The sands of the Quaternary period would not preserve fossils unless they cover palaeo-pans or palaeo-springs that could trap fossils.

Recommendation

Based on experience and the lack of any previously recorded fossils from the area, it is extremely unlikely that any fossils would be preserved in the aeolian sands of the Quaternary. There is a very small chance that fossils may occur in the adjacent dolomite and cherts of the Ghaap Group (Transvaal Supergroup) along the north eastern side, so a Fossil Chance Find Protocol should be added to the EMPr. If fossils are found by the environmental officer, or other responsible person once mining has commenced then they should be rescued and a palaeontologist called to assess and collect a representative sample. The impact on the palaeontological heritage would be low, therefore as far as the palaeontology is concerned, the mining right should be granted.

Chance Find Protocol

Monitoring Programme for Palaeontology – to commence once the excavations mining activities begin.

1. The following procedure is only required if fossils are seen on the surface and when drilling/mining commence.
2. When excavations begin the rocks and must be given a cursory inspection by the environmental officer or designated person. Any fossiliferous material (plants, insects, bone or coal) should be put aside in a suitably protected place. This way the project activities will not be interrupted.
3. Photographs of similar fossils must be provided to the developer to assist in recognizing the fossil plants, vertebrates, invertebrates or trace fossils in the shales and mudstones. This information will be built into the EMP's training and awareness plan and procedures.
4. Photographs of the putative fossils can be sent to the palaeontologist for a preliminary assessment.
5. If there is any possible fossil material found by the developer/environmental officer/miners then the qualified palaeontologist sub-contracted for this project, should visit the site to inspect the selected material and check the dumps where feasible.
6. Fossil plants or vertebrates that are considered to be of good quality or scientific interest by the palaeontologist must be removed, catalogued and housed in a suitable institution where they can be made available for further study. Before the fossils are removed from the site a SAHRA permit must be obtained. Annual reports must be submitted to SAHRA as required by the relevant permits.
7. If no good fossil material is recovered then no site inspections by the palaeontologist will be necessary. A final report by the palaeontologist must be sent to SAHRA once the project has been completed and only if there are fossils.

8. If no fossils are found and the excavations have finished then no further monitoring is required.

- **Fauna:**

Dr. Betsie Milne from Boscia Ecological Consultants has been appointed by PMG Mining (Pty) Ltd to provide an ecological study in order to highlight the ecological characteristics of the proposed mining area and to determine the possible impact of mining on the diversity and ecological status of the application area. Fauna was described and included in this report as part of the ecological study. The study will be appended to the Scoping report as Appendix 4.

According to Section 3(a) and 4(a) of the Northern Cape Nature Conservation (NCNCA) Act No. 9 of 2009, no person may, without a permit by any means hunt, kill, poison, capture, disturb, or injure any protected (Schedule 2) or specially protected (Schedule 1) wild animals. Furthermore, Section 12 (1) of NCNCA states that no person may, on a land of which he/she is not the owner, hunt a wild animal without the written permission from the landowner. According to the act "wild animal" means a live vertebrate or invertebrate, and the egg or spawn of such animal.

The landscape features on Bishop provide several habitat opportunities to faunal communities, but very few pristine habitats remain, and the mining activities is expected to limit the presence of wild animals here. Nevertheless, those likely to be found in the study area are discussed in their respective faunal groups below.

Mammals

As many as 53 terrestrial mammals and seven bat species have recorded in the region. Species that were encountered during the site visit include Kudu. Six listed terrestrial mammal species and two listed bat species potentially occur in the area. Virtually all mammals of the study area are protected; either according to Schedule 1, 2 or 3 of NCNCA.

Aardvark, Aardwolf, Cape Fox, Bat-eared Fox, African Striped Weasel, African Wildcat, Blackfooted cat, Honey Badger, Striped Polecat and South African Hedgehog all have a high chance of occurring in the pristine habitats on site, given their wide habitat tolerances and preference for the dominant habitat found here, but they are more likely to avoid the site due to high levels of noise and human activity. Dent's Horseshoe Bat could potentially use abandoned mine pits and rock crevices for nesting, but African Straw-coloured Fruit-bat is not expected to be found here, as they require fruit trees for sustenance. Littledale's Whistling Rat is also not expected to occur on site based on their restricted distribution range, while Temminck's Ground Pangolin and Brown Hyaena also have a low potential to occur on site, because they are both sensitive to anthropogenic habitat disturbances.

Problem animals (Schedule 4) with a high likelihood to occur on site include Black-backed Jackal and Caracal.

Reptiles

Bishop lies within the distribution range of at least 37 reptile species. No listed species are known to occur in the area, but most reptiles of the study area are protected either according to Schedule 1 or 2 of NCNCA. Specially protected species include *Karusasaurus polyzonus* (Southern Karusa Lizard) and *Chamaeleo dilepis dilepis* (Common Flap-neck Chameleon). The Karusa Lizard is a rock-dwelling species, while the Common Flap-neck Chameleon is typically found high up in bushes or trees.

Amphibians

Ten amphibian species are known from the region. No natural permanent water occurs on site that would represent suitable breeding habitats for most of these species, but any pools where water collect will be very important during wet periods.

The Giant Bull Frog (*Pyxicephalus adspersus*, is listed as Near Threatened in the Southern African Frog Atlas and is protected according to Schedule 1 of the NCNCA. They prefer seasonal shallow grassy pans, vleis and other rain-filled depressions in open flat areas of grassland or savanna, but mainly remain buried up to 1 m underground until conditions become favourable. The site lies within the known distribution of this species, but there is no ideal habitat for it on site.

All other amphibians of the study area are protected according to Schedule 2 of NCNCA.

Avifauna

The study site does not fall within or near (< 150 km) any of the Important Bird Areas (IBA) defined by Birdlife South Africa. A total number of 255 bird species have been recorded from the region, of which as many as 25 are listed and classified as Vulnerable, Near Threatened, Endangered or Critically Endangered. Furthermore, all birds are protected either according to Schedule 1, 2 or 3 of NCNCA. Plants in general, from grass tufts to shrubs and tall trees provide important micro-habitats to birds and therefore the entire study area could potentially host a diverse avifauna community. However, the high level of human activity is likely to decrease the bird diversity on site.

No species of conservation concern were recorded on site, but they could occur here either by occasionally passing over, foraging or nesting. The most likely bird species of conservation concern expected to occur in the pristine habitats on site include Ludwig's Bustard, Kori Bustard, Short-clawed Lark, Tawny Eagle, Martial Eagle, and Secretarybird. No habitats on site exist for protected water birds, such as Chestnut-banded Plover, Black-winged Pratincole, Marabou Stork, Maccoa Duck, Lesser Flamingo, Greater Flamingo and Greater Painted-snipe.

Fish

In addition to those regulations in the NCNCA pertaining to wild animals, Section 32 and 33 of the NCNCA states that no person may, without a permit and not immediately release, catch, import, export, transport, keep, possess, breed, or trade in a specimen of a specially protected or protected fish.

No habitats for fish occur on site.

Invertebrates

Invertebrates dominate inland habitats and play a significant role in the overall function of the ecosystem (Kremen et al. 1993, Weisser and Siemann 2004). In general, they are widely distributed and extremely diverse, which makes it almost impossible to list all species that may possibly occur on site without a dedicated study. Invertebrates have also not been surveyed as comprehensively as plants and mammals and therefore current available data on their distribution is much scarcer. Nevertheless, key morphospecies and species of conservation concern are discussed here, as well as the major habitats which delimit possible invertebrate communities on site.

Eight invertebrate species of the Northern Cape appear on the IUCN Red Data list of threatened species. However, none of these species' distribution ranges overlap with that of the study area. In addition, those species that are specially protected according to Schedule 1 of the NCNCA include all Velvet worms as well as some baboon spider species, Stag Beetles and the Flightless Dung Beetle. So far, most of these taxa have not yet been formally recorded from the region, but Baboon Spiders and All Monster Tiger Beetles have been observed near the study area and therefore has a potential to occur on site, especially in the pristine habitats.

All Rock- Creeping- and Burrowing Scorpions are protected according to Schedule 2 of the NCNCA, along with several beetles, butterflies and moths. Of these, Burrowing and Rock Scorpions as well as some Gossamer-winged Butterflies, Skippers, Brush-footed Butterflies and Satyrs have the highest likelihood to be found on site.

All other invertebrates from the class Insecta and Arachnida are protected according to Schedule 3 of the NCNCA.

- **Flora:**

Dr. Betsie Milne from Boscia Ecological Consultants has been appointed by PMG Mining (Pty) Ltd to provide an ecological study in order to highlight the ecological characteristics of the proposed mining area and to determine the possible impact of mining on the diversity and ecological status of the application area. Flora was described and included in this report as part of the ecological study. The study will be appended to the Scoping report as Appendix 4.

Broad-scale vegetation patterns

The study area falls within the Savanna Biome (Mucina and Rutherford 2006), and according to the vegetation map of Mucina et al. (2005) two vegetation units are present on site, i.e. Kuruman Mountain Bushveld and Postmasburg Thornveld. The vegetation map however does not reflect the true character of the site, because it has not been mapped at a very fine scale.

Postmasburg Thornveld is only found in the Northern Cape Province, restricted to areas around Postmasburg and lies at altitudes between 1 180 and 1 440 m. It is represented as flats surrounded by mountains supporting open, shrubby Thornveld characterised by a dense shrub layer, where trees and grasses are sparse.

Shrubs are often low and of a karroid affinity. The unit occurs on red aeolian sand (Hutton form) of the Kalahari Group overlying the volcanics and sediments of the Griqualand West Supergroup that outcrop in places. The dominant land type is Ag. The unit is classified as being least threatened with very low erosion and very little transformation. It is not currently conserved within any formal conservation areas and no endemic plant species is known from this unit.

Kuruman Mountain Bushveld is distributed in the Northern Cape and North-West Provinces at altitudes between 1 100 and 1 800 m. It stretches from the Asbestos Mountains southwest and northwest of Griekwastad, along the Kuruman Hills north of Danielskuil, passing west of Kuruman and re-emerging as isolated hills. The unit is typically presented as rolling hills with gentle to moderate slopes and hill pediment areas with an open shrubveld. Here, *Calobota cuspidosa* is conspicuous within a well-developed grass layer. The Hills consist of banded iron formation, with jasper, chert and riebeckite-asbestos of the Asbestos Hills Subgroup of the Griqualand West Supergroup. Soils are shallow sandy soils of the Hutton form, with the most common land type being Ib, followed by Ae, Ic and Ag. The unit is classified as being least threatened with very little being transformed and with little erosion being present. It is not currently conserved within any formal conservation areas and the succulent *Euphorbia planiceps* is the only endemic species known from this unit.

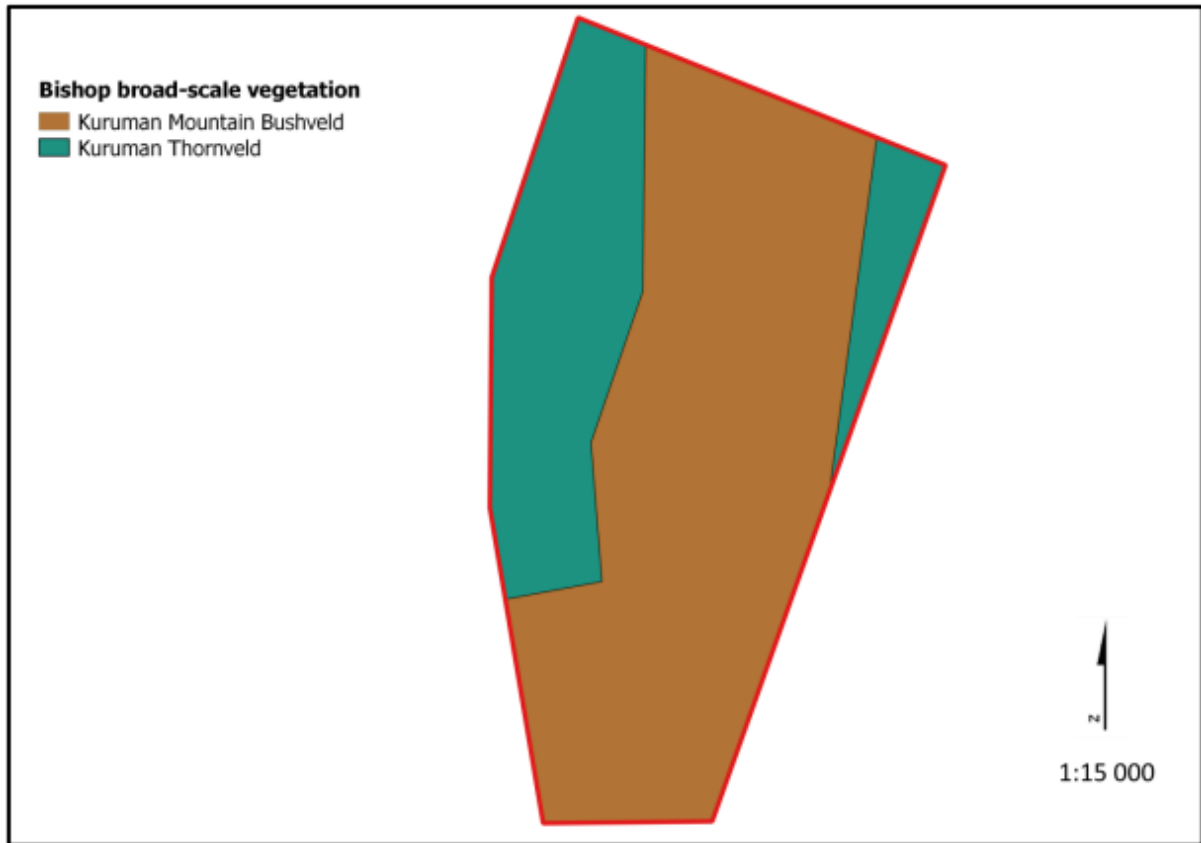


Figure 20. The distribution of broad-scale vegetation units (Mucina et al. 2005) in the study area.

Fine-scale vegetation patterns

The proposed finer scale vegetation communities were delineated according to plant species correspondences and changes in soil structure. These can be divided into five distinct units, which are described below. These descriptions include unique characteristics and the dominant species found in each unit. Areas that have already been completely transformed is indicated on the map but will not be discussed further.

i) *Tarchonanthus camphoratus* – *Stipagrostis uniplumis* open shrubland on red clayey soil

This community occurs on deep red clayey soils in the north-east of the study area. Bare ground constitutes approximately 20 % of the ground cover. The plant community is presented as an open shrubland, where tall shrubs *Tarchonanthus camphoratus* and *Senegalia mellifera* are conspicuous in a grassy matrix. These two shrubs continuously alternate in their dominance across this unit. Other common tall shrubs found here include *Ziziphus mucronata*, *Grewia flava*, *Searsia ciliata*, *S. tridactyla*, *Vachellia hebeclada*, and *V. tortilis*.

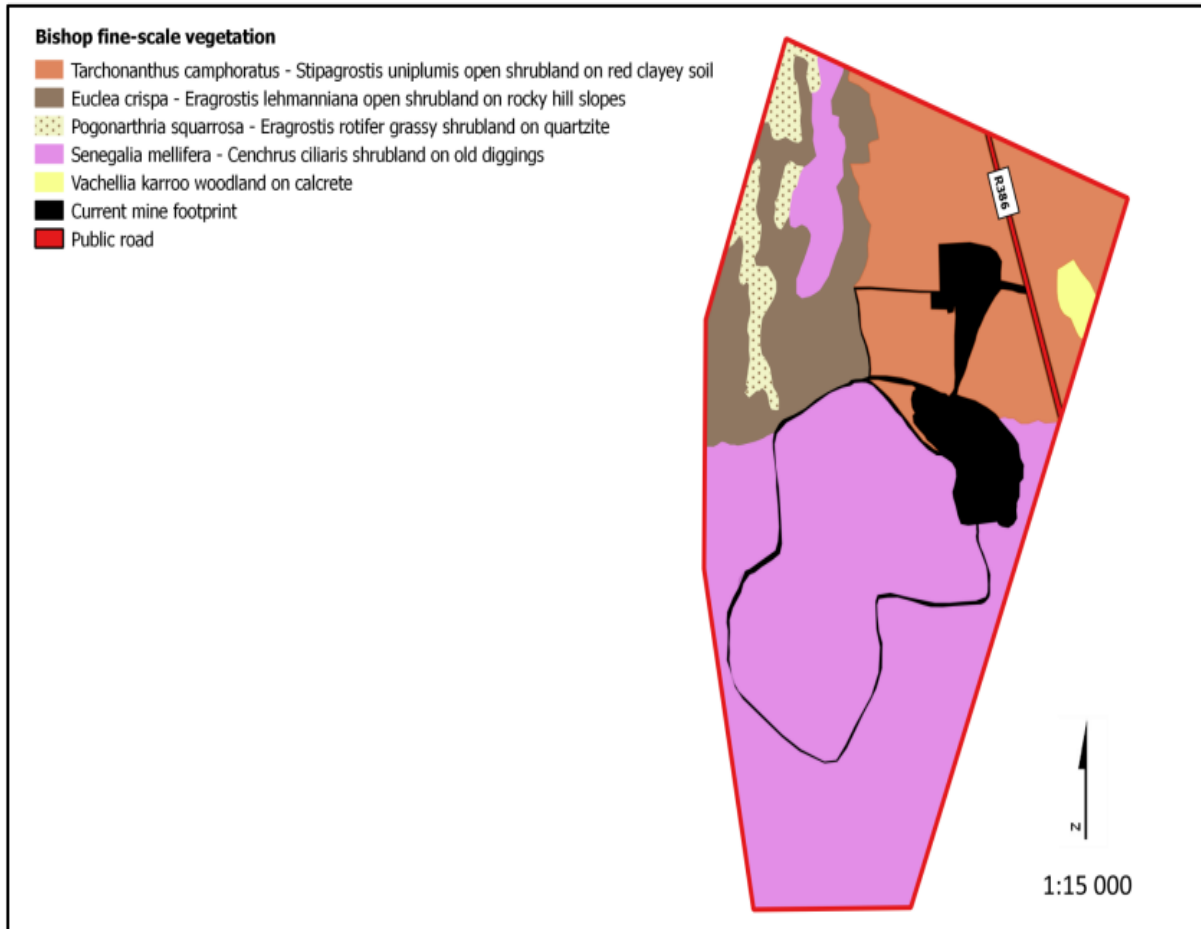


Figure 21. The distribution of fine-scale vegetation units in the study area.

The nationally protected tree *Vachellia erioloba* occurs at high densities in a restricted patch in the north of the unit, near the border. More sparsely scattered individuals are also present across the unit. Another nationally protected tree, *Boscia albitrunca* is also present in this community, but occurs at very low densities and is sparsely distributed. They also predominantly occur as very young and small shrubs.

The grass layer is very well developed and is dominated by *Stipagrostis uniplumis*, followed by *Cenchrus ciliaris*, *Schmidtia pappophoroides* and *Heteropogon contortus*. Other common grasses include *Aristida congesta* subsp. *barbicollis*, *Enneapogon cenchroides* and *Eragrostis lehmanniana*, while species like *Eragrostis obtusa* and *E. rotifer* occur sparsely.

Common lower shrubs include *Chrysocoma obtusata*, *C. ciliata*, *Phymaspermum parvifolium*, *Aptosimum marlothii*, *Asparagus capensis*, *A. laricinus*, *Leonotis pentadentata* and *Pegolettia retrofracta*.

Other species found here include *Geigeria filifolia*, *Dicoma capensis*, *Hertia pallens*, *Nidorella hottentotica*, *Polichia campestris*, *Polygala scabra*, *Senna italica* subsp. *arachoides*, *Asparagus* cf. *africanus*, *Ehretia alba*, *Pupalia lappacea* var. *lappacea*, *Solanum* sp., *Othonna* sp., *Hermannia* sp. and *Atriplex* sp.

ii) **Euclea crispa – Eragrostis lehmanniana open shrubland on rocky hill slopes**

This community occur on the slopes of the hills associated with the Gamagara Formation and have not been mined in the past. Rocky soil generally constitutes approximately 10 % of the ground cover on the east-facing slopes, but on the west-facing slopes the vegetation have evidently been overutilised and here, bare ground accounts for up to 40 %. Similarly, the vegetation characteristics on these slopes differ somewhat, in that the grass component on the west-facing slopes is much less developed and is replaced by a higher density of *Senegalia mellifera*.

In general, *Euclea crispa* shrubs are conspicuously scattered across the hill slopes, along with other dominant shrubs like *Senegalia mellifera*, *Tarchonanthus camphoratus*, *Grewia flava* and *Searsia ciliata*. Other tall shrubs that also occur on the slopes, but at lower densities, include *Vachellia tortillis* and *Rhigozum obovatum*. Common lower shrubs include *Pegolettia retrofracta*, *Chrysocoma obtusata*, *Hermannia spinosa* and *Leonotis pentadentata*.

The nationally protected tree *Boscia albitrunca* occurs at high densities on the hill slopes as adult trees as well as young, small shrubs. *Vachellia erioloba* is also present, but they occur at very low densities and are sparsely distributed.

The grass layer is dominated by *Eragrostis lehmanniana*, but other common grasses include *E.rotifer*, *Enneapogon desvauxii*, *Cenchrus ciliaris*, *Aristida diffusa*, *Heteropogon contortus* and *Stipagrostis uniplumis*. *Aristida congesta* subsp. *congesta*, *Enneapogon cenchroides*, *Eragrostis curvula* and *Melinis repens* are also present, but at lower densities.

Other species found on the hill slopes include *Asparagus capensis*, *A. retrofractus*, *Aptosimum marlothii*, *Pachypodium succulentum* *Barleria rigida*, *Cadaba aphylla*, *Geigeria filifolia*, *Helichrysum cerastioides* var. *cerastioides* *Gomphocarpus tomentosum*, *Hermannia minutiflora*, *Kleinia longiflora*, *Pentzia incana*, *Hermannia* sp., *Sericocoma* sp., *Atriplex* sp. and *Salvia* sp.

iii) **Pogonarthria squarrosa – Eragrostis rotifer grassy shrubland on quartzite**

This community is associated with quartzite outcrops on the hills in the north-west of the property. Here, large rocks constitute 40% of the ground cover, with the vegetation being scattered among them.

The vegetation is presented as grassy shrubland, where *Pogonarthria squarrosa* and *Eragrostis rotifer* are the dominant graminoids. However, *Aristida diffusa* and *Eragrostis lehmanniana* are also very common. Other grasses found here include *Heteropogon contortus*, *Aristida congesta* subsp. *barbicollis*, *Elionurus muticus*, *Enneapogon cenchroides* and *Eragrostis nindensis*.

Senegalia mellifera is scattered among the grasses and is the dominant shrub, but *Euclea crispa* and *Grewia flava* are also found. Common low shrubs include *Monechma spartioides*, *Pegolettia retrofracta*, *Chrysocoma ciliata* and *Hermannia affinis*.

The nationally protected tree *Boscia albitrunca* is scattered at medium densities across this unit, and occurs as stunted shrubs and adult trees.

