

# PROPOSED MINING ON THE FARM STEINKOPF NO 22, NAMA KHOI MUNICIPAL AREA, NORTHERN CAPE PROVINCE

## DRAFT BASIC ASSESSMENT REPORT



**JUNE 2022**

***REFERENCE NUMBER: NC 30/5/1/3/2/10950 MP***

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## EXECUTIVE SUMMARY

The Applicant, Namli Exploration and Mining (Pty) Ltd, applied for environmental authorisation, a mining permit, and waste licence over a 5-ha portion of the farm Steinkopf No 22 in the Nama Khoi municipal area of the Northern-Cape Province.

The mining permit application is for the mining of Lithium ore (Li), Nickel (Ni), Manganese (Mn), Lead (Pb), Copper (Cu), Iron (Fe), Cobalt (Co), Gold (Au), Zinc (Zn), Silver (Ag), Tungsten (W), Uranium (U), Beryllium (Be), Rare Earths, Tantalum (Ta).

The objective of the project is the extraction of minerals containing the elements Ta, Li and Nb (Niobium) from two deposits currently known as Norrabees 1 and 2 on the abovementioned property. These elements are primarily contained in the minerals spodumene ( $\text{Li}_2\text{O}$ ) and tantalite ( $\text{Ta}_2\text{O}_5$ ). A large volume of tailings material, that contain spodumene and tantalite, are present at Norrabees 1. The tailings will be processed initially, and mining of the in-situ material will not be necessary during the initial phase of the project. The project will be a relatively small-scale operation with a limited lifespan.

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

Should the MP be issued, and the mining be allowed, the proposed project will comprise of activities that can be divided into three key phases namely the:

- (1) *Site establishment/construction phase* which will involve the demarcation of the permitted mining area. Site establishment will also necessitate the clearing of vegetation and the introduction of mining machinery and equipment. Overburden stripping will only be necessary during the second phase of the project.
- (2) *Operational phase* that will entail the processing of the Norrabees 1 tailings first, upon which the mining of the in-situ hard rock will follow. The mining method will make use of blasting to loosen the hard rock; upon which the loosened material will be transported to an on-site processing plant.

Partial processing, primarily to produce a lithium and tantalum concentrate, will take place on site. The concentrate will then be transported to a more convenient locality (Steinkopf/Springbok) to produce final saleable products.

- (3) *Decommissioning phase* which entails the rehabilitation of the affected environment prior to the submission of a closure application to the Department of Mineral Resources and Energy (DMRE). Once the full mining area is rehabilitated, the mining permit holder will be required to submit a closure application to the DMRE in accordance with section 43(4) of the MPRDA, 2002. The Closure Application will be submitted in terms of Regulation 62 of the MPRDA, 2002, and Government Notice 940 of NEMA, 1998 (as amended).

### **Preferred Project Proposal**

Site Alternative 1, which entails the development of the proposed mine over 5 ha of the farm Steinkopf No 22 within the GPS coordinates as listed in Table 3 and depicted in Figure 2, was identified during the assessment phase of the environmental impact assessment, by the Applicant and project team, as the preferred and only viable site alternative.

The use of mobile/temporary infrastructure/equipment at the proposed mining operation is deemed the most viable and preferred project alternative.

### **No-go Alternative**

The no-go alternative was not deemed to be the preferred alternative as:

- ∞ the Applicant will not be able to mine the deposits available within the proposed mining area, or supply in the demand of the industry;
- ∞ the proposed job opportunities ( $\pm 15$ ), associated with the development of the mine will be lost to the surrounding community;
- ∞ the abandoned Norrabees 1 and 2 deposits will remain a safety risk in the surrounding area without the potential of being rehabilitated.

### **Public Participation Process**

Thus far, initial public participation entailed the placement of Afrikaans and English site notices at Goodhouse, Vioolsdrif and Steinkopf. Site notices were also delivered to the ward councillor of Concordia. The project will be advertised in the Plattelander and the Gemsbok, and the ward councillors (and some community members) of wards 1 - 3, as well as the acting municipal manager of the Nama Khoi Municipality were supplied with introductory pamphlets regarding the application.

The Draft Basic Assessment Report (DBAR) was compiled and will be distributed for comment and perusal to the I&AP's and stakeholders. A hard copy of the document (DBAR & EMPR) will also be available at the Steinkopf Library for ease of reference. A 30-day commenting period, ending 07 July 2022, will be allowed for perusal of the documentation and submission of comments. The comments received on the DBAR will be incorporated into the Final Basic Assessment Report (FBAR) to be submitted for decision making to DMRE.

### **Basic Assessment Report**

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

The key finding of the environmental impact assessment entail the following:

#### **Topography:**

The proposed activity will impact the topography of the mountain in that depressions will be created with stepped side walls as mining progress. The proposed mine should create an excavation with three faces that will be benched as the mining depth increases. It is proposed that the final layout of the excavation (following rehabilitation) will be safer and more attractive, as the abandoned excavations and -tailing would have been corrected.

#### **Visual Characteristics:**

The proposed footprint will only be visible from the immediate surroundings, and the activity will therefore have a low visual impact on the receiving environment.

#### **Air and Noise Quality:**

Due to the remote nature of the site no residents/occupants are expected to be impacted by the proposed activities. The impact on the air quality of the surrounding environment is deemed to be of low significance.

Although the proposed activity will have a cumulative impact on the ambient noise levels, the development will not take place near any residents, and the impact is therefore deemed to be of low significance.

### **Geology:**

The Norrabees pegmatite is one of numerous mineralized pegmatites that occur on the farms Steinkopf 22 and Vioolsdrift 226. The pegmatite has been exposed during earlier spodumene and beryl mining and it is these minerals that the Applicant is interested in.

### **Hydrology:**

There are no rivers, streams or other watercourses present within the proposed mining footprint, and the erosion potential of the site is of low significance.

### **Terrestrial Biodiversity, Conservation Areas, and Groundcover:**

The TBIA revealed that although the vegetation of the area has been exposed to disturbance, the site still has important plant species that warrant conservation. The biodiversity sensitivity of the study area is predominantly low to medium.

No faunal species were observed on site, and the bird species that were observed are all Least Concern. Therefore the potential impact of the proposed project on the faunal component of the area is deemed to be of low significance.

### **Cultural and Heritage Environment:**

Four features of importance were identified on/near the proposed mining footprint. The HIA concludes that the overall (cultural/heritage) impact of the project is low and residual impacts can be managed to an acceptable level through implementation of the recommendations made in this report. The socio-economic benefits also outweigh the possible impacts of the development if the correct mitigation measures are implemented for the project. The site is palaeontologically of insignificant risk/value.

### **Socio-economic Environment:**

The proposed mine will create approximately 15 employment opportunities to locals. The abandoned mining areas will be rehabilitated and rendered safe. The existing roads/tracks will be upgraded (where needed) and maintained by the Applicant for the duration of the project. The presence of the proposed operation will contribute (directly & indirectly) to the local economy with preference given to HDSA & women owned local suppliers, and the successful mining of the area could lead to the development of a larger long-term mine with more work opportunities.

During the environmental impact assessment process the feasibility of the proposed site was assessed to identify fatal flaws that are deemed as severe as to prevent the activity continuing or

warrant a site- or project alternative. The outcome of the assessment showed that should the mitigation measures and monitoring programmes proposed in this document be implemented, no fatal flaws could be identified that prevents the activity continuing.

### **Environmental Management Programme (EMPR)**

The EMPR provides a description of the impact management outcomes and closure objectives. It presents the impacts to be mitigated in their respective phases as well as stipulates the mitigation measures to be applied on site.

The financial provision amount that will be necessary for the rehabilitation of damages caused by the operation, both sudden closures during the normal operation of the project and at final, planned closure gives a sum of R 496 729.77.

## LIST OF ABBREVIATIONS

Ag	Silver
ASTM	American Standard Test Method
Au	Gold
Be	Beryllium
BGIS	Biodiversity GIS
CARA	Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)
CBA	Critical Biodiversity Area
Co	Copper
Cu	Copper
DALR&RD	Department of Agriculture, Land Reform and Rural Development
DBAR	Draft Basic Assessment Report
DMRE	Department of Mineral and Resources and Energy
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EIA Regulations	Environmental Impact Assessment Regulations, 2014 (as amended 2017)
EMPR	Environmental Management Programme
FBAR	Final Basic Assessment Report
Fe	Iron
FeSi	Ferrisilicon
GDP	Gross Domestic Product
GNR	Government Notice
GPS	Global Positioning System
HDSA	Historically Disadvantaged South Africans
HIA	Heritage Impact Assessment
HSA	Hazardous Substances Act, 1973 (Act No. 15 of 1973)
I&AP's	Interested and Affected Parties
IDP	Integrated Development Plan
LC	Least Concern
Li	Lithium
MHSA	Mine Health and Safety Act, 1996 (Act No. 29 of 1996)
Mn	Manganese
MP	Mining Permit

MPRDA	Minerals and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)
NCNCA	Northern Cape Nature Conservation Act, 2009 (Act No. 9 of 2009)
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NEM:AQA	National Environmental Management: Air Quality Control Act, 2004 (Act No. 39 of 2004)
NEM:BA	National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)
NEM:PAA	National Environmental Management: Protected Areas Amendment Act, 2014 (Act No. 21 of 2014)
NEM:WA	National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)
NFEPA	National Freshwater Ecosystem Priority Areas
Ni	Nickel
NKLM	Nama Khoi Local Municipality
NPAESFA	National Protected Areas Extension Strategy Framework Area
NHRA	National Heritage Resources Act, 1999 (Act No. 25 of 1999)
NRTA	National Road Traffic Act, 1996 (Act No. 93 of 1996)
NWA	National Water Act, 1998 (Act No. 36 of 1998)
OHSA	Occupational Health and Safety Act, 1993 (Act No. 85 of 1993)
Pb	Lead
PCB's	Polychlorinated Biphenyl
PCO	Pest Control Officer
PPE	Personal Protective Equipment
PSM	Palaeontological Sensitivity Map
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information System
SAMBF	South African Mining and Biodiversity Forum
SANS	South African National Standards
SDS	Safety Data Sheet
Ta	Tantalum
TBIA	Terrestrial Biodiversity Impact Assessment
U	Uranium
USBM	US Bureau of Mines
VU	Vulnerable
W	Tungsten
WMA	Water Management Area
Zn	Zinc



## TABLE OF CONTENTS

PART A.....	17
SCOPE OF ASSESSMENT AND BASIC ASSESSMENT REPORT .....	17
1. CONTACT PERSON AND CORRESPONDENCE ADDRESS .....	17
a) Details of: Greenmined Environmental.....	17
i) Details of the EAP .....	17
ii) Expertise of the EAP.....	17
(1) The qualifications of the EAP.....	17
(2) Summary of the EAP's past experience. ....	17
b) Location of the overall Activity. ....	18
c) Locality map.....	18
d) Description of the scope of the proposed overall activity. ....	19
i) Listed and specified activities .....	20
ii) Description of the activities to be undertaken .....	21
e) Policy and Legislative Context.....	35
f) Need and desirability of the proposed activities. ....	38
g) Motivation for the overall preferred site, activities and technology alternative. ....	47
h) Full description of the process followed to reach the proposed preferred alternatives within the site. 48	
i) Details of the development footprint alternatives considered.....	48
ii) Details of the Public Participation Process Followed.....	50
iii) Summary of issues raised by I&APs .....	52
iv) The Environmental attributes associated with the alternatives. ....	57
(1) Baseline Environment.....	57
(a) Type of environment affected by the proposed activity. ....	57
(b) Description of the current land uses. ....	72
(c) Description of specific environmental features and infrastructure on the site. ....	74
(d) Environmental and current land use map. ....	85
v) Impacts and risks identified including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts.....	85
vi) Methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks; .....	90
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. ....	96
viii) The possible mitigation measures that could be applied and the level of risk .....	99
ix) Motivation where no alternative sites were considered.....	108
x) Statement motivating the alternative development location within the overall site. ....	109
i) Full description of the process undertaken to identify, assess and rank the impacts and risks the activity will impose on the preferred site (In respect of the final site layout plan) through the life of the activity.....	109
j) Assessment of each identified potentially significant impact and risk .....	115
k) Summary of specialist reports. ....	121
l) Environmental impact statement .....	123

i)	Summary of the key findings of the environmental impact assessment;.....	123
ii)	Final Site Map .....	125
iii)	Summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;.....	125
m)	Proposed impact management objectives and the impact management outcomes for inclusion in the EMPr;.....	127
n)	Aspects for inclusion as conditions of Authorisation. ....	138
o)	Description of any assumptions, uncertainties and gaps in knowledge. ....	138
p)	Reasoned opinion as to whether the proposed activity should or should not be authorised .....	138
i)	Reasons why the activity should be authorised or not. ....	138
ii)	Conditions that must be included in the authorisation .....	138
q)	Period for which the Environmental Authorisation is required. ....	138
r)	Undertaking.....	138
s)	Financial Provision.....	139
i)	Explain how the aforesaid amount was derived .....	139
ii)	Confirm that this amount can be provided from operating expenditure.....	139
t)	Specific Information required by the competent Authority .....	139
i)	Compliance with the provisions of sections 24(4)(a) and (b) read with section 24 (3)(a) and (7) of the National Environmental Management Act (Act 107 of 1998). The EIA report must include the:-.	139
(1)	Impact on the socio-economic conditions of any directly affected person. ....	139
(2)	Impact on any national estate referred to in section 3(2) of the National Heritage Resources Act. ....	140
u)	Other matters required in terms of section 24(4)(a) and (b) of the Act.....	140
	PART B.....	141
	ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT.....	141
1.	DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME.....	141
a)	Details of the EAP,.....	141
b)	Description of the Aspects of the Activity .....	141
c)	Composite Map.....	141
d)	Description of impact management objectives including management statements .....	141
i)	Determination of closure objectives. (Ensure that the closure objectives are informed by the type of environment described) .....	141
ii)	Volume and rate of water use required for the operation .....	145
iii)	Has a water use licence has been applied for? .....	145
iv)	Impacts to be mitigated in their respective phases.....	146
e)	Impact Management Outcomes.....	167
f)	Impact Management Actions .....	171
i)	Financial Provision.....	175
(1)	Determination of the amount of Financial Provision. ....	175
(a)	Describe the closure objectives and the extent to which they have been aligned to the baseline environment described under the Regulation.....	175
(b)	Confirm specifically that the environmental objectives in relation to closure have been consulted with landowner and interested and affected parties.....	175
(c)	Provide a rehabilitation plan that describes and shows the scale and aerial extent of the main mining activities, including the anticipated mining area at the time of closure. ....	175

(d)	Explain why it can be confirmed that the rehabilitation plan is compatible with the closure objectives.....	175
(e)	Calculate and state the quantum of the financial provision required to manage and rehabilitate the environment in accordance with the applicable guideline. ....	177
(f)	Confirm that the financial provision will be provided as determined.....	181
	Mechanisms for monitoring compliance with and performance assessment against the environmental management programme and reporting thereon, including .....	182
g)	Monitoring of Impact Management Actions .....	182
h)	Monitoring and reporting frequency.....	182
i)	Responsible persons .....	182
j)	Time period for implementing impact management actions.....	182
k)	Mechanisms for monitoring compliance .....	182
l)	Indicate the frequency of the submission of the performance assessment/environmental audit report. 204	
m)	Environmental Awareness Plan.....	204
i)	Manner in which the applicant intends to inform his or her employees of any environmental risk which may result from their work. ....	204
ii)	Manner in which risk will be dealt with in order to avoid pollution or the degradation of the environment. ....	204
n)	Specific information required by the Competent Authority .....	206
2.	UNDERTAKING.....	207

## LIST OF FIGURES

Figure 1:	Satellite view of the proposed mining permit area (yellow polygon). (Image obtained from Google Earth). ....	18
Figure 2:	Satellite view showing the location of the MP application area (yellow polygon) in relation to the surrounding area (image obtained from Google Earth).....	23
Figure 3:	Satellite view showing the existing access road (red line) to be used to reach the proposed mining area (yellow polygon). This access road connects with the Henkries gravel road (image obtained from GoogleEarth). ....	25
Figure 4:	Image showing the most likely position of the processing area (green shaded polygon) to be established on site. Where the yellow polygon indicates the MP footprint, and the red line the access road (image obtained from GoogleEarth). ....	27
Figure 5:	Image showing a typical DMS plant for producing spodumene concentrate (image obtained from Namli Exploration and Mining (Pty) Ltd). ....	29
Figure 6:	Maximum, minimum, and average temperature of the Springbok region (chart obtained from <a href="http://www.worldweatheronline.com">http://www.worldweatheronline.com</a> ).....	57
Figure 7:	Average rainfall amount and rainy days count for the Springbok region (chart obtained from <a href="http://www.worldweatheronline.com">http://www.worldweatheronline.com</a> ).....	58
Figure 8:	Image showing the dominant wind direction (first panel) and average wind speed over a 12 month period for the Springbok area (image obtained from <a href="http://www.windfinder.com/windstatistics/springbok">http://www.windfinder.com/windstatistics/springbok</a> ). ....	58
Figure 9:	Map showing the topography of the greater study area, where the red star indicates the mining permit footprint (image obtained from <a href="http://www.en-za.topographic-map.com/maps/gwpq/South-Af">http://www.en-za.topographic-map.com/maps/gwpq/South-Af</a> ).....	59
Figure 10:	Indication of the simplified geology of the study area, where pink represents Namaqua and Natal Metamorphic Provinces, blue shows Gariep Supergroup and brown the Vanrhynsdorp and Nama Groups. Brown dots indicate copper, white lead, and blue zinc. The dark brown dots show uranium sources. The proposed mining area is indicated by the red star. (Image obtained from the Council for Geoscience).....	61

Figure 11: Satellite view showing the main watercourses in the study area in relation to the mining permit area (yellow polygon) (image obtained from Google Earth).	62
Figure 12: Map showing the extent of the FishFEPA in which the mining area falls (image obtained from the BGIS Map Viewer – National Wetlands and NFEPA).	62
Figure 13: The Mining Guidelines map shows that the mining area (blue polygon) falls within an area of high biodiversity importance with a high risk for mining (brown). The dots on the map indicate existing mining areas.	63
Figure 14: Northern Cape Biodiversity Conservation Plan Map (image obtained from the Terrestrial Biodiversity Impact Assessment).	64
Figure 15: National Protected Areas Expansion Strategy Map (image obtained from the Terrestrial Biodiversity Impact Assessment).	65
Figure 16: National vegetation cover map showing the study area within the Eastern Gariep Rocky Desert (Dg10) vegetation type (grey shaded area) (image obtained from BGIS Map Viewer – National Vegetation Map).	66
Figure 17: The SAHRA palaeontological sensitivity map shows the proposed mining footprint (red star) falls in an area of Insignificant/Zero (grey) concern.	68
Figure 18: Gender profile (image obtained from Statistics South Africa).	70
Figure 19: Gender and age distribution profile (image obtained from Statistics South Africa).	70
Figure 20: Population profile of the Nama Khoi municipal area (image obtained from Statistics South Africa).	71
Figure 21: Average household income profile of the NKLM area (image obtained from Statistics South Africa).	71
Figure 22: Highest educational level of the NKLM area (image obtained from Statistics South Africa).	72
Figure 23: Satellite view of the application area (yellow polygon) with the 500 m radius (large red circle) around it. The archaeological features are indicated by the yellow pins, and the small red circle indicates the proposed buffer area (image obtained from Google Earth).	74
Figure 24: Elevation profile of the proposed mining area (Image obtained from Google Earth).	75
Figure 25: Viewshed analysis for the north-western part of the site where the green shaded areas indicate the positions from where this section will be visible. (Image obtained from Google Earth).	76
Figure 26: Viewshed analysis for the highest part of the mining area where the green shading indicates the positions from where this section will be visible. (Image obtained from Google Earth).	77
Figure 27: Viewshed analysis for the lowest southern part of the mining area where the green shading indicates the positions from where this section will be visible. (Image obtained from Google Earth).	77
Figure 28: Site sensitivity of the study area (image obtained from the TBIA).	81
Figure 29: Distribution of observations in relation to the mining area (image obtained from HIA).	83

## LIST OF TABLES

Table 1: Location of the proposed project.	18
Table 2: Listed and specified activities triggered by the associated mining activities	20
Table 3: GPS Coordinates of the proposed mining footprint.	22
Table 4: Policy and Legislative Context.	35
Table 5: Need and desirability determination.	39
Table 6: List of the I&AP's and stakeholders that will be invited to comment on the DBAR.	51
Table 7: Summary of issues raised by IAPs	52
Table 8: List of bird species recorded at the study site (see TBIA).	67
Table 9: Land uses and/or prominent features that occur within 500 m radius of the study area.	73
Table 10: List of plant species recorded at the study site (see TBIA).	81
Table 11: Recorded features as presented in the HIA.	82
Table 12: Table to be used to obtain an overall rating of severity, taking into consideration the various criteria.	92
Table 13: Criteria for the rating of duration.	92

Table 14: Criteria for the rating of extent / spatial scale. ....	93
Table 15: Example of calculating overall consequence. ....	93
Table 16: Criteria for the rating of frequency. ....	93
Table 17: Criteria for the rating of probability. ....	93
Table 18: Example of calculating overall likelihood. ....	94
Table 19: Determination of overall environmental significance. ....	94
Table 20: Description of environmental significance and related action required. ....	94
Table 21: List of potential negative impacts associated with the preferred project proposal. ....	97
Table 22: Assessment of each identified potentially significant impact and risk ....	115
Table 23: Summary of specialist reports ....	121
Table 24: Potential negative impacts associated with the proposed activity with a Low-Medium or higher significance/risk ....	126
Table 25: Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR. ....	127
Table 26: Impact to be mitigated in their respective phases ....	146
Table 27: Impact Management Outcomes ....	167
Table 28: Impact Management Actions ....	171
Table 29: Calculation of closure cost. ....	180
Table 30: Mechanisms for monitoring compliance with and performance assessment against the EMPR and reporting thereon. ....	182

## **LIST OF APPENDICES**

Appendix A: Regulation 2.2 Mine Plan
Appendix B: Locality Map
Appendix C: Site Activities Map
Appendix D: Surrounding Land Use Map
Appendix E: Rehabilitation Plan
Appendix F: Proof of Public Participation
Appendix G: Terrestrial Biodiversity Impact Assessment
Appendix H: Heritage Impact Assessment
Appendix I: Supporting Impact Assessment
Appendix J: Closure Plan
Appendix K: Invasive Plant Species Management Plan
Appendix L: Photographs of the site
Appendix M: CV and Experience Record of EAP



**mineral resources**

Department:  
Mineral Resources  
REPUBLIC OF SOUTH AFRICA

**BASIC ASSESSMENT REPORT**  
**And**  
**ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT**

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

<b>NAME OF APPLICANT:</b>	Namli Exploration and Mining (Pty) Ltd
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<b>FILE REFERENCE NUMBER SAMRAD:</b>	NC 30/5/1/3/2/10950 MP

## IMPORTANT NOTICE

In terms of the Mineral and Petroleum Resources Development Act (Act 29 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 can be concluded that the said activities will not result in unacceptable pollution, ecological degradation or damage to the environment.

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

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

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

## OBJECTIVE OF THE BASIC ASSESSMENT PROCESS

The objective of the basic assessment process is to, through a consultative process–

- (a) determine the policy and legislative context within which the proposed activity is located and how the activity complies with and responds to the policy and legislative context;
- (b) identify the alternatives considered, including the activity, location, and technology alternatives;
- (c) describe the need and desirability of the proposed alternatives,
- (d) through the undertaking of an impact and risk assessment process inclusive of cumulative impacts which focused on determining the geographical, physical, biological, social, economic, heritage, and cultural sensitivity of the sites and locations within sites and the risk of impact of the proposed activity and technology alternatives on these aspects to determine:
  - (i) the nature, signification, consequence, extent, duration, and probability of the impacts occurring to; and
  - (ii) the degree to which these impacts –
    - (aa) can be reversed;
    - (bb) may cause irreplaceable loss of resources; and
    - (cc) can be managed, avoided or mitigated;
- (e) through a ranking of the site sensitivities and possible impacts the activity and technology alternatives will impose on the sites and location identified through the life of the activity to –
  - (i) identify and motivate a preferred site, activity and technology alternative;
  - (ii) identify suitable measures to manage, avoid or mitigate identified impacts; and
  - (iii) identify residual risks that need to be managed and monitored.



## PART A

### SCOPE OF ASSESSMENT AND BASIC ASSESSMENT REPORT

#### 1. CONTACT PERSON AND CORRESPONDENCE ADDRESS

##### a) Details of: Greenmined Environmental

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

##### i) Details of the EAP

Name of the Practitioner:	Ms Christine Fouché (Senior Environmental Specialist)
Tel No.:	021 851 2673
Fax No.:	086 546 0579
E-mail address:	<a href="mailto:christine.f@greenmined.co.za">christine.f@greenmined.co.za</a>

##### ii) Expertise of the EAP.

###### (1) The qualifications of the EAP

(With evidence).

Ms. Fouché has a Diploma in Nature Conservation and a B.Sc. in Botany and Zoology. Full curriculum vitae with evidence is attached as Appendix M.

###### (2) Summary of the EAP’s past experience.

(In carrying out the Environmental Impact Assessment Procedure)

Ms Fouche has seventeen years’ experience in doing Environmental Impact Assessments and Mining Applications in South Africa. See a list of past projects attached as Appendix M.

**b) Location of the overall Activity.**

*Table 1: Location of the proposed project.*

<b>Farm Name:</b>	Steinkopf No 22
<b>Application area (Ha)</b>	5 ha
<b>Magisterial district:</b>	Namakwa District Municipality (Nama Khoi Local Municipality)
<b>Distance and direction from the nearest town</b>	±40 km north-east of the town of Steinkopf.
<b>21-digit Surveyor General Code for each farm portion</b>	C05300000000002200000

**c) Locality map**

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

The requested map is attached as Appendix B.



*Figure 1: Satellite view of the proposed mining permit area (yellow polygon). (Image obtained from Google Earth).*

**d) Description of the scope of the proposed overall activity.**

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 aforesaid main and listed activities, and infrastructure to be placed on site

The Applicant, Namli Exploration and Mining (Pty) Ltd, applied for environmental authorisation, a mining permit, and waste licence over a 5-ha portion of the farm Steinkopf No 22 in the Nama Khoi municipal area of the Northern-Cape Province. The mining permit application is for the mining of Lithium ore (Li), Nickel (Ni), Manganese (Mn), Lead (Pb), Copper (Cu), Iron (Fe), Cobalt (Co), Gold (Au), Zinc (Zn), Silver (Ag), Tungsten (W), Uranium (U), Beryllium (Be), Rare Earths, Tantalum (Ta).

The objective of the project is the extraction of minerals containing the elements Ta, Li and Nb (Niobium) from two deposits currently known as Norrabees 1 and 2 on the abovementioned property. These elements are primarily contained in the minerals spodumene ( $\text{Li}_2\text{O}$ ) and tantalite ( $\text{Ta}_2\text{O}_5$ ).

The deposits are closely spaced (450 m) with extensive excavations present on both the outcropping areas of Norrabees 1 and 2. A large volume of tailings material, that contain spodumene and tantalite, are present at Norrabees 1. Tests and analyses have indicated that it will be viable to extract Li, Ta and Nb from this, easily accessible, material. The tailings will therefore be processed initially, and mining of the in-situ material will not be necessary during the initial phase of the project. The project will be a relatively small-scale operation with a limited lifespan. See attached as Appendix C a copy of the site activities map for the proposed project.

### i) Listed and specified activities

Table 2: Listed and specified activities triggered by the associated mining activities

NAME OF ACTIVITY  (E.g. For prospecting – drill site, site camp, ablution facilities, accommodation, equipment storage, sample storage, site office, access route etc... etc... etc  E.g. for mining – excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.)	Aerial extent of the activity Ha or m <sup>2</sup>	LISTED ACTIVITY Mark with an X where applicable or affected	APPLICABLE LISTING NOTICE  (GNR 324, GNR 325, GNR 326 OR GNR 327)
Demarcation of site with visible beacons.	5 ha	N/A	Not listed
Site establishment and infrastructure development.	±1 ha	X	GNR 327 LN 1 Activity 21, 21F, 26, 27 GNR 324 LN 3 Activity 12, 18
<p>GNR 517 Listing Notice 1 Activity 21 as amended:</p> <p><i>Any activity including the operation of that activity which requires a mining permit in terms of section 27 of the Mineral and Petroleum Resources Development Act, as well as any other applicable activity as continued in this Listing Notice or in Listing Notice 3 of 2014, required to exercise the mining permit.</i></p>			
<p>GNR 517 Listing Notice 1 Activity 21F as amended:</p> <p><i>Any activity including the operation of that activity required for the reclamation of a residue stockpile or a residue deposit as well as any other applicable activity as contained in this Listing Notice or in Listing Notice 3 of 2014, required for the reclamation of a residue stockpile or a residue deposit.</i></p>			
<p>GNR 327 Listing Notice 1 Activity 26:</p> <p><i>Residential, retail, recreational, tourism, commercial or institutional developments of 1 000 square metres or more, on land previously used for mining or heavy industrial purposes.</i></p>			
<p>GNR 327 Listing Notice 1 Activity 27:</p> <p><i>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—</i></p> <p><i>(i) the undertaking of a linear activity; or</i></p> <p><i>(ii) maintenance purposes undertaken in accordance with a maintenance management plan.</i></p>			
<p>GNR 324 Listing Notice 3 Activity 12:</p> <p><i>The clearance of an area of 300 square metres or more of indigenous vegetation.</i></p>			

NAME OF ACTIVITY	Aerial extent of the activity	LISTED ACTIVITY	APPLICABLE LISTING NOTICE
<i>g. Northern Cape</i> <i>ii. within critical biodiversity areas identified in bioregional plans;</i>			
GNR 324 Listing Notice 3 Activity 18:  <i>The widening of a road by more than 4 metres, or the lengthening of a road by more than 1 kilometre.</i> <i>g. Northern Cape</i> <i>ii Outside urban areas:</i> <i>(bb) National Protected Area Expansion Strategy Focus areas;</i> <i>(ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans.</i>			
Processing of existing tailings	±1 ha	X	GNR 327 LN 1 Activity 21, 21F, 26 NEM:WA Category A Activity 15
NEM:WA Category A Activity 15:  <i>The establishment of reclamation of a residue or residue deposit resulting from activities which require a prospecting right or mining permit, in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act No 28 of 2002).</i>			
Vegetation removal and stripping of overburden (where needed).	±4 ha	X	GNR 327 LN 1 Activity 21, 26, 27 GNR 324 LN 3 Activity 12
Drilling and blasting of hard rock.	±4 ha	X	GNR 327 LN 1 Activity 21
Excavation, loading and hauling to processing area.	±4 ha	X	GNR 327 LN 1 Activity 21
Processing, stockpiling, and transporting of material (on-site)	±1 ha	X	GNR 327 LN 1 Activity 21, 21F, 26
Sloping, and landscaping upon closure of the site	5 ha	X	GNR 327 LN 1 Activity 21

## ii) Description of the activities to be undertaken

(Describe Methodology or technology to be employed, including the type of commodity to the prospected/mined and for a linear activity, a description of the rout of the activity)

### **Background Information:**

The property Steinkopf No 22 extends across a vast area (299 556.1604 ha) that includes the town of Steinkopf. The earmarked mining areas sited over the outcrops known as Norrabees 1 & 2, are situated within the boundaries of this property on an area that has historically been mined for a variety of minerals. According to local sources, mining of this area has been ongoing (periodically) since the 1960's.

Horomela Hole Transport Services 1228 (Pty) Ltd (hereafter referred to as "Horomela") held a prospecting right (PR) over ±167 536 ha of the same property, that was subsequently ceded to Namli Exploration and Mining (Pty) Ltd (Applicant) in March

2018. The PR allows the prospecting of the area for Beryllium ore, Copper ore, Lead, Lithium ore, Nickel ore, Rare Earths, Silver ore, Tantalum/Niobium ore, Tungsten ore, Uranium ore, and Zinc ore. The said PR is valid until November 2022, with the option of renewal.

**Project Proposal:**

Upon receipt of favourable prospecting results, the Applicant applied for environmental authorisation, a mining permit, and waste licence over 5 ha of the above mentioned property. The following table lists the GPS coordinates of the proposed mining area as shown on the Regulation 2.2 Mine Plan attached as Appendix A.

*Table 3: GPS Coordinates of the proposed mining footprint.*

NUMBER	DEGREES, MINUTES, SECONDS		DECIMAL DEGREES	
	LAT (S)	LONG (E)	LAT (S)	LONG (E)
A	28°56'46.475"	17°58'33.917"	-28.946241°	17.976090°
B	28°56'48.426"	17°58'37.092"	-28.946794°	17.976973°
C	28°56'49.088"	17°58'37.744"	-28.946963°	17.977156°
D	28°56'50.168"	17°58'40.865"	-28.947271°	17.978024°
E	28°56'53.876"	17°58'45.134"	-28.948286°	17.979190°
F	28°56'56.137"	17°58'49.829"	-28.948932°	17.980510°
G	28°56'57.336"	17°58'50.981"	-28.949256°	17.980828°
H	28°56'58.679"	17°58'51.956"	-28.949640°	17.981099°
I	28°57'04.651"	17°58'48.058"	-28.951294°	17.980015°
J	28°57'03.276"	17°58'45.203"	-28.950904°	17.979222°
K	28°56'59.150"	17°58'47.978"	-28.949767°	17.979990°
L	28°56'58.146"	17°58'47.316"	-28.949491°	17.979807°
M	28°56'56.364"	17°58'47.381"	-28.949001°	17.979824°
N	28°56'51.785"	17°58'38.939"	-28.947725°	17.977489°
O	28°56'47.054"	17°58'31.512"	-28.946404°	17.975433°



Figure 2: Satellite view showing the location of the MP application area (yellow polygon) in relation to the surrounding area (image obtained from Google Earth).

It must be noted that this mining permit application only applies to the establishment of the 5 ha mining area on the property. Any activities taking place outside the boundaries of this application area must be seen as separate projects on the same property.

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

- (1) *Site establishment/construction phase* which will involve the demarcation of the permitted mining area. Site establishment will also necessitate the clearing of vegetation and the introduction of mining machinery and equipment. Overburden stripping will only be necessary during the second phase of the project.
- (2) *Operational phase* that will entail the processing of the Norrabees 1 tailings first, upon which the mining of the in-situ hard rock will follow. The mining method will make use of blasting to loosen the hard rock; upon which the loosened material

will be transported to an on-site processing plant. Partial processing, primarily to produce a lithium and tantalum concentrate, will take place on site. The concentrate will then be transported to a more convenient locality (Steinkopf/Springbok) to produce final saleable products.

- (3) *Decommissioning phase* which entails the rehabilitation of the affected environment prior to the submission of a closure application to the Department of Mineral Resources and Energy (DMRE). Once the full mining area is rehabilitated, the mining permit holder will be required to submit a closure application to the DMRE in accordance with section 43(4) of the MPRDA, 2002. The Closure Application will be submitted in terms of Regulation 62 of the MPRDA, 2002, and Government Notice 940 of NEMA, 1998 (as amended).

## **PHASES OF THE PROJECT**

### *1. Site Establishment Phase:*

Site establishment entails the demarcation of the mining boundaries and the 30 m buffer area around Feature 3 (as discussed later), clearance of vegetation, and stripping and stockpiling of overburden (second phase) to access the minerals as detailed below:

#### **⌘ Demarcation of Mining Boundaries:**

Pursuant to receipt of the Environmental Authorisation (EA) and Mining Permit (MP), and prior to site establishment, the boundaries of the mining area will be demarcated with visible beacons.

The Applicant will also demarcate and maintain the 30 m buffer around Feature 3 (refer to HIA attached as Appendix H) prior to any bush clearance or placement of site infrastructure as required by the archaeologist.

Further to this, the Applicant will arrange for the documentation of Features 1 and 2 and apply for a destruction permit should the area where these features are located be mined.

#### **⌘ Access Road:**

The proposed mining area will be reached via existing gravel roads that leads up to the site. If needed, the Applicant will upgrade the roads to allow



comfortable movement of mining related equipment and vehicles. Haul roads into the excavation will be extended as mining progresses.

As the study area falls within a National Protected Area Expansion Strategy Focus Area (NPAESFA), as well as a Critical Biodiversity Area (CBA) in terms of the systematic biodiversity plans, the upgrade of the roads may trigger Activity 18 of the EIA Regulations Listing Notice 3 (GNR 324), as referred to earlier. The improvement of roads will be restricted to a width of 8 m. No new roads will need to be established, and upon closure all roads (used by the mine) will be left in the same, or better, condition as it were prior to mining for the benefit of the community. When the mine is fully operational it is expected that  $\pm 6$  trucks will visit the site per day.



*Figure 3: Satellite view showing the existing access road (red line) to be used to reach the proposed mining area (yellow polygon). This access road connects with the Henkries gravel road (image obtained from Google Earth).*

#### ⌘ **Clearing of Vegetation:**

The vegetation type of the earmarked footprint is classified as Eastern Gariep Rocky Desert (Dg10). Although the vegetation cover of the earmarked area is highly disturbed in places, the ecologist identified Quiver trees (*Aloidendron dichotomum*) (VU), Aggenysmelkbos (*Euphorbia gregaria*) (LC), and Stink Shepherds Tree (*Boscia foetida*) (LC) that are all provincially protected. In the circumstance, upon receipt of the EA and prior to site establishment/bush clearance, an application for a relocation plant permit will be submitted to the Northern Cape Permit Section of the Northern Cape Department of Agriculture, Environmental Affairs, Rural Development and Land Reform.

Bush clearance will only commence upon receipt of the applicable plant permit, and the environmental control officer (ECO) will assess the compliance of the permit holder with the conditions of the said permit.

#### ⌘ **Introduction of Mining Machinery and Site Equipment:**

The Applicant plans to establish mobile/temporary infrastructure within the mining footprint. It is proposed that the office/processing area (including offices, workshop, storerooms, wash bay, ablutions, parking area and crushing infrastructure) will occupy  $\pm 1$  ha of the proposed 5 ha area. This area will most likely be established at the foot of the mountain (within the mining boundary) as presented in the figure below.



Figure 4: Image showing the most likely position of the processing area (green shaded polygon) to be established on site. Where the yellow polygon indicates the MP footprint, and the red line the access road (image obtained from Google Earth).

Presently, the mining infrastructure/equipment is expected to consist of at least:

- ✘ A temporary wash bay;
- ✘ ADT trucks;
- ✘ Chemical ablation facilities;
- ✘ Containers used as site offices, workshops, and storage rooms;
- ✘ Crushing and screening plant (mobile);
- ✘ Drilling equipment (when needed);
- ✘ Earthmoving- and excavating equipment;
- ✘ Generators; and
- ✘ Water truck.

## 2. Operational Phase:

### 2.1 Mining Operation

As mentioned earlier, the objective of the project is the extraction of minerals containing the elements Ta, Li and Nb from Norrabees 1 and 2. These elements are primarily contained in the minerals spodumene ( $\text{Li}_2\text{O}$ ) and tantalite ( $\text{Ta}_2\text{O}_5$ ).

Both Norrabees 1 and 2 have extensive excavations that were historically mined.

The existing tailings at Norrabees 1 will be adequate to support the proposed operation for a 6-month period, after which blasting and extraction of in-situ material from the mining areas will become necessary. Such in-situ reserves from the Norrabees 1 and 2 mining pits is expected to adequately support the operation for an additional 18 months.

The mining method (of in-situ material) will comprise of conventional opencast mining where the overburden will be stripped and stockpiled. Hard rock will be drilled and blasted, followed by loading, hauling and dozer push over. Ore will be mined in benches to economic pit depth and will be conveyed to the crushing and processing facilities by either truck and shovel or by conveyor systems. Plant discard will be removed from the processing facility and placed on the overburden stockpiles to be used in the rehabilitation of the area.

## **2.2 Crushing on Site**

Continuous crushing will not be necessary on site. The Applicant will bring in mobile crushers, consisting of a jaw and cone crusher combination, to produce and stockpile material for future processing. It is expected that the crushers will be brought to site at 6-month intervals. The mineralized tailings material will be processed first, after which in-situ, newly produced, blasted, and mined material will be crushed. Material will be crushed to a <5.0 mm size with the 0,6 mm (undersize) material that will be screened out in preparation for DMS (Dense Media Separation Plant).

## **2.3 On-Site Processing**

Partial processing, primarily to produce a lithium and tantalum concentrate, will take place on site (within the 5 ha area). The concentrate will then be transported to a more convenient locality (Steinkopf/Springbok) to produce final saleable products consisting of a spodumene concentrate of > 6.0% Li<sub>2</sub>O and a tantalum product >5% Ta<sub>2</sub>O<sub>5</sub>.

Two material streams will be processed on site:

- ⌘ The 5 mm - 0,6 mm material will be processed with a Dense Media Separation Plant (DMS).

§ The spodumene (10%) and tantalite (350 ppm) in the undersize (16% of crushed material) will be upgraded on site with shaking tables.

Tests have confirmed that a product containing 5%  $\text{Li}_2\text{O}$  and 1 000 ppm  $\text{Ta}_2\text{O}_5$  can be produced with a 10 tph DMS plant (<5.0 mm material). The shaking table will produce a concentrate of a similar grade to this from the <0,6 mm undersize material. Both these actions represent mechanical, gravity based, recovery processes with water being the only consumable. A material for producing density, namely ferrisilicon (FeSi) is used by the DMS plant. FeSi, however, has no negative impact on the environment and is continuously magnetically recovered and recycled during the process.



*Figure 5: Image showing a typical DMS plant for producing spodumene concentrate (image obtained from Namli Exploration and Mining (Pty) Ltd).*

#### **2.4 Off-Site Processing**

The concentrate obtained from the on-site processing will be transported to a more controlled locality where electricity, adequate water supply and clean conditions are present. To produce a quality final product, an environment where the process can be well managed is necessary. The total material daily received from the mining site is expected to be about 30 t (25 t DMS concentrate and 3,5 t from the shaking table undersize). Daily processing capacity that is needed will therefore be in the range of about 3 t/hour on a daily 8 – 10 hour basis.

The production units that are needed for this processing stream will consist of a small VSI crushing unit to reduce all the material to <106 microns, after which the material will be treated with Falcon and Multi Gravity Separation units. Tantalum will be tapped from this circuit first, after which spodumene will be extracted with a second run of the tantalum tailings material. Two separate, marketable, Li and Ta/Nb products will be produced.

The off-site processing area will be established in an already developed area of Steinkopf or Springbok and will fall outside the jurisdiction of the mining permit area.

## **2.5 Water Use:**

An existing borehole with constant water supply is present near the mining operation. Approximately 5 000 m<sup>3</sup> water will be required for the DMS and shaking table operations per month of which 90% of the water will be recycled. A backup water supply is possible from the industrial-scale water pipeline (9 km) that transports water from the Henkries pump station to the towns of Steinkopf and Springbok. At present no water is proposed to be drawn from dams or other surface water sources/courses.

The water will be transported to the mining area (in a truck) where it will be stored in tanks until used. Apart from the processing water, some water (±550 m<sup>3</sup>/month) will also be needed for dust suppression at the processing plant.

Dust generation will, as far as possible, be managed through alternative dust suppression methods to restrict water use to the absolute minimum. These measures will include a combination of the following:

- ⌘ The speed of all mining equipment/vehicles will be restricted to 40 km/h on the access road to minimize dust generation;
- ⌘ Site management will attempt to lessen denuded areas (dust source) to the absolute minimum;
- ⌘ Strips of used conveyor belts can be attached to the drop end of the crusher plant where crushed material falls onto the stockpiles. This lessens the blowing of fines from the minerals;
- ⌘ Compacted dust will weekly be cleaned of the crusher plant to eliminate it as a dust source.

Under very windy/dusty conditions the permit holder might have to substitute the above mentioned dust suppression methods with the spraying of water, in which case a water truck will moisten the problem areas, and sprayers at the crusher plant will moisten the material to alleviate dust generation at the conveyor belts. The water truck driver will receive proper training to ensure effective use of the water on problem areas preventing water wastage.

⌘ **Electricity Use:**

The proposed project will make use of diesel generators to power the mining infrastructure. All generators will have secondary containment in the form of a bund wall/drip tray that can contain 110% of the generator's maximum fuel capacity.

⌘ **Servicing and Maintenance:**

A temporary workshop and wash bay will be established on site where minor servicing and emergency repairs of mining related equipment/machinery will take place. The wash bay will have an impermeable floor and drain into an oil sump that will be serviced by a qualified contractor. No wash water will be allowed to drain into the surrounding environment. No bulk storing of fuel (>30 000 l) will take place on site, and any chemicals needed at the workshop will be stored in accordance with the product specific safety data sheet specifications in temporary containers/secured cages.

⌘ **Waste Handling:**

Solid (general) waste, generated during the operational phase, will be contained in sealable refuse bins that will be placed at the office area until the waste is transported to a recognised general waste landfill site. A recognized contractor will service the chemical toilets that will serve as ablution facilities to the employees.

Due to the nature of the project very little generation of hazardous waste is expected and will mainly be the result of accidental spillages or breakdowns. Such contaminated areas will be cleaned up immediately (within two hours of the occurrence) and the contaminated soil will be contained in designated hazardous waste containers that will be kept in a bunded area with

impermeable surface until it is removed from site by a registered hazardous waste handling contractor to an approved facility.

***Decommissioning Phase:***

The decommissioning phase will entail the reinstatement of the processing area by removing the stockpiled material, and site infrastructure/equipment and landscaping the disturbed footprints. Due to the impracticality of importing large volumes of fill to restore excavations to their original topography, the rehabilitation option is to develop the site into a minor landscape feature that is safe to future land users. This will entail creating a series of irregular benches along the excavation faces, the top edges of each face being blasted away to form scree slopes on the benches below, thereby reducing the overall face angle. The benches will be top-dressed with overburden and vegetated with an appropriate seed mix (see Appendix J for the Closure Plan).

The decommissioning activities will therefore consist of the following:

- ⌘ Sloping and landscaping the excavations;
- ⌘ Removing all stockpiled material;
- ⌘ Removing all mining machinery and equipment from site;
- ⌘ Landscaping all disturbed areas;
- ⌘ Vegetating the reinstated area; and
- ⌘ Controlling/monitoring the invasive plant species.

The future land use of the proposed area will be agriculture. Upon landscaping, the area around the excavation will be available for grazing purposes (if needed), and the planting of the cover crop will tie in with the proposed land use.

The Applicant will comply with the minimum closure objectives as prescribed by the DMRE and detailed below:

⌘ Rehabilitation of the excavated area:

The excavated area must serve as a final depositing area for the placement of overburden. Rocks and coarse material removed from the excavation must be dumped into the excavation.

No waste may be permitted to be deposited in the excavations.

Once overburden, rocks and coarse natural materials has been added to the excavation and it was profiled with acceptable contours and erosion control



measures, the topsoil previously stored must be returned to its original depth over the area.

The area must be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local or adapted indigenous seed mix to propagate the locally or regionally occurring flora, should natural vegetation not re-establish within 6 months from closure of the site.

If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a vegetation seed mix to his or her specification.

✂ Rehabilitation of plant, office, and service areas:

Coarse natural material used for the construction of ramps must be removed and dumped into the excavations.

Stockpiles must be removed during the decommissioning phase, the area ripped, and the topsoil returned to its original depth to provide a growth medium.

On completion of operations, all structures or objects shall be dealt with in accordance with section 44 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002):

- Where sites have been rendered devoid of vegetation/grass or where soils have been compacted owing to traffic, the surface shall be scarified or ripped.
- Areas containing French drains shall be compacted and covered with a final layer of topsoil to a height of 10 cm above the surrounding ground surface.
- The site shall be seeded with a vegetation seed mix adapted to reflect the local indigenous flora.

Photographs of the camp and office sites, before and during the mining operation and after rehabilitation, shall be taken at selected fixed points and kept on record for the information of the DMRE Regional Manager.

On completion of mining operations, the surface of these areas, if compacted due to hauling and dumping operations, shall be scarified to a depth of at least 200 mm

and graded to an even surface condition. Where applicable/possible topsoil needs to be returned to its original depth over the area.

The area shall then be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local, adapted indigenous seed mix.

If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the DMRE Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a seed mix to his or her specification.

⌘ Final rehabilitation:

Rehabilitation of the surface area shall entail landscaping, levelling, top dressing, land preparation, seeding (if required) and maintenance, and invasive plant species clearing.

All mining equipment, and other items used during the mining period must be removed from the site (section 44 of the MPRDA).

Waste material of any description, including receptacles, scrap, rubble, and tyres, must be removed entirely from the mining area, and disposed of at a recognized landfill facility. It will not be permitted to be buried or burned on the site.

The management of invasive plant species must be done in a sporadic manner during the life of the mining activities. Species regarded as Category 1a and 1b invasive species in terms of NEM:BA (National Environmental Management: Biodiversity Act 10 of 2004 and regulations applicable thereto) will be eradicated from the site.

Final rehabilitation shall be completed within a period specified by the Regional Manager.

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

will be submitted in terms of Regulation 62 of the MPRDA, 2002, and Government Notice 940 of NEMA, 1998 (as amended).

### e) Policy and Legislative Context

Table 4: Policy and Legislative Context.

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED	HOW DOES THIS DEVELOPMENT COMPLY AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.
(a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process)		(E.g. in terms of the National Water Act a Water Use License has/has not been applied for)
Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983).	Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity: <i>Physical Environment – Geology and Soil.</i>  Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – <i>Management of invader plant species.</i>	The mitigation measures proposed for the site includes specifications of the CARA, 1983.
Integrated Environmental Management Guideline: Guideline on Need and Desirability (2017).	Part A(1)(f) Need and desirability of the proposed activity.	The need and desirability of the proposed project was assessed in terms of this guideline.
Mine Health and Safety Act, 1996 (Act No 29 of 1996) read together with applicable amendments and regulations thereto including relevant OHSA regulations.	Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – <i>Management of Health and Safety Risks.</i>	The mitigation measures proposed for the site includes specifications of the MHSA, 1996
Mineral and Petroleum Resources Development Act, 2002, (Act No. 28 of 2002) read together with applicable amendments and regulations thereto.  § Section 27	Part A(1)(d) Description of the scope of the proposed overall activity	Application for a mining permit submitted to DMRE-NC.  Ref No: NC 30/5/1/3/2/10950 MP
Nama Khoi Municipality Integrated Development Plan (IDP) (2019/2020)	Part A(1)(h)(iv)(1)(a) Type of environment affected by the	The description of the study area's socio-economic status is in accordance with that of the IDP.

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED	HOW DOES THIS DEVELOPMENT COMPLY AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.
	proposed activity – <i>Socio-economic Environment</i> .	
<p>National Environmental Management Act,1998 (Act No. 107 of 1998) and the Environmental Impact Assessment Regulations, 2014 (as amended)</p> <ul style="list-style-type: none"> <li>⌘ GNR 327 Listing Notice 1 Activity 21</li> <li>⌘ GNR 327 Listing Notice 1 Activity 21F</li> <li>⌘ GNR 327 Listing Notice 1 Activity 26</li> <li>⌘ GNR 327 Listing Notice 1 Activity 27</li> <li>⌘ GNR 324 Listing Notice 3 Activity 12</li> <li>⌘ GNR 324 Listing Notice 3 Activity 18</li> </ul>	Part A(1)(d)(i) Listed and specified activities.	<p>Application for environmental authorisation submitted to DMRE-NC.</p> <p>Ref No: NC 30/5/1/3/2/10950 MP</p>
<p>National Environmental Management: Air Quality Control Act, 2004 (Act No 39 of 2004) read together with applicable amendments and regulations thereto specifically the National Dust Control Regulations, GN No R827</p>	<p>Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – <i>Air and Noise Quality</i>.</p> <p>Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – <i>Fugitive Dust Emission Mitigation Measures</i>.</p>	The mitigation measures proposed for the site consider the NEM:AQA, 2004 and the National Dust Control Regulations.
<p>National Environmental Management Act: Biodiversity Act, 2004 (Act No. 10 of 2004) read together with applicable amendments and regulations thereto.</p>	<p>Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity - <i>Biological Environment</i></p> <p>Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – <i>Management of Vegetation Removal &amp; Management of invader plant species</i>.</p>	The mitigation measures proposed for the site includes specifications of the NEM:BA, 2004.
<p>National Environmental Management: Waste Act, 2008 (Act No 59 of 2008) read together with applicable amendments and regulations thereto.</p> <p>NEM:WA, 2008: National norms and standards for the storage of waste (GN 926)</p>	<p>Part A(1)(d)(ii) Description of the activities to be undertaken.</p> <p>Part A(1)(h)(viii) The possible mitigation measures that could</p>	<p>Application for a waste licence submitted to DMRE-NC.</p> <p>Ref No: NC 30/5/1/3/2/10950 MP</p>

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED	HOW DOES THIS DEVELOPMENT COMPLY AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.
<p>§ Category A Activity 15</p>	<p>be applied on the level of risk – <i>Waste Management</i>.</p>	<p>The mitigation measures proposed for the site consider the NEM:WA.</p>
<p>National Heritage Resources Act. 1999 (Act No 25 of 1999).</p>	<p>Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – <i>Human Environment</i>.</p> <p>Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – <i>Archaeological, Heritage and Palaeontological Aspects</i>.</p>	<p>The mitigation measures proposed for the site includes specifications of the NHRA, 1999.</p>
<p>National Water Act, 1998 (Act No 36 of 1998) read together with applicable amendments and regulations thereto.</p>	<p>Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – <i>Hydrology</i>.</p> <p>Part B(1)(d)(iii) Has a water use licence been applied for?</p>	<p>The mitigation measures proposed for the site includes specifications of the NWA, 1998.</p>
<p>Northern Cape Nature Conservation Act, 2009 (Act No 9 of 2009)</p>	<p>Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity - <i>Biological Environment</i></p> <p>Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – <i>Management of Vegetation Removal</i>.</p>	<p>The mitigation measures proposed for the site consider the NCNCA, 2009.</p>
<p>Public Participation Guideline in terms of the NEMA EIA Regulations</p>	<p>Part A(1)(h)(ii) Details of the Public Participation Process Followed</p>	<p>Public participation was/will be conducted in accordance with the guidelines published in terms of the NEMA EIA Regulations.</p>

**f) Need and desirability of the proposed activities.**

(Describe Methodology or technology to be employed, including the type of commodity to be prospected/mined and for a linear activity, a description of the route of the activity)

As mentioned earlier, the objective of the project is the extraction of minerals containing the elements Ta, Li and Nb from two existing deposits currently known as Norrabees 1 and 2, on the earmarked property. These elements are primarily contained in the minerals spodumene ( $\text{Li}_2\text{O}$ ) and tantalite ( $\text{Ta}_2\text{O}_5$ ). A large volume of tailings material, that contain spodumene and tantalite, are present at Norrabees 1. Tests and analyses have indicated that it will be viable to extract Li, Ta and Nb from this, easily accessible, material. Once the tailings are processed, the ore material will be extracted from the existing mining excavations.

Lithium is used in batteries, ceramics, greases, alloys and many more, of which end uses include (amongst others) cars, electronics, and energy storage. The demand for lithium-ion batteries has transformed the lithium market in less than a decade. According to a presentation by MinEx Consulting on the geology and economics of lithium production, lithium-ion batteries currently account for 45% of lithium demand. Lithium-ion batteries are forecast to dominate the lithium market over the next decade (Sykes, 2019). Sykes reports that geologically 'brine' salars and 'hard rock' pegmatites (such as those at Steinkopf) remain the most important lithium deposit types in terms of production and undeveloped resources. Spodumene pegmatites in Australia are the fastest growing source of supply, with China being the largest user/importer. The current "Lithium Boom" raised lithium prices to a  $\pm 62$  year high in 2018, with the price still climbing.

The Steinkopf spodumene pegmatite offers the Applicant an excellent source of Ta, Li, Nb, available in an already disturbed setting from where the minerals can be mined with the least possible impact on the environment.

The development of the mine will create at least fifteen job opportunities to locals, and in doing so the proposed operation will contribute to the local economy of the area, both directly and through the multiplier effect that its presence will create. Equipment and supplies will be purchased locally, and wages will be spent at local businesses, generating both jobs and income in the area.

The need and desirability of the proposed project was assessed in terms of the National Department of Environmental Affairs' Guideline on Need and Desirability (first version published in terms of section 24J of the NEMA in 2014, and second version in 2017)). The following table shows the questions that were considered in this regard.

Table 5: Need and desirability determination.

1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES		
How will this development impact on the ecological integrity of the area?		
Question	Response	Level of Desirability
How were ecological integrity considerations taken into account?	<p>As discussed under Part A(1)(g)(iv)(1)(a) <i>Type of environment affected by the proposed activity</i>, the Mining and Biodiversity Map shows that the proposed footprint extends over an area of high biodiversity importance, is within a CBA, and falls within a NPAES area. Ground truthing, however confirmed that the earmarked area is highly disturbed and of low-medium conservation priority solely because of the protected plant species that persist in the area. The TBIA concluded that the potential impacts of the mine on the receiving environment are of low significance should the proposed mitigation measures be implemented. In support of this, mining will be contained to the already disturbed areas as mentioned in this report.</p> <p>Also refer to:</p> <ul style="list-style-type: none"> <li>∞ Part A(1)(d)(ii) Description of the activities to be undertaken – Clearing of Vegetation;</li> <li>∞ Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – Mining and Biodiversity;</li> <li>∞ Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – Biodiversity Conservation Areas;</li> <li>∞ Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – Groundcover;</li> <li>∞ Part A(1)(h)(iv)(1)(c) Description of specific environmental features and infrastructure on the site – Site Specific Terrestrial Biodiversity, Conservation Areas, and Groundcover,</li> <li>∞ Part A(1)(h)(viii) The possible mitigation measures that could be applied and the level of risk.</li> </ul>	Highly Desirable
How will this development disturb or enhance ecosystems and/or result in the loss or protection of biological diversity?		
How will this development pollute and/or degrade the biophysical environment?	<p>Mining will be contained to the already disturbed areas, and no pollution or degradation of the biophysical environment is expected. Partial processing will take place on site to produce a Li and Ta concentrate. FeSi will be used as a densifier, that has according to the specialists no negative impact on the environment and is continuously magnetically recovered and recycled during the process. Final processing will take place at an off-site processing area. General waste generated during the operational phase will be contained in sealable refuse bins to be delivered to a recognised landfill site, and very little (to no)</p>	Highly Desirable
What waste will be generated by this development?		Highly Desirable

## 1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES

How will this development impact on the ecological integrity of the area?