Other species found on the quartzite outcrops include *Raphionacme velutina*, *Gomphocarpus tomentosum*, *Tephrosia dregeana* var. *dregeana*, *Hertia pallens*, *Polichia campestris*, *Thesium lineatum*, *Wahlenbergia thunbergii*, *Helichrysum cerastioides* var. *cerastioides*, *H. zeyheri*, *Sanseveria aethiopica*, *Asparagus capensis*, *Pentzia incana*, *Solanum* sp., *Jamesbrittenia* sp., *Sericocoma* sp., *Pharnaceum* sp. and *Rhynchosia* sp.

iv) *Senegalia mellifera* – *Cenchrus ciliaris* shrubland on old diggings

This plant community is associated with areas on the hills that have been mined in the past and covers the largest part of the study area. It mainly covers the southern half of the property, but another smaller portion lies in the north-west. The vegetation has re-established on the old mine dumps, open pits, as well as other areas evidently disturbed by the historic mining activities.

The vegetation community predominantly occurs as broken shrubland with very little grass cover and this is most likely due to major topographic alterations. However, those areas where the topography has not been altered substantially, grasses are more abundant.

Senegalia mellifera is very conspicuous across this unit and is by far the most dominant shrub. However, *Tarchonanthus camphoratus*, *Euclea crispa*, *Ehretia alba*, *Rhigozum obovatum*, *Searsia ciliata*, *S. tridactyla*, *S. burchellii*, *S. lancea*, *Lycium schizocalyx* and *Ziziphus mucronata* is also common.

Common lower shrubs include *Eriocephalus ericoides*, *Chrysocoma ciliata*, *C. obtusata*, *Rhigozum trichotomum*, *Hertia pallens*, *Leonotis pentadentata*, *Aptosimum marlothii*, *Cadaba aphylla*, *Pegolettia retrofracta*, *Hermannia affinis*, *H. minutiflora*, *Monechma spartioides*, *Melolobium* sp., *Hermannia* sp. and *Lycium* sp.

Eventhough the grass cover is not well developed, high grass species diversity is found on the old diggings. This in turn is most likely related to the rather patchy distribution of graminoids found here. Dominant grass species include *Cenchrus ciliaris*, *Heteropogon contortus*, *Stipagrostis obtusa*, *S. uniplumis* and *Aristida congesta* subsp. *barbicollis*. Other grasses include *Aristida diffusa*, *A. stipitata*, *Digitaria polyphylla*, *Eragrostis chloromelas*, *E. curvula*, *E. lehmanniana*, *Enneapogon cenchroides*, *Pogonarthria squarrosa* and *Panicum maximum*.

The nationally protected tree *Boscia albitrunca* is found at low densities and occur as young, small individuals.

Other species found here include *Sericocoma* sp., *Aloe hereroensis* var. *hereroensis*, *Gomphocarpus tomentosum*, *G. fruticosus*, *Pellaea calomelanos*, *Barleria rigida* and *Rhynchosia* sp.

v) Vachellia karroo woodland on calcrete

This community is restricted to calcrete soils that comprise a very small area in the north-east of the study area. This area is evidently being used as a watering point and signs of trampling and overgrazing are evident. Very little pristine vegetation exists and the grass layer has been over utilised.

The plant community is dominated by *Vachellia karroo* trees, with *Searsia lancea* and *Ziziphus mucronata* also being present. *Eragrostis lehmanniana* is the only grass that could be recognised during the site visit.

Population of sensitive, threatened and protected plant species

The SANBI Red List provides information on the national conservation status of South Africa's indigenous plants, while the National Forests Act (No. 84 of 1998) (NFA) and the Northern Cape Nature Conservation Act (Act No. 9 of 2009) (NCNCA) restricts activities regarding sensitive plant species. Section 15 of the NFA prevents any person to cut, disturb, damage, destroy or remove any protected tree; or collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree, except under a licence granted by the Minister. Section 49 (1) and 50 (1) of the NCNCA states that no person may, without a permit pick, transport, possess, or trade in a specimen of a specially protected (Schedule 1) or protected (Schedule 2) plants. Furthermore, Section 51(2) states that no person may, without a permit, pick an indigenous plant (Schedule 3) in such manner that it constitutes large-scale harvesting.

Most species of the region are classified as least concern; a category which includes widespread and abundant taxa. However, one species, i.e. *Hereroa wilmaniae* is listed as "Data Deficient - Taxonomically Problematic" under the National Environmental:

Biodiversity Act (Act No. 10 of 2004) (NEMBA). Little is known about this species and no justification for its assessment status is provided. It was not recorded on site during the field survey. Species protected in terms of the National Forests (NFA) Act No 84 of 1998 include *Vachellia erioloba*, and *Boscia albitrunca*. The latter species is also protected according to the NCNCA (Schedule 2).

Critical biodiversity areas and broad-scale processes

All vegetation units that fall within the study area are classified as least threatened and therefore no fine-scale conservation planning has been conducted for the area. The area has also not been identified for long term maintenance of broad-scale ecological processes, and does not host exceptional biodiversity. It does not fall within a National Protected Areas Expansion Strategy Focus Area. However, these classifications

and descriptions are based on available data for the region and it is important to note that the region is greatly understudied and that decision-making should not be based purely on these classifications.

The study area fall within the Griqualand West Centre (GWC) of Endemism (Van Wyk and Smith 2001), as does many other mining operations. A centre of plant endemism is an area with high concentrations of plant species with very restricted distributions, known as endemics. They are extremely vulnerable; relatively small disturbances in a centre of endemism may easily pose a serious threat to its many range restricted species. The GWC is considered a priority in the Northern Cape, because the number of threats to the area is increasing rapidly. This is a cause of concern, because the GWC is still greatly misunderstood and under researched. Important elements might therefore be lost or disturbed due to a lack of knowledge, which could assist in protecting its fundamental processes. The cumulative effect of mining in this region exacerbate the potential risk of losing information on ecosystem function owing to the lack of basic research information within this area.

The mine itself is expected to cause habitat transformation through the excavation of large open pits, and will thereby contribute to cumulative habitat loss and the disruption of the broad-scale landscape connectivity in the region. The total extent of habitat loss is expected to be low, because the vegetation units within the study area are still more than 95% intact. Therefore, the mining activities on the Bishop mine will only have a local impact and the extent of habitat loss within these vegetation units will be low.

In addition, however it is important to note that the study area falls within a zone where South Africa's largest economically most important deposits of manganese and the principle deposits of iron ore are found. The manganese zone extends northwards over a distance of 150 km, from just south of Postmasburg to as far as the Wessels and black rock Mines north of Hotazel, while the most significant iron ore deposits occur in the vicinity of Postmasburg and Sishen. The cumulative impacts in the vicinity of the study area are therefore considered to be very high.

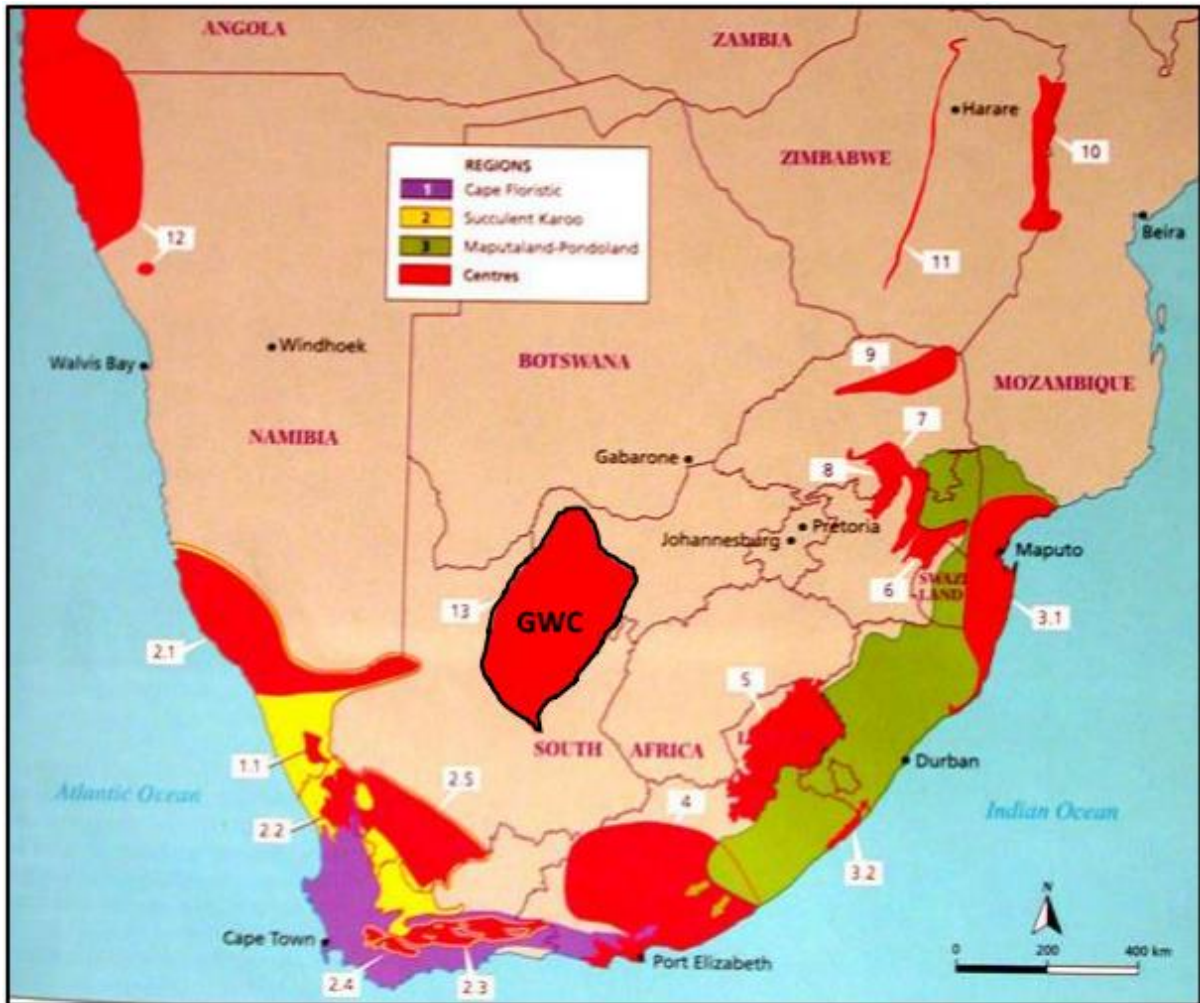


Figure 22. A map indicating the regions of floristic endemism in southern Africa, according to Van Wyk and Smith (2001).

Weeds and invader plant species

Weeds and invasive species are controlled in terms of the National Environmental Management: Biodiversity (NEMBA) Act 10 of 2004, as well as the Conservation of Agricultural Resources (CARA) Act 43 of 1993. These species that do not naturally occur in a given area and exhibit tendencies to invade that area, and others; at the cost of locally indigenous species. To govern the control of such species, NEMBA and CARA have divided weeds and invader species into categories.

All declared weeds and invasive species recorded in and around the study area are listed in Table 3 of the ecological study, along with their categories according to CARA and NEMBA. Of these, most species were associated with old diggings and areas in the vicinity of mine infrastructure. *Melia azedarach* and *Opuntia lindheimeri* are by far the most conspicuous invader species in the study area and must be controlled.

Indicators of bush encroachment

Bush encroacher species are controlled in terms of Regulation 16 of CARA; where land users of an area in which natural vegetation occurs

and that contains communities of encroacher indicator plants are required to follow sound practices to prevent the deterioration of natural resources and to combat bush encroachment where it occurs. Declared indicators of bush encroachment in the Northern Cape, which were recorded in and around the study area, are listed in Table 4 of the ecological study.

▪ **Groundwater:**

Ground water in the area is present in two different types of aquifers which will be described below.

(a) Karsified Aquifer:-

This aquifer, which predominantly occur in carbonaceous rocks (dolomite and subordinate limestone) stores its water in the cavities and can yield large volumes of water of deemed good quality. However, this aquifer, like many other aquifers is dependent on precipitation for recharge. This recharge varies with frequency of precipitation, rock type, plant and soil cover, riverbed infiltration and preferred infiltration path. Studies from the area indicate that with a threshold precipitation of more than 20 mm less than 1% to seldom more than 10% of precipitation can infiltrate to reach the ground water. During excessive precipitation events a larger percentage of the vast volumes of precipitation infiltrate (DWS, 2008).

(b) Fracture Aquifers:-

These are rocks that behave in a brittle manner under tectonic forces and have limited intergranular properties, such as the quartzite which occurs in the western side of the mining area. The brittle failure in these formations results in fracture structure which enhances the development of secondary porosity.

There are approximately three boreholes on the study area which is used for extraction of water for the operation as well as a number of monitoring bore holes.

A Water Use License No: 10/D73A/ABG/2393 was issued to PMG Mining for extraction of water (Section 21 (a)), storing of raw water (Section 21 (b)) and disposing of waste (Section 21 (g)) in a manner which may detrimentally impact on a water resource.

There are various boreholes on the immediate surrounding properties. Groundwater abstracted from these boreholes is used for:

- Domestic;
- Livestock and game watering; and
- Mining activities.

A Groundwater Assessment will be conducted by a specialist company. The findings of this report will be included in the EIA/EMPR document.

▪ **Surface Water**

Dr. Betsie Milne from Boscia Ecological Consultants has been appointed by PMG Mining (Pty) Ltd to provide an ecological study in order to highlight the ecological characteristics of the proposed mining area and to determine the possible impact of mining on the diversity and ecological status of the application area. Water resources was described and included in this report as part of the ecological study. The study will be appended to the Scoping report as Appendix 4.

Bishop falls within the Molopo quaternary catchment D41J of the Lower Vaal Water Management Area (Figure 23). This quaternary catchment has been allocated a Present Ecological State (PES) of 'Largely Natural' (B) by Delpont and Mallory (2002) and information regarding mean annual rainfall, evaporation potential and runoff is provided in Table 8.

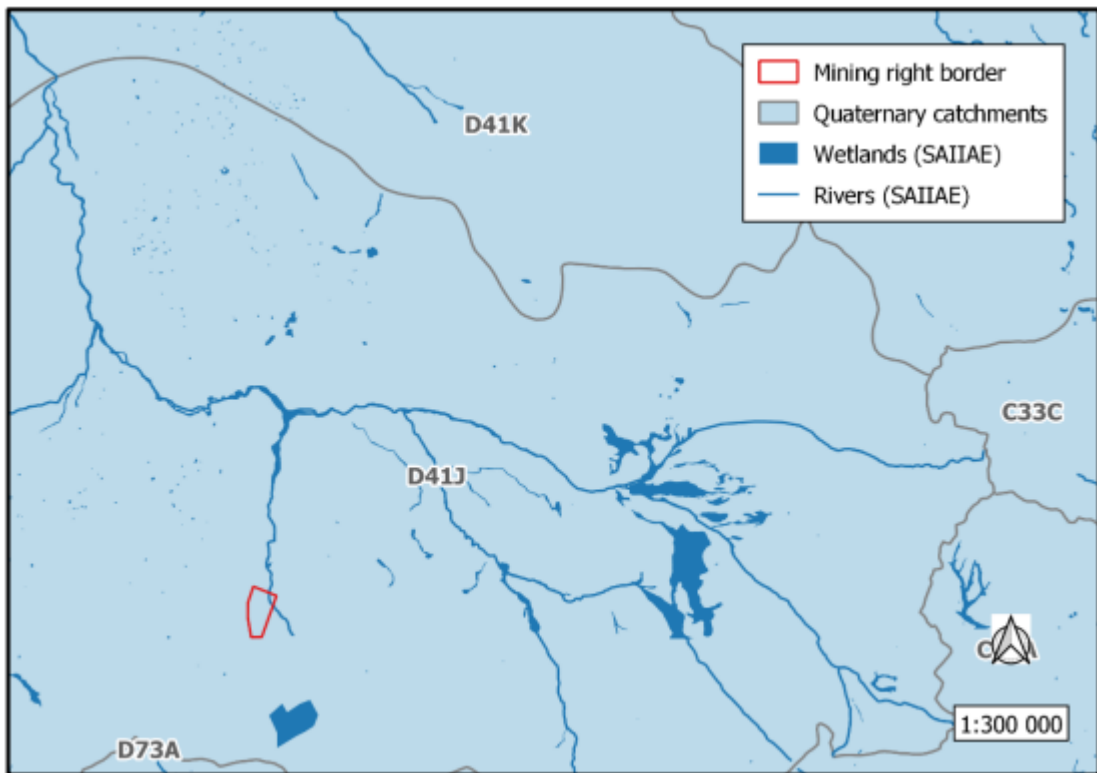


Figure 23. The locality of the proposed mining area in relation to the quaternary catchments of the Lower Vaal Water Management Area.

Table 8. Catchment characteristics, according to Delpont and Mallory (2002), for the quaternary catchment in which the study area falls.

Catchment Area (km ²)	Mean Annual Rainfall (mm)	Mean Annual Evaporation (mm)	Mean Annual Runoff (10 ⁶ m ³)
3 878	358	2 350	4.85

According to The South African Inventory of Inland Aquatic Ecosystems (SAIIAE), Bishop falls within the Eastern Kalahari Bushveld Bioregion, where 1.3 % of the land area is covered by inland wetlands, including depressions, floodplains, seeps and valley-bottom wetland types (Van Deventer et al. 2019). The spatial extent according to the present ecological status per wetland type is depicted in Table 9. Depressional wetlands are most abundant in this bioregion, with the majority being in natural condition. Most of the remaining wetland types in this Bioregion have been moderately- to severely modified.

An order 1, ephemeral river channel runs through the study area in the north-east (Figure 24). It has however been impacted by the national tar road, which have severely altered its natural channel.

Table 9. Percentage of inland wetland spatial extent according to the present ecological status per wetland type of the Eastern Kalahari Bushveld Bioregion.

Wetland type	Total Extent (%)	% Natural or near-natural (A/B)	% Moderately modified (C)	% Heavily to severely/critically modified (D/E/F)
Depression	57.1	70.5	5.7	23.8
Floodplain	2.2	0.6	48.8	50.5
Seep	17.2	10	15.1	75
Valley-bottom	23.5	0.9	29.6	69.5

A Hydrological Assessment study was conducted by Hydrologic Consulting dated July 2021 on the property and some extracts of the findings is recorded in this Scoping report. The study will be appended to the Scoping report as Appendix 7.

The mine is positioned within quaternary catchment D41J which is part of the Lower Vaal water management area. The primary Ga-Mogara River is located approximately 15km to the north of the mine. Immediately to the east of the mine is a non-perennial river with an associated upstream catchment. This catchment area approximates 37km² according to the 30m AW3D30 data (up to its point of accumulation adjacent to the mine). The non-perennial river to the east of the mine does not intersect any mine infrastructure (or area of operation) as it located on the eastern side of the R325 (the main road east of the mine).

There are two additional 1:50,000 topographical map defined non-perennial rivers of relevance, both of which have their headwaters along the western face of the ridge located in the mine. Of these two rivers, the southern river has its headwaters almost precisely along the mine boundary while the northern river intersects the mine's area of operation to a greater degree.

In processing the 0.5m DSM of the mine, it was possible to identify the low-lying areas where water would likely pond. These low-lying

areas were, by and large, associated with either currently operational pits, or historical pits. To better identify the more significant of these, only low-lying areas with a minimum depth of 1m, a minimum area of 1000m² and a minimum volume of 1000m³ were delineated. The resulting 'storage polygons' are identified in Figure 25 and present those places where runoff from upslope areas would be contained. The majority of these storage polygons are located on the western face of the ridge.

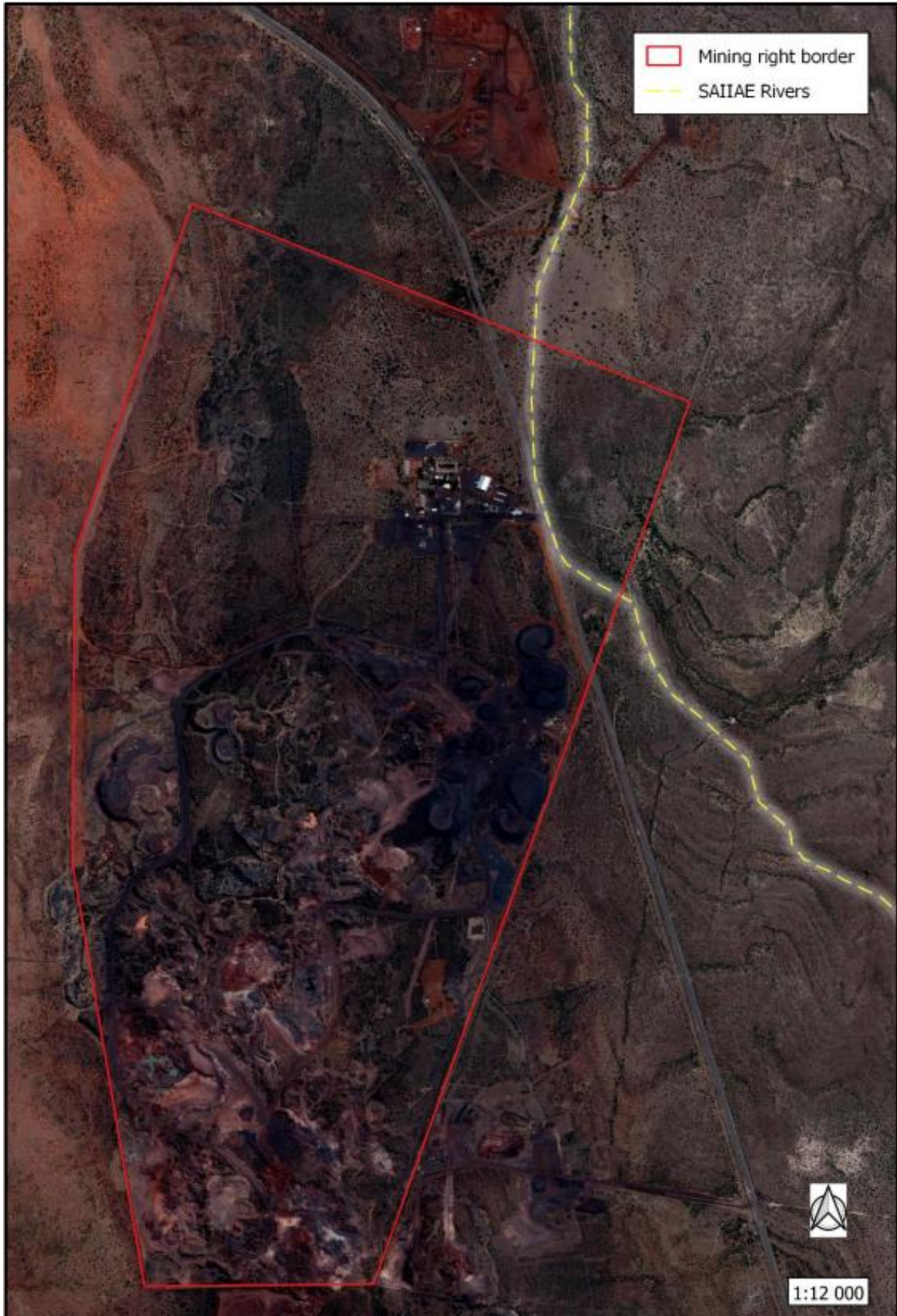


Figure 24. The location of SAIIE water resources on the proposed mining right area.