Question	Response	Level of Desirability
	hazardous waste is expected to be generated at the mine. However all waste will be contained and removed from site to recognised waste handling facilities. No waste will be left at the property after mining has ceased.	
How will this development disturb or enhance landscapes and/or sites that constitute the nation's cultural heritage?	Should the mitigation measures proposed by the HIA be implemented, the project will have no impact on any landscapes that constitute the nation's cultural heritage.	Highly Desirable
How will this development use and/or impact on non-renewable natural resources?	According to the geologists, the existing tailings at the site will sustain the mine for approximately 6 months, while the in-situ reserves is expected to adequately support the operation for an additional 18 months. Should any delays occur in the mining process, the Applicant will apply for the renewal of the mining permit when needed.	Highly Desirable
How will this development use and/or impact on renewable natural resources and the ecosystem of which they are part?	It is proposed that approximately 5 000 m <sup>3</sup> water will be needed per month for the DMS plant of which 90% of the water will be recycled. Apart from the processing water, some water (±550 m <sup>3</sup> /month) will also be needed for dust suppression at the processing plant. As mentioned earlier, the contractor will strive to manage dust generation through alternative suppression methods to restrict water use to the absolute minimum. Presently, it is proposed that water will be obtained from an existing borehole near the site.	Acceptable
How were a risk-averse and cautious approach applied in terms of ecological impacts?	Mining will be contained to the already disturbed areas. The mining of the area will also lead to the subsequent rehabilitation of areas that were previously abandoned without any rehabilitation done. Prior to mining the Applicant will apply for a plant removal permit, should any of the identified plants of importance be present within the earmarked footprint. The project will not impact on the surrounding CBA/NPAESFA areas.	Highly Desirable
How will the ecological impacts resulting from this development impact on people's environmental right?	Due to the remote nature of the mine, and as mining will be contained to the already disturbed area, no impacts were identified that could adversely affect the people's environmental right.	Highly Desirable



## 1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES

How will this development impact on the ecological integrity of the area?

Question	Response	Level of Desirability
Describe the linkages and dependencies between human wellbeing, livelihoods, and ecosystem services applicable to the area in question and how the development's ecological impacts will result in socio-economic impacts.	If approved, the mine will create at least fifteen new work opportunities to locals. It is proposed that the mine will contribute to the local economy of the area, both directly and through the multiplier effect that its presence will create. Equipment and supplies will be purchased locally, and wages will be spent at local businesses, generating both jobs and income in the area.	Highly Desirable
Based on all the above, how will this development positively or negatively impact on ecological integrity objectives/targets/considerations of the area?	If the mitigation measures proposed in this document are adhered to, the project entails the mining of the already disturbed area (5 ha) without influencing the status of the ecosystem type, red data species or the conservation targets set out for a CBA area.	Highly Desirable
Considering the need to secure ecological integrity and a healthy biophysical environment, describe how the alternatives identified, resulted in the selection of the "best practicable environmental option" in terms of ecological considerations	<p>Also refer to:</p> <ul style="list-style-type: none"> <li>∞ Part A(1)(d)(ii) Description of the activities to be undertaken – Clearing of Vegetation;</li> <li>∞ Part A(1)(h)(i) Details of the development footprint alternatives considered;</li> <li>∞ Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – Mining and Biodiversity;</li> <li>∞ Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – Biodiversity Conservation Areas;</li> <li>∞ Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – Groundcover;</li> <li>∞ Part A(1)(h)(iv)(1)(c) Description of specific environmental features and infrastructure on the site – Site Specific Terrestrial Biodiversity, Conservation Areas, and Groundcover.</li> </ul>	

## 2. PROMOTING JUSTIFIABLE ECONOMIC AND SOCIAL DEVELOPMENT

What is the socio-economic context of the area?

Question	Response	Level of Desirability
What is the socio-economic context of the area?	Please refer to Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – Socio-Economic Environment.	Highly Desirable
Considering the socio-economic context, what will the socio-economic impacts be of the development, and specifically also on the socio-economic objectives of the area?	If approved, the mine will create at least fifteen new work opportunities to locals. It is proposed that the mine will contribute to the local economy of the area, both directly and through the multiplier effect that its presence will create. Equipment and supplies will be purchased locally, and wages will be spent at local businesses, generating both jobs and income in the area. Although the proposed mining operation (mining permit) is of small scale and short term (maximum of 5 years), the successful mining of the area could lead to the development of a larger commercial mine that will be long-term and create substantially more work opportunities within the community. Work creation is of utmost importance in an area with an unemployment rate of $\pm 23\%$ .	
How will this development address the specific physical, psychological, developmental, cultural and social needs and interests of the relevant communities?		
Will the development result in equitable impact distribution, in the short- and long-term?	The proposed mine will be operated in a socially and economically sustainable manner during both the short- and long term, creating at least 15 new employment opportunities. Further to this the mine will operate in accordance with the MPRDA, as well as the provisions of the Employment Equity Act, 1998 (as amended) giving preference to historically disadvantaged employees from within the local area in terms of employment.	Highly Desirable
In terms of location, describe how the placement of the proposed development will contribute to the area.	Mining the abandoned Norrabees 1 and 2 sources will lead to the rehabilitation of previously mined areas, as well as the removal of the existing tailings on site, the project will create employment opportunities, and the sales of the material will directly and indirectly promote the economy of the area and country.	Highly Desirable
How were a risk-averse and cautious approach applied in terms of socio-economic impacts?	No negative socio-economic impacts could, at this stage, be identified that cannot be managed through the implementation of mitigation measures included in this report.	Highly Desirable

## 2. PROMOTING JUSTIFIABLE ECONOMIC AND SOCIAL DEVELOPMENT

What is the socio-economic context of the area?

Question	Response	Level of Desirability
How will the socio-economic impacts resulting from this development impact on people's environmental right?	No negative socio-economic impacts have been identified that could adversely affect the environmental rights of the people. As mentioned earlier, the project will however have various positive socio-economic related impacts.	Highly Desirable
Considering the linkages and dependencies between human wellbeing, livelihoods and ecosystem services, describe the linkages and dependencies applicable to the area in question and how the development's socio-economic impacts will result in ecological impacts?	As mentioned earlier, if the mitigation measures proposed in this document are adhered to, the project entails the mining of the already disturbed area (5 ha) without influencing the status of the ecosystem type, red data species or the conservation targets set out for a CBA area.  Also refer to: <ul style="list-style-type: none"> <li>∞ Part A(1)(h)(i) Details of the development footprint alternatives considered;</li> <li>∞ Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – Mining and Biodiversity;</li> <li>∞ Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – Biodiversity Conservation Areas;</li> <li>∞ Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – Groundcover;</li> <li>∞ Part A(1)(h)(iv)(1)(c) Description of specific environmental features and infrastructure on the site – Site Specific Terrestrial Biodiversity, Conservation Areas, and Groundcover.</li> </ul>	Highly Desirable
What measures were taken to pursue the selection of the “best practicable environmental option” in terms of socio-economic considerations?	The mitigation measures proposed in this report are compiled in consultation with the specialists to reduce the potential impact that the proposed activity may have on the receiving environment. Once approved, the management outcomes are legally binding to be implemented by site management for the duration of the site establishment-, operational- and decommissioning phases.	Highly Desirable
What measures were taken to pursue environmental justice so that adverse environmental impacts shall not be distributed in	Also refer to: <ul style="list-style-type: none"> <li>∞ Part A(1)(h)(vii) The positive and negative impacts that the proposed activity and alternatives will have on the environmental and the community that may be affected.</li> </ul>	Highly Desirable

## 2. PROMOTING JUSTIFIABLE ECONOMIC AND SOCIAL DEVELOPMENT

What is the socio-economic context of the area?

Question	Response	Level of Desirability
such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons?	∞ Part A(1)(g)(viii) The possible mitigation measures that could be applied and the level of risk.	
What measures were taken to pursue equitable access to environmental resources, benefits and services to meet basic human needs and ensure human wellbeing, and what special measures were taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination?	The mine will operate in accordance with, amongst others, the following: <ul style="list-style-type: none"> <li>❖ CARA, 1983 – to ensure agriculture related compliance;</li> <li>❖ Financial Provision Regulations, 2015 – to ensure compliance in terms of rehabilitation;</li> <li>❖ Mine Health and Safety Act, 1996 (as amended) – to ensure employee safety;</li> <li>❖ MPRDA, 2002 (as amended) – to ensure mining related compliance;</li> <li>❖ NEM:AQA, 2004 – to ensure air quality related compliance;</li> <li>❖ NEM:BA, 2004 – to ensure biodiversity related compliance;</li> <li>❖ NEM:WA, 2008 – to ensure waste related compliance;</li> <li>❖ NEMA, 1998 (as amended) – to ensure environmental related compliance;</li> <li>❖ NHRA, 1999 – to ensure archaeological and cultural related compliance.</li> </ul>	Highly Desirable
What measures were taken to ensure that the responsibility for the environmental health and safety consequences of the development has been addressed throughout the development's life cycle?	Should the proposed application be approved the mining area will be subject to compliance with the above listed, as well as all other mining related legislation.	
Considering the interests, needs and values of all the interested and affected parties, describe how the development will allow for opportunities for all the segments of the community that is consistent with the priority needs of the local area.	Presently, it is proposed that the mine will create a minimum of fifteen employment opportunities to locals. In a municipal area with an unemployment rate of ±23%, new job opportunities are of high significance. Further to this, the procurement progression plan of the Applicant supports local enterprises, of which preferences are given to HDSA & women owned local suppliers (where possible).	Highly Desirable

## 2. PROMOTING JUSTIFIABLE ECONOMIC AND SOCIAL DEVELOPMENT

What is the socio-economic context of the area?

Question	Response	Level of Desirability
What measures have been taken to ensure that current and/or future workers will be informed of work that potentially might be harmful to human health or the environment or of dangers associated with the work, and what measures have been taken to ensure that the right of workers to refuse such work will be respected and protected.	The mine will operate in accordance with the specifications of the Mine Health and Safety Act, 1996 as well as the Occupational Health and Safety Act, 1993. Site management will arrange regular toolbox talks with the site personnel regarding the work to be performed and the environment in which the work will take place. Grievances/concerns can be lodged during the toolbox sessions and site meetings.	Highly Desirable
Describe how the development will impact on job creation in terms of, amongst other aspects?	As mentioned earlier, the proposed mine will appoint ±15 employees from the surrounding area.	Highly Desirable
What measures were taken to ensure that the environment will be held in public trust for the people, that the beneficial use of environmental resources will serve the public interest, and that the environment will be protected as the people's common heritage.	The proposed mine will operate under a valid environmental authorisation, mining permit, and waste licence to be issued by the DMRE-NC. Compliance of the site with the approved EMPR, and EA conditions will be reported on as per departmental specifications. Considering this, the proposed activity will take place in an environmentally sustainable manner with the least possible impact on the receiving environment.	Highly Desirable
Are the mitigation measures proposed realistic and what long-term environmental legacy and managed burden will be left.	It is believed that the mitigation measures proposed in this document is realistic and can be implemented (when applicable) by the mine. As mentioned earlier, due to the impracticality of importing large volumes of fill to restore the excavations to their original topography, the rehabilitation option is to develop the pit/s into a minor landscape feature that will be rendered safe upon final site closure. The benches will be top-dressed with overburden and vegetated with an appropriate (indigenous	Highly Desirable

## 2. PROMOTING JUSTIFIABLE ECONOMIC AND SOCIAL DEVELOPMENT

What is the socio-economic context of the area?

Question	Response	Level of Desirability
	species) seed mix upon closure. If the disturbed areas are successfully rehabilitated no long-term management burden will be left behind.	
What measures were taken to ensure that the costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution environmental damage or adverse health effects will be paid for by those responsible for harming the environment.	In terms of Section 41 of the MPRDA, 2002 a mining permit holder must submit a financial provision to the DMRE that is sufficient to rehabilitate or manage the negative environmental impacts related to the mining activity. Upon approval of this application, the Applicant will lodge a financial guarantee with the DMRE that will be deemed sufficient to cover the financial provision amount needed to rehabilitate the mining footprint. The environmental liability of the operation will annually be reviewed and if a shortfall is indicated, the guarantee will be accordingly adjusted.	Highly Desirable
Considering the need to secure ecological integrity and a healthy bio-physical environment, describe how the alternatives identified, resulted in the selection of the best practicable environmental option in terms of socio-economic considerations	If the mitigation measures proposed in this document are adhered to, the proposal entails the mining of the 5 ha area without influencing the status of the ecosystem type, red data species or the conservation targets set out for a CBA/NPAESFA area.  Also refer to: <ul style="list-style-type: none"> <li>∞ Part A(1)(h)(vii) The positive and negative impacts that the proposed activity and alternatives will have on the environmental and the community that may be affected.</li> </ul>	Highly Desirable
Describe the positive and negative cumulative socio-economic impacts bearing in mind the size, scale, scope and nature of the project in relation to its location and other planned developments in the area.	Refer to the discussion under Part A(1)(g)(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.	Highly Desirable

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

Site Alternative 1 entails the development of the proposed mine over 5 ha of the farm Steinkopf No 22 within proposed GPS coordinates (Table 3). As no permanent infrastructure will be established, the production rate will dictate the layout of the proposed footprint area.

The proposed site was identified as the preferred and only site alternative based on the following:

- ⌘ The project proposal was sited over the known deposits of Norrabees 1 and 2, to allow optimal access to the sought after minerals. Both Norrabees 1 and 2 were historically excavated and abandoned without rehabilitation. Therefore, moving the permit area to an alternative site will remove it from the optimal resource, as well as result in the mining of another area while the current excavations have not yet been exhausted.
- ⌘ The Applicant proposes to mine the existing tailings at the site for ±6 months prior to implementing direct mining methods. Considering this, the proposed project will entail the reprocessing and reclamation of abandoned tailings on the site that will directly contribute to the rehabilitation of the altered area, as well as securing unsafe areas.
- ⌘ Confining the proposed development footprint to the already disturbed areas is deemed the most sustainable development option, considering the highly sensitive nature (CBA & NPAES) of the surrounding vegetated areas.
- ⌘ The most southern part of the application footprint incorporates a level area that would allow the establishment of the processing area.
- ⌘ The existing roads and tracks can be used to access the proposed mining area, and no new roads needs to be made.
- ⌘ The remote nature of the earmarked area lessens the potential of negative impacts regarding air, noise, and visual on the surrounding environment.
- ⌘ No rivers, streams or other watercourses were identified within 100 m, or wetlands within 500 m of the proposed mining footprint.

The use of mobile/temporary infrastructure/equipment at the proposed mining operation is deemed the most viable and preferred project alternative due to the following:

- ⌘ The Applicant will be able to move the infrastructure within the boundaries of the mining area as mining of the mineral progresses.
- ⌘ The decommissioning phase is facilitated as the removal of infrastructure and mobile equipment from the mining area is easy, of low cost and highly effective.

During the environmental impact assessment process the feasibility of the proposed site was assessed to identify fatal flaws that are deemed as severe as to prevent the activity continuing or warrant a site- or project alternative. The outcome of the assessment showed that should the mitigation measures and monitoring programmes proposed in this document be implemented, no fatal flaws could be identified that prevents the activity continuing. Considering the above, the mining proposal was updated to incorporate the project related mitigation measures and monitoring programmes identified during the assessment process. The preferred development footprint was subsequently finalized and is depicted on the attached site activities plan (Appendix C).

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

NB!! – This section is about the determination of the specific site layout and the location of infrastructure and activities on site, having taken into consideration the issues raised by interested and affected parties, and the consideration of alternatives to the initially proposed site layout.

**i) Details of the development footprint alternatives considered.**

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

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

**Site Alternative 1 (Preferred and Only Site Alternative):** Site Alternative 1 entails the development of the proposed mine over 5 ha of the farm Steinkopf No 22 within the GPS coordinates as listed in Table 3 and depicted in Figure 2.

Site Alternative 1 was identified during the assessment phase of the prospecting campaign and the environmental impact assessment for the proposed mining operation, by the Applicant and project team, as the **preferred and only site alternative** due to the following:

- ⌘ The project proposal was sited over the known deposits of Norrabees 1 and 2, to allow optimal access to the sought after minerals. Both Norrabees 1 and 2 was historically excavated and abandoned without rehabilitation. Therefore, moving the permit area to an alternative site will remove it from the optimal resource, as well as result in the mining of another area while the current excavations have not yet been exhausted.
- ⌘ The Applicant proposes to mine the existing tailings at the site for ±6 months prior to implementing direct mining methods. Considering this, the proposed project will



entail the reprocessing and reclamation of abandoned tailings on the site that will directly contribute to the rehabilitation of the altered area, as well as securing unsafe areas.

- ⌘ Confining the proposed development footprint to the already disturbed areas is deemed the most sustainable development option, considering the highly sensitive nature (CBA & NPAES) of the surrounding vegetated areas.
- ⌘ The most southern part of the application footprint incorporates a level area that would allow the establishment of the processing area.
- ⌘ The existing roads and tracks can be used to access the proposed mining area, and no new roads needs to be made.
- ⌘ The remote nature of the earmarked area lessens the potential of negative impacts regarding air, noise, and visual on the surrounding environment.
- ⌘ No rivers, streams or other watercourses were identified within 100 m, or wetlands within 500 m of the proposed mining footprint.

Considering the above mentioned, S1 is believed to be the most practical and only viable site alternative as the resource has already been proven to be present and of good grade, the area is already disturbed, and the environmental related impacts are acceptable.

**Project Alternative:** The use of temporary infrastructure and mobile equipment (Preferred Alternative) was compared to the use of permanent infrastructure and fixed equipment, at the mining footprint, for the operational phase of the project.

- ⌘ Temporary infrastructure/equipment entails the use of infrastructure and/or machinery that is either track-based or can be removed without difficulty. The positive aspects associated with the use of temporary infrastructure and mobile equipment firstly enables the Applicant to move the infrastructure within the boundaries of the mining area as mining of the mineral progresses. Secondly the decommissioning phase is facilitated as the removal of infrastructure and mobile equipment from the mining area is easy, of low cost and highly effective.
- ⌘ In contrast to the above, the use of permanent infrastructure and fixed equipment will increase the impact of the proposed project on the environment as it will entail the establishment of more structures, lengthen the period required for rehabilitation

as well as increase the rehabilitation cost as the permanent structures either must be decommissioned or be maintained after the closure of the site. Due to the small scale of the mining area, fixed equipment may also be exposed to flyrock damage during blasting events.

Considering the above, the use of mobile/temporary infrastructure/equipment at the proposed mining operation is deemed the most viable and preferred project alternative.

**No-go Alternative:** The no-go alternative entails no change to the *status quo* and is therefore a real alternative that must be considered. Apart from the income to be generated by the Applicant, the project will also promote the South African Mining Industry with specific focus on the lithium market. If however, the no-go alternative is implemented the Applicant will not be able to exploit the mineral resources on the property.

The no-go alternative was not deemed to be the preferred alternative as:

- ∞ the Applicant will not be able to mine the deposits available within the proposed mining area, or supply in the demand of the industry;
- ∞ the proposed job opportunities (±15), associated with the development of the mine will be lost to the surrounding community;
- ∞ the abandoned Norrabees 1 and 2 deposits will remain a safety risk in the surrounding area without the potential of being rehabilitated.

## 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.

Thus far, initial public participation entailed the placement of Afrikaans and English site notices at Goodhouse, Violsdrif and Steinkopf. Site notices were also delivered to the ward councillor of Concordia. The project will be advertised in the Plattelander and the Gemsbok, and the ward councillors (and some community members) of wards 1 - 3, as well as the acting municipal manager of the Nama Khoi Municipality were supplied with introductory pamphlets regarding the application.

In accordance with the timeframes stipulated in the EIA Regulations of December 2014 (as amended) the Draft Basic Assessment Report (DBAR) was compiled and will be distributed for comment and perusal to the I&AP's and stakeholders listed below. A hard copy of the document (DBAR & EMPR) will also be available at the Steinkopf

Library for ease of reference. A 30-day commenting period, ending 07 July 2022, will be allowed for perusal of the documentation and submission of comments. The comments received on the DBAR will be incorporated into the Final Basic Assessment Report (FBAR) to be submitted for decision making to DMRE. The following table provides a list of the I&AP's and stakeholders that will be invited to comment on the DBAR:

Table 6: List of the I&AP's and stakeholders that will be invited to comment on the DBAR.

SURROUNDING LANDOWNERS & INTERESTED AND AFFECTED PARTIES	STAKEHOLDERS
<p><b><u>Landowner:</u></b></p> <ul style="list-style-type: none"> <li>⌘ Community of Steinkopf c/o Nama Khoi Municipality Steinkopf No 22 &amp; the ward councillor of Ward 3.</li> </ul> <p><b><u>Surrounding landowners &amp; lawful occupiers:</u></b></p> <ul style="list-style-type: none"> <li>⌘ Community of Steinkopf (c/o councillor of Ward 3);</li> <li>⌘ Community of Vioolsdrif (c/o councillor of Ward 2);</li> <li>⌘ Community of Goodhouse (c/o councillor of Ward 3);</li> <li>⌘ Community of Concordia (c/o councillor of Ward 1);</li> <li>⌘ Verde Bitterfontein (Pty) Ltd (lawful occupier);</li> <li>⌘ Mr MD van Schalkwyk (surrounding landowner); Remaining Extent of Nigramoep No 136.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Department of Agriculture, Environmental Affairs, Rural Development and Land Reform – Kimberley;</li> <li>⌘ Department of Agriculture, Environmental Affairs, Rural Development and Land Reform – Springbok;</li> <li>⌘ Department of Economic Development and Tourism – Kimberley;</li> <li>⌘ Department of Economic Development and Tourism – Upington;</li> <li>⌘ Department of Roads and Public Works – Kimberley;</li> <li>⌘ Department of Roads and Public Works – Springbok;</li> <li>⌘ Department of Water and Sanitation – Kimberley;</li> <li>⌘ Department of Water and Sanitation – Upington;</li> <li>⌘ Department of Labour – Kimberley;</li> <li>⌘ Department of Labour – Springbok;</li> <li>⌘ Namakwa District Municipality;</li> <li>⌘ Nama Khoi Local Municipality;</li> <li>⌘ Nama Khoi Ward Councillors (Ward 1 – 3);</li> <li>⌘ Regional Land Claims Commission – NC;</li> <li>⌘ SAFTA (Pty) Ltd;</li> <li>⌘ Eskom;</li> <li>⌘ South African Heritage Resources Agency.</li> </ul>

### iii) Summary of issues raised by I&APs

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

Table 7: Summary of issues raised by IAPs

Interested and Affected Parties List the name of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted	Date Received	Comments	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
<b>AFFECTED PARTIES</b>	X	-	-	-	-
<b>Landowner/s</b>		-	-	-	-
Community of Steinkopf c/o Nama Khoi Municipality & ward councillor of Ward 3. ✎ Steinkopf No 22	X		Any comments received will be incorporated into the FBAR.		
<b>Lawful occupier/s of the land</b>		-	-	-	-
Verde Bitterfontein (Pty) Ltd ✎ Lawful occupier of Steinkopf No 22 as holder of a mining right.	X		Any comments received will be incorporated into the FBAR.		
<b>Landowners or lawful occupiers on adjacent properties</b>	X	-			
Mr MD van Schalkwyk ❖ Remaining Extent of Nigramoep No 136	X		Any comments received will be incorporated into the FBAR.		
Republic of South Africa c/o Department of Public Works ❖ Portion 0 of Wolfioen No 48;	X		Any comments received will be incorporated into the FBAR.		

<b>Interested and Affected Parties</b>  <b>List the name of persons consulted in this column, and</b>  <b>Mark with an X where those who must be consulted were in fact consulted</b>	<b>Date Received</b>	<b>Comments</b>	<b>Issues raised</b>	<b>EAPs response to issues as mandated by the applicant</b>	<b>Section and paragraph reference in this report where the issues and or response were incorporated.</b>
❖ Remaining Extent of Korridor No 21.					
<b>Municipal councillor</b>	-		-	-	-
Cllr. Warren Britz (Ward 3)	X	The project was telephonically introduced to Cllr. Britz, upon which an introductory pamphlet supported by project maps were emailed to him on 03 May 2022. To date no comments were received that could be incorporated into this document. Any comments received on the DBAR will be incorporated into the FBAR.			
<b>Municipality</b>	-		-	-	-
Nama Khoi Local Municipality	X	The NKLM was supplied with an introductory pamphlet and project map regarding the proposed project on 03 May 2022. To date no comments were received from the municipality that could be incorporated into this document. Any comments received on the DBAR will be incorporated into the FBAR.			
<b>Organs of state (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWA e</b>	-	-	-	-	-
Department of Roads and Public Works (Kimberley & Springbok)	X	Any comments received will be incorporated into the FBAR.			
Department of Water and Sanitation (Kimberley & Upington)	X	Any comments received will be incorporated into the FBAR.			

<b>Interested and Affected Parties</b>  <b>List the name of persons consulted in this column, and</b>  <b>Mark with an X where those who must be consulted were in fact consulted</b>	<b>Date Received</b>	<b>Comments</b>	<b>Issues raised</b>	<b>EAPs response to issues as mandated by the applicant</b>	<b>Section and paragraph reference in this report where the issues and or response were incorporated.</b>
Eskom Ltd	X			Any comments received will be incorporated into the FBAR.	
<b>Communities</b>	X			-	
∞ Community of Steinkopf	X			<p>At the onset of the project, Greenmined was informed that Mr S Cloete acts as the community representative of Steinkopf. Subsequently, Mr Cloete asked the EAP to introduce the project to Mrs C Gertze during a meeting. A representative of the Applicant, Mrs Gertze and the EAP met on 29 April 2022 at the Nama Khoi municipal point in Steinkopf. Mrs Gertze was supplied with a copy of the introductory pamphlet and the project was pointed out in relation to the surrounding towns and properties. Matters such as possible work opportunities, benefits to the community, and water resources were discussed, and Mrs Gertze requested to be registered as I&amp;AP on the project. Mrs Gertze further requested that Mr M Raymond be added to the contact list as community representative.</p> <p>Both Mrs Gertze, and Mr Raymond were added to the registered I&amp;AP list and will be invited to comment on the DBAR. Any comments received on the DBAR will be added to the FBAR.</p>	
∞ Community of Vioolsdrif	X			<p>Cllr S Cloete was identified as the ward councillor of Ward 2 of which Vioolsdrif forms part. Cllr Cloete was unfortunately not available to meet on the 29<sup>th</sup> of April 2022, however the project was telephonically (WhatsApp) introduced to her, and she was supplied (03 May 2022) with a copy of the introductory pamphlet and project maps for her perusal. To date no comments were received that could be incorporated into this report. Cllr Cloete will be invited to comment on the DBAR, and any comments received from her will be incorporated into the FBAR.</p>	
∞ Community of Goodhouse	X			<p>Afrikaans and English site notices were placed at the Brug Kafee Mini Market of Vioolsdrif on 28 April 2022.</p>	
∞ Community of Goodhouse	X			<p>The Goodhouse area falls within the jurisdiction of Cllr Britz of Ward 3. As mentioned earlier, Cllr Britz was supplied with the introductory pamphlet and project map regarding the proposed project on 03 May 2022.</p>	

<b>Interested and Affected Parties</b>  <b>List the name of persons consulted in this column, and</b>  <b>Mark with an X where those who must be consulted were in fact consulted</b>	<b>Date Received</b>	<b>Comments</b>	<b>Issues raised</b>	<b>EAPs response to issues as mandated by the applicant</b>	<b>Section and paragraph reference in this report where the issues and or response were incorporated.</b>
					<p>Afrikaans and English site notices were placed at the Camel Rock Wholesale &amp; Take Aways in Goodhouse on 28 April 2022.</p>
<p>∞ Community of Concordia</p>	<p>X</p>				<p>Cllr C Visser was identified as the ward councillor of Ward 1 of which Concordia forms part. Greenmined and a representative of the Applicant met with Cllr Visser and two community members on 29 April 2022 at the Nama Khoi municipal point in Concordia. The project was introduced to the meeting and the introductory project pamphlet and project maps were distributed. The community members enquired how the project will benefit the local people and voiced their concern regarding mining applicants that are from areas outside the community. It was noted that mining companies enter these areas, and subsequently abandon the unrehabilitated mines as the companies does not have an interest in the surroundings. It was however, noted that Concordia is an adjacent community, and that the final comments should come from the Community of Steinkopf. Cllr Visser confirmed that even though the title deed notes the Community of Concordia as the landowner of Steinkopf No 22, this was no longer the case, and that the property was transferred to the Community of Steinkopf. Cllr. Visser requested that Mr D Magerman from the Nama Khoi Municipality (Springbok) also be informed of the project and be added as registered stakeholder on the project. Cllr Visser undertook to place the site notices at the municipal offices (Concordia) once she discussed the project with Mr Magerman.</p> <p>The meeting was informed of the possible employment opportunities, although this would most likely benefit the Community of Steinkopf instead of Concordia. Mr Magerman was registered as the acting municipal manager of Nama Khoi Local Municipality, and Cllr Visser was supplied with an Afrikaans and English site notice to be placed at the municipality (Concordia). Cllr Visser was also registered as I&amp;AP on the project and will be invited to comment on the DBAR. Any comments received on the DBAR will be incorporated into the FBAR.</p>
<p><b>Dept. Land Affairs</b></p>	<p>X</p>	<p>31 May 2022</p>	<p>Greenmined sent a request to enquire whether a land claim was registered over the property to the DALR&amp;RD. Response is still awaited.</p>	<p>Appendix F – Proof of Public Participation Process.</p>	
<p><b>Traditional Leaders</b></p>	<p>N/A</p>	<p>-</p>	<p>-</p>	<p>-</p>	
<p><b>Dept. Environmental Affairs</b></p>					

<b>Interested and Affected Parties</b>  <b>List the name of persons consulted in this column, and</b>  <b>Mark with an X where those who must be consulted were in fact consulted</b>	<b>Date Received</b>	<b>Comments</b>	<b>Issues raised</b>	<b>EAPs response to issues as mandated by the applicant</b>	<b>Section and paragraph reference in this report where the issues and or response were incorporated.</b>
Department of Agriculture, Environmental Affairs, Rural Development and Land Reform (Kimberley & Springbok)	X		Any comments received will be incorporated into the FBAR.		
<b>Other Competent Authorities affected</b>	-	-			
Department of Economic Development and Tourism (Kimberley & Upington)	X		Any comments received will be incorporated into the FBAR.		
Department of Labour (Kimberley & Springbok)	X		Any comments received will be incorporated into the FBAR.		
Namakwa District Municipality	X		Any comments received will be incorporated into the FBAR.		
SAFTA (Pty) Ltd	X		Any comments received will be incorporated into the FBAR.		
South African Heritage Resources Agency	X		Any comments received will be incorporated into the FBAR.		
<b><u>OTHER AFFECTED PARTIES</u></b>	-	-	-	-	
N/A	-	-	-	-	
<b><u>INTERESTED PARTIES</u></b>	-	-	-	-	
N/A	-	-	-	-	



#### iv) The Environmental attributes associated with the alternatives.

(The environmental attributes described must include socio-economic, social, heritage, cultural, geographical, physical and biological aspects)

##### (1) Baseline Environment

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

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

This section describes the biophysical, cultural, and socio-economic environment that may be affected and the baseline conditions, which are likely to be affected by the proposed mining activity.