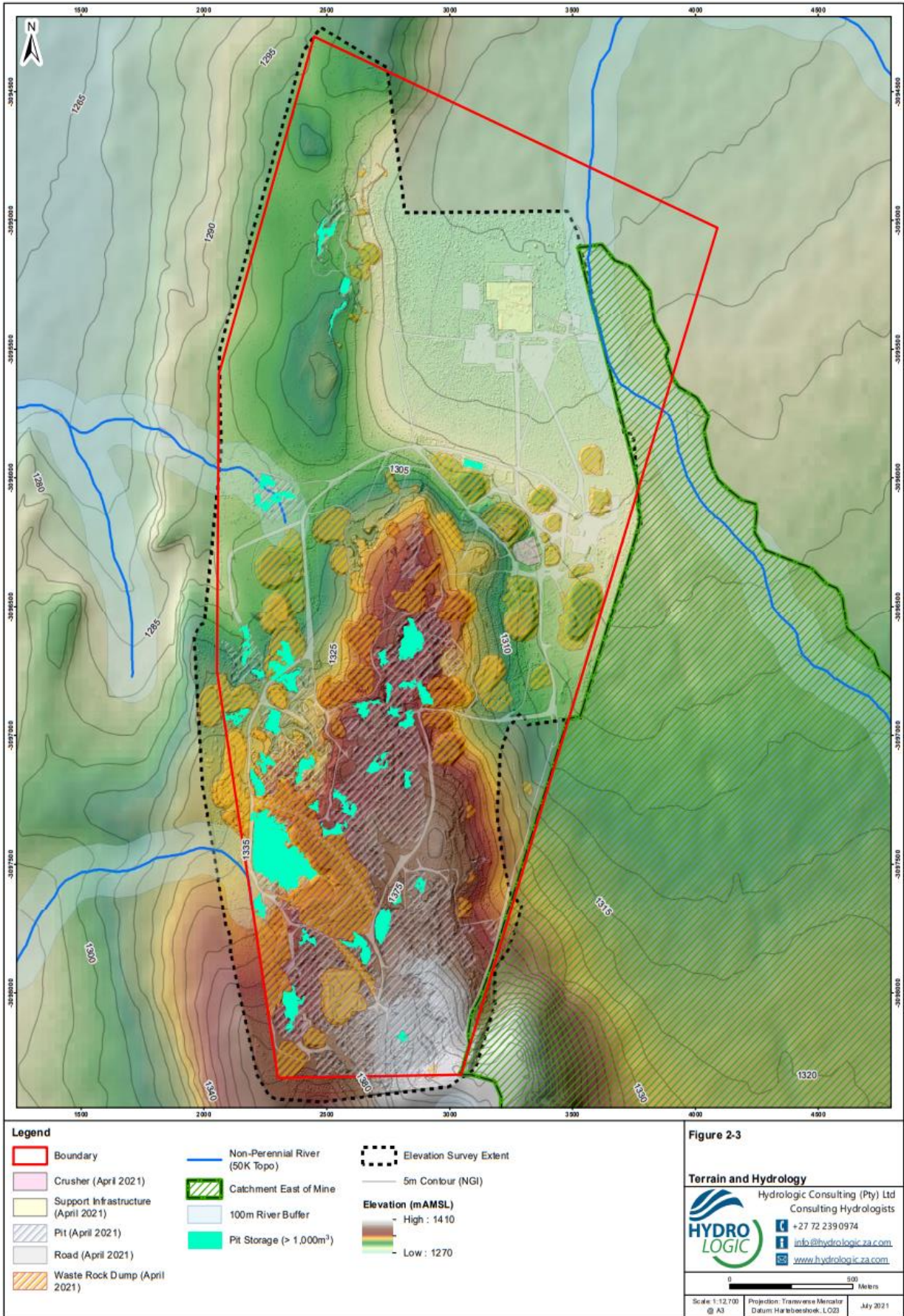


Figure 25. Terrain and Hydrology of Bishop Mine

▪ **Socio-Economic:**

ZF Mgcawu District Municipality

The ZF Mgcawu District Municipality was formerly known as the Siyanda District Municipality. It lies within the mid-northern section of the Northern Cape Province, bordering with Botswana in the north and Namibia in the west and covers an area of 102 484 km².

The ZF Mgcawu District comprises five Local Municipalities with the Tsantsabane Local Municipality (TLM) as the relevant municipality for this application. The main towns that are scattered through the area are Brandboom, Danielskuil, Eksteenskuil, Groblershoop, Kakamas, Keimoes, Kenhardt, Lime Acres, Mier, Postmasburg, Rietfontein, and Upington. The latter serves as the district municipal capital.

The ZF Mgcawu District Municipality accounts for approximately 30% of the Northern Cape economy. ZF Mgcawu's economy is largely dominated by mining and agriculture. Mining activity mainly occurs in the local municipalities of Tsantsabane and Kgatelopele, where manganese, diamonds and the raw materials are found. Agricultural enterprises are found along the Orange River with table grape and dried fruit production, processing and packaging. Livestock farming is undertaken throughout the area with varying land unit sizes due to the diverse carrying capacity in the different sections of the district. A large variety of game can also be found on both private and conservation areas in the region.

Tourism is one of the most important economic sectors in the Northern Cape as well as within the ZF Mgcawu District Municipal boundaries. The industry is noted as the fastest growing component of the economy by the ZFM IDP (2012– 2017). The world famous Kgalagadi Transfrontier Park is found in this region.

The spatial vision of the ZF Mgcawu District Municipality thus include:

- Tourism: Cultural, wilderness, floristic, river tourism ranging from the Kgalagadi international trans frontier park to the culture of the Riemvasmaak community to river tourism on the Orange River;
- Mining and mining beneficiation;
- Agriculture: Riverbank vineyards and expansive stock and game farming in the Kalahari; and
- Renewable energy technology opportunities.

Tsantsabane Local Municipality

The Tsantsabane LM falls under the jurisdiction of the ZF Mgcawu District Municipality formerly known as the Siyanda District Municipality. The extent of the geographical area of the municipality is 18 317 km². The TLM falls in the Gamagara Corridor, which the Northern Cape Provincial Spatial Development Framework (NCPSDF) (2012) defines as “comprises the mining belt of the John Taolo Gaetsewe and ZF Mgcawu districts and runs from Lime Acres and Danielskuil to Hotazel in the north. The corridor focuses on the mining of iron and manganese.



Figure 26. Local Municipalities

The TLM area consists of various wards as indicated in the table below. The study area falls within Ward 6 that spans a vast area. The ward includes Stasie, White City and areas of Beeshoek near Postmasburg with the Olifantshoek area forming the eastern boundary of the ward, and the western boundary just extending to the east of the R325. Ward 6 further stretches northwards to an area near the Olifantshoek – Upington crossing of the N14 and R325.

Table 10: Wards and settlements in the study area

WARDS	AFFECTED SETTLEMENTS IN WARD
Ward 1	Part of <u>Postdene</u> and <u>Carnation</u>
Ward 2	<u>Newtown</u>
Ward 3	<u>Groenwater</u> , <u>Jenn Haven</u> , part of <u>Postdene</u> and <u>Kolomela</u> houses
Ward 4	<u>Boichoko</u>
Ward 5	<u>Skeifontein</u> , <u>Soetfontein</u> , <u>Strathmore</u> , Part of <u>Boichoko</u> and <u>Postmasburg Town</u>
Ward 6	<u>White City</u> , <u>Glosam</u> , <u>Maremane</u> , <u>Beeshoek</u> , <u>Stasie</u>
Ward 7	<u>Maranteng</u> , <u>Kanonbult</u>

Postmasburg is the main town within the Tsantsabane LM, with various other small rural settlements such as Jenn-Haven, White City, Groenwater and Skeyfontein. New settlements developments include Mountainview, Greenfields, and Postdene Phase 1 & 2.

Postdene is situated to the north of Postmasburg and just east of the R325. Newtown is to the west of Postmasburg and south of the R385 (Main Road) with Boichoko further west of both these settlements. Biochoko and Postdene settlement is spatially separated from Postmasburg town, while residents of Newtown access Postmasburg via R385, Main Road and Boom Street.

The main route in the area is the R325 to Kathu and is characterised by high levels of movement. This opens up economic opportunities for the TLM along this and other secondary routes.

Economically, Tsantsabane is known for being rich in minerals, and for its mining, agriculture, manufacturing, and farming sectors. Tsantsabane has become one of the leading investment areas in the Northern Cape.

The key Municipal priorities as set out in the TLM's IDP include:

- Bulk Infrastructure services;
- Revenue Collection and Enhancement;
- Provision of Sustainable Basic Services (Water, Electricity & Sanitation);
- Local Economic Development and Job Creation;
- Education: access to land for educational purposes;
- Access to land for residential and business erven;
- Library services for rural areas;
- Refurbishment of community halls; and
- Access to health services.

(b) Description of the current land uses.**▪ Current land use:**

A terrestrial specialist fauna and flora study was conducted by Dr. Betsie Milne on the property and some extracts of the findings is recorded in this Scoping report. The study will be appended to the scoping report as Appendix 4.

The study area is divided by the R325 road. The largest section lies west of this road and is currently utilized for mining. The smaller section in the east is presumably utilised for grazing. A watering point and a few kudus were observed here. The majority of the western section was mined extensively between the 1930's to 1960's and substantial evidence of the mining activities and associated disturbances are visible today. Some areas have also evidently been overgrazed in the past.

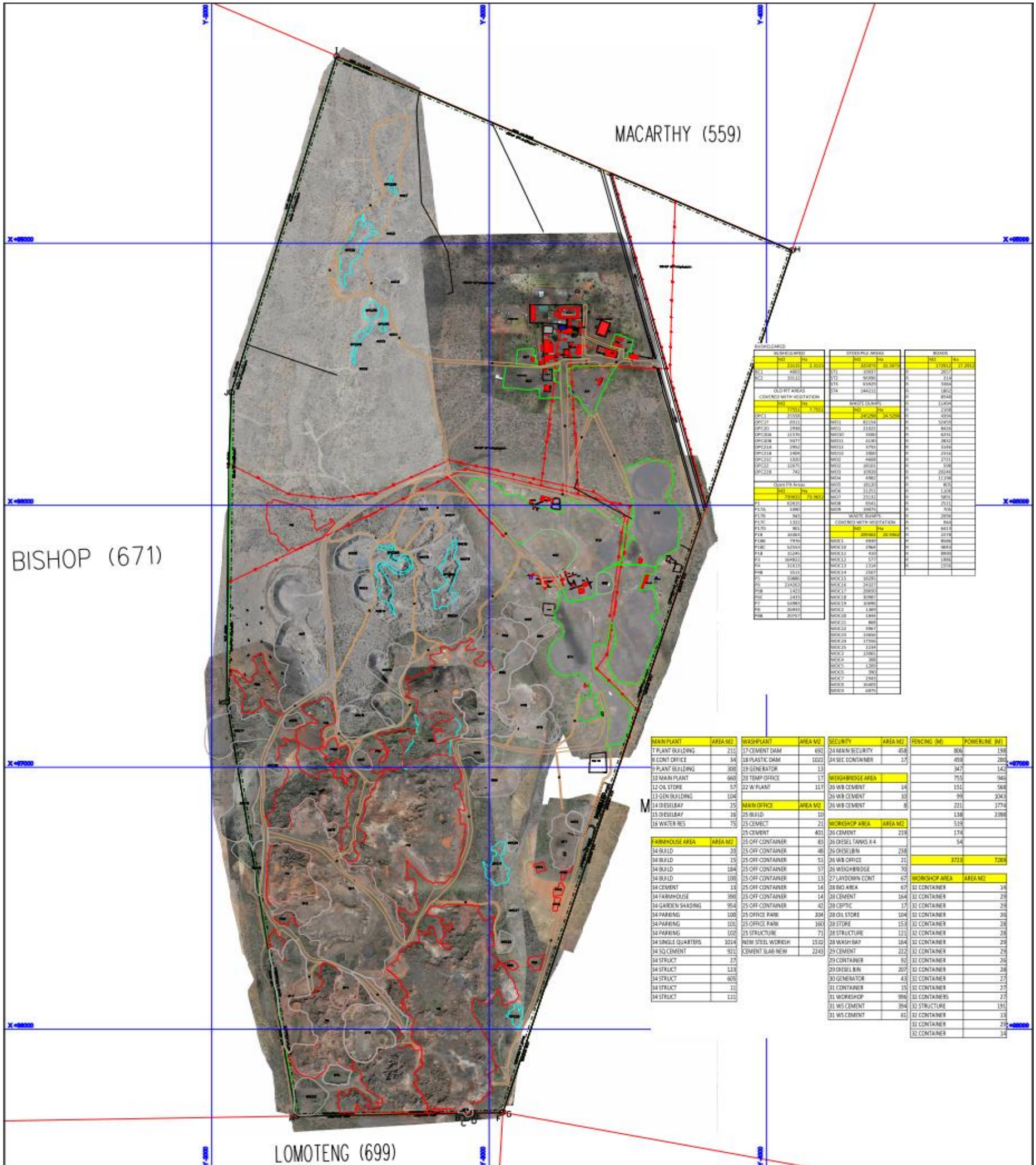
▪ Evidence of disturbance:

The majority of the western section was mined extensively between the 1930's to 1960's and substantial evidence of the mining activities and associated disturbances are visible today. Some areas have also evidently been overgrazed in the past.

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

The infrastructure on site is comprehensively discussed in section d) ii) as part of the methodology discussion and a basic description of the environment was presented in section h iv) (A) as part of the baseline report. Specific environmental features and infrastructure will be comprehensively discussed in the EIA report after all specialist assessments have been completed.

(d) Environmental and current land use map:
(Show all environmental and current land use features.)



SUB-CLEARING		EFFECTIVE AREA		BLANK	
NO.	AREA (M ²)	NO.	AREA (M ²)	NO.	AREA (M ²)
SPC1	4801	SPC1	2007	SPC1	2072
SPC2	2511	SPC2	2009	SPC2	2114
SPC3	2511	SPC3	2009	SPC3	2114
SPC4	2511	SPC4	2009	SPC4	2114
SPC5	2511	SPC5	2009	SPC5	2114
SPC6	2511	SPC6	2009	SPC6	2114
SPC7	2511	SPC7	2009	SPC7	2114
SPC8	2511	SPC8	2009	SPC8	2114
SPC9	2511	SPC9	2009	SPC9	2114
SPC10	2511	SPC10	2009	SPC10	2114
SPC11	2511	SPC11	2009	SPC11	2114
SPC12	2511	SPC12	2009	SPC12	2114
SPC13	2511	SPC13	2009	SPC13	2114
SPC14	2511	SPC14	2009	SPC14	2114
SPC15	2511	SPC15	2009	SPC15	2114
SPC16	2511	SPC16	2009	SPC16	2114
SPC17	2511	SPC17	2009	SPC17	2114
SPC18	2511	SPC18	2009	SPC18	2114
SPC19	2511	SPC19	2009	SPC19	2114
SPC20	2511	SPC20	2009	SPC20	2114
SPC21	2511	SPC21	2009	SPC21	2114
SPC22	2511	SPC22	2009	SPC22	2114
SPC23	2511	SPC23	2009	SPC23	2114
SPC24	2511	SPC24	2009	SPC24	2114
SPC25	2511	SPC25	2009	SPC25	2114
SPC26	2511	SPC26	2009	SPC26	2114
SPC27	2511	SPC27	2009	SPC27	2114
SPC28	2511	SPC28	2009	SPC28	2114
SPC29	2511	SPC29	2009	SPC29	2114
SPC30	2511	SPC30	2009	SPC30	2114
SPC31	2511	SPC31	2009	SPC31	2114
SPC32	2511	SPC32	2009	SPC32	2114
SPC33	2511	SPC33	2009	SPC33	2114
SPC34	2511	SPC34	2009	SPC34	2114
SPC35	2511	SPC35	2009	SPC35	2114
SPC36	2511	SPC36	2009	SPC36	2114
SPC37	2511	SPC37	2009	SPC37	2114
SPC38	2511	SPC38	2009	SPC38	2114
SPC39	2511	SPC39	2009	SPC39	2114
SPC40	2511	SPC40	2009	SPC40	2114
SPC41	2511	SPC41	2009	SPC41	2114
SPC42	2511	SPC42	2009	SPC42	2114
SPC43	2511	SPC43	2009	SPC43	2114
SPC44	2511	SPC44	2009	SPC44	2114
SPC45	2511	SPC45	2009	SPC45	2114
SPC46	2511	SPC46	2009	SPC46	2114
SPC47	2511	SPC47	2009	SPC47	2114
SPC48	2511	SPC48	2009	SPC48	2114
SPC49	2511	SPC49	2009	SPC49	2114
SPC50	2511	SPC50	2009	SPC50	2114

MAIN PLANT	AREA (M ²)	WASH PLANT	AREA (M ²)	SECURITY	AREA (M ²)	FENCING (M)	POWERLINE (M)
17 PLANT BUILDING	211	17 CEMENT DAM	693	24 MAIN SECURITY	458	806	158
18 CONT OFFICE	34	18 PLASTIC DAM	1023	24 SEC CONTAINER	27	409	202
19 PLANT BUILDING	300	19 GENERATOR	13			347	142
20 MAIN PLANT	660	20 TEMP OFFICE	17	WEIGHBRIDGE AREA			
21 OIL STORE	57	21 W PLANT	117	25 WB CEMENT	34	151	568
22 GEN BUILDING	104			25 WB CEMENT	35	99	3243
23 DREHSLAB	25			25 WB CEMENT	8	231	1774
24 WATER RES	75			25 WB CEMENT	888	338	2388
						339	
						174	
						54	
						373	728

PMG MINING PTY (LTD)
BISHOP MINE
MANGANESE MINE

REGIONAL SETTING : SITUATED IN THE MAGISTERIAL DISTRICT OF KURUMAN IN THE NORTHERN CAPE
REGISTERED DESCRIPTION OF PROPERTIES
PORTION 1 AND THE REMAINDER OF THE FARM BISHOP NO 671
543.3462 HA IN EXTENT

REHABILITATION PLAN

TRIGONOMETRIC SYSTEM : WGS 84
COORDINATE Y 0 X 3 000 000
ALL ELEVATIONS ABOVE MEAN SEA LEVEL

SCALE 1: 5000

GME 14/18/2/2295

SIGNATURES		
DATE	NAME	SIGNATURES
31/03/2023	H HUSSELMANN	

LEGEND

- WASH DAM
- WASH
- OLD PITS VEGETATED
- ROADS
- BACKFILL AREAS
- OPEN PIT AREAS

Figure 27: Current land use and environmental map

(v) 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 consultations with affected parties together with the significance, probability and duration of the impacts.)

Environmental Factor	Nature of Impact	Significance	Probability	Duration	Extent	Management / mitigation
PHYSICAL						
Geology and Mineral Resource	Sterilisation of mineral resources	Very low	Highly unlikely	Operational and Decommissioning	Local	Ensure that optimal use is made of the available mineral resource.
Topography	Changes to surface topography Development of infrastructure; and residue deposits, excavations and blasting	Medium	High	Construction and Operational	Local	<ul style="list-style-type: none"> • Backfill all excavations continuously. • Employ effective rehabilitation strategies to restore surface topography of excavations, rock dump and plant site. • Stabilise the mine residue deposits (rock dump). • All temporary infrastructures should be demolished during closure (Terrestrial Fauna and Flora Report, August 2015).
Soils	Soil Erosion During clearing of an area for the excavation of minerals, construction of infrastructure and	Low-Medium	Possible, frequently	Decommissioning	Local	<ul style="list-style-type: none"> • Bare ground exposure should be minimised at all times in terms of the surface area and duration. • Re-establishment of plant cover on disturbed areas must take place as soon as

	roads, stockpiling, natural events.					<p>possible, once activities in the area have ceased.</p> <ul style="list-style-type: none"> • No new roads, infrastructure or mining areas should be developed over the watercourse. • Disturbances during the rainy season should be monitored and controlled. • Any potential run-off from exposed ground should be controlled with flow retarding barriers. • Regular monitoring during the mining operation should be carried out to identify areas where erosion is occurring; followed by appropriate remedial actions.
	Nature of Impact	Significance	Probability	Duration	Extent	Management / mitigation
	Loss of soil fertility During clearing of an area for the excavation of minerals, construction of infrastructure and roads, stockpiling.	Medium - High	Certain for life of operation	Residual	Local	<ul style="list-style-type: none"> • Topsoil needs to be removed and stored separately during mining and the construction of roads, infrastructure and stockpile areas. • These topsoil stockpiles must be kept as small as possible in order to prevent compaction and the formation of anaerobic conditions.

						<ul style="list-style-type: none"> • Topsoil must be stockpiled for the shortest possible timeframes to ensure that the quality of the topsoil is not impaired. • Topsoil must not be handled when the moisture content exceeds 12 %. • Topsoil stockpiles must by no means be mixed with sub-soils. • The topsoil should be replaced as soon as possible on to the disturbed areas, thereby allowing for the re-growth of the seed bank contained within the topsoil. • For restoration of the affected areas without topsoil, soils can be sourced from other sustainable areas and chemically changed to match with the surrounding environment. • To restore areas where compacted soil occurs, a ripper blade or deep plow can be pulled across the affected area to alleviate compaction. • Encourage the growth of natural plant species in all
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	Nature of Impact	Significance	Probability	Duration	Extent	Management / mitigation
	<p>Soil character and quality</p> <p>During clearing of an area for the excavation of minerals, construction of infrastructure and roads, stockpiling, oil and petrochemical spills.</p>	<p>Medium - High</p>	<p>Certain for life of operation</p>	<p>Residual</p>	<p>On-site</p>	<p>affected areas by sowing indigenous seeds or by planting seedlings.</p> <ul style="list-style-type: none"> • Topsoil needs to be removed and stored separately during mining and the construction of roads, infrastructure and stockpile areas. • These topsoil stockpiles must be kept as small as possible in order to prevent compaction and the formation of anaerobic conditions. • Topsoil must be stockpiled for the shortest possible timeframes to ensure that the quality of the topsoil is not impaired. • Topsoil must not be handled when the moisture content exceeds 12 %. • Topsoil stockpiles must by no means be mixed with sub-soils. • The topsoil should be replaced as soon as possible on to the disturbed areas, thereby allowing for the re-growth of the seed bank contained within the topsoil.

						<ul style="list-style-type: none">• For restoration of the affected areas without topsoil, soils can be sourced from other sustainable areas and chemically changed to match with the surrounding environment.• To restore areas where compacted soil occurs, a ripper blade or deep plow can be pulled across the affected area to alleviate compaction.• Encourage the growth of natural plant species in all affected areas by sowing indigenous seeds or by planting seedlings.• Vehicles and machinery should be regularly serviced and maintained.• Refuelling and vehicle maintenance must take place in well demarcated areas and over suitable drip trays to prevent soil pollution.• Drip trays must be available on site and installed under all stationary vehicles.• Spill kits to clean up accidental spills from any accidental spillages must
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						<p>be well-marked and available on site.</p> <ul style="list-style-type: none"> Workers must undergo induction to ensure that they are prepared for rapid clean-up procedures. Any soil or area that is contaminated must be cleaned immediately by removing the soil and disposing it as hazardous waste in the correct manner.
Land Capability	Loss of land capability through topsoil removal, disturbances and loss of fertility.	Very Low	Possible	Short term	Minimal Local	Employ appropriate rehabilitation strategies to restore land capability.
Land use	Loss of land use due to poor placement of surface infrastructure and ineffective rehabilitation	Very low	Possible	Short term	Minimal Local	Carefully plan the placement of infrastructure and employ rehabilitation strategies to restore land capability.
Ground Water Quantity	Nature of Impact	Significance	Probability	Duration	Extent	Management / mitigation
	Groundwater Dewatering If groundwater is used for supply then localized dewatering could occur.	Low	Possible	Construction	Low Local	Borehole abstraction should be sufficiently managed and water levels monitored at the abstraction wells and nearby boreholes.
	Hydrocarbon Spills Hydrocarbon spills from construction vehicles and fuel storage areas may	Medium	Possible	Construction	Low Local	Staff at Workshop areas, yellow metal laydown zones and fuel storage areas should be sufficiently trained in hydrocarbon spill response

	contaminate the groundwater resource locally					Each area where hydrocarbons are stored or likely to spill should be equipped with sufficient spill response kits and personnel, contaminated soil should be disposed of correctly at a suitable location.
	Groundwater Dewatering Groundwater depletion will take place in the areas surrounding the opencast pit.	Low	Possible	Operational	Low Local	No mitigation possible. Although unlikely to occur, should any local groundwater user's resource be impacted on by operations at the mine the affected party should be provided with an alternative water source at the mine operator's cost. Groundwater levels should be monitored regularly and should any negative trends in groundwater levels be observed suitable mitigation should be implemented. Discharge water from the open pit should be disposed of in a safe manner, should the water become contaminated over time it should either be stored in dedicated PCD's for reuse at the plant or treated prior to discharging into the environment.
Groundwater Quality	Nature of Impact	Significance	Probability	Duration	Consequence Extent	Management / mitigation

	Poor quality seepage The waste material at the waste rock dump and stockpile areas may undergo oxidation over time, resulting in poor quality seepage to the groundwater resource.	Low	Possible	Operational BASE CASE	Low Local	Material at the stockpile areas should be removed as fast as possible to prevent oxidation. The waste rock dumps should be maintained and sufficient storm water management options should be installed to prevent excessive infiltration of runoff to the material.
Groundwater Quantity	Groundwater Rebound Following cessation of mining operations, the groundwater levels at the site will rebound to their original level. Decant is unlikely.	Low	Unlikely	Closure	Low Local	In order to avoid decant the pit should be backfilled and rehabilitated in a manner where the pit materials mimic the natural groundwater environment as far as possible.
Environmental Factor	Nature of Impact	Significance	Probability	Duration	Consequence Extent	Management / mitigation
Surface Water	Alteration/destruction of watercourses During excavation of minerals, construction of infrastructure and roads, stockpiling.	Low - Medium	Possible infrequent	Permanent	Regional	<ul style="list-style-type: none"> • All activities associated with the mining operation must be planned to avoid any disturbances to the watercourse and its buffer zone. • No new roads should be created across the watercourse and no mining should take place in it. • If this is unavoidable, a water use license to alter its beds and banks should be

	<p>Siltation of surface water</p> <p>During clearing of an area for the excavation of minerals, construction of infrastructure and roads, stockpiling, natural events.</p>	<p>Low-Medium</p>	<p>Possible Infrequent</p>	<p>Residual</p>	<p>Regional</p>	<p>obtained from DWS prior to such activities.</p> <ul style="list-style-type: none"> • Employ sound rehabilitation measures to restore characteristics of any affected watercourses • Bare ground exposure should always be minimised in terms of the surface area and duration. • Re-establishment of plant cover on disturbed areas must take place as soon as possible once activities in the area have ceased. • No new roads, infrastructure or mining areas should be developed over the watercourse. • Disturbances during the rainy season should be monitored and controlled. • Any potential run-off from exposed ground should be controlled with flow retarding barriers. • Regular monitoring during the mining operation should be carried out to identify areas where erosion is occurring;
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Environmental Factor	Nature of Impact	Significance	Probability	Duration	Extent	Management
Indigenous Flora	<p>Loss of and disturbance to indigenous vegetation</p> <p>During clearing of an area for the excavation of minerals, construction of infrastructure and roads, stockpiling.</p>	Low - Medium	Certain for life of operation	Residual	On-site	<p>followed by appropriate remedial actions.</p> <ul style="list-style-type: none"> • Implement best practise principles to minimise the footprint of transformation, by keeping to existing roads and earmarked areas where possible. • Implement effective avoidance measures to limit any activities in the highly sensitive areas, by applying the no-go principles. • Ensure measures for the adherence to a maximum speed limit of 40 km/h to minimise dust fallout and associated effects on plants in the adjacent pristine areas. • Encourage the growth of natural plant species in all affected areas by sowing indigenous seeds or by planting seedlings. • The setup of a small nursery is advisable to maximise translocation and re-establishment efforts of affected areas.

						<ul style="list-style-type: none"> Apply for permits to authorise the clearance of indigenous plants from DENC at least three months before such activities will commence.
	<p>Loss of Red data and / or protected floral species</p> <p>Removal of plant species of conservation concern during clearing of an area for excavations, construction of infrastructure and roads, stockpiling. Intentional removal of plant species for non-mine related purposes, e.g. illegal plant trade, fire-wood, medicinal, ornamental use.</p>	Medium - High	Certain for life of operation	Residual	On-site	<ul style="list-style-type: none"> The footprint areas of the mining activities must be scanned for Red Listed and protected plant species prior to any destructive activities by means of a search-and-rescue operation. These plants should be identified and marked prior to intended activity and should ideally be incorporated into the design layout and left in situ. However, due to the nature of the proposed mining activities they will most likely all be removed or relocated if possible. The relevant permits from DAFF / DENC should be obtained before such activities will commence. The setup of a small nursery is advisable to maximise translocation and re-establishment efforts of all the rescued plants.

						<ul style="list-style-type: none">• A management plan should be implemented to ensure proper establishment of ex situ individuals and should include a monitoring programme for at least two years after re-establishment in order to ensure successful translocation.• The designation of an environmental officer is recommended to render guidance to the staff and contractors with respect to suitable areas for all related disturbance and must ensure that all contractors and workers undergo Environmental Induction prior to commencing with work on site. The environmental induction should occur in the appropriate languages for the workers who may require translation.• All those working on site must be educated about the conservation importance of the flora occurring on site as well as the legislation relating to protected species.
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						<ul style="list-style-type: none"> • Employ regulatory measures to ensure that no illegal harvesting takes place. A management plan should be implemented to ensure proper establishment of ex situ individuals, and should include a monitoring programme for at least two years after re-establishment in order to ensure successful translocation. • All those working on site must be educated about the conservation importance of the fauna and flora occurring on site.
	<p>Introduction and spread of alien species</p> <p>During clearing of an area for the excavation of minerals, construction of infrastructure and roads, stockpiling, improper rehabilitation practises.</p>	Low - Medium	Possible, frequently	Residual	Local	<ul style="list-style-type: none"> • Implement best practise principles to minimise the footprint of transformation, by keeping to existing roads and earmarked areas where possible. • Mechanical methods of control should be implemented pro-actively as soon as invasive species start to emerge. • Regular follow-up monitoring of invasive control areas needs to be

						<p>implemented to ensure effective eradication.</p> <ul style="list-style-type: none"> • Encourage proper rehabilitation of disturbed areas through soil restoration and reseedling of indigenous plant species.
	<p>Encouragement of bush encroachment</p> <p>During clearing of an area for the excavation of minerals, construction of infrastructure and roads, stockpiling, improper rehabilitation practises.</p>	Low	Possible, infrequently	Residual	On site	<ul style="list-style-type: none"> • Mechanical methods of control should be implemented pro-actively when encroaching species form dense stands. • Regular follow-up monitoring of encroached control areas needs to be implemented to ensure effective eradication. • Encourage proper rehabilitation of disturbed areas through soil restoration and reseedling of indigenous plant species.
	<p>Broad-scale ecological processes</p> <p>The construction of roads, plant site, as well as other necessary infrastructure; and the</p>	Medium - High	Certain for life of operation	Residual	Regional	<ul style="list-style-type: none"> • Minimise the footprint of transformation. • Encourage proper rehabilitation of mined areas. • Encourage the growth of natural plant species. • Mining activities must be planned, where possible in

	clearing of vegetation for mining					<p>order to encourage faunal dispersal and should minimise dissection or fragmentation of any important faunal habitat type.</p> <ul style="list-style-type: none"> The extent of the mining area should be demarcated on site layout plans (preferably on disturbed areas or those identified with low conservation importance).
Fauna	<p>Loss, damage and fragmentation of natural habitats</p> <p>During clearing of an area for the excavation of minerals, construction of infrastructure and roads, stockpiling.</p>	Medium – High	Certain for life of operation	Residual	Regional	<ul style="list-style-type: none"> All activities associated with the mining operation must be planned, where possible to encourage faunal dispersal and should minimise dissection or fragmentation of any important faunal habitat type. The extent of the earmarked area should be demarcated on site layout plans. No staff, contractors or vehicles may leave the demarcated area except those authorised to do so. Those pristine areas surrounding the earmarked area that are not part of the demarcated area should be

						<p>considered as a no-go zone for employees, machinery or even visitors.</p> <ul style="list-style-type: none"> • No new roads should be created across a watercourse. • No mining should take place in the ephemeral river. • If watercourse disturbances are unavoidable, a water use license to alter its beds and banks should be obtained from DWS prior to such activities. • Employ sound rehabilitation measures to restore characteristics of all affected terrestrial and aquatic habitats.
	<p>Disturbance, displacement and killing of fauna</p> <p>Vegetation clearing; increase in noise and vibration; human and vehicular movement on site resulting from mining activities.</p>	Low-Medium	Certain for life of operation	Decommissioning	Local	<ul style="list-style-type: none"> • Careful planning of the operation is needed to avoid the destruction of pristine habitats and minimise the overall disturbance footprint. • The extent of the mining activities should be demarcated on site layout plans, and no personnel or vehicles may leave the demarcated area except if authorised. Areas

						<p>surrounding the earmarked site that are not part of the demarcated area should be considered as a no-go zone.</p> <ul style="list-style-type: none"> • No mining should take place in the ephemeral river and no new roads should be created across this watercourse. If this is unavoidable, a water use license to alter its beds and banks should be obtained from DWS prior to such activities. • If any of the protected wildlife species are directly threatened by habitat destruction or displacement during the mining operation, then the relevant permits from DENC should be obtained followed by the relevant mitigation procedures stipulated in the permits. • Everyone on site must undergo environmental induction for awareness on not capturing or harming species that are often persecuted out of superstition and to be educated about the
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						<p>conservation importance of the fauna occurring on site.</p> <ul style="list-style-type: none"> • Reptiles, amphibians, mammals, special invertebrates or active bird nests exposed during the clearing operations should be captured for later release or translocation by a qualified expert. • Employ measures that ensure adherence to a speed limit of 40 km/h as well as driving mindfully to lower the risk of animals being killed on the roads or elsewhere in the mining area.
	<p>Broad-scale ecological processes</p> <p>Clearing of vegetation and disturbance during the construction of roads and mining activities; alterations to watercourse habitat characteristics.</p>	Medium	Medium	Construction and Operational	Low Regional	<ul style="list-style-type: none"> • Implement best practise principles to minimise the footprint of transformation, by keeping to existing roads and earmarked areas where possible. • Apply for the relevant permits from DENC and DAFF. • No new roads should be created across a watercourse and no mining should take place in them. • If this is unavoidable, a water use license should be

						<p>obtained from DWS prior to such activities.</p> <ul style="list-style-type: none"> • Employ sound rehabilitation measures to restore characteristics of all affected habitats. • For restoration of the affected areas without topsoil, soils can be sourced from other sustainable areas and chemically changed to match with the surrounding environment. • To restore areas where compacted soil occurs, a ripper blade or deep plow can be pulled across the affected area to alleviate compaction. • Encourage the growth of natural plant species in all affected areas by sowing indigenous seeds or by planting seedlings. • The setup of a small nursery is advisable to maximise translocation and re-establishment efforts of affected areas.
Air Quality	Sources of atmospheric emission associated with the mining operation are	Low	Certain	Decommissioning	Low Local	Effective soil management; identification of the required control efficiencies in order to

	likely to include fugitive dust from materials handling operations, wind erosion of stockpiles, and vehicle entrainment of road dust.					maintain dust generation within acceptable levels.
SOCIAL SURROUNDINGS						
Environmental Factor	Nature of Impact	Significance	Probability	Duration	Extent	Management
Noise Impacts	Clearing of footprint areas, stripping of stockpiling of topsoil Noise increase at the boundary of the mine footprint	Medium	Possible	Pre- Construction and Construction	Local	Equipment and/or machinery which will be used must comply with the manufacturers specifications on acceptable noise levels Topsoil stripping should be limited to daytime only.
	Civil construction activities Noise increase at the boundary of the mine footprint	Medium	Possible	Pre- Construction and Construction	Local	Equipment and/or machinery which will be used must comply with the manufacturers specifications on acceptable noise levels Civil construction activities should be limited to daytime only.
	Construction of internal Roads Noise increase at the boundary of the mine footprint	Medium	Possible	Pre- Construction and Construction	Local	Equipment and/or machinery which will be used must comply with the manufacturers specifications on acceptable noise levels Construction of internal roads should be limited to daytime only.

	<p>Construction of the overland conveyer</p> <p>Noise increase at the boundary of the mine footprint.</p>	Medium	Possible	Pre-Construction and Construction	Local	Equipment and/or machinery which will be used must comply with the manufacturers specifications on acceptable noise levels
	<p>Assembly of crusher and plant equipment</p> <p>Noise increase at the boundary of the mine footprint</p>	Medium	Possible	Pre- Construction and Construction	Local	Equipment and/or machinery which will be used must comply with the manufacturers specifications on acceptable noise levels Assembly of mine foot print activities should be limited to daytime only. Noise survey to be carried out to monitor the noise levels during these activities.
	<p>Building activities</p> <p>Noise increase at the boundary of the mine footprint</p>	Medium	Possible	Pre- Construction and Construction	Local	Equipment and/or machinery which will be used must comply with the manufacturers specifications on acceptable noise levels Building activities at the mine foot print and along the conveyer belt should be limited to daytime only.
	<p>Hauling of building material to and from the specific areas.</p> <p>Noise increase at the boundary of the mine footprint</p>	Medium	Possible	Pre- Construction and Construction	Local	Equipment and/or machinery which will be used must comply with the manufacturers specifications on acceptable noise levels Hauling of material should be limited to daytime only.

						Noise survey to be carried out to monitor the noise levels during these activities.
	Construction of the waste rock dump, soil stock pile and material stock pile. Noise increase at the boundary of the mine footprint	Medium	Possible	Pre- Construction and Construction	Local	Equipment and/or machinery which will be used must comply with the manufacturers specifications on acceptable noise levels Noise survey to be carried out to monitor the noise levels during these activities.
	Clearing of new open cast mining areas, stripping and stockpiling of topsoil. Noise increase at the boundary of the mine footprint	Medium	Possible	Operational	Local	Equipment and/or machinery which will be used must comply with the manufacturers specifications on acceptable noise levels Topsoil stripping should be limited to daytime only.
	Diesel emergency generators Noise increase at the boundary of the mine footprint	Medium	Possible	Operational to closure	Local	Equipment and/or machinery which will be used must comply with the manufacturers specifications on acceptable noise levels Noise survey to be carried out to monitor the noise levels during these activities.
	Additional traffic to and from the mine	Medium	Possible	Operational to closure	Local	Equipment and/or machinery which will be used must comply with the manufacturers specifications on acceptable noise levels

						Noise survey to be carried out to monitor the noise levels during these activities.
	Mining activities at the opencast pit	Medium	Possible	Operational to closure	Local	Equipment and/or machinery which will be used must comply with the manufacturers specifications on acceptable noise levels Noise survey to be carried out to monitor the noise levels during these activities.
	Hauling of waste rock to the rock waste dump	Medium	Possible	Operational to closure	Local	Equipment and/or machinery which will be used must comply with the manufacturers specifications on acceptable noise levels Noise survey to be carried out to monitor the noise levels during these activities. Haul roads to be levelled on a regular basis to avoid potholes.
	Hauling of ore to the crushers	Medium	Possible	Operational to closure	Local	Speed limit to be controlled at 40km/h at all times Noise survey to be carried out to monitor the noise levels during these activities Haul roads to be levelled on a regular basis to avoid potholes.
	Crushing activities	Medium	Possible	Operational to closure	Local	Equipment and/or machinery which will be used must comply with the manufacturers specifications on acceptable noise levels

						Noise survey to be carried out to monitor the noise levels during these activities.
	Blasting activities	Medium	Possible	Operational	Local	Blasting must be done in terms of the safe blast techniques. No blasting to be done during night time – 22h00 to 6h00 Surveys to be carried out to monitor the noise and vibration levels during these activities. Such information to be made available to site engineer and records to be kept.
	Maintenance activities at the different sites.	Medium	Possible	Operational to closure	Local	Equipment and/or machinery which will be used must comply with the manufacturers specifications on acceptable noise levels Noise survey to be carried out to monitor the noise levels during these activities.
	Back fill of mine footprint area Noise increase at the boundary of the mine footprint	Medium	Possible	Decommissioning	Local	Equipment and/or machinery which will be used must comply with the manufacturers specifications on acceptable noise levels Backfill of mine footprint area activities should be limited to daytime only.
	Planting of grass and vegetation at the rehabilitated areas	Medium	Possible	Decommissioning	Local	Equipment and/or machinery which will be used must comply with the manufacturers specifications on acceptable noise levels

						Planting of grass and/or vegetation should be limited to daytime only
	Removal of infrastructure	Medium	Possible	Decommissioning	Local	Equipment and/or machinery which will be used must comply with the manufacturers specifications on acceptable noise levels Removal of infrastructure should be limited to daytime only. Noise survey to be carried out to monitor the noise levels during these activities.
Visual impacts	Potential visual impact on R325	Medium Regional	Certain	Construction, Operation and Decommissioning	Local Site	The design of the proposed mining development will determine the visual impact. As the visual impact would be low, Correct design will ensure that the development will fit into the surrounding area and will become a feature of the area.
	Potential Visual Impact on the surrounding land users	Medium Regional	Highly Likely	Construction, Operation and Decommissioning	Local Site	Visual barriers located along the borders of the site will reduce the visual exposure of the surrounding land users. The design of the proposed mining development will determine the visual impact.
	Potential visual impact of lighting at night on observers in close proximity to the	Medium Regional	Highly likely	Construction, Operational and Decommissioning	Regional	Planning: pro-active lighting design and planning and installation of motion detector type lighting installed.

	proposed development					
	Potential visual impact of the proposed development on the Sense of Place	Medium Regional	Highly Likely	Construction, Operational and Decommissioning	Local Site	Design of the proposed development can ensure that the development forms part of the area and is aesthetically pleasing.
	Potential visual impact of the proposed development on the construction phase of the surrounding land users in close proximity	Medium Regional	Highly Likely	Construction	Local Site	<p>Wetting of exposed areas should be undertaken as required to prevent dust pollution having a negative visual impact. The construction area should be closed off by using visual barriers.</p> <ul style="list-style-type: none"> • Ensure that the design fits into the surrounding environment and it is aesthetically pleasing; • Reduce the construction period through careful planning and productive implementation of resources; • Plan the placement of lay-down areas and any potential temporary construction camps in order to minimise vegetation clearing; • Restrict the activities and movement of construction workers and vehicles to the immediate construction site and existing access roads;

						<ul style="list-style-type: none"> • Ensure that rubble, litter and disused construction materials are managed and removed regularly; • Ensure that all infrastructure and the site and general surrounds are maintained in a neat and appealing way; • Reduce and control construction dust emitting activities through the use of approved dust suppression techniques; and • Restrict construction activities to daylight hours in order to negate or reduce the visual impacts associated with lighting or restrict lighting to certain areas.
	<p>Potential visual impact of the proposed development on the operational phase of the surrounding land users in close proximity.</p>	<p>Medium Regional</p>	<p>Highly likely</p>	<p>Operational</p>	<p>Local Site</p>	<p>Wetting of exposed areas should be undertaken as required to prevent dust pollution having a negative visual impact. The operational area should be closed off by using visual barriers.</p> <ul style="list-style-type: none"> • Ensure that the design fits into the surrounding environment and it is aesthetically pleasing.