### PHYSICAL ENVIRONMENT

#### CLIMATE

The following chart shows the maximum, minimum and average temperatures of the Springbok region (nearest available weather information to Steinkopf). Springbok (and Steinkopf) experiences its highest temperatures during the summer months from November – April with peaks of up to 30°C; thereafter the mercury drops to lows of 7°C during June/July.

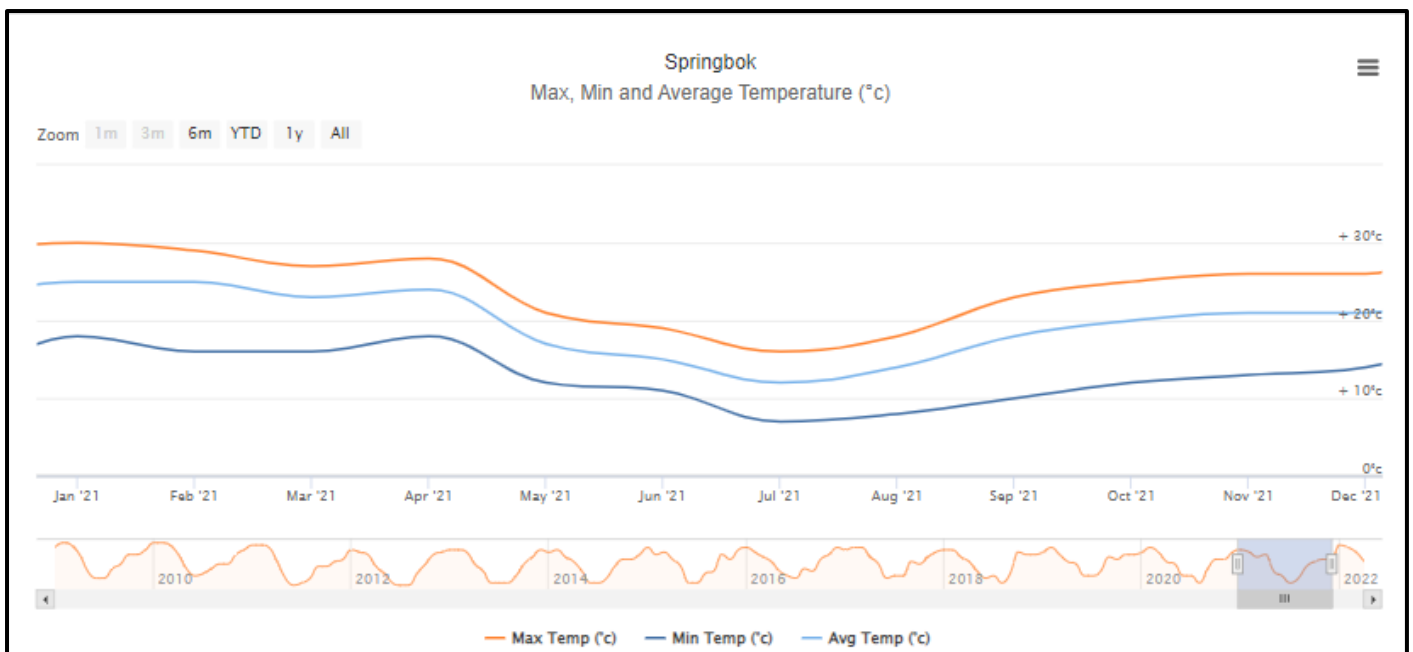


Figure 6: Maximum, minimum, and average temperature of the Springbok region (chart obtained from <http://www.worldweatheronline.com>)

According to Weather-atlas the average rainfall of the Springbok area is 167 mm/year (132 mm/year, Mora Ecological Services). The following chart obtained from World Weather Online shows that the measured rainfall average for 2021 was  $\pm 96.5$  mm,

while the area received the least rainfall during February, April, and September, and the most during March and July.

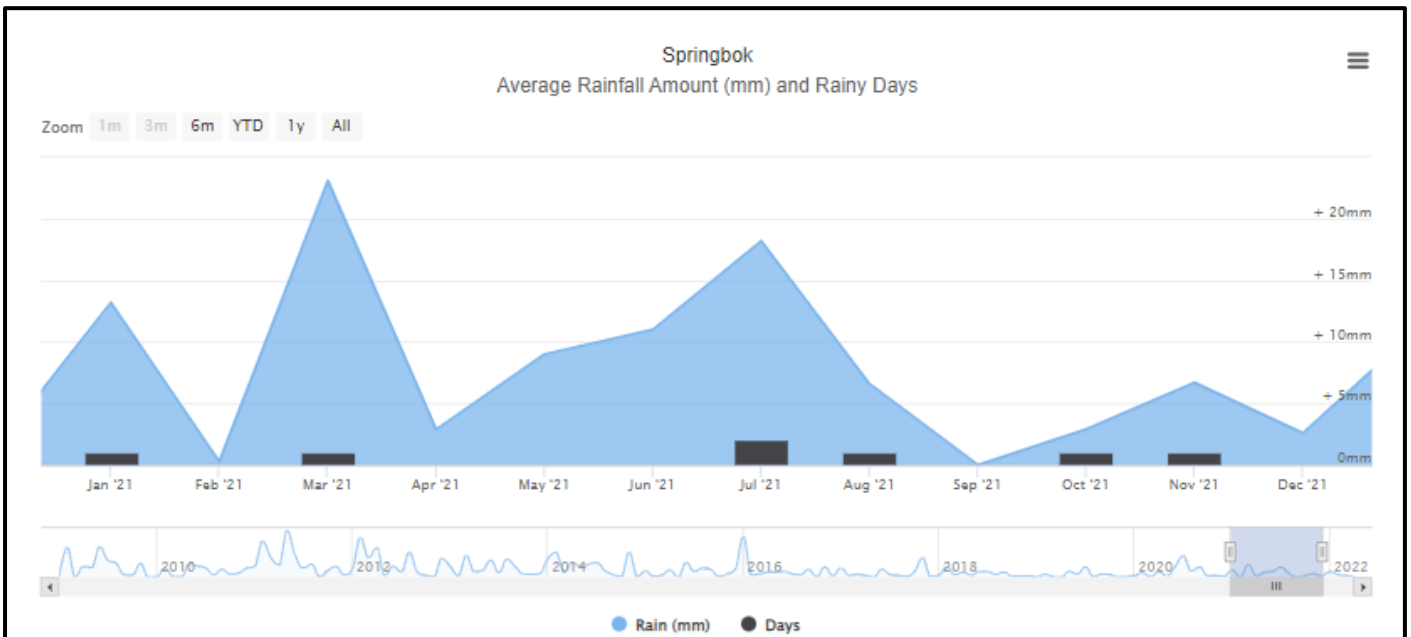


Figure 7: Average rainfall amount and rainy days count for the Springbok region (chart obtained from <http://www.worldweatheronline.com>)

The dominant wind direction of the Springbok region is constant in a north/north-eastern direction during the summer months. During winter the wind is mostly in a southern direction. The average wind speed of the area is  $\pm 9$  knots ( $\pm 16.7$  km/h) as shown in the figure below (measured at the Springbok Airport).

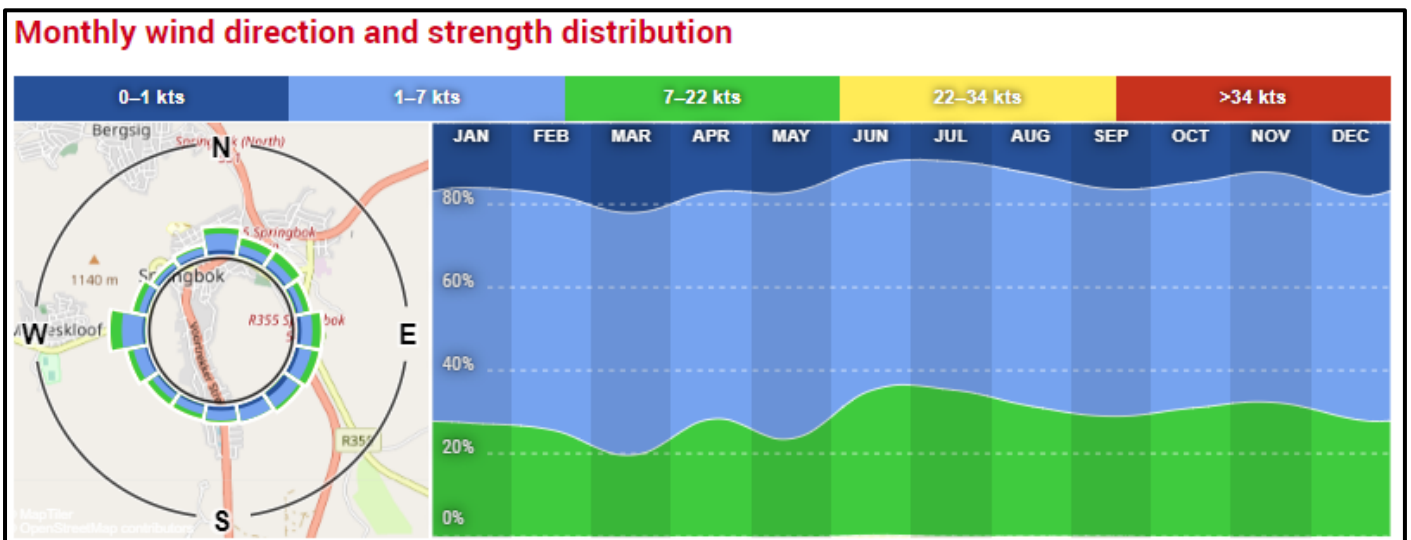


Figure 8: Image showing the dominant wind direction (first panel) and average wind speed over a 12 month period for the Springbok area (image obtained from <http://www.windfinder.com/windstatistics/springbok>).

## TOPOGRAPHY AND LANDSCAPE FEATURES

(Information extracted from the Terrestrial Biodiversity Impact Assessment attached as Appendix G)

The topography of the greater study area is shown in the figure below. The area has elevations generally ranging between 618 – 876 mamsl.

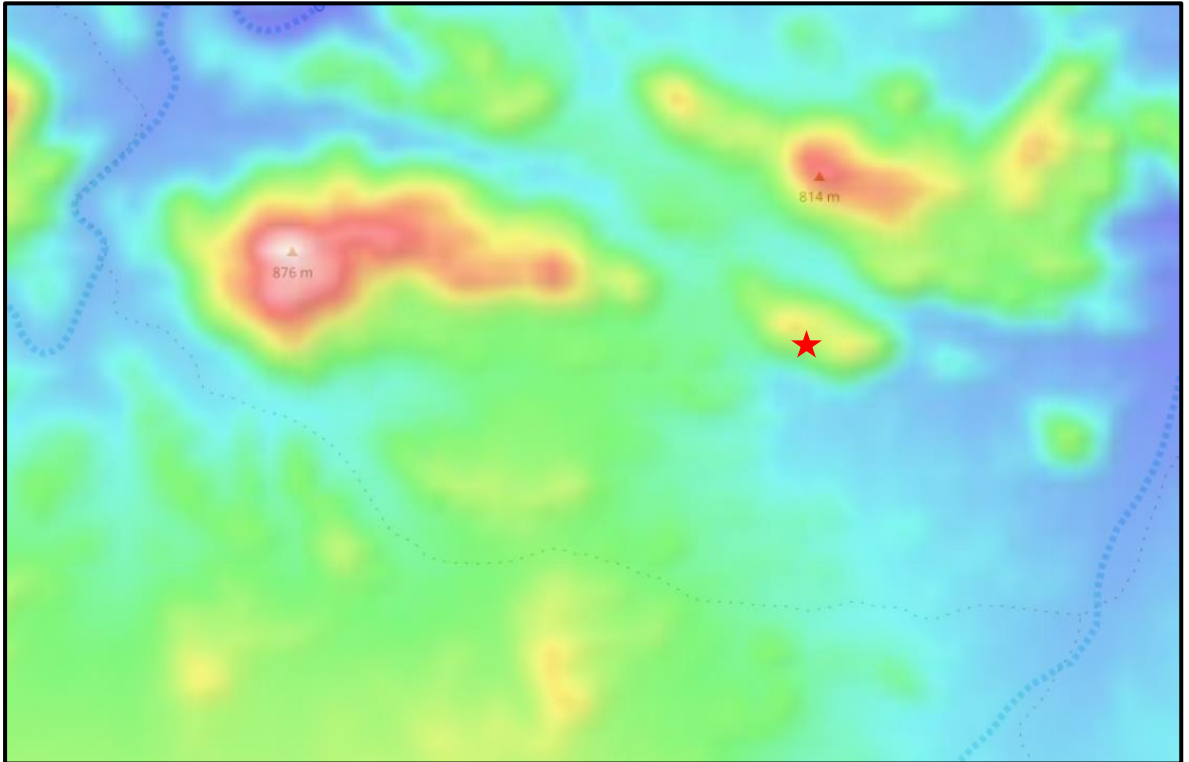


Figure 9: Map showing the topography of the greater study area, where the red star indicates the mining permit footprint (image obtained from <http://www.en-za.topographic-map.com/maps/gwpq/South-Af>).

The landscape features of the area represent hills and mountains, mostly with bare rock outcrops and covered with very sparse shrubby vegetation in crevices. Separated by broad sheet-wash plains. Habitats are mainly controlled by topography, aspect, local climate, and lithology. On the Groot Pellaberg, for example, there is a sparse shrubland on the southern foothills and a higher cover of plants in the southern ravines and rocky drainage lines. On the higher southern slopes *Justicia orchoides* is often dominant, with localised grassland directly below steep cliffs. The south-facing quartzite cliffs and steep slopes support chasmophytes (cremnohytes). On the summits and higher northern slopes there is a much higher preponderance of succulent plants. Succulent plants are also important on the northern foothills (Van Jaarsveld 1985).

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

## **VISUAL CHARACTERISTICS**

The visual character of the surrounding areas mainly comprises of a highly rural region within an agricultural setting, intersected by road- and electricity infrastructure. Due to the historic mining of the earmarked area that was left unrehabilitated, the site is not pristine with a highly altered nature. As mentioned earlier, the farm Steinkopf No 22 is extensive, including the town of Steinkopf, with (amongst others) the N7 national road and the R382 provincial road travelling through the property.

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

## **AIR AND NOISE QUALITY**

The air quality and noise ambiance of the study area is representative of a highly rural environment occasionally impacted by vehicles travelling through the area with occasional high dust emissions from the dirt roads. Intermittent mining/prospecting of resources in the greater area also contribute to the air- and noise characteristics of the area. However, the air quality and noise ambiance of the area is still regarded as rural and of good quality.

## **GEOLOGY AND SOIL**

*(Information extracted from the Terrestrial Biodiversity Impact Assessment attached as Appendix G)*

In the east mainly leucocratic biotite gneiss and quartz-feldspar gneiss of the Stalhoek Complex and lesser amounts of leucocratic biotite gneiss occur, with intercalations of calc-silicate rocks, mafic gneiss, and a quartzite-schist association of the Hom Subgroup, Bushmanland Group. In the west the area consists of granodiorite, adamellite, leucogranite, tonalite and diorite of the Vioolsdrif Suite and intermediate and acid volcanics of the Haib Subgroup of the Orange River Group (all the above of Mokolian age). Very rocky substrate, with little or no soils. Land type 1c.

The geological map for the Council of Geoscience (figure below) shows the study area within the Namaqua and Natal Metamorphic Provinces (pink shaded area), within proximity to known copper strikes (brown dots).

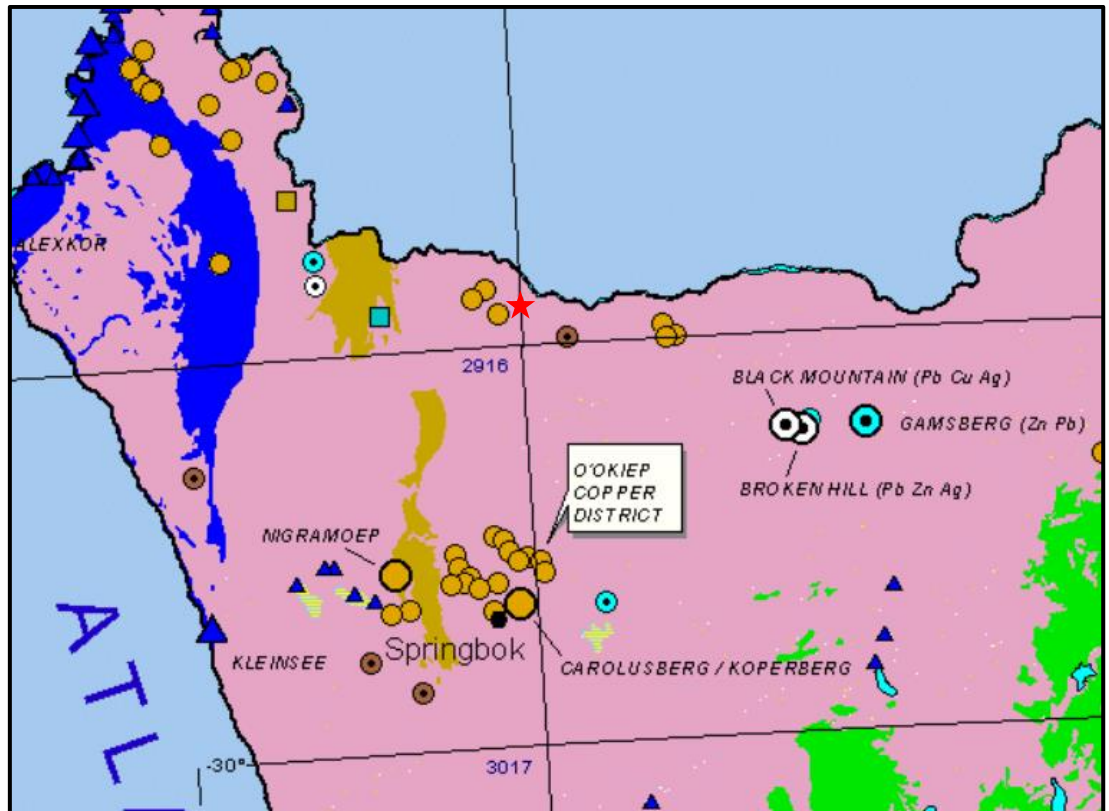


Figure 10: Indication of the simplified geology of the study area, where pink represents Namaqua and Natal Metamorphic Provinces, blue shows Gariep Supergroup and brown the Vanrhynsdorp and Nama Groups. Brown dots indicate copper, white lead, and blue zinc. The dark brown dots show uranium sources. The proposed mining area is indicated by the red star. (Image obtained from the Council for Geoscience)

## HYDROLOGY

The proposed mining area is situated in the Orange sub-water management area that forms part of the greater Lower Orange Water Management Area (ID 6). The Orange River is  $\pm 10$  km north-east of the study area, while the Oeruoep River passes the study area  $\pm 3$  km to the north-west. No rivers, streams or watercourses are present at the proposed mining area.



Figure 11: Satellite view showing the main watercourses in the study area in relation to the mining permit area (yellow polygon) (image obtained from Google Earth).

According to the National Freshwater Ecosystem Priority Areas (NFEPA) map as presented by SANBI, the proposed mining area falls within a Fish:FEPA as associated with the Orange River.

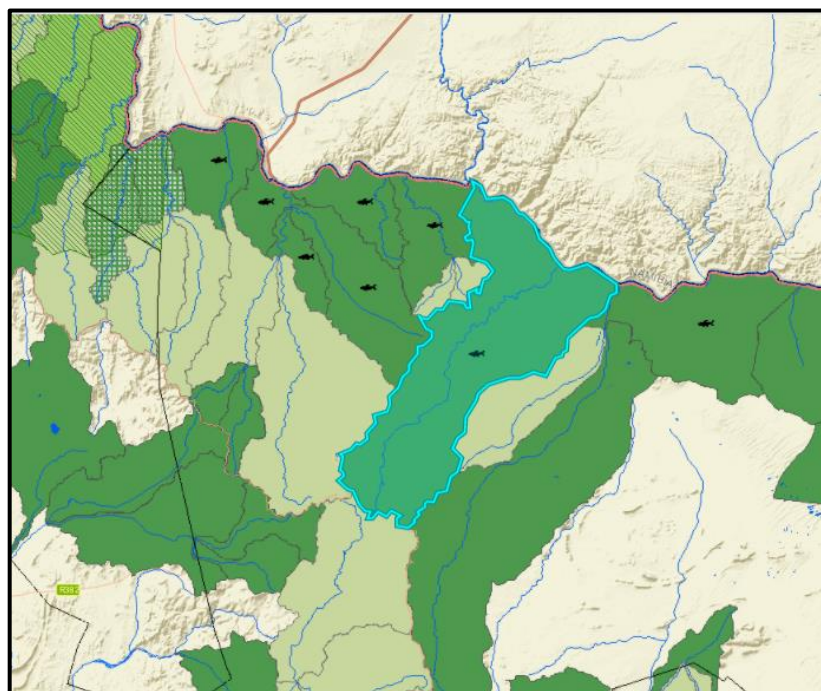


Figure 12: Map showing the extent of the FishFEPA in which the mining area falls (image obtained from the BGIS Map Viewer – National Wetlands and NFEPA).

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

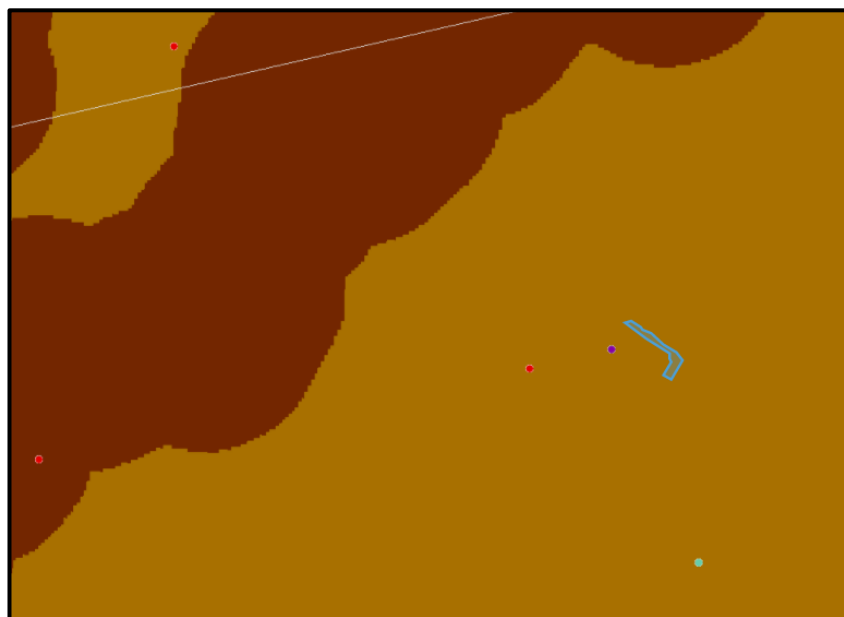
## **BIOLOGICAL ENVIRONMENT**

### **MINING AND BIODIVERSITY**

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

The Mining and Biodiversity Guideline, compiled by the South African Mining and Biodiversity Forum (SAMBF) provides the mining sector with a practical, user-friendly manual for integrating biodiversity considerations into planning processes and managing biodiversity during the developmental and operational phases of a mine, from exploration through to closure.

When the proposed mining footprint is layered over the Mining and Biodiversity Map (following figure), the site falls in an area of high biodiversity importance (brown) with a corresponding rating of high risk for mining. The Mining and Biodiversity Guideline's definition for areas of high biodiversity importance stipulates that: *"these areas are important of conserving biodiversity, for supporting or buffering other biodiversity priority areas, and for maintaining important ecosystem services for particular importance communities or the country as a whole"*. The guidelines note that an EIA should include an assessment of optimum, sustainable land use for a particular area and will determine the significance of the impact on biodiversity.



*Figure 13: The Mining Guidelines map shows that the mining area (blue polygon) falls within an area of high biodiversity importance with a high risk for mining (brown). The dots on the map indicate existing mining areas.*

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

## BIODIVERSITY CONSERVATION AREAS

(Information extracted from the Terrestrial Biodiversity Impact Assessment attached as Appendix G)

The Northern Cape CBA Map identifies biodiversity priority areas, called Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs), which, together with protected areas, are important for the persistence of a viable representative sample of all ecosystem types and species as well as the long-term ecological functioning of the landscape.

According to the plan, the entire site falls within Critical Biodiversity Area 2 (following figure). Furthermore, the site also falls within the National Protected Areas Expansion Strategy (NPAES) which is called Kamiesberg Bushmanland Augrabies. Kamiesberg Bushmanland Augrabies Focus Area represents the largest remaining natural area for the expansion of the protected area network.

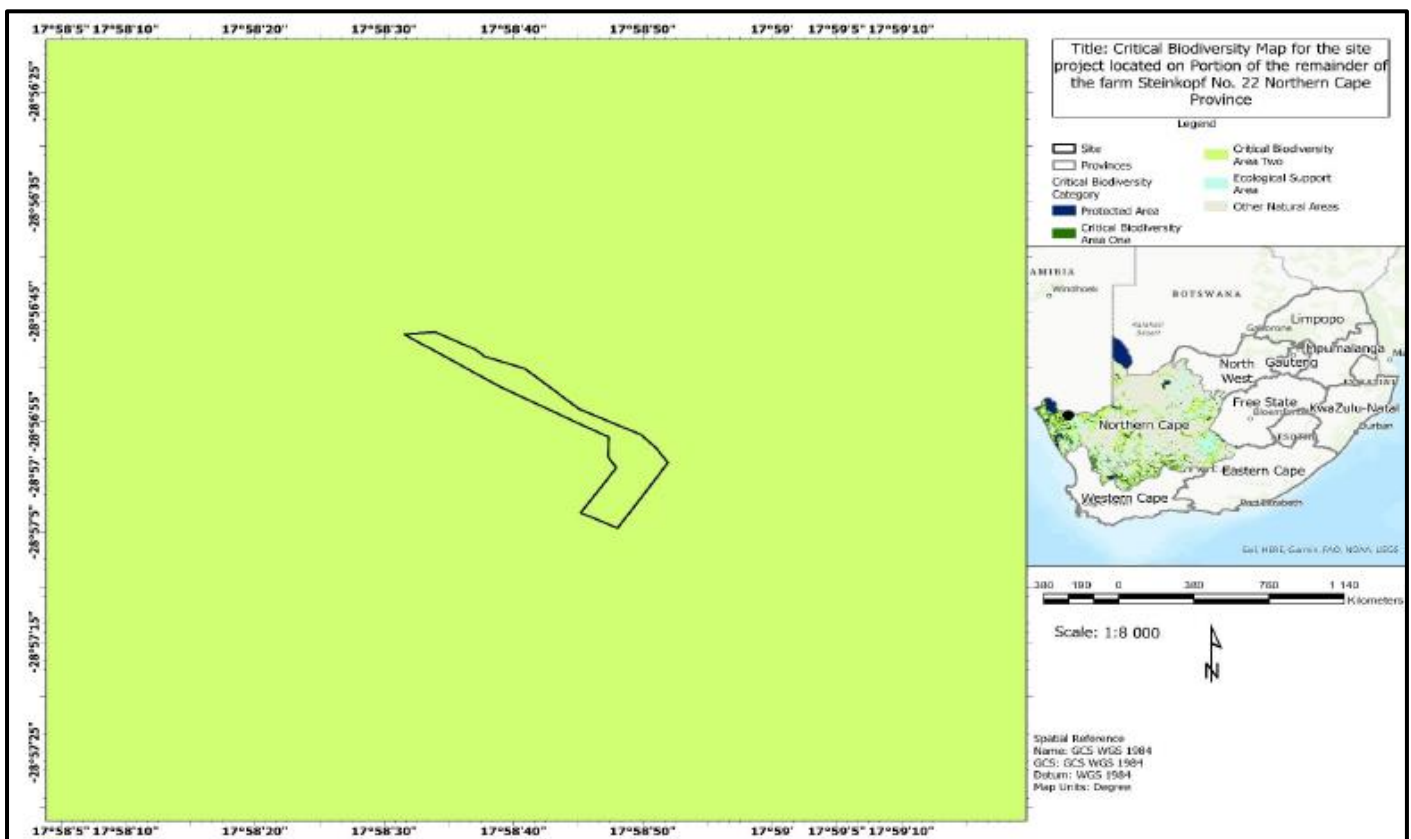


Figure 14: Northern Cape Biodiversity Conservation Plan Map (image obtained from the Terrestrial Biodiversity Impact Assessment).