						<ul style="list-style-type: none"> • Ensure that all infrastructure and the site and general surroundings are maintained in a neat and appealing way; • Rehabilitation of disturbed areas and re-establishment of vegetation; • Mitigation of lighting impacts includes the proactive design, planning and specification lighting for the development by a lighting engineer. The correct specification and placement of lighting and light fixtures for the proposed development will go far to contain rather than spread the light. Additional measures include the following: <ul style="list-style-type: none"> ○ Shielding the sources of light by physical barriers (vegetation, or the structure itself); ○ Limiting mounting heights of lighting fixtures by specifying foot-lights or bollard level lights; <p>Making use of minimum lumen or wattage in fixtures;</p>
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						<p>Making use of down-lighters, or shielded fixtures; and</p> <ul style="list-style-type: none"> ○ Making use of energy efficient lighting or other types of low impact lighting. • Secondary impacts anticipated as a result of the proposed development (i.e. visual character, sense of place and tourism potential) are not possible to mitigate.
Traffic	Potential negative impacts on traffic safety and deterioration of the existing road networks.	Low	Low likelihood	Decommissioning	Local	Utilise existing access roads, where applicable; implement measures that ensure adherence to traffic rules.
Heritage resources	The Deterioration of sites of cultural and heritage importance.	Medium to High	Certain	Construction, Operational	Local	The proposed mining activities can go ahead in light of the low probability of occurrence of heritage resources above and below the surface due to a long history of surface mining. The burial ground is sufficiently protected. Steel fencing around the graves is clearly visible and it is not likely that machinery will inadvertently encroach into the burial ground. As a standard precaution in the

						event of other heritage resources being discovered in future phases of the project, the Provincial Heritage Resources Authority or SAHRA must be alerted immediately and an archaeologist or heritage expert called to attend.
Environmental Factor	Nature of Impact	Significance	Probability	Duration	Extent	Management
Socio-Economic	Population Impacts Employment Opportunities and skills Inequities	Medium Positive	Probable	Start-up and Construction	Positive Local	<ul style="list-style-type: none"> • A community skills audit should be undertaken by PMG Mining. Alternatively, the existing Tsantsabane Labour Desk could be used to determine which skills are locally available and which employees could come into consideration for employment. • Training of potential future employees, contract workers and/or community members should focus on mining related skills which would furthermore equip trainees/beneficiaries with the necessary portable skills to find employment at the available employment sectors within the study area. Multi-skilling is thus not necessarily the

						<p>preferred training and skills development method.</p> <ul style="list-style-type: none"> • Training of local construction workers during the construction phase to enable them to be employable during the operational phase would not stop the influx of outsiders, but could attempt to minimise the number of “new” outsiders coming to the area in search of employment. • Training courses should be accredited and certificates obtained should be acceptable by other related industries. • Guidance concerning legal requirements to which locals should adhere to, to make them employable, such as the standard construction industry requirements should also be attended to.
	Inflow of Temporary workers	Low Negative	Highly Probable	Start up and Construction	Negative Local	<ul style="list-style-type: none"> • Construction workers falling within the semi-skilled to unskilled category should be sourced from the local population where possible to avoid possible conflict arising between

						<p>locals and the outside workforce, but also to limit the need for accommodation facilities.</p> <ul style="list-style-type: none"> • Construction activities should be kept to normal working hours e.g. from 7 am until 5 pm during weekdays. • Security on-site should be active prior to the construction period. • The construction site should be properly managed to avoid any littering and possible environmental pollution. Water and sanitation facilities should be up to standard. • Information distributed as part of the existing HIV/Aids awareness campaigns undertaken in the area should again be focused on and communicated to the local workforce. • Unrealistic employment expectations should not be created. • The development of informal vending “stations” where food and small goods are sold should be
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						properly managed, to avoid littering, safety risks and possible environmental pollution.
	Influx of Jobseekers	Low Negative	Highly probable	Start-up and Construction	Negative Local	<ul style="list-style-type: none"> • Maximise the use of local labour where possible by developing a strategy to involve local labour in the construction process. • The development, publication and widespread dissemination of a recruitment policy could serve to encourage local employment and reduce the potential influx of jobseekers to the area. • The communication strategy should ensure that unrealistic employment expectations are not created. • A representative of the Bishop project could liaise with the traditional leaders and local councillors to either attend key community meetings arranged within the various wards to discuss the employment and recruitment process; or liaise with the traditional leaders and local

						councillors to ensure that the correct information regarding this issue is portrayed to the communities
	Accommodation of workforce	Low Negative	Most Likely Regional	Start – up and Construction	Negative Local	<ul style="list-style-type: none"> • Should, as a worst case scenario, a temporary accommodation facility be required on site, this facility must be managed in an environmentally and socially acceptable manner to avoid any social conflict and environmental pollution. It is, however, not recommended from a social point of view. • Local formal and adequate accommodation facilities in nearby towns should receive preference. • Once all local accommodation facilities have been exhausted, other facilities further from the mining area should be considered.
	Community and Institutional Activities Local Economic Contribution	Medium Positive	Probable	Start-up and Construction	Positive Regional	<ul style="list-style-type: none"> • Bishop Mine should develop a database of local companies, including credible SMMEs that could qualify as potential service providers prior to the initiation of the tender

						<p>process, to enable these local companies and SMMEs to be involved with the tender process. In this regard Bishop Mine should liaise with local stakeholders, as well as with representatives of the TLM.</p> <ul style="list-style-type: none"> • Even if local companies and SMMEs would be considered during the construction phase of the project, the tender process should be based on competitive business principles and the quality of services to be rendered to ensure adherence to standards and to maximise overall welfare.
	<p>Conflicts between Local Residents and Newcomers</p> <p>Impact on Social Networks</p>	Low Negative	Probable	Start-up and Construction	Negative Local	<ul style="list-style-type: none"> • Unrealistic job expectations should be restrained through a transparent communication process. • The appointment of locals and the inflow of temporary workers should still be managed with due cognisance of the sensitivities at hand and the process of introducing foreigners should be pro-actively managed.

						<ul style="list-style-type: none"> • As far as possible, the movement of construction workers should be confined to the work site to avoid any potential for impact from this variable in proximate residential areas. • Specify the conduct of contract workers in worker related management plans and employment contracts. • Consult with local structures and TLM on employment matters. • Do not house construction workers on site, but ensure sufficient and proper accommodation facilities. • Ensure sufficient safety and security measures on site
	Impact on daily living and movement patterns	Low Negative	Probable	Start-up and Construction	Negative Local	<ul style="list-style-type: none"> • Dust suppression methods should be strictly implemented if and where required • It is recommended that sufficient warning signs should be erected where vehicles would be turning from the R325. • All construction vehicles should be in a good

						<p>condition and adhere to the road worthy standards</p> <ul style="list-style-type: none"> • Dust creation should be kept to the minimum by adhering to the speed limits on the gravel road • The construction of additional access roads should be limited. • Speeding of construction vehicles must be strictly monitored.
	Impact of blasting	Low Negative	Highly probable	Life of Mine	Negative Local	<ul style="list-style-type: none"> • Employees involved in blasting activities should be sufficiently qualified to undertake blasting • Blasting activities should be restricted to non-intrusive times (e.g. blasting on Sundays and during the night should be avoided). • Strict control measures should be put in place to prevent dust pollution. • Nearby communities and property owners should be notified timeously of blasting schedules to allow them sufficient time to move their animals. • If it was scientifically proven that blasting from the

						Bishop Mine did damage structures, a compensation process should follow.
	Safety and Security Risks	Low Negative	Highly Probable	Construction	Negative Local	<ul style="list-style-type: none"> • A Fire/Emergency Management Plan should be developed and implemented at the outset of the construction phase. • Open fires for cooking and related purposes should not be allowed on site. • Appropriate firefighting equipment should be on site and construction workers should be appropriately trained for fire fighting • The construction area should be fenced or access to the area should be controlled to avoid animals or people entering the area without authorisation. • The construction sites should be clearly marked and “danger” and “no entry” signs should be erected. • Speed limits on the local roads surrounding the construction sites should be enforced. • Speeding of construction vehicles must be strictly monitored

						<ul style="list-style-type: none"> Local procurement and job creation should receive preference. A blasting buffer zone should be established and be adhered to. Blasting schedules should be communicated to the nearby communities.
	Health Impacts	Low Negative	Highly probable	Construction	Negative Local	<ul style="list-style-type: none"> Maximise the employment of locals where possible First aid supplies should be available at various points at the construction site Continue and extend the current HIV/AIDS awareness and support programmes, with specific focus on those in and nearby the construction site The general health of construction workers should be monitored on an on-going basis
	Community Infrastructure Needs Impact on Infrastructure and Services	Low Negative	Highly probable	Construction	Negative Local	<ul style="list-style-type: none"> Maximise the employment of locals where possible Maintenance of the roads frequently used by construction traffic e.g. R325 should be discussed and negotiated with the Northern Cape Department of Roads and Public Works

	Heritage Features	Low Negative	Highly probable	Construction	Negative Local	<ul style="list-style-type: none"> Any heritage features (e.g. graves, buildings and/or artefacts) on site must be protected and monitored Should it be necessary, such heritage features should be assessed and be recorded by an accredited Heritage Impact Specialist or archaeologist Community members should have controlled access to these resources (e.g. visitation rights to the graves).
	Intrusion Impacts Visual Impact and Sense of Place	Low Negative	Probable	Construction	Negative Local	<ul style="list-style-type: none"> The construction site should be kept litter free Site rehabilitation on certain sections of the site should occur as soon as the construction process allows The recommendations made by the Visual Impact Assessment should be adhered to.
	Noise Impact	Low Negative	Probable	Construction	Negative Local	<ul style="list-style-type: none"> The mitigation measures of the Noise Impact Assessment should be implemented Construction vehicles should be in a good working order

						<ul style="list-style-type: none"> • Construction activities should be kept to normal working hours e.g. 7 am until 5 pm during weekdays • Blasting activities should be communicated to community members near the site.
	<p>Population Impacts Employment Opportunities and skills inequities</p>	<p>Medium Positive</p>	<p>Probable</p>	<p>Operational</p>	<p>Positive Regional</p>	<ul style="list-style-type: none"> • The development of skills and the creation of opportunities to obtain experience through the start-up and construction phase are of critical importance to ensure that the semi-skilled and unskilled positions can be filled from individuals (especially the youth) from the core communities (TLM area) as well as the wider district. • Job creation and training remains critical as there is still a high unemployment rate within the local communities even with all the mining activities undertaken in the area. The reason being that the local community members do not have the necessary skills to be easily employable. Training

						<p>should thus be focused on mining related skills.</p> <ul style="list-style-type: none"> • The general practice would be that if a mining company is not able to appoint a local person with the necessary skills, they would employ an “outsider”. • A recruitment policy should be adopted to enhance positive employment impacts, limit in-migration of outside jobseekers and mitigate the potential impact of residual in-migration. • Bishop Mine should clearly communicate their anticipated employment figures and job categories to the communities. • Employees should be properly informed of the skills development programmes of Bishop Mine and how they can be involved in these programmes. • Should retrenchments be necessary, adequate measures should be put in place to assist the affected employees to find
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						<p>alternative forms of employment.</p> <ul style="list-style-type: none"> • Possible steps to be taken with regards to retrenchments should be clearly communicated to all employees, and the TLM.
	Accommodation of Permanent workforce	Low Negative	Highly Probable	Operational	Negative Local	<ul style="list-style-type: none"> • Employees should be educated with regards to their accommodation options • PMG Mining must ensure that their employees find suitable formal housing in towns in and around the study area. • PMG Mining must not allow employees to erect informal housing structures in informal settlements. • Housing needs should be monitored and addressed in consultation and cooperation with the TLM. • Maximise the employment of locals to limit the need for any additional housing infrastructure, as far as possible
	Community and Institutional Activities	Medium Positive	Probable	Operational	Positive Regional	<ul style="list-style-type: none"> • Focused programmes aimed at building SMME links to the mine could supplement the indirect

	Local Economic Contribution					<p>economic benefits to the local communities.</p> <ul style="list-style-type: none"> The mine should adopt a Procurement Plan whereby they aim to provide SMME's with the opportunity to become involved in the procurement of capital goods, consumables, and services. This Plan should be implemented in conjunction with the local municipality and local development programmes in the surrounding communities. These programmes could focus on providing support and technical advice to entrepreneurs and/or SMMEs to enable them to supply goods and materials for operations at the future mine
	Capacity Building and Skills Training	Medium Positive	Probable	Operational	Positive Regional	<ul style="list-style-type: none"> A community skills database audit could be undertaken. Alternatively the existing Tsantsabane Labour Desk could be used to determine which skills are available and which employees should undergo

						<p>further training and skills development.</p> <ul style="list-style-type: none"> • The findings of the community skills database should determine and contribute to the specific type and level of training interventions to be provided during the operational life of the mine. • Training and career path plans must be focused on mining related skills. Progress in this regard should be monitored on an annual basis. • In-house training through learnerships to fill the hard-to-fill vacancies would be crucial for long term capacity building and skills development within the core and affected communities • Sectors for portable skills training should also be identified in consultation with the TLM to ensure the transfer of applicable skills relevant at the time of downscaling. • Women should also benefit from the skills training programmes.
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	Social Development and social services support	Medium Positive	Probable	Operational	Positive Regional	<ul style="list-style-type: none"> • Involvement in upliftment programmes should be done according to the priority needs and projects identified as part of the TLM IDP, as well as in consultation with other stakeholders such as the local community representatives, traditional leaderships, and youth organisations. • Focus involvement on the existing LED programmes and/or existing community development projects undertaken in the area. • Community development projects initiated by Bishop Mine should avoid benefiting only a selected few but should follow a broad based approach, still taking budget constraints into consideration.
	<p>Conflicts between local residents and newcomers</p> <p>Impact on social networks</p>	Low Negative	Probable	Operational	Negative Local	<ul style="list-style-type: none"> • Maximise the employment of locals as far as possible • Make use of credible SMME's for the provision of goods and services • Embark on regular communication efforts towards the community with regards to the mine's

						involvement in the communities. This could be done through an established forum
	<p>Individual and Family level impacts</p> <p>Impacts on daily living and movement patterns and family activities</p>	Low Negative	Highly Probable	Operational	Negative Local	<ul style="list-style-type: none"> • Maximise the employment of local labour to limit the negative impacts on the infrastructure and services within the area • The applicant should enter into discussions with the local municipality to indicate their employment profile in order to determine the need for housing and the additional pressure it would place on the existing infrastructure and services. • Maintenance of the roads frequently used by mining related traffic e.g. R325 should be discussed and negotiated with the Northern Cape Department of Roads and Public Works. • Speed limits on the local roads surrounding the mining site should be enforced. • Speeding of mine related vehicles must be strictly monitored • Due to the traffic volumes on the R325 it is imperative

						<p>that the entrance to the mine should be upgraded and be kept up to standard to accommodate the traffic load and traffic patterns.</p> <ul style="list-style-type: none"> Monitoring of possible impacts on water quality and quantity, as well as the possible impacts of dust pollution should be undertaken.
	Impact on Tsantsabane Local Municipality	Low Positive	Probable	Operational	Positive Regional	<ul style="list-style-type: none"> Assist the TLM with the diversification of the local economy Emphasise the use of local service providers (BEE) and focus on the development of LED programmes Institute a joint municipal coordinating and implementing committee to support the municipalities' local economic and social development needs and requirements, where feasible Ensure that mine employees do have access to proper housing facilities
	Impact of Blasting	Low Negative	Highly probable	Operational	Negative Local	<ul style="list-style-type: none"> Blasting activities should be communicated to the landowner and the game

						<p>farm operator where possible.</p> <ul style="list-style-type: none"> • Employees involved in blasting activities should be sufficiently qualified to undertake blasting • Blasting activities should be restricted to non-intrusive times (e.g. blasting on Sundays and during the night should be avoided). • Strict control measures should be put in place to prevent dust pollution. • Nearby communities and property owners should be notified timeously of blasting schedules to allow them sufficient time to move their animals. • If it was scientifically proven that blasting from the Bishop Mine did damage structures, a compensation process should follow.
	Health and safety risks	Low Negative	Highly Probable	Operational	Negative Local	<ul style="list-style-type: none"> • The general health of employees should be monitoring on an on-going basis • EMP Guidelines should be strictly adhered to and international best practice should be sought

	Community Infrastructure Needs Impact on Infrastructure	Low Negative	Probable	Operational	Negative Local	<ul style="list-style-type: none"> The establishment of a bus transport service for employees would limit negative impacts on the road network and traffic volumes.
	Intrusion Impacts Visual Impact and Sense of Place	Low Negative	Highly Probable	Operational	Negative Local	<ul style="list-style-type: none"> Recommendations and mitigation measures as part of the EMP should be strictly implemented. Mining areas should be rehabilitated as soon as the Mining Works Programme allows
	Noise Impact	Low Negative	Probable	Operational	Negative Local	<ul style="list-style-type: none"> Recommendations and mitigation measures proposed by the Noise Impact Assessment should be strictly implemented Noise generating activities should be kept to normal working hours (e.g. 7 am until 5 pm) where possible
	Socio-Economic Possible social impacts to be experienced during decommissioning (closure of the mine) could include the following:	Low Negative	Highly probable	Decommissioning	Negative Local	<ul style="list-style-type: none"> Downscaling of production should be undertaken over a period. Downscaling and retrenchment of contractor and permanent staff should be done over a period. Rehabilitation of all mining and mining related areas should be undertaken.

	<p>Job losses due to mine closure; Decline in the sustainability of the local economy as a result of the loss of employment, household income and capital investments; Reduced economic activities within the area with subsequent negative impacts on smaller businesses; A decline in the local economy would also have a direct impact on the financial status of the affected local municipalities; Negative impact on the revenue base of the local municipalities; Population changes and out-migration of people from the area; Negative impact on the social fabric and social networks; A new class of jobseekers targeting</p>					<ul style="list-style-type: none"> • A closure plan must be developed and a closure quantum must be included in the Environmental Management Programme Report
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	<p>other mines in the area; Decrease in the quality of life of the surrounding communities due to the discontinuation of social development support and local economic development programmes; Possible relocation of families; Skilled workers moving out of the area in search of employment elsewhere; Negative impact on infrastructure development and maintenance; A change in community infrastructure; Disruptions and nuisance factors associated with the actual decommissioning such as noise, visual and traffic related impacts;</p>					
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	Increased safety risks associated with the decommissioning of the infrastructure; Possible negative impact on the crime levels due to increased unemployment rate; Remnants of possible environmental impacts; and Remaining visual impact as a result of mining.					
Interested and Affected Parties	Loss of trust and a good standing relationship between the IAP's and the mining company.	Low to medium	Possible	Construction, Operational and Decommissioning	Low Local	Ensure continuous and transparent communication with IAP's

(vi) 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 were determined in order to decide the extent to which the initial site layout needs revision.)

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

The Different environmental components on which the project (can) have an impact are:

- 1. Geology**
- 2. Topography**
- 3. Soil**
- 4. Land Capability**
- 5. Land Use**
- 6. Flora (Vegetation)**
- 7. Fauna**
- 8. Surface Water**
- 9. Ground Water**
- 10. Air Quality**
- 11. Noise and vibration**
- 12. Archaeological and Cultural Sites**
- 13. Sensitive Landscapes**
- 14. Visual Aspects**
- 15. Socio-Economic Structures**
- 16. Interested and Affected Parties**

Impact Assessment

Before the impact assessment could be done the different project Activities/infrastructure components were identified.

1. The clearing of vegetation for:
 - Access roads and haul roads
 - Surface infrastructure
 - Explosive Magazine
 - Product Stockpile area
 - Waste disposal site (domestic and industrial waste)
2. The stripping and stockpiling of topsoil.
3. Opencast mining for manganese.
 - Selective mining, loading, hauling.
4. Altering the characteristics of surface water features.
5. The development of temporary stockpiles:
 - Topsoil storage area;
 - Overburden;
 - Ore Stockpile dumps;
 - Subgrade stockpile area.
6. The backfilling of open excavations.
7. The Screening and Crushing plant.
8. Loading, hauling, and transporting of ROM, product and material
9. Water holding facilities, pipeline, and stormwater control:
 - Clean & Dirty water system: Stormwaterdam / Water storage facility
 - Water distribution Pipeline;
 - Water tank.
10. Fuel storage and refuelling bays;
 - Re-fuel and lube station;
 - Fuel Storage facility (Diesel tanks);
 - Concrete bund walls and diesel depots.
11. Supporting infrastructure:
 - Office complexes;
 - Office Parking Bay;
 - Workshop and Wash bay;
 - Salvage yard (Storage and laydown area);
 - Ablution facilities;
 - Generators;
 - Security Gate and guard house at access control point;
 - Pipelines transporting water;
 - Weighbridge (Weighbridge control room).

The criteria used to assess the Consequence of the impacts are shown in the table 11 below/overleaf. The limits were defined in relation to mining characteristics. Those for probability, intensity/severity and significance are subjective, based on rule-of-thumb and experience. Natural and existing mitigation measures were considered. These natural mitigation measures were defined as natural conditions, conditions inherent in the project design and existing management measures, which alleviate impacts. The significance of the impacts was calculated by using the following formula:

$$(Severity + Extent + Duration) \times Probability \text{ weighting}$$

For the impact assessment, the different project activities and associated infrastructure were identified and considered in order to identify and analyse the various possible impacts.

Table 11. Consequence of impacts is defined as follows.

CONSEQUENCE				
Colour Code	Consequence rating	Rating	Negative Impact	Positive Impact
	Very low	3 -16	Acceptable/Not serious	Marginally Positive
	Low	17 - 22	Acceptable/Not serious	Marginally Positive
	Low- Medium	23 -33	Acceptable/Not desirable	Moderately Positive
	Medium	34 - 48	Generally undesirable	Beneficial
	Medium-High	49 - 56	Generally unacceptable	Important
	High	57 - 70	Not Acceptable	Important
	Very High	90 - 102	Totally unacceptable	Critically Important

Consequence of impacts is defined as follows:

Very Low - Impact would be negligible. Almost no mitigation and/or remedial activity would be needed, and any minor steps which might be needed would be easy, cheap and simple.

Low - Impact would have little real effect. Mitigation and/or remedial activity would be either easily achieved or little would be required or both.

Low Medium Impact would be real but not substantial within the bounds of those which could occur. Mitigation and/or remedial activity would be both feasible and fairly easily possible.

Medium - Impact would be real but not substantial within the bounds of those which could occur. Mitigation and/or remedial activity would be feasible and possible.

Medium High- Impact would be real but could be substantial within the bounds of those which could occur. Mitigation and/or remedial activity would be both feasible and possible but may be difficult and or costly.

High - Impacts of substantial order. Mitigation and/or remedial activity would be feasible but difficult, expensive, time consuming or some combination of these.

Before any assessment can be made the following evaluation, criteria need to be described.

Table 12. Criteria used to assess the **SIGNIFICANCE** of impacts

Weight	Severity	Spatial scope (Extent)	Duration
5	Disastrous	Trans boundary effects	Permanent
4	Catastrophic / Major	National / Severe environmental damage	Residual
3	High / Critical / Serious	Regional effect	Decommissioning
2	Medium / slightly harmful	Immediate surroundings / local / outside mine fence	Life of Operation
1	Minimal/potentially harmful	Slight permit deviation / on-site	Short term / construction (6 months – 1 year)
0	Insignificant/ non harmful	Activity specific / No effect / Controlled	Immediate (0 – 6 months)

Table 13. Explanation of **PROBABILITY** of impact occurrence

Weight number		1	2	3	4	5
Frequency						
Probability	Frequency of impact	Highly unlikely	Rare	Low likelihood	Probable / Possible	Certain
		Practically impossible	Conceivable but very unlikely	Only remotely possible	Unusual but possible	Definite
	Frequency of activity	Annually or less	6 months/ temporarily	Infrequent	Frequently	Life of Operation

Table 14. Explanation of **SEVERITY** of the impact

Weight	Impact Severity	Explanation of Severity
0	Insignificant/ non harmful	There will be no impact at all – not even a very low impact on the system or any of its parts.
1	Minimal/potentially harmful	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 to be better, if one or a number of ways, then this means of achieving the benefit.

2	Medium / slightly harmful	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 or little would be required or both. In the case of positive impacts alternative means for achieving this benefit would be easier, cheaper, more effective, less time-consuming, or some combination of these.
3	High / Critical / Serious	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 the case of positive impacts other means other means of covering these benefits would be about equal in cost and effort.
4	Catastrophic / Major	Impacts of 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.
5	Disastrous	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 was predicted. In the case of positive impacts there is no real alternative to achieving the benefit.

(vii) 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.)

During the operational stages of the mining operation, there is a possibility of sterilisation of the mineral reserves and resources due to improper placement of infrastructure. The infrastructure and stockpiles/dumps will alter the topography by adding features to the landscape. Topsoil removal and excavations will unearth the natural topography. The construction of infrastructure and various facilities in the mining area can also result in loss of soil due to erosion. Vegetation will be stripped in preparation for placement of infrastructure and excavations, and therefore the areas will be bare and susceptible to erosion.

The topsoil that is stripped and piled on surrounding areas can be eroded by wind and rain. The soil will be carried away during runoff. The cleared areas will be rehabilitated, but full restoration of soils might only occur over a number of years, subsequent to the re-establishment of vegetation. Furthermore, improper stockpiling and soil compaction can result in soil sterilisation. Leaching can also occur, resulting in the loss of nutrients.

There is also a possibility that equipment might leak oil, thus causing surface spillages. The hydrocarbon soil contamination will render the soil useless unless they are decontaminated. The storage of fuels on site might have an impact on soil if the tanks that are available on site are not properly monitored and maintained to avoid leakages. Then there is the potential that contaminated soil can be carried through runoff to contaminate water resources and soil stockpiled for rehabilitation. Soil pollution is therefore possible, but through mitigation it can be minimised.

The loss of land capability and land use can occur in two ways. Firstly, through topsoil removal, disturbances and loss of soil fertility; and secondly through the improper placement of infrastructure. Most of the site has a land capability for grazing, but grazing activities can still be performed in areas not earmarked for the operation, and with proper rehabilitation the land capabilities and land use potential can be restored.

Groundwater could be directly affected if any deep excavations reach the primary aquifers. Furthermore, if any oil and fuel spillages occur during these scenarios and activities, then groundwater will be directly contaminated. Similarly, hazardous surface spillages will seep into the underlying aquifers and contaminate ground water. Improper handling of hazardous material will cause contamination of nearby surface water resources (drainage lines) during runoff episodes. Lack of storm control structures will lead to erosion of stockpiles during heavy rains and runoff will carry suspended solids into the downstream environment. This might cause high silt load and affect stream flow. If no, or inadequate ablution facilities are available then workers might feel the need to use the veld for this purpose, which can contaminate natural resources.

Any excavations within the drainage line will impact on the surface water environment by altering their physical characteristics. These impacts include the alteration of flow patterns, ponding and an increase in the concentration of suspended solids and sedimentation.

Mining activities on site will reduce the natural habitat for ecological systems to continue their operation. It is not expected that the areas of high ecological function will rehabilitate following disturbance events. It is likely that the pristine vegetation and any protected species will be destroyed during the operation. While general clearing of the area and mining activities destroy natural vegetation, invasive plants can increase due to their opportunistic nature in disturbed areas. If invasive plants establish in disturbed areas, it may cause an impact beyond the boundaries of the mining site. These alien invasive species are thus a threat to surrounding natural vegetation and can result in the decrease of biodiversity and ecological value of the area. Therefore, if alien invasive species are not controlled and managed, their propagation into new areas could have a high impact on the surrounding natural vegetation in the long term. With proper mitigation, the impacts can be substantially reduced.

The transformation of natural habitats to mining and associated infrastructure will result in the loss of habitat affected individual species, and ecological processes. In turn this will result in the displacement of faunal species dependent upon such habitat. Increased noise and vibration due to operational activities will disturb and possibly displace birds and other wildlife. Fast moving vehicles take a heavy toll in the form of road kills of small mammals, birds, reptiles, amphibians and a large number of invertebrates. Associated

infrastructure will result in the loss of connectivity and fragmentation of natural habitat. Fragmentation of habitat will lead to the loss of migration corridors, in turn resulting in degeneration of the affected population's genetic make-up. This results in a subsequent loss of genetic variability between meta-populations occurring within the study site. Pockets of fragmented natural habitats hinder the growth and development of populations.

During the operation the abovementioned activities have potential for dust generation. It is anticipated that the extent of dust emissions would vary substantially from day to day depending on the level of activity and the specific operations. The operation will typically have low to moderate levels of noise, along with man-influenced sounds such as traffic on the secondary road, activities on the farm and very occasional air traffic. The proposed operation will add a certain amount of noise to the existing noise in the area. However, levels of noise generated by mining activities especially with blasting can be substantial.

The impact of site generated trips on the traffic and infrastructure of the existing roads is expected to be moderate. Furthermore, if road safety is not administered it can have a high impact on the safety of fellow road users.

The activities on site have the potential to impact upon heritage resources. Heritage sites are fixed features in the environment, occurring within specific spatial confines. Any impact upon these resources will be permanent and irreversible. Any movement of vehicles, equipment or personnel through areas containing these artefacts could result in the permanent destruction of the artefacts and loss of heritage resources.

The operation will create a number of new employment opportunities and uplift the local community. The magnitude of this impact will depend on the number of people that will be employed and the number of contractors sourced. An influx of people into the area could possibly impact on safety and security of local farm residents. During the decommissioning and at closure of the site, staff will most likely be retrenched, resulting in people being unable to find new employment for a long period of time.

Economic slump of the local towns after site closure is not considered to be an associated potential impact, because there are numerous other mining operations in the region. However, income streams from wage bills as well as goods and services contracts (at all geographical levels) will come to an end, reducing the monetary income of individuals and operation-related businesses.

It is likely, however that there will be residual positive economic impacts that are not fully reversed with the closure of the site, and that the economy will not decline to its original level prior to the development of this project. This is because the operation will generate substantial income for the regional and local economy, both directly and indirectly, during its life.

(viii) 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.)

Impact	Mitigation	Risk
Air quality	<ul style="list-style-type: none"> • Speed limits; • Spraying of surfaces with water; • Avoidance of unnecessary removal of vegetation; • Re-vegetation; • Monitoring; • Backfilling and rehabilitation of disturbed areas; and • Controlled drilling and blasting operations, preferably on wind-free days. 	Low - Medium
Fauna	<p>Habitat fragmentation</p> <ul style="list-style-type: none"> • All activities associated with the mining operation must be planned, where possible to encourage faunal dispersal and should minimise dissection or fragmentation of any important faunal habitat type. • The extent of the earmarked area should be demarcated on site layout plans. No staff, contractors or vehicles may leave the demarcated area except those authorised to do so. • Those pristine areas surrounding the earmarked area that are not part of the demarcated area should be considered as a no-go zone for employees, machinery or even visitors. • No new roads should be created across a watercourse. • No mining should take place in the ephemeral river. • If watercourse disturbances are unavoidable, a water use license to alter its beds and banks should be obtained from DWS prior to such activities. • Employ sound rehabilitation measures to restore characteristics of all affected terrestrial and aquatic habitats. <p>Disturbance, displacement and killing of fauna</p> <ul style="list-style-type: none"> • Careful planning of the operation is needed to avoid the destruction of 	<p>Medium – High</p> <p>Low-Medium</p>

	<p>pristine habitats and minimise the overall disturbance footprint.</p> <ul style="list-style-type: none"> • The extent of the mining activities should be demarcated on site layout plans, and no personnel or vehicles may leave the demarcated area except if authorised. Areas surrounding the earmarked site that are not part of the demarcated area should be considered as a no-go zone. • No mining should take place in the ephemeral river and no new roads should be created across this watercourse. If this is unavoidable, a water use license to alter its beds and banks should be obtained from DWS prior to such activities. • If any of the protected wildlife species are directly threatened by habitat destruction or displacement during the mining operation, then the relevant permits from DENC should be obtained followed by the relevant mitigation procedures stipulated in the permits. • Everyone on site must undergo environmental induction for awareness on not capturing or harming species that are often persecuted out of superstition and to be educated about the conservation importance of the fauna occurring on site. • Reptiles, amphibians, mammals, special invertebrates or active bird nests exposed during the clearing operations should be captured for later release or translocation by a qualified expert. • Employ measures that ensure adherence to a speed limit of 40 km/h as well as driving mindfully to lower the risk of animals being killed on the roads or elsewhere in the mining area. 	
<p>Flora</p>	<p>Loss of indigenous vegetation</p> <ul style="list-style-type: none"> • Implement best practise principles to minimise the footprint of transformation, by keeping to existing roads and earmarked areas where possible. • Implement effective avoidance measures to limit any activities in the highly sensitive areas, by applying the no-go principles. • Ensure measures for the adherence to a maximum speed limit of 40 km/h to 	<p>Low – Medium</p>

	<p>minimise dust fallout and associated effects on plants in the adjacent pristine areas.</p> <ul style="list-style-type: none"> • Encourage the growth of natural plant species in all affected areas by sowing indigenous seeds or by planting seedlings. • The setup of a small nursery is advisable to maximise translocation and re-establishment efforts of affected areas. • Apply for permits to authorise the clearance of indigenous plants from DENC at least three months before such activities will commence <p>Loss of Red data and / or protected floral species</p> <ul style="list-style-type: none"> • The footprint areas of the mining activities must be scanned for Red Listed and protected plant species prior to any destructive activities by means of a search-and-rescue operation. • These plants should be identified and marked prior to intended activity and should ideally be incorporated into the design layout and left in situ. However, due to the nature of the proposed mining activities they will most likely all be removed or relocated if possible. The relevant permits from DAFF / DENC should be obtained before such activities will commence. • The setup of a small nursery is advisable to maximise translocation and re-establishment efforts of all the rescued plants. • A management plan should be implemented to ensure proper establishment of ex situ individuals and should include a monitoring programme for at least two years after re-establishment in order to ensure successful translocation. • The designation of an environmental officer is recommended to render guidance to the staff and contractors with respect to suitable areas for all related disturbance and must ensure that all contractors and workers undergo Environmental Induction prior to commencing with work on site. The environmental induction should occur in 	<p>Medium- High</p>
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	<p>the appropriate languages for the workers who may require translation.</p> <ul style="list-style-type: none"> • All those working on site must be educated about the conservation importance of the flora occurring on site as well as the legislation relating to protected species. • Employ regulatory measures to ensure that no illegal harvesting takes place. <p>Introduction or spread of Alien species</p> <ul style="list-style-type: none"> • Implement best practise principles to minimise the footprint of transformation, by keeping to existing roads and earmarked areas where possible. • Mechanical methods of control should be implemented pro-actively as soon as invasive species start to emerge. • Regular follow-up monitoring of invasive control areas needs to be implemented to ensure effective eradication. • Encourage proper rehabilitation of disturbed areas through soil restoration and reseeded of indigenous plant species. <p>Bush encroachment</p> <ul style="list-style-type: none"> • Mechanical methods of control should be implemented pro-actively when encroaching species form dense stands. • Regular follow-up monitoring of encroached control areas needs to be implemented to ensure effective eradication. • Encourage proper rehabilitation of disturbed areas through soil restoration and reseeded of indigenous plant species. 	<p>Low-Medium</p> <p>Low</p>
<p>Ground water</p>	<ul style="list-style-type: none"> • Refuelling must take place in well demarcated areas and over suitable drip trays to prevent ground water pollution. • Spill kits to clean up accidental spills from earthmoving machinery must be well marked and available on site. • Workers must undergo induction to ensure that they are prepared for rapid clean-up procedures. • All facilities where dangerous materials are stored must be contained in a bund wall. 	<p>Medium-High</p>

	<ul style="list-style-type: none"> • Vehicles and machinery should be regularly serviced and maintained. • Monitoring of groundwater abstraction and quality; and • Clean & Dirty water system must be well maintained. • Provide for establishing a monitoring program to detect groundwater response to seasonal variations and pit dewatering as well as possible potential contamination of groundwater. 	
Noise	<ul style="list-style-type: none"> • Hearing protection; • Non-metallic washers to join infrastructure; • Working hours; • Controlled drilling & blasting operations; • Silencers on equipment and vehicles; • Acoustic enclosure for generators; and • Distance from residence of Occupant. 	Medium
Soil	<p>Alteration of Soil Character and quality</p> <ul style="list-style-type: none"> • Topsoil needs to be removed and stored separately during mining and the construction of roads, infrastructure and stockpile areas. • These topsoil stockpiles must be kept as small as possible in order to prevent compaction and the formation of anaerobic conditions. • Topsoil must be stockpiled for the shortest possible timeframes to ensure that the quality of the topsoil is not impaired. • Topsoil must not be handled when the moisture content exceeds 12 %. • Topsoil stockpiles must by no means be mixed with sub-soils. • The topsoil should be replaced as soon as possible on to the disturbed areas, thereby allowing for the re-growth of the seed bank contained within the topsoil. • For restoration of the affected areas without topsoil, soils can be sourced from other sustainable areas and chemically changed to match with the surrounding environment. • To restore areas where compacted soil occurs, a ripper blade or deep plow can be pulled across the affected area to alleviate compaction. 	Medium – High

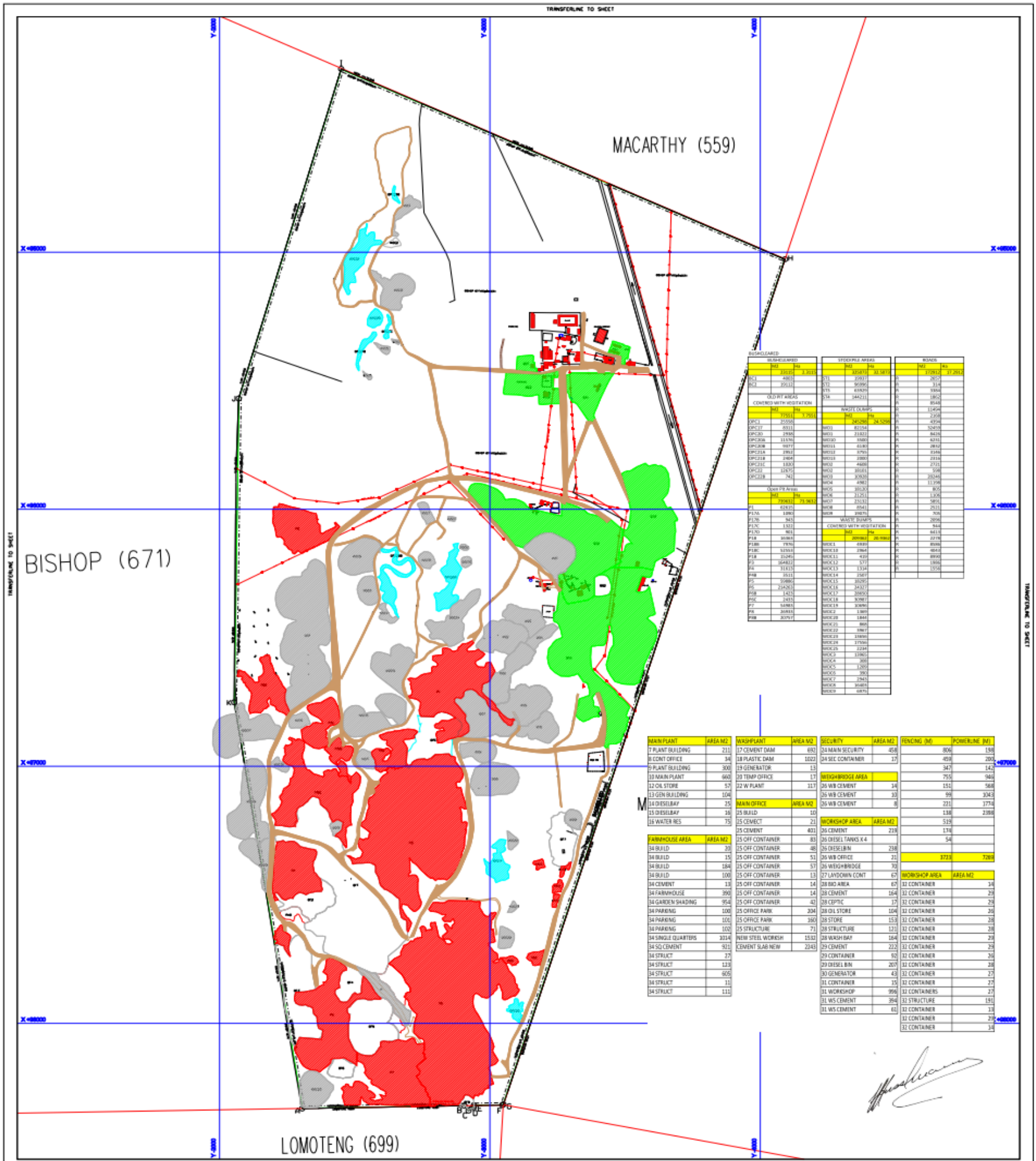
	<ul style="list-style-type: none"> • Encourage the growth of natural plant species in all affected areas by sowing indigenous seeds or by planting seedlings. • Vehicles and machinery should be regularly serviced and maintained. • Refuelling and vehicle maintenance must take place in well demarcated areas and over suitable drip trays to prevent soil pollution. • Drip trays must be available on site and installed under all stationary vehicles. • Spill kits to clean up accidental spills from any accidental spillages must be well-marked and available on site. • Workers must undergo induction to ensure that they are prepared for rapid clean-up procedures. • Any soil or area that is contaminated must be cleaned immediately by removing the soil and disposing it as hazardous waste in the correct manner. <p>Loss of topsoil and soil fertility</p> <ul style="list-style-type: none"> • Topsoil needs to be removed and stored separately during mining and the construction of roads, infrastructure and stockpile areas. • These topsoil stockpiles must be kept as small as possible in order to prevent compaction and the formation of anaerobic conditions. • Topsoil must be stockpiled for the shortest possible timeframes to ensure that the quality of the topsoil is not impaired. • Topsoil must not be handled when the moisture content exceeds 12 %. • Topsoil stockpiles must by no means be mixed with sub-soils. • The topsoil should be replaced as soon as possible on to the disturbed areas, thereby allowing for the re-growth of the seed bank contained within the topsoil. • For restoration of the affected areas without topsoil, soils can be sourced from other sustainable areas and chemically changed to match with the surrounding environment. 	<p>Medium - High</p> <p>Low – Medium</p>
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	<ul style="list-style-type: none"> • To restore areas where compacted soil occurs, a ripper blade or deep plow can be pulled across the affected area to alleviate compaction. • Encourage the growth of natural plant species in all affected areas by sowing indigenous seeds or by planting seedlings. <p>Increase in soil erosion</p> <ul style="list-style-type: none"> • Bare ground exposure should be minimised at all times in terms of the surface area and duration. • Re-establishment of plant cover on disturbed areas must take place as soon as possible, once activities in the area have ceased. • No new roads, infrastructure or mining areas should be developed over the watercourse. • Disturbances during the rainy season should be monitored and controlled. • Any potential run-off from exposed ground should be controlled with flow retarding barriers. • Regular monitoring during the mining operation should be carried out to identify areas where erosion is occurring; followed by appropriate remedial actions. 	
<p>Surface water</p>	<p>Alteration destruction of watercourses</p> <ul style="list-style-type: none"> • All activities associated with the mining operation must be planned to avoid any disturbances to the watercourse and its buffer zone. • No new roads should be created across the watercourse and no mining should take place in it. • If this is unavoidable, a water use license to alter its beds and banks should be obtained from DWS prior to such activities. • Employ sound rehabilitation measures to restore characteristics of any affected watercourses. <p>Siltation of surface water</p> <ul style="list-style-type: none"> • Bare ground exposure should always be minimised in terms of the surface area and duration. • Re-establishment of plant cover on disturbed areas must take place as soon 	<p>Low-Medium</p> <p>Low-Medium</p>

	<p>as possible once activities in the area have ceased.</p> <ul style="list-style-type: none"> • No new roads, infrastructure or mining areas should be developed over the watercourse. • Disturbances during the rainy season should be monitored and controlled. • Any potential run-off from exposed ground should be controlled with flow retarding barriers. • Regular monitoring during the mining operation should be carried out to identify areas where erosion is occurring; followed by appropriate remedial actions. 	
Broad-scale ecological processes	<ul style="list-style-type: none"> • Implement best practise principles to minimise the footprint of transformation, by keeping to existing roads and earmarked areas where possible. • Apply for the relevant permits from DENC and DAFF. • No new roads should be created across a watercourse and no mining should take place in them. If this is unavoidable, a water use license should be obtained from DWS prior to such activities. • Employ sound rehabilitation measures to restore characteristics of all affected habitats. • For restoration of the affected areas without topsoil, soils can be sourced from other sustainable areas and chemically changed to match with the surrounding environment. • To restore areas where compacted soil occurs, a ripper blade or deep plow can be pulled across the affected area to alleviate compaction. • Encourage the growth of natural plant species in all affected areas by sowing indigenous seeds or by planting seedlings. • The setup of a small nursery is advisable to maximise translocation and re-establishment efforts of affected areas. 	Cumulative Medium – High
Topography	<ul style="list-style-type: none"> • Backfill all excavations continuously if possible, otherwise when they become available; • Employ effective rehabilitation strategies to restore surface topography of excavations and plant site; • Stabilise the mine residue deposits; 	High

	<ul style="list-style-type: none"> • All temporary infrastructure should be demolished during closure. 	
Visual	<ul style="list-style-type: none"> • Continuous backfilling of open excavations if possible, otherwise when they become available; • Replacing layer of topsoil over backfilled areas; • Sloping of rehabilitated and disturbed areas; • Sloping of topsoil dumps, stockpiles and waste rock dumps; and • Removal of all infrastructure upon mine closure. 	Low

(ix) 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.)



PMG MINING PTY (LTD)
BISHOP MINE
MANGANESE MINE

REHABILITATION PLAN

TRIGONOMETRIC SYSTEM : WGS 84
COORDINATE Y 0 X 3 000 000
ALL ELEVATIONS ABOVE MEAN SEA LEVEL

SCALE 1: 5000

LEGEND

- WASTE DAM
- DEMOL
- OLD PITS VEGETATED
- ROADS
- BACKFILL AREA
- OPEN PIT AREAS

REGIONAL SETTING: SITUATED IN THE MAGISTERIAL DISTRICT OF KURUMAN IN THE NORTHERN CAPE

REGISTERED DESCRIPTION OF PROPERTIES

PORTION 1 AND THE REMAINDER OF THE FARM BISHOP NO 671 563.3402 HA IN EXTEND

OME 14/10/2265

SIGNATURES		
DATE	NAME	SIGNATURES
04/03/2023	H. HUBBELMANN	

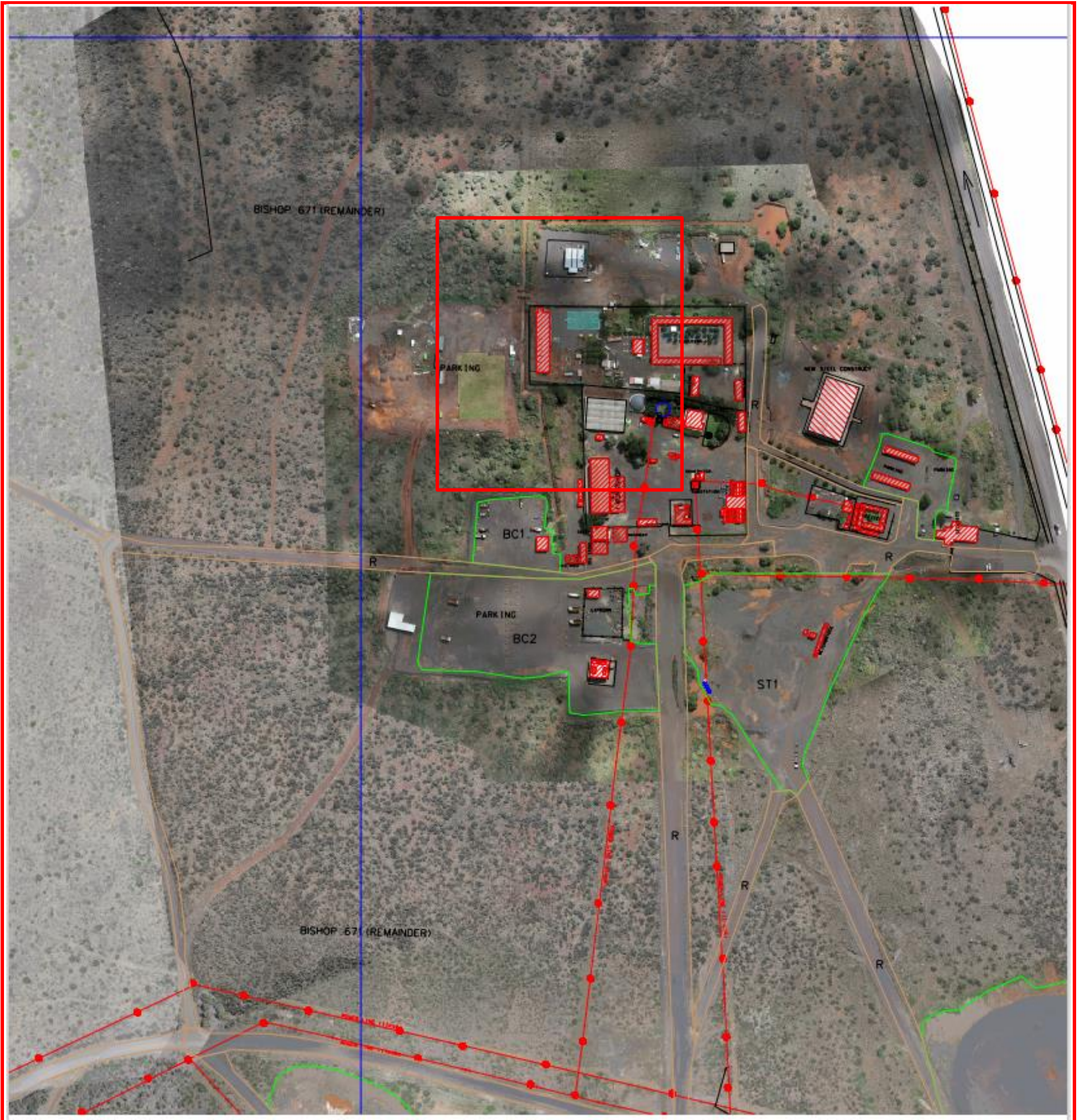


Figure 28: Site layout plans of Mine area and office area.