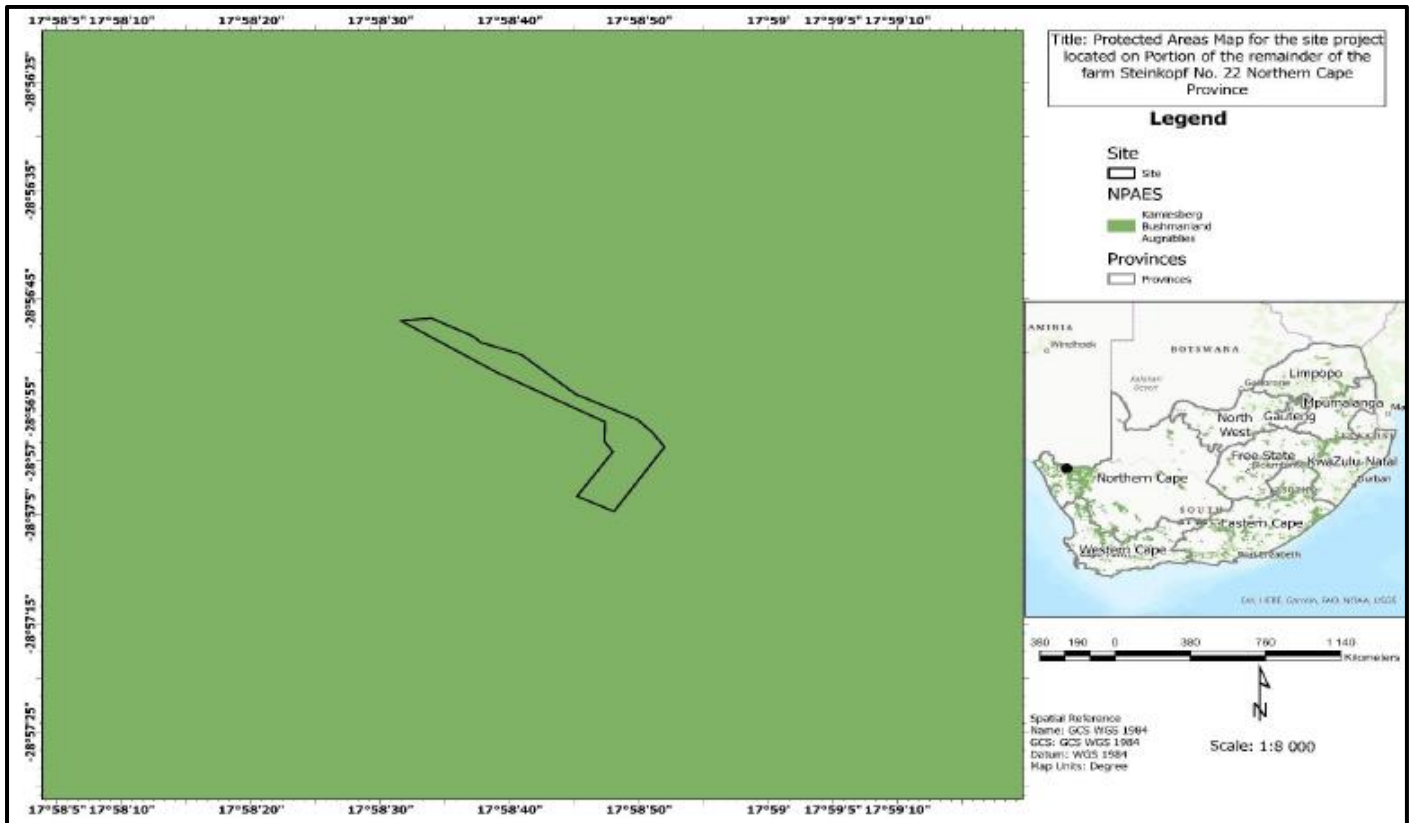


Figure 15: National Protected Areas Expansion Strategy Map (image obtained from the Terrestrial Biodiversity Impact Assessment).

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

## GROUNDCOVER

(Information extracted from the Terrestrial Biodiversity Impact Assessment attached as Appendix G)

The site falls within Desert Biome and according to Mucina and Rutherford (2012) the natural vegetation type of the study area is classified as Eastern Gariep Rocky Desert (Dg10).

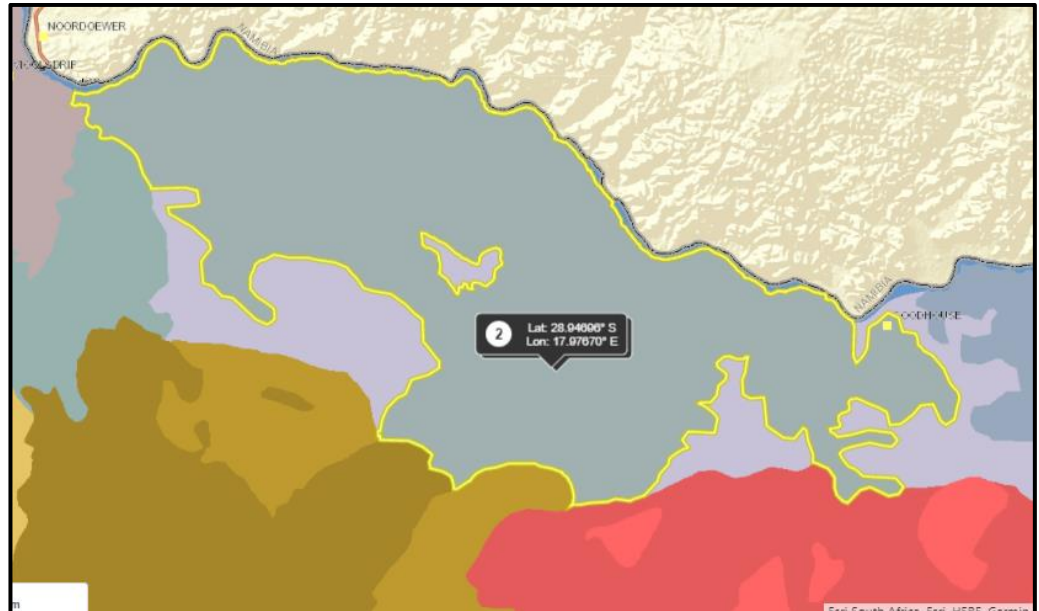


Figure 16: National vegetation cover map showing the study area within the Eastern Gariep Rocky Desert (Dg10) vegetation type (grey shaded area) (image obtained from BGIS Map Viewer – National Vegetation Map).

This vegetation type is found in all the rocky desert areas along the Orange River, including Groot Pellaberge, Dabenorisberge, Abbasasberge and many smaller mountains between Pella and Vioolsdrif. Also some mountains mapped further south well away from the Orange River such as the Haramoebberge and Witberg.

As mentioned earlier, the vegetation type is separated by broad sheet-wash plains (Dg 9 Eastern Gariep Plains Desert). On the Groot Pellaberg, for example, there is a sparse shrubland on the southern foothills (with, for example, *Aloe dichotoma*, *Rhigozum trichotomum* and *Petalidium setosum*) and a higher cover of plants in the southern ravines and rocky drainage lines (e.g. *Abutilon pycnodon*, *Asparagus suaveolens*, *Ficus cordata*, *Rhus populifolia* and *R. viminalis*). On the higher southern slopes *Justicia orchioides* is often dominant, with localised grassland directly below steep cliffs (*Enneapogon scaber*, *Triraphis ramosissima* and *Danthoniopsis ramosa*).

The south-facing quartzite cliffs and steep slopes support chasmophytes (cremnophytes) such as *Ficus ilicina*, *Aloe dabenorisana* and *Bowiea gariensis*. On the summits and higher northern slopes there is a much higher preponderance of succulent plants including *Euphorbia avasmontana*, *Aloe dichotoma*, *A. microstigma* subsp. *microstigma*, *Pelargonium aridum* and *Kleinia longiflora*. Succulent plants are also important on the northern foothills and include *Aloe dichotoma*, *Euphorbia avasmontana*, *Sarcostemma viminale* and the diminutive *Lapidaria margarethae* (Van Jaarsveld 1985).

The conservation target for this vegetation type is 34%, of which none has yet been statutorily conserved in South Africa.

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

## FAUNA

*(Information extracted from the Terrestrial Biodiversity Impact Assessment attached as Appendix G)*

Although the proposed footprint has been extensively altered for mining purposes, the surrounding areas are still natural and intermittently used for livestock grazing by the residents. The TBIA (Terrestrial Biodiversity Impact Assessment) reports that birds are regarded as one of the most useful bioindicators, that have been used extensively as models to determine ecosystem function (see review Koskimies 1989; Potts et al. 2014; Bregman et al. 2016). High levels of human disturbance as well as habitat transformation and degradation on the study site and adjacent areas would result in the disappearance of the more elusive bird species. Considering this, during the site inspection very few birds were recorded around the study site (see following table), and no other faunal species were observed on site. Historical records of faunal species previously recorded around the study area are listed in the appendices of the TBIA attached as Appendix G.

*Table 8: List of bird species recorded at the study site (see TBIA).*

Species	Common Name	IUCN Conservation Status
<i>Emberiza impetuani</i>	Lark-like Bunting	Least Concern
<i>Corvus albus</i>	Pied Crow	Least Concern
<i>Philetairus socius</i>	Sociable Weaver	Least Concern
<i>Myrmecocichla formicivora</i>	Ant-eating Chat	Least Concern
<i>Oenanthe familiaris</i>	Familiar Chat	Least Concern

## HUMAN ENVIRONMENT:

### CULTURAL AND HERITAGE ENVIRONMENT

*(Information extracted from a Heritage Impact Assessment attached as Appendix H)*

The South African Heritage Resources Agency (SAHRA) compiled the Palaeontological (fossil) Sensitivity Map (PSM) to guide developers, heritage officers and practitioners in screening palaeontologically sensitive areas at the onset of a project. When the footprint of the proposed mining area is placed on the PSM, it shows the study area to extend over an area of insignificant/zero (grey) concern as presented in the figure below. Considering this, no palaeontological study is required.

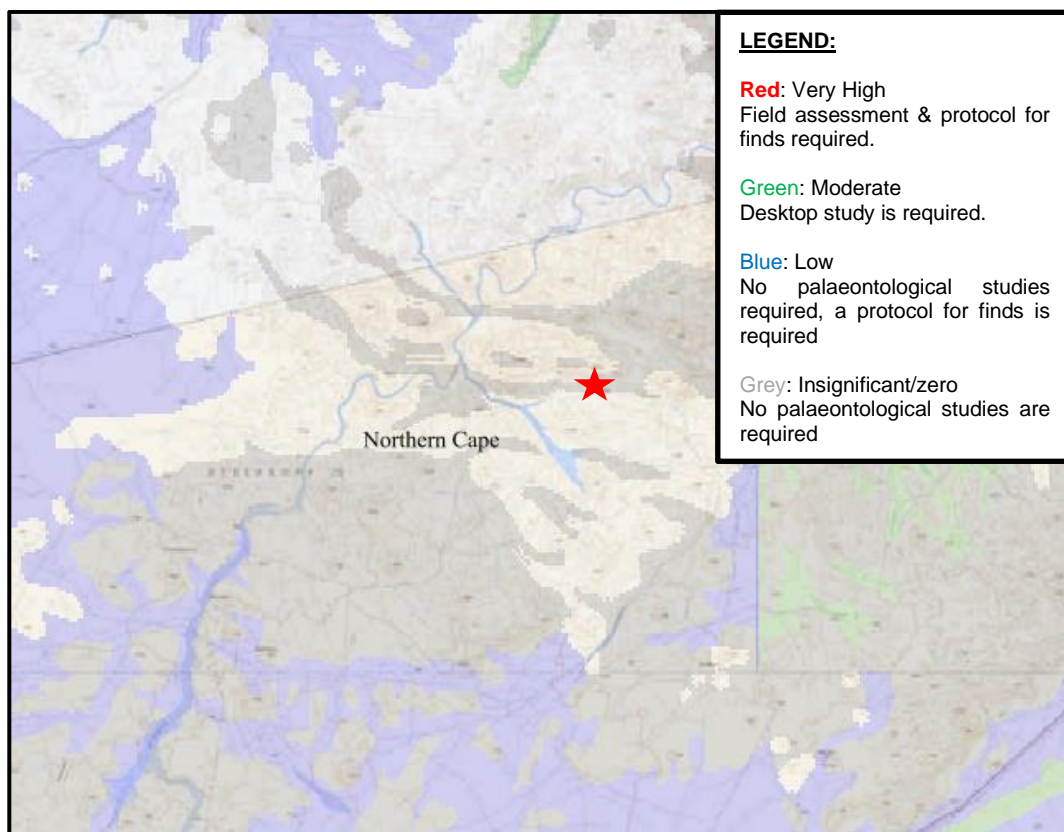


Figure 17: The SAHRA palaeontological sensitivity map shows the proposed mining footprint (red star) falls in an area of Insignificant/Zero (grey) concern.

According to the HIA (Heritage Impact Assessment) Beaumont *et al.* (1995) have noted that there is a low-density background scatter of artefacts throughout Bushmanland. In the greater study area, however, this scatter tends to be quite ephemeral. Several other surveys in the region support this distribution of archaeological materials (Halkett 2010; Morris 2011a, 2011b, 2013; Orton 2015, 2016; Webley & Halkett 2012). Within the Gamsberg inselberg, however, scatters of Early Stone Age (ESA) artefacts have been recorded in open, often eroding areas (Morris 2010; Orton 2014).

An assessment to the east of the study area (Halkett and Gribble 2018) concurs with the findings in the greater area and recorded evidence of a human presence in the surrounding area going back to the Earlier/Middle Stone Age. The MSA (Middle Stone Age) material identified consists of low density, ephemeral, unstratified, surface finds with no associated non-lithic material of low heritage significance. The study also recorded Later Stone Age (LSA) material in a handful of small overhangs around the base of granite kopjes. These sites all contained some deposit and scattered archaeological material on the adjacent talus slopes and are an important local information resource about the LSA of the area.

Because it lies so far from the original Cape Colony (i.e., Cape Town), northern Bushmanland was colonised quite late with most farms only surveyed and granted in the very late 19<sup>th</sup> or even early 20<sup>th</sup> centuries. As a result, very few historical structures and features exist on the landscape. Most of the buildings date to the early-mid-20<sup>th</sup> century and tend to be of low or no heritage significance. A number of surveys in the Bushmanland area have recorded possible isolated graves represented by unusual rocks (either isolated standing rocks or unnatural clusters). These could be related to early 'trekboers' passing through the area. Because they lived a very nomadic lifestyle, the physical traces of these early European stock farmers are extremely ephemeral. The ruins of small stone structures that are occasionally found alongside rock outcrops in Bushmanland are likely to represent huts and small livestock enclosures built either by 19<sup>th</sup> century 'trekboers' or by early 20<sup>th</sup> century shepherds. They may have been covered with sticks and skins or by tarpaulins. Halkett and Gribble (2018) recorded evidence of more recent, historical period occupation of the area including the remains of built structures, ash heaps and possible graves. Van Ryneveld (2020) recorded a homestead.

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

## **SOCIO-ECONOMIC ENVIRONMENT**

*(Information extracted from Stats SA [http://www.statssa.gov.za/?page\\_id=993&id=umshwathi-municipality](http://www.statssa.gov.za/?page_id=993&id=umshwathi-municipality))*

The proposed mining area is in Ward 3 of the Nama Khoi Local Municipality (NKLM). The NKLM is situated within Namakwa District Municipality ±40 km north-east of the town Steinkopf. The Nama Khoi municipal area comprises of at least fourteen towns/settlements of which Springbok is the largest.

According to the revised population estimates based on the 2011 results (Stats SA, 2011), the NKLM has a population of 47 041 with a population growth rate of 0.47%. South Africa is estimated to have an average annual growth rate of 1.4% and the growth rate of the NKLM it therefore well below the national growth rate.

### **Gender Profile**

The Pie Chart below indicates that the gender ratio in the NKLM is comprised of 50.6% females and 49.4% males (StatsSA). The age/sex distribution of the NKLM shows the highest number of people in the NKLM are between 15 – 19 years of age.

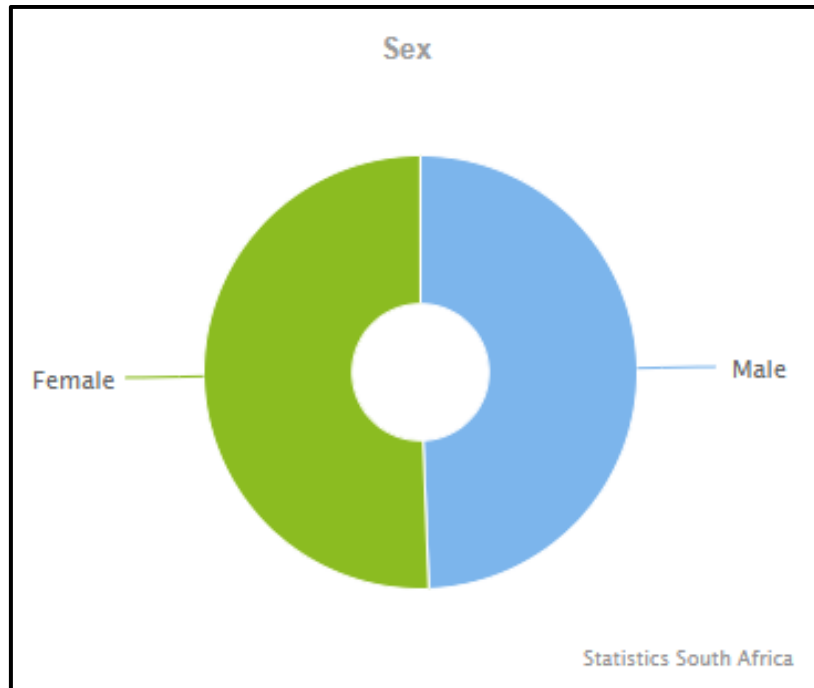


Figure 18: Gender profile (image obtained from Statistics South Africa).

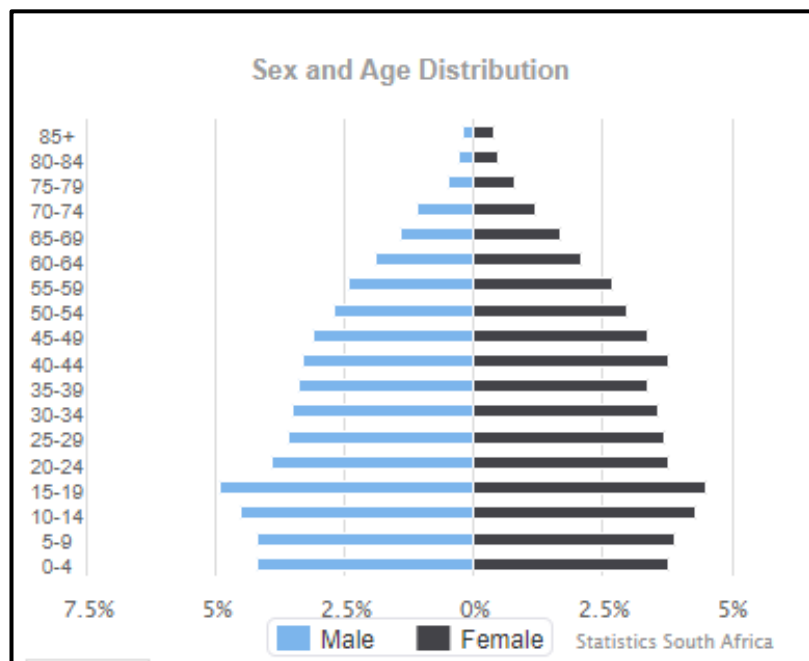


Figure 19: Gender and age distribution profile (image obtained from Statistics South Africa).

**Population Profile**

Below is a pie chart which indicates the total Coloured population of NKLM at 88.1%, White at 6.6%, and Black population at 4.2%. The Indian/Asian and Others form the lowest proportion of the population with the first group accounting for 0.5% and the latter for 0.8%.

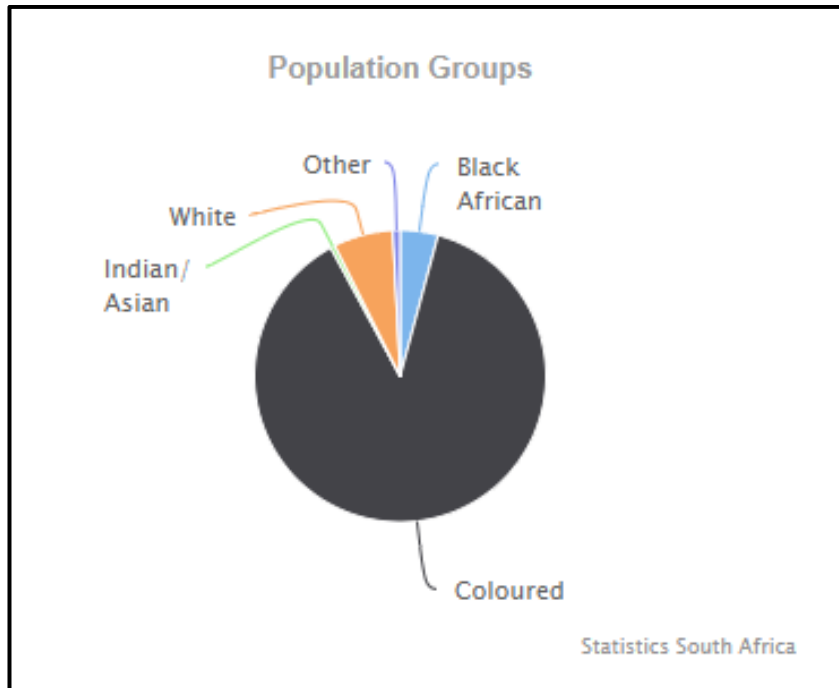


Figure 20: Population profile of the Nama Khoi municipal area (image obtained from Statistics South Africa).

**Economic Profile**

The NKLM is well known for its mining and agriculture, of which livestock farming is the predominant pursuit. The municipality has ±16 016 people who are economically active, and of these 22.9% are unemployed. Twenty point eight percent of the average household income of the NKLM range between R 19 601 – R 38 200, followed by an average income of R 38 201 – R 76 400 at 18.3%, while 17.4% of the households registered an income of R 9 601 – R 19 600 as shown below.

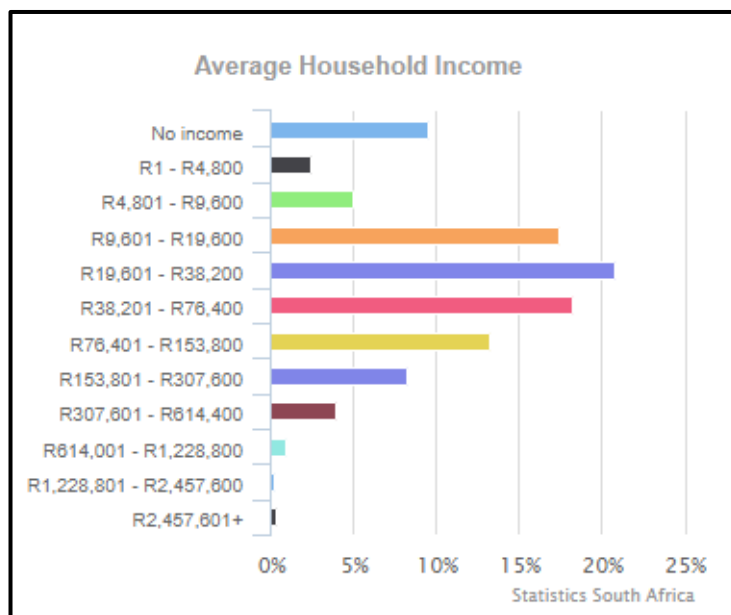


Figure 21: Average household income profile of the NKLM area (image obtained from Statistics South Africa).

The 2011 statistics showed a decrease in the youth unemployment rate of the municipality from 43.4%, in 2001, to 30.1%. The average unemployment rate of the NKLM decreased from 33.1% (2001) to 22.9% in 2011. As mentioned earlier, the economic activities of the NKLM mainly comprise of mining and agriculture. The NKLM IDP (2019/2020) notes that the Provincial SDF identified Steinkopf as a growth area with high urban potential which implies that infrastructure investment and spending should ideally focussed in these areas with potential.

**Education Levels**

Two point two percent of the population above the age of 20 has no schooling, 20% has obtained matric and 7.9% obtained higher education. The matric rate increased from 16.6% in 2001 to 20% in 2011, the no schooling rate decreased from 4.7% to 2.2% and the Higher Education increased from 6.6% to 7.9%.

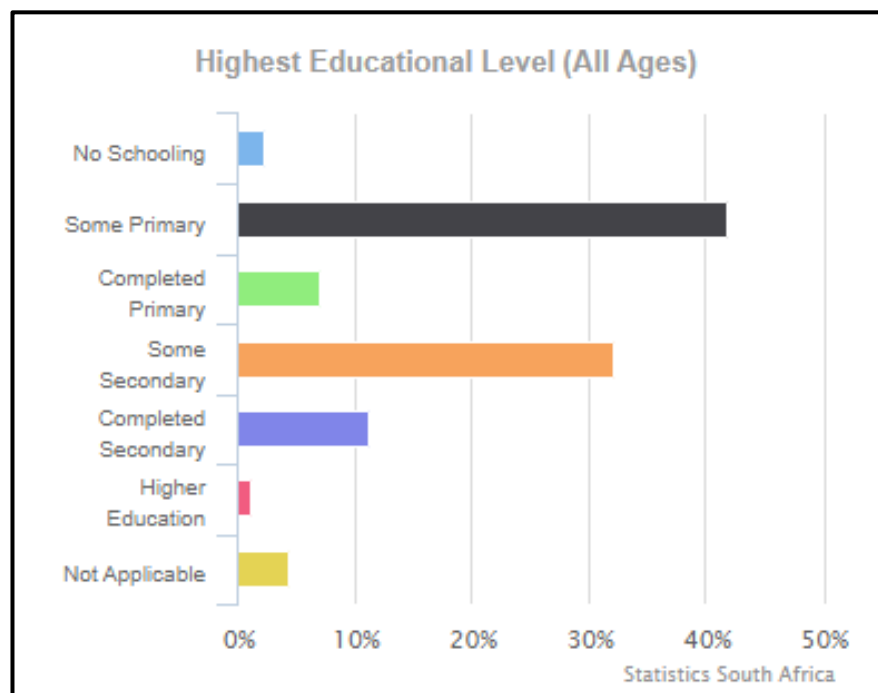


Figure 22: Highest educational level of the NKLM area (image obtained from Statistics South Africa).

**(b) Description of the current land uses.**

The property Steinkopf No 22 is situated in a rural setting intersected by electricity-, pipeline- and road infrastructure and transformed by the development of the town Steinkopf. According to the title deed, the property is 299 556.1604 ha in extent, with municipal Wards 2 and 3 extending into it. Apart from the area developed as townland, most of the property is used for livestock farming intersected with various current- and historic mining activities.



The main land use of the surrounding properties is for agricultural purposes, with various community settlements such as Vioolsdrift, Goodhouse, and Concordia. The following table provides a description of the land uses and/or prominent features that currently occur within a 500 m radius of the study area:

*Table 9: Land uses and/or prominent features that occur within 500 m radius of the study area.*

<b>LAND USE CHARACTER</b>	<b>YES</b>	<b>NO</b>	<b>DESCRIPTION</b>
Natural area	<b>YES</b>	-	The study area is surrounded by natural areas used for agricultural purposes.
Low density residential	-	<b>NO</b>	-
Medium density residential	-	<b>NO</b>	-
High density residential	-	<b>NO</b>	-
Informal residential	-	<b>NO</b>	-
Retail commercial & warehousing	-	<b>NO</b>	-
Light industrial	-	<b>NO</b>	-
Medium industrial	-	<b>NO</b>	-
Heavy industrial	-	<b>NO</b>	-
Power station	-	<b>NO</b>	-
High voltage power line	-	<b>NO</b>	-
Office/consulting room	-	<b>NO</b>	-
Military or police base / station / compound	-	<b>NO</b>	-
Spoil heap or slimes dam	-	<b>NO</b>	-
Quarry, sand or borrow pit	<b>YES</b>	-	This application entails the mining of Norrabees 1 and 2.
Dam or reservoir	-	<b>NO</b>	-
Hospital/medical centre	-	<b>NO</b>	-
School/ crèche	-	<b>NO</b>	-
Tertiary education facility	-	<b>NO</b>	-
Church	-	<b>NO</b>	-
Old age home	-	<b>NO</b>	-
Sewage treatment plant	-	<b>NO</b>	-
Train station or shunting yard	-	<b>NO</b>	-
Railway line	-	<b>NO</b>	-
Major road (4 lanes or more)	-	<b>NO</b>	-
Airport	-	<b>NO</b>	-
Harbour	-	<b>NO</b>	-
Sport facilities	-	<b>NO</b>	-
Golf course	-	<b>NO</b>	-
Polo fields	-	<b>NO</b>	-
Filling station	-	<b>NO</b>	-
Landfill or waste treatment site	-	<b>NO</b>	-
Plantation	-	<b>NO</b>	-
Agriculture	<b>YES</b>	-	As mentioned earlier the earmarked property is used for agricultural purposes.
River, stream, or wetland	-	<b>NO</b>	-
Nature conservation area	-	<b>NO</b>	-
Mountain, hill, or ridge	<b>YES</b>	-	The earmarked area is situated against the western facing slope of the mountain.

LAND USE CHARACTER	YES	NO	DESCRIPTION
Museum	-	NO	-
Historical building	-	NO	-
Protected Area	-	NO	-
Graveyard	-	NO	-
Archaeological site	YES	-	The archaeologist identified four features of importance during the site survey.
Other land uses (describe)	-	NO	-



Figure 23: Satellite view of the application area (yellow polygon) with the 500 m radius (large red circle) around it. The archaeological features are indicated by the yellow pins, and the small red circle indicates the proposed buffer area (image obtained from Google Earth).

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

**SPECIFIC ENVIRONMENTAL FEATURES**

**SITE SPECIFIC TOPOGRAPHY**

As mentioned earlier, the topography of the study area is hilly. The natural topography of the earmarked area gradually rises along the mountainside from the most north-western boundary, before sharply dropping down to the level area proposed as processing area (southern boundary) as shown in the figure below. The area has an

average slope of 12.3% from 634 mamsl at the north-western boundary, up to 679 mamsl (highest point), before declining to 589 mamsl at the southern boundary (lowest point).

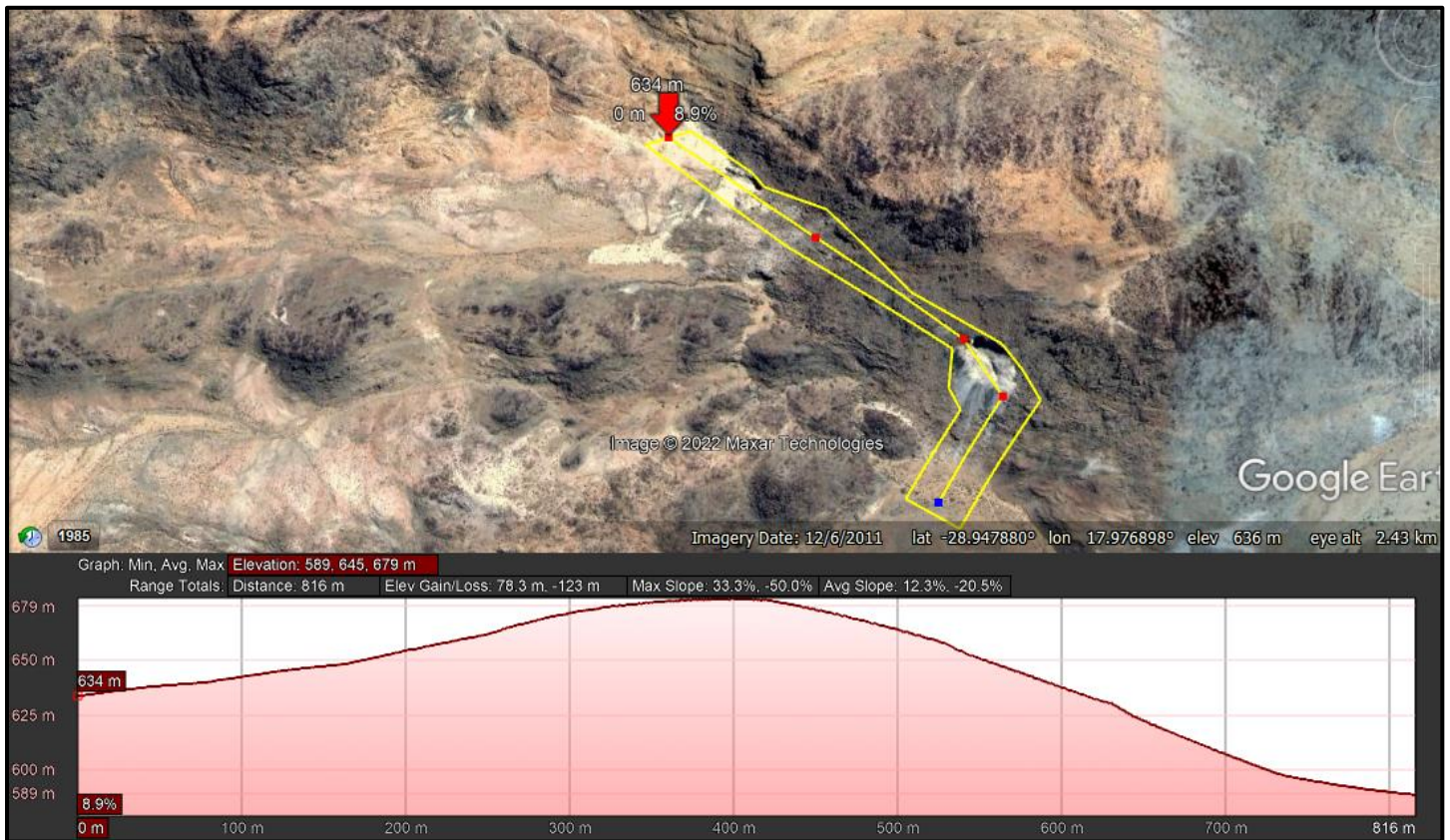


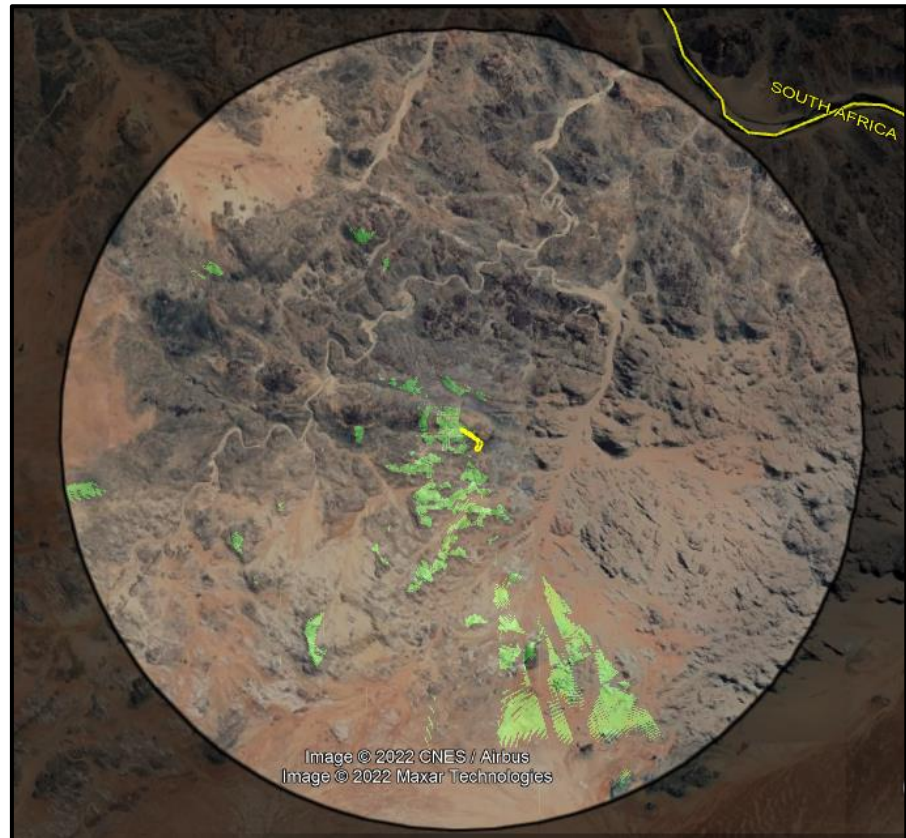
Figure 24: Elevation profile of the proposed mining area (Image obtained from Google Earth).

As mentioned earlier, there are two existing excavations known as Norrabees 1 and 2 within the earmarked mining permit area. Should this application be approved, the Applicant plans to mine both these deposits through open-cast mining methods, whereby blasting will be employed to loosen the in-situ material (following the processing of the existing tailings on site).

Due to the nature of the activity it will result in the alteration of the topography of the mountain in that depressions will be created with stepped side walls as mining progress. As is currently evident on site, the proposed mining activity into the western side of the mountain, should create an excavation with three faces that will be benches as the mining depth increases. Due to the impracticality of importing large volumes of fill material to restore the excavation to its original topography, the rehabilitation option (upon closure) is to render the excavations safe and leave it as a minor landscape feature. Considering the end-use of the mining area, it is proposed that the final layout of the excavation (following rehabilitation) will be safer and more attractive, as the abandoned excavations and -tailing would have been corrected.

## SITE SPECIFIC VISUAL CHARACTERISTICS

The following figure shows the viewshed analysis of the earmarked area within a  $\pm 10$  km radius. The green shaded areas indicate the positions from where the mining area will be visible. Due to the varying topography of the site, the viewshed analysis was taken for the north-western portion of the site, the highest point, and the lowest southern part.



*Figure 25: Viewshed analysis for the north-western part of the site where the green shaded areas indicate the positions from where this section will be visible. (Image obtained from Google Earth).*

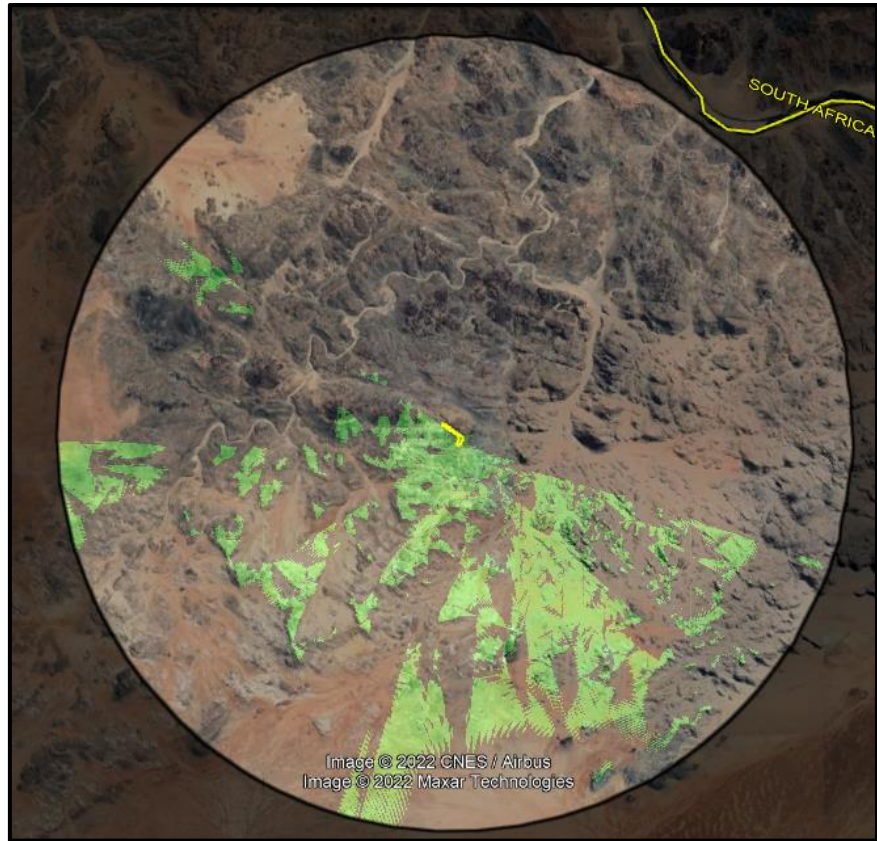


Figure 26: Viewshed analysis for the highest part of the mining area where the green shading indicates the positions from where this section will be visible. (Image obtained from Google Earth).

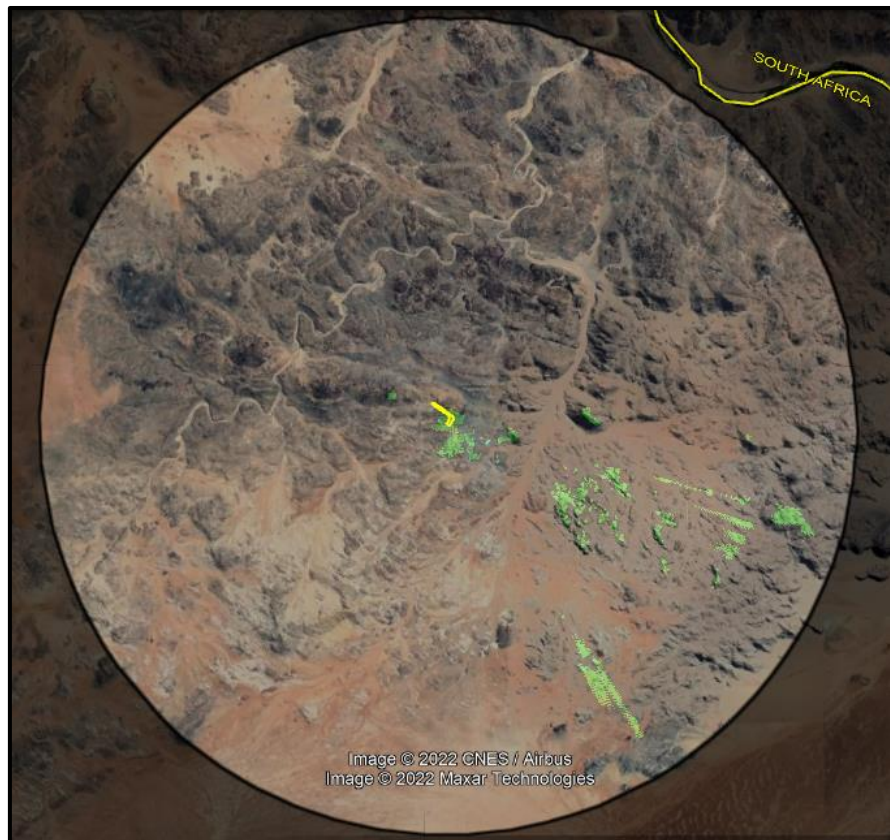


Figure 27: Viewshed analysis for the lowest southern part of the mining area where the green shading indicates the positions from where this section will be visible. (Image obtained from Google Earth).

The analysis shows that the proposed visual impact will be of very low concern as the highest part of the mining area will intermittently be visible from the southern to south-eastern direction ( $\pm 3$  km). Due to the topography, the north, north-eastern and -western areas will be screened from the development. The lower parts of the mining area will only be visible from the immediate surroundings, and it is proposed that as the distance between the development and the observer increases the visual impact will decrease. From the above mentioned, it is deduced that the proposed activity will have a low visual impact on the receiving environment.

### **SITE SPECIFIC AIR AND NOISE QUALITY**

There are no residential dwellings within a  $\pm 1$  km radius around the site. As mentioned earlier, the prevalent wind direction of the study area is in a north/north-eastern direction during summer, and mostly southern direction during winter. Currently the air quality of the study area is mainly impacted by vehicles travelling through the area as all the roads are unsurfaced.

Emission into the atmosphere is controlled by the National Environmental Management: Air Quality Act, 2004. The proposed mining activity does not trigger an application in terms of the said act, and emissions to be generated is expected to mainly entail dust due to the displacement of soil, crushing and screening of hard rock, and the transport of material on gravel roads. Due to the remote nature of the site no residents/occupants are expected to be impacted by the proposed activities. Should the Applicant implement the mitigation measures proposed in this document and the EMPR the impact on the air quality of the surrounding environment is deemed to be of low significance.

As with air quality, the noise ambiance of the study area is mainly impacted by the occasional traffic driving through the area and the occasional mining of deposits. The noise to be generated at the proposed mine will contribute to the daily noise levels of the site. The proposed activity will contribute noise generated due to blasting, as well as the crushing and screening and transporting of material. The nuisance value of noise generated by heavy earthmoving equipment, on the receiving environment is deemed to be of low significance, as there are no nearby recipients. The noise caused by blasting will be instantaneous and of short duration.

Although the proposed activity will have a cumulative impact on the ambient noise levels, the development will not take place near any residents, and the impact is therefore deemed to be of low significance.

## **SITE SPECIFIC GEOLOGY AND SOIL**

The Norrabees pegmatite is one of numerous mineralized pegmatites that occur on the farms Steinkopf 22 and Vioolsdrift 226 in the Springbok region of the Northern Cape. These mineralized (heterogeneous) pegmatites have in the past been exploited mainly for feldspar, mica, beryl, spodumene, tantalite-columbite and bismuth. The pegmatites are predominantly hosted in the meta-granodiorite and to a lesser extent meta-gabbro rocks of the Vioolsdrif Suite and the metasediments and metavolcanics of the Orange River Group.

Pegmatites in the Namaqua Terrain are found within a well-defined zone approximately 8 km wide and extending from Kokerboomrand and Groendoorn in the west, through Hom and Ramansdrift in the east. Most of the pegmatites are found in the metamorphosed rocks of the Kaiing and Wilgenhoutdrif Series, namely: schist, migmatite, gneiss and in grey granitic gneiss.

The lithium-bearing pegmatites mainly occur near the contacts between the grey granitic gneiss and the older rocks, indicating a relationship between the pegmatites and the grey gneissic granite. Pegmatites in sedimentary rocks were emplaced concordantly, whereas pegmatites found in the granitic and granodioritic grey gneiss were emplaced discordantly with respect to the country-rock's strike and dip.

The pegmatites predominantly assume a dike-like geometry, with lengths ranging from a few centimetres in some to over 2 kilometres in others. Generally, the pegmatites are, however, some 60 meters long and not more than 15 meters wide. The pegmatites can be divided into two general types, specifically homogeneous and heterogeneous.

The homogeneous pegmatites are most abundant, and are made up of aggregates of quartz, feldspar and accessory minerals that cannot be subdivided into units of contrasting textures or mineralogy. Homogeneous pegmatites are then subdivided into poorly zoned and unzoned bodies. The un-zoned have no visible evidence of differing mineral assemblages and contain no economically exploitable minerals. The poorly zoned pegmatites resemble the un-zoned, the difference is that there are small, isolated, and spread out pod-like aggregates of coarse-grained microcline perthite and quartz. The pods range between 60 cm to 3 m in diameter. Heterogeneous pegmatites consist of two or more structural and lithological units which differ in mineralogy and/or texture. All the pegmatites which contain mineable concentrations of beryl, feldspar, muscovite, spodumene and other economically exploitable minerals belong to the heterogeneous group.

The Norrabees pegmatite swarm consists of numerous pegmatites, of which only six pegmatites (Norrabees I – VI) were locally exploited on artisanal to small mining scale in the past. At the Norrabees I pegmatite lithium mineralisation comprises spodumene and lepidolite minerals, but plagioclase feldspar may also take lithium up in the crystal lattice, resulting in a light pink variant of plagioclase. Lithium minerals are generally confined to the intermediate zone. Here spodumene represents the bulk of the lithium minerals with crystals usually between 5 cm and 45 cm long where it constitutes some 15% of the zone as largely unaltered crystals. Lepidolite occurs as a subordinate mineral in very low percentages.

The Norrabees I pegmatite has been exposed during earlier spodumene and beryl mining on the southern slope of a steep hill. The pegmatite body strike Northwest-Southeast and attain a moderate to steep South-westerly dip.

### **SITE SPECIFIC HYDROLOGY**

As mentioned earlier, there are no rivers, streams or other watercourses present within the proposed mining footprint, and the erosion potential of the site is of low significance. Should the Applicant implement the mitigation measures proposed in this document, the proposed activity is not expected to impact the hydrology of the area in any way.

### **SITE SPECIFIC TERRESTRIAL BIODIVERSITY, CONSERVATION AREAS AND GROUNDCOVER**

*(Information extracted from the Terrestrial Biodiversity Impact Assessment attached as Appendix G)*

The TBIA revealed that although the vegetation of the area has been exposed to disturbance, the site still has important plant species that warrant conservation. The following table lists the plant species recorded at the study area.



Table 10: List of plant species recorded at the study site (see TBIA).

Species	Common Name	Growth Form	Protection Level	IUCN Conservation Status
<i>Euphorbia gregaria</i>	Aggenysmelkbos	Succulent	Schedule 2	Least Concern
<i>Aloe gariensis</i>	Orange River aloe	Succulent		Least Concern
<i>Aloidendron dichotomum</i>	Quiver tree		Schedule 1	Vulnerable
<i>Boscia foetida</i>	Stink Shepherds-tree	Tree	Schedule 2	Least Concern
<i>Brownanthus pseudoschlichtianus</i>	Groot Skerpioenbos	Succulent		Least Concern
<i>Forsskaolea tenacissima</i>	N/A	Herb		Least Concern
<i>Maerua gilgii</i>	River bush cherry	Tree		Least Concern
<i>Monechma mollissimum</i>	Skaapbossie	Shrub		Least Concern
<i>Sisyndite sparteae</i>	N/A	Shrub		Least Concern
<i>Stipagrostis anomala</i>	N/A	Grass		Least Concern
<i>S. obtusa</i>	Kortbeenboesmangras	Grass		Least Concern

The TBIA notes that the sensitivity within the study area was predominantly low to medium. Some sections within the site have been extensively excavated and no rehabilitation was done. There are Quiver trees (*Aloidendron dichotomum*) (VU), Aggenysmelkbos (*Euphorbia gregaria*) (LC), and Stink Shepherds Tree (*Boscia foetida*) (LC) that are all provincially protected. The abovementioned, makes the site to be of low-medium sensitivity. The following figure (obtained from the TBIA) shows habitat sensitivity within the study site.



Figure 28: Site sensitivity of the study area (image obtained from the TBIA).

The TBIA concludes that the proposed mining will be located on a previously mined site, which was not rehabilitated. There are several habitats within the proposed site that have been exposed to high levels of disturbance resulting from excavations. There are also areas that still have provincially protected plant species. As a result, conservation of the said plant species should be prioritised.

No faunal species were observed on site, and the bird species that were observed are all Least Concern. Therefore the potential impact of the proposed project on the faunal component of the area is deemed to be of low significance.

## **SITE SPECIFIC CULTURAL AND HERITAGE ENVIRONMENT**

*(Information extracted from a Heritage Impact Assessment attached as Appendix H)*

### **Heritage Resources:**

The HIA conducted by Beyond Heritage (Pty) Ltd in May 2022 reports that the study area has been impacted on by previous mining, and associated activities characterise the study area. Much of the study area is located on a steep slope without shelters or overhangs and not suitable for human settlement and no archaeological sites or artefacts of significance were recorded. Finds were limited to stone-built structures and an adit associated with the initial mining activities at Norrabees 1. According to the [diggings.com](http://diggings.com) online source the site was first discovered in 1955 and from aerial photographs the site was already mined by 1961. This means that the recorded features could all be older than 60 years and therefore protected by the NHRA. The following table provides a summary of the features identified on site.

*Table 11: Recorded features as presented in the HIA.*

<b>Label</b>	<b>Longitude</b>	<b>Latitude</b>	<b>Description</b>	<b>Significance</b>
Feature 1	17° 58' 49.4077" E	28° 56' 59.7521" S	Small adit on the side of the hill with various stone packed terraces leading to the valley below.	Low to Medium
Feature 2	17° 58' 46.6958" E	28° 57' 00.9920" S	Rectangular stone platform capped with a cement layer measuring approximately 14 m in length and 6 m wide.	Low
Feature 3	17° 58' 47.7888" E	28° 57' 04.4575" S	Three circular enclosures, one bilobial enclosure and one rectangular enclosure with two divisions. All enclosures are distributed linearly at the base of a hill opposite to the proposed mining area. Entrances are marked by upstanding monoliths facing the historic mining activities. The enclosures measure approximately 2,2 m in diameter and no archaeological artefacts (such as Stone Age lithics, ostrich eggshell beads or ceramics) were noted in and around the enclosures. Historical artefacts were noted including cans scattered in and around the features.	Low to Medium

Feature 4	17° 58' 32.4463" E	28° 56' 48.2748" S	Rectangular stone packed structure measuring approximately 2x 2 m of unknown purpose at Norrabees 2 outside of the impact area.	Low to Medium
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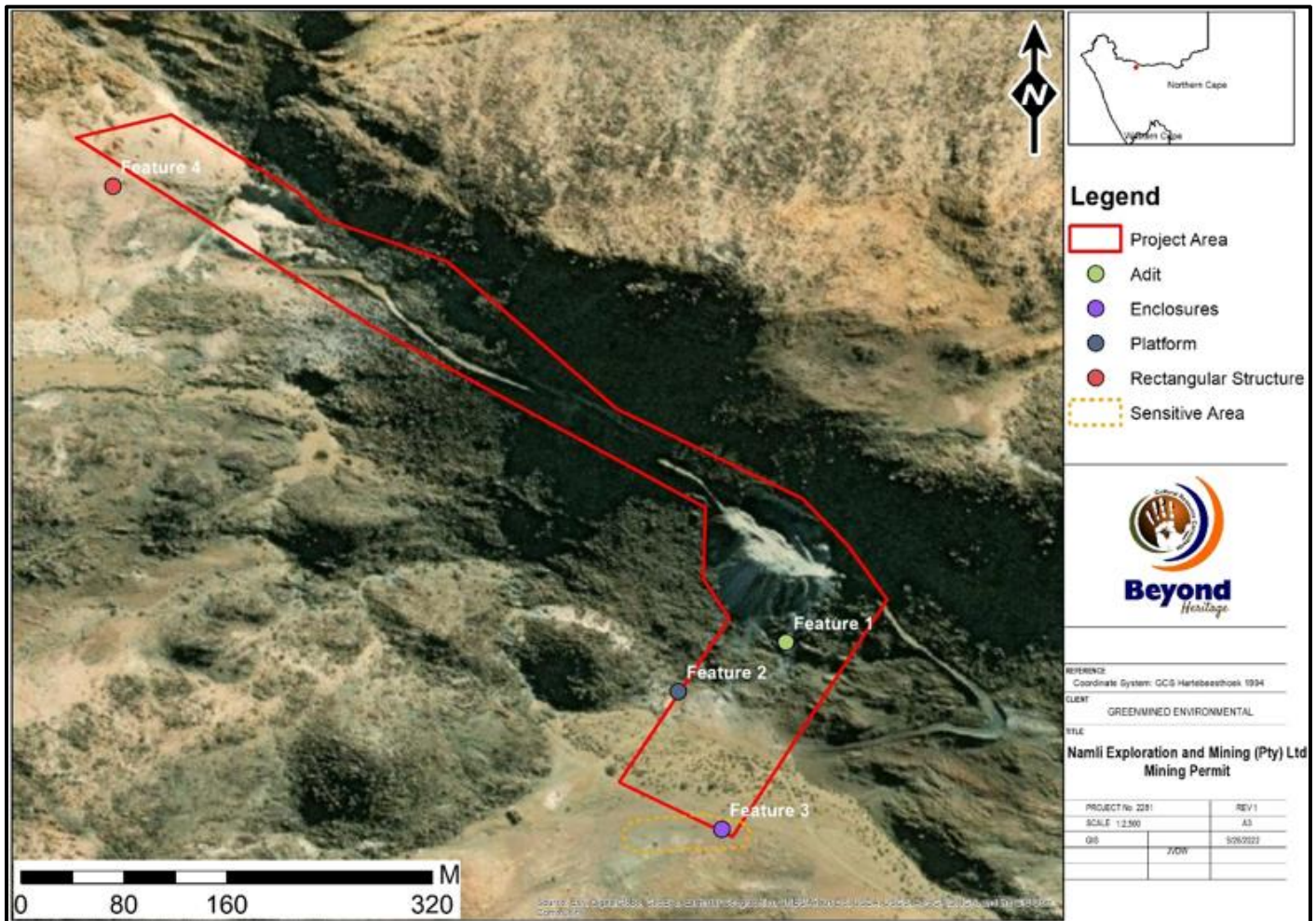


Figure 29: Distribution of observations in relation to the mining area (image obtained from HIA).

**Cultural Landscape:**

Historical land use and the cultural landscape are linked since the cultural landscape is shaped to some extent by the history of the area. Although the farm seems to have been fallow in recent years, some sort of agricultural activity no doubt took place and is evident by fences and watering holes. This is largely related to small stock but has not left much trace. The major historic aspect that left the most visible remains on the landscape is the previous mining activities that predates 1961.

**Palaeontological Heritage:**

As mentioned earlier, in terms of the paleontological component, the general study area is indicated as of insignificant or low significance on the SAHRIS Palaeontological sensitivity map, and no further studies are required for this aspect. According to

Beyond Heritage's communication with Prof Marion Bamford the study area is located within the Vioolsdrift Suite characterised by ancient metamorphic rocks and no fossils.

### **Potential Impact:**

The HIA reports that based on the current lay out, the project will directly impact on Feature 1 and 2 and have a possible indirect impact on Feature 3 and 4. Collectively these features are of low to medium significance and based on the assumption that these features are 60 years old or approaching the 60 year threshold and falls under the ambit of the NHRA.

Any additional effects to subsurface heritage resources can be successfully mitigated by implementing a chance find procedure. Mitigation measures and additional recommendations in this report should be implemented during all phases of the project. With the implementation of the recommended mitigation measures impacts of the project on heritage resources is acceptable (Low).

### **Recommendations:**

The specialist proposed the following recommendations for Environmental Authorisation, and proposed that the project may only proceed based on approval from SAHRA:

- ⌘ Documentation (scaled mapping) of the mining-related structures at Norrabees 1 and 2;
- ⌘ After documentation of the features a destruction permit can be applied for the sites that will be impacted on (for Feature 1 and 2) from Ngwao-Boswa Jwa Kapa Bokone (Northern Cape PHRA) prior to mining activities starting;
- ⌘ The enclosures recorded as Feature 3 are just outside of the development footprint and it is recommended that these features should be avoided and preserved in situ with a 30 meter buffer zone;
- ⌘ Feature 4 is located outside of the impact area and should be demarcated and avoided during mining activities;
- ⌘ Implementation of a Chance Find Procedure for the project;
- ⌘ Monitoring of the project by the ECO.

### **Reasoned Opinion:**

The HIA concludes that the overall impact of the project is low and residual impacts can be managed to an acceptable level through implementation of the recommendations made in this report. The socio-economic benefits also outweigh the

possible impacts of the development if the correct mitigation measures are implemented for the project.

### SITE SPECIFIC INFRASTRUCTURE

No infrastructure exists in the 5 ha footprint that could be impacted on by the proposed activity. The Applicant will be responsible for the upgrade and upkeep of the access roads (when needed) for the duration of the site establishment-, operational-, and decommissioning phases.

#### (d) Environmental and current land use map.

(Show all environmental and current land use features)

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

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

(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. Please indicate the extent to which they can be reversed, the extent to which they may cause irreplaceable loss of resources, and can be avoided, managed, or mitigated.)