(x) Motivation where no alternative sites were considered:

No viable alternative sites were identified for the following reasons:

- PMG Mining holds a valid Mining Right over the application area.
- A drilling programme was conducted on the abovementioned property under the valid Mining Right, which results proved the feasibility of the project.
- The drilling results and findings indicates that manganese ore within the boundaries of the abovementioned property can be viably mined.
- The final locality of the above infrastructure is existing as this is an operational mine.

S24 G

It is not feasible to consider other sites in terms of location alternatives as the property has existing operational fuel facilities.

Alternative locations are therefore currently not available and would involve the disturbance of another area. The existing diesel tanks is compatible with the surrounding mining operation and workshops that is also existing land uses and should blend in well with the predominant mining character of the surrounding developments.

(xi) Statement motivating the preferred site:

(Provide a statement motivating the final site layout that is proposed.)

The site was firstly determined as PMG Mining has an existing Mining right over the property. The final site layout is existing as this is an existing operational mine.

i) Plan of study for the Environmental Impact Assessment process:**(i) Description of alternatives to be considered including the option of not going ahead with the activity:**

- Land use development alternatives:
The site layout may vary, depending on the operational requirements. However the final design and layout of the infrastructure have been planned and decided upon by the engineering company appointed by the mine and in consultation with the Mining Right Holder on the grounds of reserves, and placement of infrastructure based on hauling distance, environmental features such as wind direction, heritage findings, protected species, and stormwater management on the mine.
- No-go option:
The following positive impacts will be lost if the proposed mining project does not continue:
 - TAX and VAT obligations to SARS as well as Royalties;
 - CAPEX spent locally and regionally;
 - Employment opportunities;
 - Payroll income;
 - Operating expenditure and maintenance (OPEX);
 - Revenue.

NO-GO ALTERNATIVE SECTION 24 (G)

This environmental application is made in terms of Section 24G of NEMA to recertify and undertake the listed activity in terms of GNR 327:14 of the EIA regulations.

It is suggested that to maintain the status quo is the best option for the micro and macro environment. The do-nothing (“no go”) option would entail maintaining the site as is. From certain perspectives this is a viable option as the site is situated within an operational mining area. By not developing the site, the site will be anomalous in the context of the surrounding land-uses, and some of the direct and indirect socio-economic benefits (i.e. job creation, etc.) will not materialize.

From an environmental perspective, most of the site is assessed to be of LOW sensitivity. No Highly Sensitive or ‘No-Go’ habitats or environments occur on the diesel storage sites. The diesel storage sites is totally transformed with no sensitive habitats present. There are no priority faunal or floral species present on the site; no watercourses present and no wetlands within a 500m radius of the site;

The No-Go development alternative could therefore not be considered the responsible way to manage the site.

(ii) 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...)

1. The clearing of vegetation for:
 - Access roads and haul roads
 - Surface infrastructure
 - Explosive Magazine
 - Product Stockpile area
 - Waste disposal site (domestic and industrial waste)
2. The stripping and stockpiling of topsoil.
3. Opencast mining for manganese.
 - Selective mining, loading, hauling.
4. Altering the characteristics of surface water features.
5. The development of temporary stockpiles:
 - Topsoil storage area;
 - Overburden;
 - Ore Stockpile dumps;
 - Subgrade stockpile area.
6. The backfilling of open excavations.
7. The Screening and Crushing plant.

8. Loading, hauling and transporting of ROM, product and material
9. Water holding facilities, pipeline, and stormwater control:
 - Clean & Dirty water system: Stormwaterdam / Water storage facility;
 - Water distribution Pipeline;
 - Water tank.
10. Fuel storage and refuelling bays;
 - Re-fuel and lube station;
 - Fuel Storage facility (Diesel tanks);
 - Concrete bund walls and diesel depots.
11. Supporting infrastructure:
 - Office complexes;
 - Office Parking Bay;
 - Workshop and Wash Bay;
 - Salvage yard (Storage and laydown area);
 - Ablution facilities;
 - Generators;
 - Security Gate and guard house at access control point;
 - Pipelines transporting water;
 - Storage facility: Drill Cores;
 - Weighbridge;
 - Weighbridge control room: – Mobile container.

(iii) Description of aspects to be assessed by specialists:

This is an existing Mining Right with an existing approved Environmental Authorization. Most specialist studies that are needed in order to investigate the potential environmental impacts associated with the mining activities had been done as well as other more technical specialists that was needed to provide strategies and technical specifications for infrastructure that could potentially alleviate impact the environment. Terms of reference for each of these studies are unique but include the identification and delineation of respective environmental attributes, assessing the state of these attributes, identifying potential impacts relating to these attributes and making recommendations regarding mitigation measures and legal requirements. The following specialists' studies have been completed:

- Ecological Assessment (includes Soil, Land use and capability, Fauna, Flora, surface water and biodiversity) dated October 2022;
- Archaeology, cultural & heritage dated June 2022;
- Hydrological July 2021
- Ground water October 2011;
- Noise & Vibration 2010 - 2011;
- Visual Impact (Not done);
- Socio-economic (Not done);

(iv) Proposed method of assessing the environmental aspects including the proposed method of assessing alternatives:

The receiving environment will be determined using a combination of on-site observations, spatial information, project description, site layout and previous studies currently available to the EAP. Based on the EAPs knowledge and experience, the receiving environment will include geological features, topography, land use, archaeological and historical sites, surface water, groundwater, terrestrial ecology, air quality, noise, etc.

The identification of potential impacts of the mining activity will be based on the legal requirements; the nature of the proposed activity; the nature of the receiving environment; and issues raised during the public participation process. Considering the factors listed above and based on the EAPs knowledge and experience, environmental impacts that could potentially result from the mining activities include impacts on air quality, noise, fauna, flora, ground water, terrestrial ecology, heritage resources, socio-economy, aquatic environments, visuals, storm water and erosion.

The consideration of alternatives is a critical component of the EIA process, where an appropriate range of alternatives require consideration whilst achieving the desired objective of the proposed project. In order to ensure that the proposed project enables sustainable mining, a number of feasible options will be explored. The various alternatives in terms of land use, project infrastructure, mining method and proceeding without the mining operation will be assessed in terms of logistical practicality, environmental acceptability and economic feasibility. Alternatives for the locality of the mining operation will however not form part of this consideration, as the location of the mining site is determined by the geological location of the mineral resource.

(v) The proposed method of assessing duration significance:

The lifetime of the impact will be measured in the context of the lifetime of the proposed phase or activity.

Weight	Duration of Impact	Explanation of Duration
1	Very Short	Less than 1 year
2	Short	1 to 5 years
3	Medium	6 to 15 years
4	Long term (Life of project)	16 to 50 years
5	Very Long term	Longer than 50 years
6	Permanent	Permanent

- **Short term**
The impact will either disappear with mitigation or will be mitigated through natural process in a short time period.
- **Medium term**
The impact will last up to the end of the mining period, where after it will be entirely negated.
- **Long term**
The impact will continue or last for the entire operational life of the mine, but will be mitigated by direct human action or by natural processes thereafter.
- **Permanent**

The only class of impact, which will be non-transitory. Mitigation either by man or natural process will not occur in such a way or in such a time span that the impact can be considered transient.

(vi) The stages at which the Competent Authority will be consulted:

Consultation with the Competent Authority will take place throughout the application process, however more specifically; consultation will take place before submission of the Scoping Report and again before submission of the EIA/EMPR Report and the Section 102 and 24G application.

This application is for the amendment of the existing approved Environmental Management Programme for PMG Mining in terms of Section 102 of the MPRDA with an additional Section 24 G application for the storage, or for the storage and handling, of a dangerous good on site.

The original application for environmental authorization, the environmental management plan (EMP) submitted in 2007, did not make provision for the large scale/bulk storage of diesel. Over time, as our mining operations developed and the fleet of the operation grew, so did the provisions for the maintenance of such scale of operations. The DMRE issued a verbal instruction to PMG to submit an additional application in accordance with section 24G of the NEMA for an environmental authorisation regarding the unlawful activity.

It is confirmed that the way forward is to do a substitution of the current Environmental Management Programme in terms of section 102 of the Mineral and Petroleum Resources Development Act, 28 of 2002 and the process to be followed is in terms of sections 31 and 32 of the National Environmental Management Act, 107 of 1998.

Thus the timeframes (as mentioned in the Department of Mineral Resources' form for Environmental Authorisations) should be aligned with the National Environmental Management Act as well as with the prescribed timeframes for the submission of documents as regulated by the National Environmental Management Act's EIA (Environmental Impact Assessment) Regulations (2014) and it should be strictly adhered thereto.

The process that was proposed to the Department was agreed to by the Department is as follows:

The amendment should be an application in terms of Part 2, Section 31, of the EIA Regulations (2014) and the process to be followed should be in terms of Section 32 of same;

The amendment should be submitted, along with the amended Mining Work Programme, in terms of Section 102 of the Mineral and Petroleum Resources Development Act.

A Section 24(G) application needs to accompany this Section 102 application for storage, or for the storage and handling, of a dangerous good on site.

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

1. 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 required level of Public Participation will be considered based on the:

- scale of anticipated impacts,
- public and environmental sensitivity of the project,
- Potentially affected parties.

The minimum requirement for public participation in accordance to EIA regulations will always be met.

The landowner and the neighbours will be identified and consulted. An advert will be published in the local newspaper for comments and notices will be placed to invite any in-identified parties which might like to register. Information will be sent via Registered post and emails where relevant to all affected government departments and any person who registers during the application process.

Site notices will be placed at the entrance to the site and nearby sites or public places if any is available at the nearest town.

Public meetings will only be conducted where activities will directly impact close communities or when instructed by any competent authority or upon a specific request from interested and affected parties.

2. 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 record of such consultation will be required in the EIA at a later stage.)

The required level of Public Participation will be considered based on the:

- scale of anticipated impacts,
- public and environmental sensitivity of the project,
- Potentially affected parties.

The minimum requirement for public participation in accordance to EIA regulations will always be met.

The landowner and the neighbours will be identified and consulted. An advert will be published in the local newspaper for comments and notices will be placed to invite any in-identified parties which might like to register. Information will be sent via Registered post and emails where relevant to all affected government departments and any person who registers during the application process.

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The original application for environmental authorization, the environmental management plan (EMP) submitted in 2007, did not make provision for the large scale/bulk storage of diesel. Over time, as our mining operations developed and the fleet of the operation grew, so did the provisions for the

maintenance of such scale of operations. The DMRE issued a verbal instruction to PMG to submit an additional application in accordance with section 24G of the NEMA for an environmental authorisation regarding the unlawful activity.

Site notices will be placed at the entrance to the site and nearby sites or public places if any is available at the nearest town.

Public meetings will only be conducted where activities will directly impact close communities or when instructed by any competent authority or upon a specific request from interested and affected parties.

- Notification letters were sent to all identified interested and / or affected parties on the 13 March 2023. Attached to each of these letters was a scoping report containing information relating to the proposed Section 102 application and Section 24G to revise the Environmental Authorisation.
- A newspaper advert was placed in the Kathu Gazette local newspaper on the March 2023.
- Notices were placed at the entrance to the mine and at the library in Postmasburg as well as at the fuel station on way to the mine on 8 March 2023.

Proof of notification is attached as Appendix '3'.

3. 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.)

The following information will be provided to IAPs:

- The site plan;
- List of activities to be authorised;
- Scale and extent of activities to be authorised;
- Typical impacts of activities to be authorised;
- The duration of the activity.

The following information will be requested from the IAPs:

- To provide information on how they consider that the proposed activities will impact on them or their socio-economic conditions;
- To provide written responses stating their suggestions to mitigate the anticipated impacts of each activity;
- To provide information on current land uses and their location within the area under consideration;
- To provide information on the location of environmental features on site to make proposals as to how and to what standard the impacts on site can be remedied. They will be requested to make written proposals;
- To mitigate the potential impacts on their socio-economic conditions to make proposals as to how the potential impacts on their infrastructure can be managed, avoided or remedied).

(viii) Description of the tasks that will be undertaken during the environmental impact assessment process:**Determining environmental attributes**

The receiving environment will be determined using a combination of on-site observations, spatial information, project description, site layout and previous studies currently available to the EAP. Based on the EAPs knowledge and experience, the receiving environment will include geological features, topography, land use, archaeological and historical sites, surface water, groundwater, terrestrial ecology, air quality, noise, etc.

Identification of impacts and risks

The identification of potential impacts of the mining activity will be based on the legal requirements; the nature of the proposed activity; the nature of the receiving environment; and issues raised during the public participation process.

Considering the factors listed above and based on the EAPs knowledge and experience, environmental impacts that could potentially result from the mining activities include impacts on air quality, noise, fauna, flora, ground water, surface water, terrestrial ecology, heritage resources, socio-economy, aquatic environments, visuals, stormwater and erosion.

Consideration of alternatives

The consideration of alternatives is a critical component of the EIA process, where an appropriate range of alternatives require consideration whilst achieving the desired objective of the mining project. In order to ensure that the proposed project enables sustainable mining, a number of feasible options will be explored. The various alternatives in terms of land use, project infrastructure, mining method and proceeding without the mining operation will be assessed in terms of logistical practicality, environmental acceptability and economic feasibility.

Alternatives for the locality of the mining operation will however not form part of this consideration, as the location of the mining site is determined by the geological location of the mineral resource.

Process to assess and rank impacts

Before any assessment can be made the following evaluation criteria need to be described

Table 15: Explanation of PROBABILITY of impact occurrence

Weight	Probability of Impact Occurrence	Explanation of Probability
1	Very Low	<20% sure of particular fact or likelihood of impact occurring
2	Low	20 – 39% sure of particular fact or likelihood of impact occurring
3	Moderate	40 – 59% sure of particular fact or likelihood of impact occurring

4	High	60 – 79% sure of particular fact or likelihood of impact occurring
5	Very High	80 – 99% sure of particular fact or likelihood of impact occurring
6	Definite	100% sure of particular fact or likelihood of impact occurring

Table 16: Explanation of EXTENT of impact

Weight	Extent of Impact	Explanation of Extent
1	Site Specific	Direct and Indirect impacts limited to site of impact only
2	Surrounding Area	Direct and Indirect impacts affecting environmental elements within 2 km of site
3	Local Municipality	Direct and Indirect impacts affecting environmental elements within the Postmasburg area
4	Regional/District	Direct and Indirect impacts affecting environmental elements within District (ZF-Mgcawu District)
5	Provincial	Direct and Indirect impacts affecting environmental elements in the Northern Cape Province

Table 17: Explanation of DURATION of impact

Weight	Duration of Impact	Explanation of Duration
1	Very Short	Less than 1 year
2	Short	1 to 5 years
3	Medium	6 to 15 years
4	Long term (Life of project)	16 to 50 years
5	Very Long term	Longer than 50 years
6	Permanent	Permanent

Table 18: Explanation of SEVERITY of the impact

Weight	Impact Severity	Explanation of Severity
1	No Impact	There will be no impact at all – not even a very low impact on the system or any of its parts.
2	Very Low	Impact would be negligible. In the cast 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 to be better, if one or several ways, then this means of achieving the benefit.
3	Low	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 or little would be required or both. In the case of positive impacts alternative means for achieving this benefit would be easier, cheaper, more effective, less time-consuming, or some combination of these.
4	Moderately Severe	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 easily possible. In the case of positive impacts other means other means of covering these benefits would be about equal in cost and effort.
5	High Severance	Impacts of 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.
6	Very High Severity	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 was predicted. In the case of positive impacts there is no real alternative to achieving the benefit.

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

The criteria used to assess the significance of the impacts are shown in the table below. The limits were defined in relation to mining characteristics. Those for probability, intensity/severity and significance are subjective, based on rule-of-thumb and experience. Natural and existing mitigation measures were considered. These natural mitigation measures were defined as natural conditions, conditions inherent in the project design and existing management measures, which alleviate impacts. The significance of the impacts was calculated by using the following formula:

$$(Severity + Extent + Duration) \times Probability \text{ weighting}$$

For the impact assessment, the different project activities and associated infrastructure were identified and considered in order to identify and analyse the various possible impacts.

Table 19

SIGNIFICANCE				
Colour Code	Significance rating	Rating	Negative Impact	Positive Impact
	Very low	3 -16	Acceptable/Not serious	Marginally Positive
	Low	17 - 22	Acceptable/Not serious	Marginally Positive
	Medium-Low	23 -33	Acceptable/Not desirable	Moderately Positive
	Medium	34 - 48	Generally undesirable	Beneficial
	Medium-High	49 - 56	Generally unacceptable	Important
	High	57 - 70	Not Acceptable	Important

	Very High	90 - 102	Totally unacceptable	Critically Important
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Significance of impacts is defined as follows:

Very Low - Impact would be negligible. Almost no mitigation and/or remedial activity would be needed, and any minor steps which might be needed would be easy, cheap and simple.

Low - Impact would have little real effect. Mitigation and/or remedial activity would be either easily achieved or little would be required or both.

Medium Low- Impact would be real but not substantial within the bounds of those which could occur. Mitigation and/or remedial activity would be both feasible and fairly easily possible.

Medium - Impact would be real but not substantial within the bounds of those which could occur. Mitigation and/or remedial activity would be feasible and possible.

Medium High- Impact would be real but could be substantial within the bounds of those which could occur. Mitigation and/or remedial activity would be both feasible and possible but may be difficult and or costly.

High - Impacts of substantial order. Mitigation and/or remedial activity would be feasible but difficult, expensive, time consuming or some combination of these.

Very High - Of the highest order possible within the bounds of impacts which could occur. There would be no possible mitigation and/or remedial activity to offset the impact at the spatial or time scale for which was predicted.

(ix) 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:

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 (e.g. noise control measures, stormwater control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc...etc...) (e.g. modify through alternative method. Control through management and monitoring through rehabilitation.)	POTENTIAL FOR RESIDUAL RISK
Blasting	<ul style="list-style-type: none"> • Dust • Fly-rock • Noise • Removal and disturbance of vegetation cover and natural habitat of fauna • Surface disturbance • Surface water contamination 	<ul style="list-style-type: none"> • Dust control and monitoring • Noise control and monitoring • Access control. • Continuous rehabilitation. • Stormwater run-off control. 	Medium
Ablution facilities are available on the mine with French drains	<ul style="list-style-type: none"> • Soil contamination • Groundwater contamination • Odours 	<ul style="list-style-type: none"> • Maintenance of sewage treatment facility on regular basis. • Removal of containers upon closure. 	Low
Clean & Dirty water system	<ul style="list-style-type: none"> • Surface disturbance • Groundwater contamination • Soil contamination • Surface water contamination 	<ul style="list-style-type: none"> • Maintenance of berms and trenches. • Groundwater levels and quality monitoring. • Oil traps used in relevant areas. • Drip trays used. • Immediately clean hydrocarbon spill. 	Low
Diesel tanks •Re-fuel and lube station	<ul style="list-style-type: none"> • Groundwater contamination • Removal and disturbance of vegetation cover and natural habitat of fauna • Soil contamination 	<ul style="list-style-type: none"> • Maintenance of diesel tanks and bund walls. • Oil traps. • Groundwater quality monitoring. • Drip tray at re-fuelling point. 	Medium

Excavations	<ul style="list-style-type: none"> • Surface disturbance • Dust • Groundwater contamination • Noise • Removal and disturbance of vegetation cover and natural habitat of fauna • Soil contamination • Surface disturbance • Surface water contamination 	<ul style="list-style-type: none"> • Immediately clean hydrocarbon spill. • Access control • Dust control and monitoring • Groundwater quality monitoring • Noise control and monitoring • Continuous rehabilitation • Stormwater run-off control • Immediately clean hydrocarbon spill • Drip trays • Rock stability control and monitoring • Erosion control 	Medium
Explosives magazine	<ul style="list-style-type: none"> • Groundwater contamination • Removal and disturbance of vegetation cover and natural habitat of fauna • Soil contamination • Surface disturbance • Surface water contamination 	<ul style="list-style-type: none"> • Access control • Maintenance of magazines and fence. • Groundwater quality monitoring • Stormwater run-off control • Immediately clean spill 	Low
Generators	<ul style="list-style-type: none"> • Groundwater contamination • Noise • Removal and disturbance of vegetation cover and natural habitat of fauna • Soil contamination • Surface disturbance 	<ul style="list-style-type: none"> • Access control • Maintenance of generator and bund walls • Noise control and monitoring • Oil traps • Groundwater quality monitoring • Immediately clean hydrocarbon spill 	Medium
Office Buildings	<ul style="list-style-type: none"> • Removal and disturbance of vegetation cover and natural habitat of fauna • Soil contamination • Surface disturbance 	<ul style="list-style-type: none"> • Immediately clean hydrocarbon spill • Rip disturbed areas to allow re-growth of vegetation cover 	Low
Parking bay	<ul style="list-style-type: none"> • Dust • Groundwater contamination 	<ul style="list-style-type: none"> • Dust control and monitoring • Groundwater quality monitoring 	Low

	<ul style="list-style-type: none"> • Noise • Removal and disturbance of vegetation cover and natural habitat of fauna • Surface disturbance 	<ul style="list-style-type: none"> • Noise control and monitoring • Drip trays • Stormwater run-off control. • Immediately clean hydrocarbon spills • Rip disturbed areas to allow re-growth of vegetation cover 	
Processing plant	<ul style="list-style-type: none"> • Dust • Noise • Groundwater contamination and usage • Removal and disturbance of vegetation cover and natural habitat of fauna • Soil contamination • Surface disturbance 	<ul style="list-style-type: none"> • Access control • Maintenance of processing plant • Dust control and monitoring • Groundwater quality and level monitoring • Noise control and monitoring • Drip trays • Stormwater run-off control. • Immediately clean hydrocarbon spills • Rip disturbed areas to allow re-growth of vegetation cover 	Medium
Water distribution Pipeline	<ul style="list-style-type: none"> • Surface disturbance • Groundwater contamination • Soil contamination • Surface water contamination 	<ul style="list-style-type: none"> • Maintenance of pipes. • Groundwater levels, quality and quantity monitoring. 	Low
Roads	<ul style="list-style-type: none"> • Dust • Groundwater contamination • Noise • Removal and disturbance of vegetation cover and natural habitat of fauna • Surface disturbance 	<ul style="list-style-type: none"> • Maintenance of roads • Dust control and monitoring • Groundwater quality monitoring • Noise control and monitoring • Speed limits • Stormwater run-off control. • Erosion control • Immediately clean hydrocarbon spills • Rip disturbed areas to allow re-growth of vegetation cover 	Medium
Salvage yard	<ul style="list-style-type: none"> • Groundwater contamination 	<ul style="list-style-type: none"> • Access control 	Low

	<ul style="list-style-type: none"> • Removal and disturbance of vegetation cover and natural habitat of fauna • Soil contamination • Surface disturbance • Surface water contamination 	<ul style="list-style-type: none"> • Maintenance of fence. • Groundwater quality monitoring • Stormwater run-off control • Immediately clean hydrocarbon spill 	
Security Gate and guard house at access control point	<ul style="list-style-type: none"> • Dust • Groundwater contamination • Noise • Removal and disturbance of vegetation cover and natural habitat of fauna • Surface disturbance 	<ul style="list-style-type: none"> • Access control • Maintenance of boom gates and container. • Dust control and monitoring • Noise control and monitoring • Groundwater quality monitoring • Immediately clean hydrocarbon spill • Rip disturbed areas to allow re-growth of vegetation cover 	Low
Stockpile area	<ul style="list-style-type: none"> • Dust • Groundwater contamination • Noise • Removal and disturbance of vegetation cover and natural habitat of fauna • Surface disturbance 	<ul style="list-style-type: none"> • Dust control and monitoring • Groundwater quality monitoring • Noise control and monitoring • Drip trays • Stormwater run-off control. • Immediately clean hydrocarbon spills • Rip disturbed areas to allow re-growth of vegetation cover 	Medium
Stormwater dam	<ul style="list-style-type: none"> • Surface disturbance • Groundwater contamination • Soil contamination • Surface water contamination 	<ul style="list-style-type: none"> • Maintenance of dam walls. • Groundwater levels and quality monitoring. 	Low
Subgrade stockpile area	<ul style="list-style-type: none"> • Dust • Groundwater contamination • Noise 	<ul style="list-style-type: none"> • Dust control and monitoring • Groundwater quality monitoring • Noise control and monitoring • Drip trays • Stormwater run-off control. 	Medium

	<ul style="list-style-type: none"> Removal and disturbance of vegetation cover and natural habitat of fauna Surface disturbance 	<ul style="list-style-type: none"> Immediately clean hydrocarbon spills Rip disturbed areas to allow re-growth of vegetation cover 	
Topsoil storage area	<ul style="list-style-type: none"> Dust Removal and disturbance of vegetation cover and natural habitat of fauna Soil disturbance Surface disturbance 	<ul style="list-style-type: none"> Dust control and monitoring Stormwater run-off control. Continuous rehabilitation Rip disturbed areas to allow re-growth of vegetation cover Backfilling of topsoil during rehabilitation 	Low
Waste disposal site	<ul style="list-style-type: none"> Groundwater contamination Surface water contamination 	<ul style="list-style-type: none"> Storage of waste within receptacles Storage of hazardous waste on concrete floor with bund wall Removal of waste on regular intervals. 	Low
Waste rock dumps	<ul style="list-style-type: none"> Dust Groundwater contamination Noise Removal and disturbance of vegetation cover and natural habitat of fauna Surface disturbance 	<ul style="list-style-type: none"> Dust control and monitoring Groundwater quality monitoring Noise control and monitoring Stormwater run-off control. Rip disturbed areas to allow re-growth of vegetation cover 	Medium to High
Water tank	<ul style="list-style-type: none"> Groundwater abstraction and usage Surface disturbance 	<ul style="list-style-type: none"> Maintain water tanks and structures. Groundwater levels and quality monitoring. 	Low
Weighbridge	<ul style="list-style-type: none"> Dust Groundwater contamination Noise Removal and disturbance of vegetation cover and natural habitat of fauna Surface disturbance 	<ul style="list-style-type: none"> Access control Maintenance of weighbridge Dust control and monitoring Noise control and monitoring Groundwater quality monitoring Immediately clean hydrocarbon spill 	Low

		<ul style="list-style-type: none"> • Rip disturbed areas to allow re-growth of vegetation cover 	
Weighbridge control room – mobile container	<ul style="list-style-type: none"> • Dust • Groundwater contamination • Noise • Removal and disturbance of vegetation cover and natural habitat of fauna • Surface disturbance 	<ul style="list-style-type: none"> • Access control • Maintenance of weighbridge control room • Dust control and monitoring • Noise control and monitoring • Groundwater quality monitoring • Immediately clean hydrocarbon spill • Rip disturbed areas to allow re-growth of vegetation cover 	Low
Workshop and Wash bay	<ul style="list-style-type: none"> • Groundwater contamination • Noise • Removal and disturbance of vegetation cover and natural habitat of fauna • Surface disturbance 	<ul style="list-style-type: none"> • Access control • Concrete floor with oil/water separator • Maintenance of buildings • Noise control and monitoring • Groundwater quality monitoring • Immediately clean hydrocarbon spill 	Low

- (x) **Other information required by the Competent Authority:**
1. **Compliance with the provisions of Sections 24(4)(a) and (b) read with Section 24(3)(a) and (7) of the National Environmental Management Act (Act 107 of 1998), the EIA report must include the:-**

a. 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 '7' and confirm that the applicable mitigation is reflected in 2.5.3, 2.11.6 and 2.12 herein.)

The socio-economic conditions of the local community could be affected in two ways:

- Negative impacts to the welfare of the local farm residents and workers through general nuisance, dust generation, damages to properties and any associated potential safety risks.
- Positive impacts through job creation and local business opportunities.
- The consultation with interested and affected parties is on-going and any issues, concerns or comments will be considered and included in the EIA report and control measures will be presented in the EMP report.
- Impact on landowner and occupier: (PMG is the surface owner of the Remaining Extent of Bishop)
Positive: Compensation of land lost to mining.
Negative: Temporary Loss of grazing land that will re-establish post mining with the correct mitigation measures put in place by PMG Mining.

b. 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 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 '8' and confirm that the applicable mitigation is reflected in 2.5.3, 2.11.6 and 2.12 herein.)

Various Specialist companies have conducted various studies and completed reports on National Heritage sites on the identified area. The findings of these reports will be included in the EIA/EMPR document.

A list of the Various Archaeological, cultural & heritage assessments that have been conducted on the property follows:

A 2nd report on a heritage impact assessment for the upgrade of Transnet's Glosam siding for PMG's Bishop Mine (Loading Bay) on Portion 2 and the Remainder of Gloucester 674 near Postmasburg, Tsantsabane Local Municipality, Northern Cape Report No AE01236P by AJ Pelser Accredited member of ASAPA Professional Member SASCH dated June 2012

A Report on a cultural heritage impact assessment for the Bishop Mine, close to Kathu, Northern Cape Province Report No AE01854V

by Prof AC van Vollenhoven (L.AKAD.SA) Accredited member of ASAPA (Accreditation number 166) Accredited member of SASCH (Accreditation number: CH001) dated 9 November 2018 (Appendix 8).

Archaetnos cc was requested by Wadala Mining and Consulting (Pty) Ltd. to conduct a cultural heritage impact assessment (HIA) for the Bishop Mine. The mine is located on the farm Bishop 671, close to Dingleton and Kathu, in the Kuruman District, Northern Cape Province, November 2018.

Project description:

Bishop mine is a manganese mining activity. During work for the revised EMP, it was realized that an HIA had never been done on the farm. As a result an HIA was commissioned for the entire Bishop farm. This report is the result of the HIA study.

Methodology:

The methodology for the study includes a survey of literature followed by a field assessment. The latter was conducted according to generally accepted HIA practices and was aimed at locating all possible objects, sites and features of cultural significance in the area of proposed development.

If required, the location/position of any site was determined by means of a Global Positioning System (GPS), while photographs were also taken where needed. The survey was undertaken by doing a physical survey via off-road vehicle and on foot and covered as much as possible of the area to be studied. Certain factors, such as accessibility, density of vegetation, etc. may however influence the coverage.

All sites, objects, features and structures identified were documented according to the general minimum standards accepted by the archaeological profession. Co-ordinates of individual localities were determined by means of the Global Positioning System (GPS). The information was added to the description in order to facilitate the identification of each locality.

Findings:

During the survey one site (graves) of cultural heritage significance were identified.

The following is recommended:

- The one site identified consist of approximately 24 graves.

Usually there are two options when dealing with graves:

- o The first option is to leave the graves in situ. This would be possible should there be no direct impact on the graves. However, the possibility of secondary impacts due to dust etc. remains.
- o The second option is to exhume the graves and have the bodies reburied. This usually is only allowed if there is a direct impact on the site. Graves younger than 60 years are handled by a registered undertaker. Graves older than 60 years and those of an unknown

date is regarded as heritage graves. In such a case an archaeologist is also involved in the process.

- It is recommended that Option 1 be implemented as mitigation measure. The site should remain in situ. It should be fenced in and a management plan drafted for the sustainable preservation thereof. **A buffer zone of at least 20 m** should be implemented.
- After implementation of the mitigation measures proposed above, the development may proceed.
- It should also be noted that the subterranean presence of archaeological and/or historical sites, features or artifacts is always a distinct possibility. Due to the density of vegetation in certain areas it also is possible that some sites may only become known later. Operating controls and monitoring should therefore be aimed at the possible unearthing of such features. Care should therefore be taken when development commences that if any of these are discovered, a qualified archaeologist be called in to investigate the occurrence.

In this regard the following 'Chance find Procedure' should be followed:

- Upon finding any archaeological or historical material all work at the affected area must cease.
- The area should be demarcated to prevent any further work there until an investigation has been completed.
- An archaeologist should be contacted immediately to provide advice on the matter.
- Should it be a minor issue, the archaeologist will decide on future action.

Depending on the nature of the find, it may include a site visit.

- SAHRA's APM Unit may also be notified.
- If needed, the necessary permit will be applied for with SAHRA. This will be done in conjunction with the appointed archaeologist.
- The removal of such archaeological material will be done by the archaeologist in lieu of the approval given by SAHRA, including any conditions stipulated by the latter.
- Work on site will only continue after the archaeologist/ SAHRA has agreed to such a matter.

(AHS) Archaeological and Heritage Services Africa was requested by Wadala Mining and Consulting (Pty) Ltd. to conduct a cultural heritage impact assessment (HIA) for the Bishop Mine. The mine is located on the farm Bishop 671, close to Dingleton and Kathu, in the Kuruman District, Northern Cape Province, June 2022 (Appendix 5).

This report contains the results of a Heritage Impact Assessment (HIA) study conducted in support of mining right application at Bishop Mine on the farm Bishop No 671 near Glosam in the Tsantsabane Local Municipality, Northern Cape Province.

Mine dumps, discard stockpile and other waste represent an evolving mining landscape occupying a large portion of the property. In archaeological terms this area is considered as disturbed and no old relics can be expected to be found in their original context.

Nevertheless, it is a cultural landscape of old and new discard stockpiles and mining waste in which the different patinas of the waste heaps captures the timeline of mining in the area. But in terms of parameters used at the present time to denote cultural significance, there is no outstanding heritage significance in the mine dumps.

Stone Age

No Stone Age artefacts were found in patches of undisturbed ground examined.

The Iron Age

No sites or relics dating to the Iron Age were recorded.

Burial grounds

There is burial ground on Bishop Mine holding c. 24 graves. A rectangular steel palisade has been erected around the graves, which provides adequate insurance from possible inadvertent encroachment. No historical information was provided about the graves.

Interestingly at Kitso Mine, 6 km north of Bishop Mine on the same manganese ridge, there is a large burial ground holding more than 400 graves. In a book published in 1983, A. Hocking writes that South African Manganese (Ltd) operated a mine on the ridge from the mid-1930s until it was closed in the 1950s. The mine employed a labour force of which according to records 600 succumbed to a mystery fever in the 1930s, which was later diagnosed as relapsing fever. It is tempting to speculate that those buried Bishop were possibly victims of the mysterious ailment.

Recommendations and conclusions

The proposed mining activities can go ahead in light of the low probability of occurrence of heritage resources above and below the surface due to a long history of surface mining. The burial ground is sufficiently protected. Steel fencing around the graves is clearly visible and it is not likely that machinery will inadvertently encroach into the burial ground. As a standard precaution in the event of other heritage resources being discovered in future phases of the project, the Provincial Heritage Resources Authority or SAHRA must be alerted immediately and an archaeologist or heritage expert called to attend.

(AHSA) Archaeological and Heritage Services Africa was requested by Wadala Mining and Consulting (Pty) Ltd. to conduct a cultural heritage impact assessment (HIA) for the Bishop Mine. The mine is located on the farm Bishop 671, close to Dingleton and Kathu, in the Kuruman District, Northern Cape Province, June 2022.

Palaeontological

This report has been compiled by Professor Marion Bamford, of the University of the Witwatersrand, sub-contracted by Archaeological and Heritage Services Africa (Pty) Ltd, Pretoria, South Africa (Appendix 6).

Based on the nature of the project, surface activities may impact upon the fossil heritage if preserved in the development footprint. The

geological structures suggest that the rocks are either much too old to contain fossils or are the incorrect type. Furthermore, the material to be mined does not preserve fossils. Since there is an extremely small chance that fossils from the nearby Ghaap Group may be disturbed a Fossil Chance Find Protocol has been added to this report. Taking account of the defined criteria, the potential impact to fossil heritage resources is extremely low.

Assumptions and uncertainties

Based on the geology of the area and the palaeontological record as we know it, it can be assumed that the formation and layout of the dolomites, sandstones, shales and sands are typical for the country and only some contain trace fossils such as stromatolites. The sands of the Quaternary period would not preserve fossils unless they cover palaeo-pans or palaeo-springs that could trap fossils.

Recommendation

Based on experience and the lack of any previously recorded fossils from the area, it is extremely unlikely that any fossils would be preserved in the aeolian sands of the Quaternary. There is a very small chance that fossils may occur in the adjacent dolomite and cherts of the Ghaap Group (Transvaal Supergroup) along the north eastern side, so a Fossil Chance Find Protocol should be added to the EMPr. If fossils are found by the environmental officer, or other responsible person once mining has commenced then they should be rescued and a palaeontologist called to assess and collect a representative sample. The impact on the palaeontological heritage would be low, therefore as far as the palaeontology is concerned, the mining right should be granted.

Chance Find Protocol

Monitoring Programme for Palaeontology – to commence once the excavations mining activities begin.

The following procedure is only required if fossils are seen on the surface and when drilling/mining commence.

When excavations begin the rocks and must be given a cursory inspection by the environmental officer or designated person. Any fossiliferous material (plants, insects, bone or coal) should be put aside in a suitably protected place. This way the project activities will not be interrupted.

Photographs of similar fossils must be provided to the developer to assist in recognizing the fossil plants, vertebrates, invertebrates or trace fossils in the shales and mudstones. This information will be built into the EMP's training and awareness plan and procedures.

Photographs of the putative fossils can be sent to the palaeontologist for a preliminary assessment.

If there is any possible fossil material found by the developer/environmental officer/miners then the qualified palaeontologist sub-contracted for this project, should visit the site to inspect the selected material and check the dumps where feasible.

Fossil plants or vertebrates that are considered to be of good quality or scientific interest by the palaeontologist must be removed, catalogued and housed in a suitable institution where they can be made available for further study. Before the fossils are removed from the site a SAHRA permit must be obtained. Annual reports must be submitted to SAHRA as required by the relevant permits.

If no good fossil material is recovered then no site inspections by the palaeontologist will be necessary. A final report by the palaeontologist must be sent to SAHRA once the project has been completed and only if there are fossils.

If no fossils are found and the excavations have finished then no further monitoring is required.

(xi) 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 details, 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 '9'.)

PMG Mining (Pty) Ltd is currently the holder of a Mining Right with reference number NC30/5/1/1/3/2/1/114MR, executed on behalf of the Minister of Mineral Resources ("Minister") on 10 January 2008 before Mr Noel Henry Kriel, a Notary Public, under Protocol Number 829/2008, consisting of the sole and exclusive right to mine for iron ore and manganese in, on and under Portion 1 and the Remainder of the farm Bishop no. 671, situated in the magisterial district of Kuruman, Northern Cape Province.

The Mining Right was issued for a period of 15 years and will expire on 9 January 2023. A renewal application was lodged on 1 April 2022 under reference number NC30/5/1/2/2/10208 MR for a further 23 years. The acknowledgement of receipt for the renewal from the DMRE is dated 7 June 2022.

Notice is given of an application submitted on behalf of the applicant (i.e. PMG Mining (Pty) Ltd) to the Department of Mineral Resources and Energy (DMRE) in terms of Section 24 G and Section 102 to upgrade and amend the existing Environmental Authorization in terms of the National Environmental Management Act (Act 107 of 1998) for Environmental Authorisation in order to rectify the diesel storage on the mining activities on the Remainder of the Farm Bishop 671 (mining right NC 0114 MR).

The PMG Mining (Pty) Ltd. Bishop project is situated approximately 40km from Postmasburg on the R325 to Kathu/ Kuruman and is approximately 250km from Kimberley in the Northern Cape Province of South Africa, the property under the mining right consists of the Portion 1 and the Remaining Extent of Portion 1 of the farm Bishop № 671, (543.3402 ha) District of Kuruman.

The applicant and practised mining activities are authorised in terms of the Mineral and Petroleum Resources Development of 2002 (MPRDA Act 28 of 2002) but still require an Environmental Authorisation in order to be compliant with the NEMA Act 107 of 1998.

The original application for environmental authorization, the environmental management plan (EMP) submitted in 2007, did not make provision for the large scale/bulk storage of diesel. Over time, as our mining operations developed and the fleet of the operation grew, so did the provisions for the maintenance of such scale of operations. The increase in volume of storage capacity of diesel was undertaken instinctively at the time and, as our environmental management of the associated risks continued in tandem with the increase in storage capacity, we did not appreciate the need for environmental authorisation. In this regard, we confirm that notwithstanding the fact that we did not have the authorisation, we operated in full compliance with how we would have been expected to operate had we had the required authorisation.

Following inspections by the Department of Mineral Resources and Energy (DMRE) in 2018 and 2019, PMG submitted an application in terms of section 24G of the National Environmental Management Act 107 of 1998 (NEMA) to authorise the unlawful activity.

In 2021, following a further inspection, the DMRE informed PMG that the application in terms of section 24G of the NEMA submitted in 2019, was neither considered nor attended to by the DMRE. The DMRE issued a verbal instruction to PMG to submit an additional application in accordance with section 24G of the NEMA for an environmental authorisation regarding the unlawful activity.

The following listed activity are taking place in the mining area and is being applied for:

Activity 14 NEMA: LN1 (GNR327): The development and related operation of facilities or infrastructure for the storage and handling of dangerous goods (fuel), where such storage occurs in containers with a combined capacity of 80 cubic metres or more but not exceeding 500 cubic meters.

The mining activities at Bishop comprise of the following:

The Bishop Mine produces High grade manganese ore removed by Excavators and transported to the processing plant for processing.

The manganese ore will be mined selectively to ensure that only on grade material is transported to the Run of Mine (ROM) stockpile at the plant. The mining equipment selected for the mine will enable the mine to carry out the selective mining process. The selective mining process will be controlled by the mine's geologists. From the mine the manganese ore will be transported to the plant. The plant process is a standard crushing and screening process that produce a marketable product with a particle sizing of -70mm +0mm. Ancillary mining infrastructure include components such as offices, workshops, access and haul roads, staff accommodation, a laboratory, ROM stockpiles and product stockpiles.

Further a result of the size of its operations, the Mine plays a significant role in the manganese industry, both in South Africa and globally. Since the inception of the EMP, PMG's mining operations have increased significantly. As a result, the storage capacity of diesel at the Mine have instinctively been increased and

a storage capacity of at least [223 820 of litres] is currently necessary to conduct the mining operations/to meet PMG's daily operational needs, in accordance with the following:

There are various related operation of facilities or infrastructure, for the storage, or for the storage and handling, of a dangerous good at the Bishop site. These consist of :

No	Facility	Tank Capacity Liters
1	Lab chemical storage	2 240
2	Plant diesel tank 1(Silver)	25 000
3	Plant Diesel Tank 2	20 000
4	Plant Oil store	9 000
5	Plant Generator storage	920
6	Plant Transformer	400
7	Workshop diesel bay	86 000
8	Workshop Salvage Yard Bundwall	
9	Workshop Oil Store	17 000
10	Backup Generator 1	470
11	Back Up Generator 2	440
12	Workshop Bundwall	
	TOTAL	161,470

All equipment is diesel driven and used for the excavation and transportation of raw material to the processing plant where electricity will be used. Electrical reticulation will be established from a transformer to the mining infrastructure, as required. A portable generator will be provided on site as a back-up electricity supply.

No	Vehicles and Equipment on site	Number of Vehicles / Equipment	Average Tank Capacity of Machine	Liters on Site
1	Excavators	14	1 500	21 000
2	Dumpers	28	950	26 600
3	Front End Loaders	7	750	5 250
4	Bulldozers	2	1 650	3 300
5	Graders	1	670	670

6	Other(Crane,Forklift, TLB,firetruck)	8	500	4 000
7	Vehicles	18	85	1 530
	TOTAL	78	6 105	62 350

Total dangerous goods storage capacity of 223 820lt is applied for to be stored on site.

Cognisance must be taken that the filling of all machines on site is equal to approximately 62350 litres with a frequency of filling every machine at least once per week which means that with the current capacity of diesel tanks (131000l) machines can be filled up twice meaning diesel for 14 days approximately.

Water is sourced from boreholes supported by a Water Use License as well as from the Sedibeng Water Users Association.

All infrastructure and activities have been completed and already commenced with.

Following inspections by the Department of Mineral Resources and Energy (DMRE) in 2018 and 2019, PMG applied in terms of section 24G of the National Environmental Management Act 107 of 1998 (NEMA) to authorise the unlawful activity.

In 2021, following a further inspection, the DMRE informed PMG that the application in terms of section 24G of the NEMA submitted in 2019, was neither considered nor attended to by the DMRE. The DMRE issued a verbal instruction to PMG to submit an additional application in accordance with section 24G of the NEMA for an environmental authorisation regarding the unlawful activity.

There are no viable alternatives as PMG Mining has a Mining right over the property and over which the resources has been proven through drilling activities. This is also a Section 102 application to replace the previous EIA/EMP document.

S 24(G) APPLICATION

It is not feasible to consider other sites in terms of location alternatives as the property has existing operational fuel facilities.

Alternative locations are therefore currently not available and would involve the disturbance of another area. The existing diesel tanks is compatible with the surrounding mining operation and workshops that is also existing land uses and should blend in well with the predominant mining character of the surrounding developments.

(xii) Undertaking regarding correctness of information:

I, RH Oosthuizen, ID number 7004180037082, herewith undertake that the information provided in the foregoing report is correct, and that the comments and inputs from stakeholders and Interested and Affected Parties has been correctly recorded in the report.

Signature of EAP

Date: _____

(xiii) Undertaking regarding level of agreement:

I, RH Oosthuizen, ID number 7004180037082, 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 recorded and reported herein.

Signature of EAP

Date: _____

- END -