The following potential impacts were identified of each main activity in each phase of the proposed project. The significance rating was determined using the methodology as explained under *vi) Methodology Used in Determining and Ranking the Significance*. The impact rating listed below was determined for each impact **prior** to bringing the proposed mitigation measures into consideration. The degree of mitigation indicates the possibility of partial, full or no mitigation of the identified impact.

#### SITE ESTABLISHMENT & INFRASTRUCTURE DEVELOPMENT:

Visual intrusion because of site establishment

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
<b>Rating: Low-Medium</b>			<b>Final Project Proposal</b>		<b>Degree of Mitigation: Partial</b>		
2	4	1	2.3	2	5	3.5	<b>8</b>

Potential impact on the CBA/NPAESFA objectives

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
<b>Rating: Low-Medium</b>			<b>Final Project Proposal</b>		<b>Degree of Mitigation: Full</b>		
4	4	4	4	3	1	2	<b>8</b>

Potential impact on vegetation and listed and/or protected plant species

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
<b>Rating: Low-Medium</b>			<b>Final Project Proposal</b>			<b>Degree of Mitigation: Full</b>	
3	4	4	3.6	3	2	2.5	9

Potential impact on fauna within the footprint area

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
<b>Rating: Low-Medium</b>			<b>Final Project Proposal</b>			<b>Degree of Mitigation: Full</b>	
3	3	1	2.6	3	2	2.5	6.5

Potential impact on archaeological artefacts

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
<b>Rating: Medium</b>			<b>Final Project Proposal</b>			<b>Degree of Mitigation: Full</b>	
4	5	5	4.6	5	1	3	13.8

New job opportunities because of the mining operation (Positive Impact)

			Consequence			Likelihood	Significance (+)
Severity (+)	Duration	Extent		Probability	Frequency		
<b>Rating: High (+)</b>			<b>Final Project Proposal</b>			<b>Degree of Mitigation: N/A</b>	
4	4	5	4.6	5	5	5	23

**PROCESSING OF TAILINGS, VEGETATION REMOVAL, AND STRIPPING OF OVERBURDEN:**

Dust nuisance because of the disturbance of soil

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
<b>Rating: Medium</b>			<b>Final Project Proposal</b>			<b>Degree of Mitigation: Partial</b>	
2	4	2	2.6	5	5	5	13

Noise nuisance generated by earthmoving machinery

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
<b>Rating: Low-Medium</b>			<b>Final Project Proposal</b>			<b>Degree of Mitigation: Partial</b>	
2	3	2	2.3	3	5	4	9.2

Infestation of the mining area with weeds or invader plant species

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
<b>Rating: Medium</b>			<b>Final Project Proposal</b>			<b>Degree of Mitigation: Full</b>	
3	4	2	3	5	2	3.5	10.5

Potential impact on local fauna due to disturbance of habitat

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
<b>Rating: Medium</b>			<b>Final Project Proposal</b>			<b>Degree of Mitigation: Full</b>	
3	4	1	2.6	4	4	4	<b>10.4</b>

Potential erosion of denuded areas

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
<b>Rating: Low-Medium</b>			<b>Final Project Proposal</b>			<b>Degree of Mitigation: Full</b>	
3	3	1	2.3	4	2	3	<b>6.9</b>

Potential contamination of footprint area and surface runoff because of hydrocarbon spillages

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
<b>Rating: Medium</b>			<b>Final Project Proposal</b>			<b>Degree of Mitigation: Full</b>	
3	3	1	2.3	4	4	4	<b>9.2</b>

**DRILLING AND BLASTING:**

Health and safety risk posed by blasting activities

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
<b>Rating: Medium</b>			<b>Final Project Proposal</b>			<b>Degree of Mitigation: Full</b>	
4	4	1	3	4	3	3.5	<b>10.5</b>

Dust nuisance caused by blasting activities

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
<b>Rating: Low-Medium</b>			<b>Final Project Proposal</b>			<b>Degree of Mitigation: None</b>	
2	4	2	2.6	4	3	3.5	<b>9.1</b>

Noise nuisance because of blasting

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
<b>Rating: Low-Medium</b>			<b>Final Project Proposal</b>			<b>Degree of Mitigation: Partial</b>	
3	4	2	3	3	3	3	<b>9</b>

**EXCAVATION, LOADING AND HAULING TO THE PROCESSING PLANT**

Dust nuisance due to excavation and from loading and vehicles transporting the material

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
<b>Rating: Medium</b>			<b>Final Project Proposal</b>			<b>Degree of Mitigation: Full</b>	
2	4	2	2.6	4	5	4.5	<b>11.7</b>

Noise nuisance because of the mining activities

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
<b>Rating: Medium</b>			<b>Final Project Proposal</b>			<b>Degree of Mitigation: Partial</b>	
2	4	2	2.6	4	5	4.5	<b>11.7</b>

Unsafe working environment for employees

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
<b>Rating: Medium</b>			<b>Final Project Proposal</b>			<b>Degree of Mitigation: Full</b>	
4	4	1	3	4	5	4.5	<b>13.5</b>

Soil contamination from hydrocarbon spills and/or littering

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
<b>Rating: Medium</b>			<b>Final Project Proposal</b>			<b>Degree of Mitigation: Full</b>	
3	4	1	2.6	4	5	4.5	<b>11.7</b>

Potential impact on areas of palaeontological concern

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
<b>Rating: Low</b>			<b>Final Project Proposal</b>			<b>Degree of Mitigation: Full</b>	
4	5	5	4.6	1	1	1	<b>4.6</b>

Facilitation of erosion due to mining activities

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
<b>Rating: Low-Medium</b>			<b>Final Project Proposal</b>			<b>Degree of Mitigation: Full</b>	
3	4	1	2.6	4	3	3.5	<b>9.1</b>

**PROCESSING, STOCKPILING AND TRANSPORTING OF MATERIAL:**

Dust nuisance generated at the processing plant

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
<b>Rating: Low-Medium</b>			<b>Final Project Proposal</b>			<b>Degree of Mitigation: Full</b>	
2	3	2	2.3	5	2	3.5	<b>8</b>

Noise nuisance stemming from operation of the processing plant

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
<b>Rating: Low-Medium</b>			<b>Final Project Proposal</b>			<b>Degree of Mitigation: Partial</b>	
2	3	2	2.3	4	2	3	<b>6.9</b>



Potential contamination of environment due to improper waste management

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
<b>Rating: Medium</b>			<b>Final Project Proposal</b>			<b>Degree of Mitigation: Full</b>	
3	4	1	2.6	4	4	4	<b>10.4</b>

Overloading of trucks impacting road infrastructure

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
<b>Rating: Medium-High</b>			<b>Final Project Proposal</b>			<b>Degree of Mitigation: Full</b>	
3	4	5	4	4	5	4.5	<b>18</b>

Degradation of the access roads

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
<b>Rating: Medium</b>			<b>Final Project Proposal</b>			<b>Degree of Mitigation: Full</b>	
3	4	2	3	4	5	4.5	<b>13.5</b>

**CUMULATIVE IMPACTS:**

Impact the broad-scale ecological processes

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
<b>Rating: Low-Medium</b>			<b>Final Project Proposal</b>			<b>Degree of Mitigation: Partial</b>	
4	4	4	4	2	1	1.5	<b>6</b>

Successful mining could lead to development of a larger long-term mine with more work opportunities **(Positive Impact)**

			Consequence			Likelihood	Significance (+)
Severity (+)	Duration	Extent		Probability	Frequency		
<b>Rating: Medium-High (+)</b>			<b>Final Project Proposal</b>			<b>Degree of Mitigation: N/A</b>	
4	4	5	4.3	4	5	4.5	<b>19.4</b>

**SLOPING AND LANDSCAPING DURING REHABILITATION:**

Safety risk posed by un-sloped areas

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
<b>Rating: Medium</b>			<b>Final Project Proposal</b>			<b>Degree of Mitigation: Full</b>	
4	5	1	3.3	4	5	4.5	<b>14.8</b>

Erosion of landscaped area after rehabilitation

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
<b>Rating: Medium</b>			<b>Final Project Proposal</b>			<b>Degree of Mitigation: Full</b>	
3	5	1	3	4	3	3.5	<b>10.5</b>

Infestation of the reinstated areas by weeds and invader plant species

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
<b>Rating: Medium</b>			<b>Final Project Proposal</b>		<b>Degree of Mitigation: Full</b>		
3	5	3	3.6	4	2	3	<b>10.8</b>

Potential impact associated with litter/waste left at the mining area

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
<b>Rating: Medium</b>			<b>Final Project Proposal</b>		<b>Degree of Mitigation: Full</b>		
3	5	1	3	4	5	4.5	<b>10.5</b>

Rehabilitation of the abandoned pits and tailings dump (**Positive Impact**)

			Consequence			Likelihood	Significance (+)
Severity (+)	Duration	Extent		Probability	Frequency		
<b>Rating: Medium-High (+)</b>			<b>Final Project Proposal</b>		<b>Degree of Mitigation: N/A</b>		
4	5	1	3.3	5	5	5	<b>16.5</b>

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

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

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

**DEFINITIONS AND CONCEPTS:**

**Environmental significance:**

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

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

Significance can be differentiated into impact magnitude and impact significance. Impact magnitude is the measurable change (i.e. intensity, duration, and likelihood). Impact significance is the value placed on the change by different affected parties (i.e. level of

acceptability) (DEAT (2002) Impact Significance, Integrated Environmental Management, Information Series 5).

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

### **Impact**

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

### **Consequence**

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

### **Likelihood**

A qualitative term covering both probability and frequency.

### **Frequency**

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

### **Probability**

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

### **Environment**

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

### **Methodology that will be used**

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

$$\text{Environmental Significance} = \text{Overall Consequence} \times \text{Overall Likelihood}$$

### **Determination of Overall Consequence**

Consequence analysis is a mixture of quantitative and qualitative information, and the outcome can be positive or negative. Several factors can be used to determine consequence. To determining the environmental significance in terms of consequence, the following factors

were chosen **Severity/Intensity, Duration and Extent/Spatial Scale**. Each factor is assigned a rating of 1 to 5, as described in the tables below.

### **Determination of Severity / Intensity**

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

The table below will be used to obtain an overall rating for severity, taking into consideration the various criteria.

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

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

### **Determination of Duration**

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

Table 13: Criteria for the rating of duration.

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

### **Determination of Extent/Spatial Scale**

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

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

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

### **Determination of Overall Consequence**

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

Table 15: Example of calculating overall consequence.

Consequence	Rating
Severity	Example 4
Duration	Example 2
Extent	Example 4
<b>SUBTOTAL</b>	<b>10</b>
<b>TOTAL CONSEQUENCE:</b> (Subtotal divided by 3)	<b>3.3</b>

### **Determination of Likelihood:**

The determination of likelihood is a combination of Frequency and Probability. Each factor is assigned a rating of 1 to 5, as described below and in tables 6 and 7.

### **Determination of Frequency**

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

Table 16: Criteria for the rating of frequency.

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

### **Determination of Probability**

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

Table 17: Criteria for the rating of probability.

Rating	Description
1	Almost never / almost impossible
2	Very seldom / highly unlikely

Rating	Description
3	Infrequent / unlikely / seldom
4	Often / regularly / likely / possible
5	Daily / highly likely / definitely

### Overall Likelihood

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

Table 18: Example of calculating overall likelihood.

Consequence	Rating
Frequency	Example 4
Probability	Example 2
<b>SUBTOTAL</b>	<b>6</b>
<b>TOTAL LIKELIHOOD</b> (Subtotal divided by 2)	<b>3</b>

### Determination of Overall Environmental Significance:

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

Table 19: Determination of overall environmental significance.

Significance or Risk	Low	Low-Medium	Medium	Medium-High	High
Overall Consequence X Overall Likelihood	1 – 4.9	5 – 9.9	10 – 14.9	15 – 19.9	20 – 25

### Qualitative description or magnitude of Environmental Significance

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

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

Significance	Low	Low-Medium	Medium	Medium-High	High
Impact Magnitude	Impact is of very low order and therefore likely to have very little real effect. Acceptable.	Impact is of low order and therefore likely to have little real effect. Acceptable.	Impact is real, and potentially substantial in relation to other impacts. Can pose a risk to company	Impact is real and substantial in relation to other impacts. Pose a risk to the company. Unacceptable	Impact is of the highest order possible. Unacceptable. Fatal flaw.

Significance	Low	Low-Medium	Medium	Medium-High	High
Action Required	Maintain current management measures. Where possible improve.	Maintain current management measures. Implement monitoring and evaluate to determine potential increase in risk. Where possible improve	Implement monitoring. Investigate mitigation measures and improve management measures to reduce risk, where possible.	Improve management measures to reduce risk.	Implement significant mitigation measures or implement alternatives.

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

- High** Of the highest order possible within the bounds of impacts which could occur. In the case of negative impacts, there would be no possible mitigation and / or remedial activity to offset the impact at the spatial or time scale for which it was predicted. In the case of positive impacts, there is no real alternative to achieving the benefit.
- Medium-High** Impacts of a substantial order. In the case of negative impacts, mitigation and / or remedial activity would be feasible but difficult, expensive, time-consuming or some combination of these. In the case of positive impacts, other means of achieving this benefit would be feasible, but these would be more difficult, expensive, time-consuming or some combination of these.
- Medium** Impact would be real but not substantial within the bounds of those, which could occur. In the case of negative impacts, mitigation and / or remedial activity would be both feasible and fairly easily possible. In case of positive impacts; other means of achieving these benefits would be about equal in time, cost, and effort.
- Low-Medium** Impact would be of a low order and with little real effect. In the case of negative impacts, mitigation and / or remedial activity would be either easily achieved or little would be required, or both. In case of positive impacts alternative means for achieving this benefit would likely be easier, cheaper, more effective, less time-consuming, or some combination of these.
- Low** Impact would be negligible. In the case of negative impacts, almost no mitigation and or remedial activity would be needed, and any minor steps, which might be needed, would be easy, cheap, and simple. In the case of positive impacts, alternative means would almost all likely be better, in one or several ways, than this means of achieving the benefit
- Insignificant** There would be a no impact at all – not even a very low impact on the system or any of its parts.

**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)

Refer to Part A(1)(h)(i) *Details of the development footprint alternatives considered*, for an explanation on the development alternatives that were considered. The proposed project will result in the following positive impacts:

**POSITIVE IMPACTS ASSOCIATED WITH PROJECT PROPSAL:**

- ⌘ The permit holder will be able to exploit the resources available within the earmarked area and enter the rising lithium market that will directly contribute to the economy of the country;
- ⌘ Mining of the abandoned areas will enhance the rehabilitation possibilities of the area;
- ⌘ Mining will be confined to the already disturbed areas, minimising the potential impact on the biodiversity of the area;
- ⌘ The proposed layout offers the Applicant a level area that could be used for the partial processing of the material;
- ⌘ The existing roads and tracks can be used, and will be maintained by the Applicant for the duration of the project;
- ⌘ The project will have a very low significance on the air quality, noise ambiance and visual character of the site due to its remote nature;
- ⌘ At least fifteen new job opportunities will be created by the proposed activity;
- ⌘ The presence of the proposed operation will contribute (directly & indirectly) to the local economy with preference give to HDSA & women owned local suppliers;
- ⌘ Upon closure, the area will be rendered safe;
- ⌘ Temporary infrastructure will be used on site that will have a lesser impact than permanent structures;
- ⌘ Successful mining could lead to development of a larger long-term mine with more work opportunities.

**POTENTIAL NEGATIVE IMPACTS ASSOCIATED WITH THE PREFERRED PROJECT PROPOSAL:**

The following table shows the potential negative impacts associated with the preferred project proposal that were identified during the EIA:



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

ACTIVITY	POTENTIAL IMPACT	SIGNIFICANCE (BEFORE MITIGATION)	SIGNIFICANCE (AFTER MITIGATION)
<ul style="list-style-type: none"> <li>⌘ Site establishment and infrastructure development.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Visual intrusion because of site establishment</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Low-Medium</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Low</li> </ul>
<ul style="list-style-type: none"> <li>⌘ Site establishment and infrastructure development.</li> <li>⌘ Cumulative Impacts</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Potential impact on the CBA/NPAESFA objectives.</li> <li>⌘ Impact the broad-scale ecological processes.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Low-Medium</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Low</li> </ul>
<ul style="list-style-type: none"> <li>⌘ Site establishment and infrastructure development.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Potential impact on vegetation and listed and/or protected plant species.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Low-Medium</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Low</li> </ul>
<ul style="list-style-type: none"> <li>⌘ Site establishment and infrastructure development.</li> <li>⌘ Processing of tailings, vegetation removal, and stripping of overburden.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Potential impact on fauna within the footprint area.</li> <li>⌘ Potential impact on local fauna due to disturbance of habitat.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Low-Medium</li> <li>⌘ Medium</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Low</li> <li>⌘ Low</li> </ul>
<ul style="list-style-type: none"> <li>⌘ Site establishment and infrastructure development.</li> <li>⌘ Excavation, loading and hauling to the processing plant.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Potential impact on archaeological artefacts.</li> <li>⌘ Potential impact on areas of palaeontological concerns.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Medium</li> <li>⌘ Low</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Low</li> <li>⌘ Low</li> </ul>
<ul style="list-style-type: none"> <li>⌘ Processing of tailings, vegetation removal, and stripping of overburden.</li> <li>⌘ Drilling and Blasting.</li> <li>⌘ Excavation, loading and hauling to the processing plant.</li> <li>⌘ Processing, stockpiling and transporting of material.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Dust nuisance because of the disturbance of soil.</li> <li>⌘ Dust nuisance caused by blasting activities.</li> <li>⌘ Dust nuisance due to excavation and from loading and vehicles transporting the material.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Medium</li> <li>⌘ Low-Medium</li> <li>⌘ Medium</li> <li>⌘ Medium</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Low</li> <li>⌘ Low-Medium</li> <li>⌘ Low</li> <li>⌘ Low</li> </ul>
<ul style="list-style-type: none"> <li>⌘ Processing of tailings, vegetation removal, and stripping of overburden.</li> <li>⌘ Drilling and blasting.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Noise nuisance generated by earthmoving machinery.</li> <li>⌘ Noise nuisance because of blasting.</li> <li>⌘ Noise nuisance because of the mining activities.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Low-Medium</li> <li>⌘ Low-Medium</li> <li>⌘ Medium</li> <li>⌘ Low-Medium</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Low</li> <li>⌘ Low-Medium</li> <li>⌘ Low</li> <li>⌘ Low</li> </ul>

ACTIVITY	POTENTIAL IMPACT	SIGNIFICANCE (BEFORE MITIGATION)	SIGNIFICANCE (AFTER MITIGATION)
<ul style="list-style-type: none"> <li>⌘ Excavation, loading and hauling to the processing plant.</li> <li>⌘ Processing, stockpiling, and transporting of material.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Noise nuisance stemming from operation of the processing plant.</li> </ul>		
<ul style="list-style-type: none"> <li>⌘ Processing of tailings, vegetation removal, and stripping of overburden.</li> <li>⌘ Sloping and landscaping during rehabilitation phase.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Infestation of the mining area with weeds or invader plant species.</li> <li>⌘ Infestation of the reinstated areas by weeds and invader plant species.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Medium</li> <li>⌘ Medium</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Low</li> <li>⌘ Low</li> </ul>
<ul style="list-style-type: none"> <li>⌘ Processing of tailings, vegetation removal, and stripping of overburden.</li> <li>⌘ Excavation, loading and hauling to the processing plant.</li> <li>⌘ Sloping and landscaping during rehabilitation.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Potential erosion of denuded areas.</li> <li>⌘ Facilitation of erosion due to mining activities.</li> <li>⌘ Erosion of landscaped area after rehabilitation.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Low-Medium</li> <li>⌘ Low-Medium</li> <li>⌘ Medium</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Low</li> <li>⌘ Low</li> <li>⌘ Low</li> </ul>
<ul style="list-style-type: none"> <li>⌘ Processing of tailings, vegetation removal, and stripping of overburden.</li> <li>⌘ Excavation, loading and hauling to the processing plant.</li> <li>⌘ Processing, stockpiling, and transporting of material.</li> <li>⌘ Sloping and landscaping during rehabilitation phase.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Potential contamination of footprint area and surface runoff because of hydrocarbon spillages.</li> <li>⌘ Soil contamination from hydrocarbon spills and/or littering.</li> <li>⌘ Potential contamination of environment due to improper waste management.</li> <li>⌘ Potential impact associated with litter/waste left at the mining area.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Low-Medium</li> <li>⌘ Medium</li> <li>⌘ Medium</li> <li>⌘ Medium</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Low</li> <li>⌘ Low</li> <li>⌘ Low</li> <li>⌘ Low</li> </ul>
<ul style="list-style-type: none"> <li>⌘ Drilling and blasting.</li> <li>⌘ Excavation, loading and hauling to the processing plant.</li> <li>⌘ Sloping and landscaping during rehabilitation phase.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Health and safety risk posed by blasting activities.</li> <li>⌘ Unsafe working environment for employees.</li> <li>⌘ Safety risk posed by un-sloped areas.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Medium</li> <li>⌘ Medium</li> <li>⌘ Medium</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Low</li> <li>⌘ Low</li> <li>⌘ Low</li> </ul>
<ul style="list-style-type: none"> <li>⌘ Processing, stockpiling, and transporting of material.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Overloading of trucks impacting road infrastructure.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Medium-High</li> <li>⌘ Medium</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Low</li> <li>⌘ Low</li> </ul>

ACTIVITY	POTENTIAL IMPACT	SIGNIFICANCE (BEFORE MITIGATION)	SIGNIFICANCE (AFTER MITIGATION)
	<ul style="list-style-type: none"> <li>⌘ Degradation of the access road.</li> </ul>		

**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 mitigation 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)

The following mitigation measures are proposed to address/minimize the impact of the proposed activity on the surrounding environment:

**TOPOGRAPHY**

**Rehabilitating/Landscaping of Mining Area:**

- ⌘ The excavated area must serve as a final depositing area for the placement of overburden.
- ⌘ Rocks and coarse material removed from the excavation must be dumped into the excavation upon completion.
- ⌘ Coarse natural material used for the construction of ramps must be removed and dumped into the excavations.
- ⌘ Stockpiles must be removed during the decommissioning phase, the area ripped, and the topsoil (if available) returned to its original depth to provide a growth medium.
- ⌘ No waste may be permitted to be deposited in the excavations.
- ⌘ Once overburden, rocks and coarse natural materials have been added to the excavation and it was profiled with acceptable contours and erosion control measures, the topsoil previously stored (if any) must be returned to its original depth over the area.
- ⌘ The area must be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local or adapted indigenous seed mix to propagate the locally or regionally occurring flora.
- ⌘ If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a vegetation seed mix to his or her specification.
- ⌘ On completion of operations, all structures or objects shall be dealt with in accordance with section 44 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002).
- ⌘ On completion of mining operations, the surface of all plant-, stockpiling-, and/or office areas, if compacted due to hauling and dumping operations, shall be scarified to a depth

of at least 200 mm and graded to an even surface condition. Where applicable/possible topsoil needs to be returned to its original depth over the area.

## **VISUAL CHARACTERISTICS**

### **Visual Mitigation:**

- ⌘ The site must have a neat appearance and always be kept in good condition.
- ⌘ Mining equipment must be stored neatly in dedicated areas when not in use.
- ⌘ The permit holder must limit vegetation removal, and stripping of overburden may only be done immediately prior to the mining/use of a specific area.
- ⌘ The excavation must be contained within the approved footprint of the permitted area.
- ⌘ Upon closure the site must be rehabilitated to ensure that the visual impact on the aesthetic value of the area is reduced to the minimum.

## **AIR AND NOISE QUALITY**

### **Fugitive Dust Emission Mitigation Measures:**

- ⌘ The liberation of dust into the surrounding environment must be effectively controlled using, inter alia, straw, water spraying and/or environmentally friendly dust-allaying agents that contains no PCB's (e.g. DAS products).
- ⌘ The site manager must ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression.
- ⌘ Speed on the haul roads must be limited to 20 km/h and 40 km/h on the access road to prevent the generation of excess dust.
- ⌘ Areas devoid of vegetation, which could act as a dust source, must be minimized and vegetation removal may only be done immediately prior to mining.
- ⌘ The crusher plant must have operational water sprayers to alleviate dust generation from the conveyor belts.
- ⌘ Fines, blowing from the drop end of the crusher plant, can be minimized by attaching strips of used conveyor belts to the conveyor's end.
- ⌘ Compacted dust must weekly be removed from the crusher plant to eliminate the dust source.
- ⌘ Loads must be flattened to prevent spillage during transportation on public roads.
- ⌘ Weather conditions must be taken into consideration upon commencement of daily operations. Limiting operations during very windy periods would reduce airborne dust and resulting impacts.

- ⌘ All dust generating activities shall comply with the National Dust Control Regulations, GN No R827 promulgated in terms of NEM:AQA (Act 39 of 2004) and ASTM D1739 (SANS 1137:2012).
- ⌘ Best practice measures shall be implemented during the stripping of overburden, excavation, and transporting of material from site to minimize potential dust impacts.

#### **Noise Handling:**

- ⌘ The permit holder must ensure that employees and staff conduct themselves in an acceptable manner while on site.
- ⌘ No loud music may be permitted at the mining area.
- ⌘ All mining vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the National Road Traffic Act, 1996 (Act No 93 of 1996).
- ⌘ The type, duration and timing of the blasting procedures must be planned with due cognizance of other land users and structures in the vicinity. Surrounding land users must be notified in writing prior to each blasting occasion.
- ⌘ A qualified occupational hygienist must be contracted to quarterly monitor and report on the personal noise exposure of the employees working at the mine. The monitoring must be done in accordance with the SANS 10083:2004 (Edition 5) sampling method as well as NEM:AQA, 2004, SANS 10103:2008.
- ⌘ Best practice measures shall be implemented to minimize potential noise impacts.

#### **GEOLOGY AND SOIL**

##### **Soil Management (where applicable):**

- ⌘ Due to the nature of the area, very little to no topsoil exists that can be stripped, the Applicant must however treat any soil as a valuable and essential resource for rehabilitation and it must therefore be managed carefully to conserve and maintain it throughout the stockpiling and rehabilitation processes.
- ⌘ Soil stripping, stockpiling, and re-spreading must be done in a systematic way. The mining plan must be such that soil is stockpiled for the minimum possible time.
- ⌘ The soil must be placed on a levelled area, within the mining footprint. No soil heaps may be placed in undisturbed areas.
- ⌘ Soil stockpiles must be protected against losses by water- and wind erosion. Stockpiles must be positioned so as not to be vulnerable to erosion by wind and water. The establishment of plants (weeds or a cover crop) on the stockpiles will help to prevent erosion.
- ⌘ The temporary soil stockpiles must be kept free of invasive plant species.

- ⌘ The stockpiled soil must be evenly spread over the rehabilitated area upon closure of the site.
- ⌘ The permit holder must strive to re-instate soil at a time of year when vegetation cover can be established as quickly as possible afterwards, so that erosion of returned soil by both rain and wind, before vegetation is established, is minimized. The best time of year is at the end of the rainy season, when there is moisture in the soil for vegetation establishment and the risk of heavy rainfall events is minimal.
- ⌘ The rehabilitated area must be monitored for erosion, and appropriately stabilized if any erosion occurs for at least 12 months after reinstatement.

## **HYDROLOGY**

### **Erosion Control and Storm Water Management:**

- ⌘ Clearing of vegetation must be limited to the proposed mining footprint and associated infrastructure. No clearing outside of the minimum required footprint to take place.
- ⌘ Stormwater must be diverted around the soil heaps and mining areas to prevent erosion.
- ⌘ Stockpiles must be protected from erosion and stored on flat areas where possible.
- ⌘ When mining within steep slopes, it must be ensured that adequate slope protection is provided.
- ⌘ During mining, the outflow of run-off water from the mining excavation must be controlled to prevent down-slope erosion. This must be done by way of the construction of temporary banks and ditches that will direct run-off water (if needed). These must be in place at any points where overflow out of the excavation might occur.
- ⌘ Roads and other disturbed areas within the project area must be regularly monitored for erosion and problem areas must receive follow-up monitoring to assess the success of the remediation.
- ⌘ Any erosion problems within the mining area because of the mining activities observed must be rectified immediately (within 48 hours) and monitored thereafter to ensure that it does not re-occur.
- ⌘ Mining must be conducted only in accordance with the Best Practice Guideline for small scale mining that relates to storm water management, erosion and sediment control and waste management, developed by the Department of Water and Sanitation (DWS), and any other conditions which that Department may impose:
  - Clean water (e.g. rainwater) must be kept clean and be routed to a natural watercourse by a system separate from the dirty water system. You must prevent clean water from running or spilling into dirty water systems.
  - Dirty water must be collected and contained in a system separate from the clean water system.

- Dirty water must be prevented from spilling or seeping into clean water systems.
- ⌘ Polluting activities including storage of mining fleet, equipment wash down facilities and vehicle maintenance yards must be restricted to the workshop areas and must be undertaken on impermeable hard standing surfaces, which are formally drained to a dirty water drainage system at the site.
- ⌘ All fuels and chemicals stored or used on site must be contained within fit for purpose containers and stored within designated storage areas. To prevent pollution of the surrounding environment during an accidental spillage, the designated storage areas must be situated on an impermeable surface and must feature a perimeter bund and a drainage sump. The volume of the bund and sump must be sized to contain at least 110% of the total volume of the fuel and chemicals being stored within the designated storage area.

## **TERRESTRIAL BIODIVERSITY, CONSERVATION AREAS AND GROUNDCOVER**

### **Management of Vegetation Removal:**

- ❖ The mining boundaries must be clearly demarcated, and all operations must be contained to the approved mining area. The area outside the mining boundaries must be declared a no-go area, and all staff must be educated accordingly.
- ❖ Permits for the removal of protected plant species must be obtained and always kept on-site in the possession of the flora search and rescue team.
- ❖ A pre-commencement environmental induction for all site staff must be provided to ensure that basic environmental principles are adhered to. This includes awareness of no littering, appropriate handling of pollution and chemical spills, avoiding fire hazards, minimising wildlife interactions, remaining within demarcated construction areas, etc.
- ❖ Bush-clearance may only commence once the plant permits were obtained, and the protected plants successfully relocated by an appropriately qualified person.
- ❖ The on-site ECO must provide supervision and oversight of vegetation clearing activities and other activities which may cause damage to the environment, especially during the site establishment phase, when most of the vegetation clearing is taking place.
- ❖ All vehicles must remain on demarcated roads and no unnecessary driving in the veld outside these areas may be allowed.
- ❖ No plants may be translocated or otherwise uprooted or disturbed for rehabilitation or other purposes without express permission from the ECO and without the relevant permits.
- ❖ No fires must be allowed on-site.
- ❖ All cleared areas that are no longer or not required for drilling activities must be re-seeded with locally sourced seed of suitable species. Bare areas can also be packed with brush

removed from other parts of the site to encourage natural vegetation regeneration and limit erosion.

### **Management of Invasive Plant Species:**

- ⌘ An invasive plant species management plan (Appendix K) must be implemented at the site to ensure the management and control of all species regarded as Category 1a and 1b invasive species in terms of NEM:BA (National Environmental Management: Biodiversity Act 10 of 2004 and regulations applicable thereto). Weed/alien clearing must be done on an ongoing basis throughout the life of the mining activities.
- ⌘ No planting or importing of any alien species to the site for landscaping, rehabilitation or any other purpose may be allowed.
- ⌘ All stockpiles must be kept free of invasive plant species.
- ⌘ Management must take responsibility to control declared invader or exotic species on the rehabilitated areas. The following control methods can be used:
  - The plants can be uprooted, felled, or cut off and can be destroyed completely.
  - The plants can be treated chemically by a registered pest control officer (PCO) using an herbicide recommended for use by the PCO in accordance with the directions for the use of such an herbicide.

## **FAUNA**

### **Protection of Fauna:**

- ⌘ The site manager must ensure no fauna is caught, killed, harmed, sold, or played with.
- ⌘ Any fauna directly threatened by the operational activities must be removed to a safe location by the ECO or other suitably qualified person.
- ⌘ All personnel must undergo environmental induction regarding fauna management and in particular awareness about not harming or collecting species such as snakes, tortoises, and owls. Workers must be instructed to report any animals that may be trapped in the working area.
- ⌘ No snares may be set, or nests raided for eggs or young.
- ⌘ All vehicles must adhere to a low speed limit (40 km/h is recommended) to avoid collisions with susceptible species such as snakes and tortoises.
- ⌘ No litter, food or other foreign material may be thrown or left around the site. Such items must be kept in waste bins with sealable lids at the processing area.



## **CULTURAL AND HERITAGE ENVIRONMENT**

### **Archaeological, Heritage and Palaeontological Aspects:**

- ⌘ All mining must be confined to the development footprint area.
- ⌘ Documentation (scaled mapping) must be done of the mining-related structures at Norrabees 1 and 2.
- ⌘ After documentation of Features 1 and 2 a destruction permit must be applied for from Ngwao-Boswa Jwa Kapa Bokone (Northern Cape PHRA) prior to this area being worked.
- ⌘ A 30 m buffer must be maintained around Feature 3 to preserve it in situ, and any damage to the feature must be avoided.
- ⌘ Feature 4 must be demarcated and avoided during mining activities.
- ⌘ The ECO must monitor the project.
- ⌘ A Chance Find Procedure must be implemented for the project as listed below:
  - If during the pre-construction phase, construction, operations or closure phases of this project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance or heritage site, this person must cease work at the site of the find and report this find to their immediate supervisor, and through their supervisor to the senior on-site manager.
  - It is the responsibility of the senior on-site Manager to make an initial assessment of the extent of the find and confirm the extent of the work stoppage in that area.
  - The senior on-site Manager must inform the ECO of the chance find and its immediate impact on operations. The ECO must then contact a professional archaeologist for an assessment of the finds who must notify the SAHRA/PHRA.
  - Work may only continue once the go-ahead was issued by SAHRA/PHRA.

## **EXISTING INFRASTRUCTURE**

### **Management of the Access Road:**

- ⌘ When applicable, storm water must be diverted around the access road to prevent erosion.
- ⌘ Vehicular movement must be restricted to the existing access road and crisscrossing of tracks through undisturbed areas must be prohibited.
- ⌘ Rutting and erosion of the access road caused as a direct result of the mining activities must be repaired by the permit holder.
- ⌘ Overloading of the trucks must be prevented, and proof of load weights must be filed and be available for auditing by relevant officials.

- ⌘ The speed of all mining equipment/vehicles must be restricted to 40 km/h on the access roads.

## **GENERAL**

### **Waste Management:**

- ⌘ Regular vehicle maintenance, repairs and services may only take place at the workshop and service area. If emergency repairs are needed on equipment not able to move to the workshop, drip trays must be present. All waste products must be disposed of in a closed container/bin to be removed from the emergency service area (same day) to the workshop to ensure proper disposal. This waste must be treated as hazardous waste and must be disposed of at a registered hazardous waste handling facility, alternatively collected by a registered hazardous waste handling contractor. The safe disposal certificates must be filed for auditing purposes.
- ⌘ If a diesel bowser is used on site, it must always be equipped with a drip tray. Drip trays must be used during each refuelling event. The nozzle of the bowser needs to rest in a sleeve to prevent dripping after refuelling.
- ⌘ Site management must ensure drip trays are cleaned after each use. No dirty drip trays may be used on site. The dirty rags used to clean the drip trays must be disposed as hazardous waste into a designated bin at the workshop, where it is incorporated into the hazardous waste removal system.
- ⌘ Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. Proof of safe disposal must be filed for auditing purposes.
- ⌘ An oil spill kit must be obtained, and the employees must be trained in the emergency procedures to follow when a spill occurs as well as the application of the spill kit.
- ⌘ Spills must be cleaned up immediately, within two hours of occurrence, to the satisfaction of the Regional Manager (DMRE) by removing the spillage together with the polluted soil and containing it in a designated hazardous waste bin until it is disposed of at a recognised facility. Proof must be filed.
- ⌘ Suitable covered receptacles must always be available and conveniently placed for the disposal of general waste.
- ⌘ Non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., must be stored in a container with a closable lid at a collecting point to be collected at least once a month and disposed of at a recognized landfill site. Specific precautions must be taken to prevent refuse from being dumped on or in the vicinity of the mine area. Proof of disposal must be available for auditing purposes.

- ⌘ Biodegradable refuse must be handled as indicated above.
- ⌘ Re-use or recycling of waste products must be encouraged on site.
- ⌘ No waste may be buried or burned on the site.
- ⌘ Ablution facilities must be provided in the form of a chemical toilet/s. The chemical toilet must be anchored (to prevent blowing/falling over) and shall be serviced at least once a week for the duration of the mining activities by a registered liquid waste handling contractor. The safe disposal certificates must be filed for auditing purposes.
- ⌘ The use of any temporary, chemical toilet facilities must not cause any pollution to water sources or pose a health hazard. In addition, no form of secondary pollution should arise from the disposal of refuse or sewage from the temporary, chemical toilets. Any pollution problems arising from the above are to be addressed immediately by the permit holder.
- ⌘ When small volumes of wastewater are generated during the life of the mine the following is applicable:
  - Water containing waste must not be discharged into the natural environment.
  - Measures to contain the wastewater and safely dispose thereof must be implemented.
- ⌘ It is important that any significant spillage of chemicals, fuels etc. during the lifespan of the mining activities is reported to the Department of Water and Sanitation and other relevant authorities.
- ⌘ Site management must implement the use of waste registers to keep record of the waste generated and removed from the mining area.

**Storage/Handling of Hazardous Substances/Chemicals:**

- ⌘ Chemical storage areas must be placed on level ground to prevent offsite migration of any spilled product.
- ⌘ The floor of the storage area must be impermeable to prevent seepage of spilled products into the ground or ground water.
- ⌘ Access to the chemicals/substances must be controlled and require prior notification of an appropriate staff member.
- ⌘ A Hazardous Substances Register must be maintained, and Safety Data Sheets (SDS) must be kept current for all chemicals used on site.
- ⌘ Any fuel/used oil tanks must have secondary containment in the form of an impermeable bund wall and base within which the tanks sit, raised above the floor, on plinths. The bund capacity must be sufficient to contain 110% of the tank's maximum capacity. The distance and height of the bund wall relative to that of the tank must also be taken into consideration to ensure that any spillage does not result in hydrocarbons/other substances spouting beyond the confines of the bund.

- ⌘ The site manager must establish a formal inspection routine to check all equipment in the bund area, as well as the bund area itself for malfunctions or leakages. The bund area must be inspected at least weekly, and any accumulated rainwater removed and handled as contaminated water. All valves and outlets must be checked to ensure that its intact and closed securely.
- ⌘ The bund base must slope towards an oil sump of sufficient size. Contaminated water may not be allowed to mix with clean water and must be contained until it is collected by a registered hazardous waste handling contractor or disposed of at a registered hazardous waste handling facility.
- ⌘ Drip trays must be used underneath all stationary equipment or vehicles. Used drip trays must be placed within a bunded area and are not to be stored on bare soil. The wastewater originating from the cleaning of drip trays must be discarded into the oil sump.

**Management of health and safety risks:**

- ⌘ Workers must have access to the correct personal protection equipment (PPE) as required by law.
- ⌘ Sanitary facilities must be located within 100 m from any point of work.
- ⌘ All operations must comply with the Mine Health and Safety Act, 1996 (Act No 29 of 1996).
- ⌘ The type, duration and timing of the blasting procedures must be planned with due cognizance of other land users in the vicinity.
- ⌘ The surrounding land users must be informed in writing ahead of each blasting event.
- ⌘ The compliance of ground vibration and airblast levels must be monitored to USBM standards with each blasting event.
- ⌘ A vibro recorder must be used to record all blasts.
- ⌘ Audible warning of a pending blast must be given at least 3 minutes in advance of the blast.
- ⌘ Measures to limit flyrock must be taken. All flyrock (of diameter 150 mm and larger) which falls beyond the working area, together with the rock spill must be collected and removed.

**ix) Motivation where no alternative sites were considered.**

Refer to Part A(1)(h)(i) *Details on the development footprint alternative considered* for an explanation why the proposed mining footprint cannot be moved from the current position.

**x) Statement motivating the alternative development location within the overall site.**

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

The proposed site (Table 3) was identified as the preferred and only site alternative based on the following:

- ⌘ The project proposal was sited over the known deposits of Norrabees 1 and 2, to allow optimal access to the sought after minerals. Both Norrabees 1 and 2 was historically excavated and abandoned without rehabilitation. Therefore, moving the permit area to an alternative site will remove it from the optimal resource, as well as result in the mining of another area while the current excavations have not yet been exhausted.
- ⌘ The Applicant proposes to mine the existing tailings at the site for ±6 months prior to implementing direct mining methods. Considering this, the proposed project will entail the reprocessing and reclamation of abandoned tailings on the site that will directly contribute to the rehabilitation of the altered area, as well as securing unsafe areas.
- ⌘ Confining the proposed development footprint to the already disturbed areas is deemed the most sustainable development option, considering the highly sensitive nature (CBA & NPAES) of the surrounding vegetated areas.
- ⌘ The most southern part of the application footprint incorporates a level area that would allow the establishment of the processing area.
- ⌘ The existing roads and tracks can be used to access the proposed mining area, and no new roads needs to be made.
- ⌘ The remote nature of the earmarked area lessens the potential of negative impacts regarding air, noise, and visual on the surrounding environment.
- ⌘ No rivers, streams or other watercourses were identified within 100 m, or wetlands within 500 m of the proposed mining footprint.

Considering the above mentioned, the project proposal is believed to be the most practical option as the mining area will be contained to the already disturbed areas, geological results have shown the presence of the sought after minerals, there is existing access to the site, and the environmental related impacts are of low significance.

**i) Full description of the process undertaken to identify, assess and rank the impacts and risks the activity will impose on the preferred site (In respect of the final site layout plan) through the life of the activity.**

(Including (i) a description of all environmental issues and risks that were identified during the environmental impact assessment process and (ii) an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures)

During the impact assessment process the following potential impacts were identified of each main activity in each phase. An initial significance rating (listed under *v) Impacts and Risks Identified*) was determined for each potential impact should the mitigation measures proposed in this document not be implemented on-site. The impact assessment process then continued in

identifying mitigation measures to address the impact that the proposed mining activity may have on the surrounding environment.

The significance rating was again determined for each impact using the methodology as explained under *vi) Methodology Used in Determining and Ranking the Significance*. The impact ratings listed below was determined for each impact **after** bringing the proposed mitigation measures into consideration and therefore represents the final layout/activity proposal.

### SITE ESTABLISHMENT & INFRASTRUCTURE DEVELOPMENT:

Visual intrusion because of site establishment

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
<b>Rating: Low</b>			<b>Final Project Proposal</b>			<b>Degree of Mitigation: Partial</b>	
1	4	1	2	2	2	2	4

Potential impact on the CBA/NPAESFA objectives

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
<b>Rating: Low</b>			<b>Final Project Proposal</b>			<b>Degree of Mitigation: Full</b>	
2	4	4	3.3	2	1	1.5	4.9

Potential impact on vegetation and listed and/or protected plant species

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
<b>Rating: Low</b>			<b>Final Project Proposal</b>			<b>Degree of Mitigation: Full</b>	
1	4	1	2	2	2	2	4

Potential impact on fauna within the footprint area

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
<b>Rating: Low</b>			<b>Final Project Proposal</b>			<b>Degree of Mitigation: Full</b>	
2	3	1	2.3	2	2	2	4.6

Potential impact on archaeological artefacts

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
<b>Rating: Low</b>			<b>Final Project Proposal</b>			<b>Degree of Mitigation: Full</b>	
2	5	5	4	1	1	1	4

New job opportunities because of the mining operation (Positive Impact)

			Consequence			Likelihood	Significance (+)
Severity (+)	Duration	Extent		Probability	Frequency		
<b>Rating: High (+)</b>			<b>Final Project Proposal</b>			<b>Degree of Mitigation: N/A</b>	
4	4	5	4.6	5	5	5	23

## PROCESSING OF TAILINGS, VEGETATION REMOVAL, AND STRIPPING OF OVERBURDEN

Dust nuisance because of the disturbance of soil

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
<b>Rating: Low</b>			<b>Final Project Proposal</b>			<b>Degree of Mitigation: Full</b>	
2	3	1	2	2	2	2	4

Noise nuisance generated by earthmoving machinery

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
<b>Rating: Low</b>			<b>Final Project Proposal</b>			<b>Degree of Mitigation: Partial</b>	
1	3	1	1.6	1	5	3	4.8

Infestation of the mining area with weeds or invader plant species

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
<b>Rating: Low</b>			<b>Final Project Proposal</b>			<b>Degree of Mitigation: Full</b>	
2	3	1	2	2	2	2	4

Potential impact on local fauna due to disturbance of habitat

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
<b>Rating: Low</b>			<b>Final Project Proposal</b>			<b>Degree of Mitigation: Full</b>	
1	4	1	2	2	2	2	4

Potential erosion of denuded areas

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
<b>Rating: Low</b>			<b>Final Project Proposal</b>			<b>Degree of Mitigation: Full</b>	
2	2	1	1.6	2	2	2	3.2

Potential contamination of footprint area and surface runoff because of hydrocarbon spillages

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
<b>Rating: Low</b>			<b>Final Project Proposal</b>			<b>Degree of Mitigation: Full</b>	
2	2	1	1.6	2	2	2	3.2

### DRILLING AND BLASTING:

Health and safety risk posed by blasting activities

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
<b>Rating: Low</b>			<b>Final Project Proposal</b>			<b>Degree of Mitigation: Full</b>	
4	2	1	2.3	2	1	1.5	3.4

Dust nuisance caused by blasting activities

Severity	Duration	Extent	Consequence			Likelihood	Significance
			Probability	Frequency			
<b>Rating: Low-Medium</b>			<b>Final Project Proposal</b>			<b>Degree of Mitigation: None</b>	
2	4	2	2.6	4	3	3.5	9.1

Noise nuisance because of blasting

Severity	Duration	Extent	Consequence			Likelihood	Significance
			Probability	Frequency			
<b>Rating: Low-Medium</b>			<b>Final Project Proposal</b>			<b>Degree of Mitigation: Partial</b>	
2	4	2	2.6	3	3	3	7.8

**EXCAVATION, LOADING AND HAULING TO THE PROCESSING PLANT**

Dust nuisance due to excavation and from loading and vehicles transporting the material

Severity	Duration	Extent	Consequence			Likelihood	Significance
			Probability	Frequency			
<b>Rating: Low</b>			<b>Final Project Proposal</b>			<b>Degree of Mitigation: Full</b>	
2	3	1	2	2	2	2	4

Noise nuisance because of the mining activities

Severity	Duration	Extent	Consequence			Likelihood	Significance
			Probability	Frequency			
<b>Rating: Low</b>			<b>Final Project Proposal</b>			<b>Degree of Mitigation: Partial</b>	
1	3	1	1.6	1	4	2.5	4

Unsafe working environment for employees

Severity	Duration	Extent	Consequence			Likelihood	Significance
			Probability	Frequency			
<b>Rating: Low</b>			<b>Final Project Proposal</b>			<b>Degree of Mitigation: Full</b>	
2	2	1	1.6	2	1	1.5	2.4

Soil contamination from hydrocarbon spills and/or littering

Severity	Duration	Extent	Consequence			Likelihood	Significance
			Probability	Frequency			
<b>Rating: Low</b>			<b>Final Project Proposal</b>			<b>Degree of Mitigation: Full</b>	
2	2	1	1.6	2	2	2	3.2

Potential impact on areas of palaeontological concern

Severity	Duration	Extent	Consequence			Likelihood	Significance
			Probability	Frequency			
<b>Rating: Low</b>			<b>Final Project Proposal</b>			<b>Degree of Mitigation: Full</b>	
2	5	5	4	1	1	1	4



Facilitation of erosion due to mining activities

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
<b>Rating: Low</b>			<b>Final Project Proposal</b>			<b>Degree of Mitigation: Full</b>	
2	3	1	2	2	2	2	4

**PROCESSING, STOCKPILING AND TRANSPORTING OF MATERIAL:**

Dust nuisance generated at the processing plant

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
<b>Rating: Low</b>			<b>Final Project Proposal</b>			<b>Degree of Mitigation: Full</b>	
1	3	2	2	2	2	2	4

Noise nuisance stemming from operation of the processing plant

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
<b>Rating: Low</b>			<b>Final Project Proposal</b>			<b>Degree of Mitigation: Partial</b>	
1	3	1	1.6	1	2	1.5	2.4

Potential contamination of environment due to improper waste management

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
<b>Rating: Low</b>			<b>Final Project Proposal</b>			<b>Degree of Mitigation: Full</b>	
2	3	1	2	2	2	2	4

Overloading of trucks impacting road infrastructure

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
<b>Rating: Low</b>			<b>Final Project Proposal</b>			<b>Degree of Mitigation: Full</b>	
2	3	5	3.3	2	1	1.5	4.9

Degradation of the access road

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
<b>Rating: Low</b>			<b>Final Project Proposal</b>			<b>Degree of Mitigation: Full</b>	
2	3	2	2.3	2	2	2	4.6

**CUMULATIVE IMPACTS:**

Impact the broad-scale ecological processes

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
<b>Rating: Low</b>			<b>Final Project Proposal</b>			<b>Degree of Mitigation: Partial</b>	
2	4	4	3.3	2	1	1.5	4.9

Successful mining could lead to development of a larger long-term mine with more work opportunities (**Positive Impact**)

Severity (+)	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance (+)
<b>Rating: Medium-High (+)</b>			<b>Final Project Proposal</b>			<b>Degree of Mitigation: Full</b>	
4	4	5	4.3	4	5	4.5	19.4

### SLOPING AND LANDSCAPING DURING REHABILITATION:

Safety risk posed by un-sloped areas

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: Low</b>			<b>Final Project Proposal</b>			<b>Degree of Mitigation: Full</b>	
2	3	1	2	2	1	1.5	3

Erosion of landscaped area after rehabilitation

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: Low</b>			<b>Final Project Proposal</b>			<b>Degree of Mitigation: Full</b>	
2	3	1	2	2	1	1.5	3

Infestation of the reinstated areas by weeds and invader plant species

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: Low</b>			<b>Final Project Proposal</b>			<b>Degree of Mitigation: Full</b>	
2	3	1	2	2	1	1.5	3

Potential impact associated with litter/waste left at the mining area

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: Low</b>			<b>Final Project Proposal</b>			<b>Degree of Mitigation: Full</b>	
2	3	1	2	2	1	1.5	3

Rehabilitation of the abandoned pits and tailings dump (**Positive Impact**)

Severity (+)	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance (+)
<b>Rating: Medium-High (+)</b>			<b>Final Project Proposal</b>			<b>Degree of Mitigation: N/A</b>	
4	5	1	3.3	5	5	5	16.5

**j) Assessment of each identified potentially significant impact and risk**

(This section of the report must consider all the known typical impacts of each of the activities (including those that could or should have been identified by knowledgeable persons and not only those that were raised by registered interested and affected parties).

Table 22: Assessment of each identified potentially significant impact and risk

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
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.)	(E.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, air pollution, etc...etc...etc.)		In which impact is anticipated. (E.g. Construction, commissioning, operational Decommissioning closure, post closure.)	If not mitigated.	(Modify, remedy, control, or stop) through (e.g. noise control measures, storm water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc etc)  E.g. Modify through alternative method Control through noise control Control through management and monitoring through rehabilitation.	If not mitigated.
⌘ Demarcation of site with visible beacons.	⌘ No impact could be identified other than the beacons being outside the boundaries of the approved mining area.	N/A	Site Establishment phase	N/A	Control through management and monitoring.	N/A
⌘ Site establishment and infrastructure development.	⌘ Visual intrusion because of site establishment.	The visual impact may affect the	Site Establishment &	⌘ Low-Medium	<u>Control:</u> Implementing proper housekeeping.	⌘ Low

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
		aesthetics of the landscape.	Operational Phase			
<ul style="list-style-type: none"> <li>⌘ Site establishment and infrastructure development.</li> <li>⌘ Cumulative Impacts</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Potential impact on the CBA/NPAESFA objectives.</li> <li>⌘ Impact the broad-scale ecological processes.</li> </ul>	This will impact on the biodiversity of the receiving environment.	Site Establishment & Operational Phase	<ul style="list-style-type: none"> <li>⌘ Low-Medium</li> <li>⌘ Low-Medium</li> </ul>	<u>Control:</u> Implementing proper housekeeping and comply with recommendations of the botanist.	<ul style="list-style-type: none"> <li>⌘ Low</li> <li>⌘ Low</li> </ul>
<ul style="list-style-type: none"> <li>⌘ Site establishment and infrastructure development.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Potential impact on vegetation and listed and/or protected plant species.</li> </ul>	This will impact on the biodiversity of the receiving environment.	Site Establishment phase	<ul style="list-style-type: none"> <li>⌘ Low-Medium</li> </ul>	<u>Control &amp; Stop:</u> Implementing good management practices and adhering to the recommendations of the botanist.	<ul style="list-style-type: none"> <li>⌘ Low</li> </ul>
<ul style="list-style-type: none"> <li>⌘ Site establishment and infrastructure development.</li> <li>⌘ Processing of tailings, vegetation removal, and stripping of overburden.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Potential impact on fauna within the footprint area.</li> <li>⌘ Potential impact on local fauna due to disturbance of habitat.</li> </ul>	This will impact on the biodiversity of the receiving environment.	Site Establishment & Operational Phase	<ul style="list-style-type: none"> <li>⌘ Low-Medium</li> <li>⌘ Medium</li> </ul>	<u>Control &amp; Stop:</u> Implementing good management practices and adhering to the recommendations of the botanist.	<ul style="list-style-type: none"> <li>⌘ Low</li> <li>⌘ Low</li> </ul>
<ul style="list-style-type: none"> <li>⌘ Site establishment and infrastructure development.</li> <li>⌘ Excavation, loading and hauling to the processing plant.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Potential impact on archaeological artefacts.</li> <li>⌘ Potential impact on areas of palaeontological concerns.</li> </ul>	This could impact on the cultural and heritage legacy of the receiving environment.	Site Establishment, & Operational Phase.	<ul style="list-style-type: none"> <li>⌘ Medium</li> <li>⌘ Low</li> </ul>	<u>Control &amp; Stop:</u> Implementing good management practices and adhering to the recommendations of the archaeologist.	<ul style="list-style-type: none"> <li>⌘ Low</li> <li>⌘ Low</li> </ul>

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
<ul style="list-style-type: none"> <li>⌘ Site establishment and infrastructure development.</li> <li>⌘ Cumulative Impact</li> </ul>	<ul style="list-style-type: none"> <li>⌘ New job opportunities because of the mining operation (+).</li> <li>⌘ Successful mining could lead to development of a larger long-term mine with more work opportunities (+)</li> </ul>	Contribution to the socio-economic status of the area.	Site Establishment, & Operational Phase.	<ul style="list-style-type: none"> <li>⌘ High+</li> <li>⌘ Medium-High+</li> </ul>	N/A	<ul style="list-style-type: none"> <li>⌘ High+</li> <li>⌘ Medium-High+</li> </ul>
<ul style="list-style-type: none"> <li>⌘ Processing of tailings, vegetation removal, and stripping of overburden.</li> <li>⌘ Drilling and Blasting.</li> <li>⌘ Excavation, loading and hauling to the processing plant.</li> <li>⌘ Processing, stockpiling and transporting of material.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Dust nuisance because of the disturbance of soil.</li> <li>⌘ Dust nuisance caused by blasting activities.</li> <li>⌘ Dust nuisance due to excavation and from loading and vehicles transporting the material.</li> </ul>	Increased dust generation will impact on the air quality of the receiving environment.	Operational-, and Decommissioning Phase	<ul style="list-style-type: none"> <li>⌘ Medium</li> <li>⌘ Low-Medium</li> <li>⌘ Medium</li> <li>⌘ Medium</li> </ul>	<u>Control:</u> Dust suppression methods and proper housekeeping.	<ul style="list-style-type: none"> <li>⌘ Low</li> <li>⌘ Low-Medium</li> <li>⌘ Low</li> <li>⌘ Low</li> </ul>
<ul style="list-style-type: none"> <li>⌘ Processing of tailings, vegetation removal, and stripping of overburden.</li> <li>⌘ Drilling and blasting.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Noise nuisance generated by earthmoving machinery.</li> <li>⌘ Noise nuisance because of blasting.</li> <li>⌘ Noise nuisance because of the mining activities.</li> </ul>	Should noise levels become excessive it may have an impact on the noise ambiance of the receiving environment.	Site Establishment-, Operational-, and Decommissioning Phase	<ul style="list-style-type: none"> <li>⌘ Low-Medium</li> <li>⌘ Low-Medium</li> <li>⌘ Medium</li> <li>⌘ Low-Medium</li> </ul>	<u>Control:</u> Noise suppression methods and proper housekeeping.	<ul style="list-style-type: none"> <li>⌘ Low</li> <li>⌘ Low-Medium</li> <li>⌘ Low</li> <li>⌘ Low</li> </ul>

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
<ul style="list-style-type: none"> <li>⌘ Excavation, loading and hauling to the processing plant.</li> <li>⌘ Processing, stockpiling, and transporting of material.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Noise nuisance stemming from operation of the processing plant.</li> </ul>					
<ul style="list-style-type: none"> <li>⌘ Processing of tailings, vegetation removal, and stripping of overburden.</li> <li>⌘ Sloping and landscaping during rehabilitation phase.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Infestation of the mining area with weeds or invader plant species.</li> <li>⌘ Infestation of the reinstated areas by weeds and invader plant species.</li> </ul>	Infestation of the footprint by invader plant species may affect the biodiversity of the receiving environment.	Site Establishment-, Operational, and Decommissioning Phase	<ul style="list-style-type: none"> <li>⌘ Medium</li> <li>⌘ Medium</li> </ul>	<u>Control &amp; Remedy:</u> Implementation of an invasive plant species management plan.	<ul style="list-style-type: none"> <li>⌘ Low</li> <li>⌘ Low</li> </ul>
<ul style="list-style-type: none"> <li>⌘ Processing of tailings, vegetation removal, and stripping of overburden.</li> <li>⌘ Excavation, loading and hauling to the processing plant.</li> <li>⌘ Sloping and landscaping during rehabilitation.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Potential erosion of denuded areas.</li> <li>⌘ Facilitation of erosion due to mining activities.</li> <li>⌘ Erosion of landscaped area after rehabilitation.</li> </ul>	Erosion of the footprint will affect the rehabilitation of the excavation upon closure of the site.	Site Establishment-, Operational and Decommissioning Phase	<ul style="list-style-type: none"> <li>⌘ Low-Medium</li> <li>⌘ Low-Medium</li> <li>⌘ Medium</li> </ul>	<u>Control &amp; Remedy:</u> Proper housekeeping and storm water management.	<ul style="list-style-type: none"> <li>⌘ Low</li> <li>⌘ Low</li> <li>⌘ Low</li> </ul>

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
<ul style="list-style-type: none"> <li>⌘ Processing of tailings, vegetation removal, and stripping of overburden.</li> <li>⌘ Excavation, loading and hauling to the processing plant.</li> <li>⌘ Processing, stockpiling, and transporting of material.</li> <li>⌘ Sloping and landscaping during rehabilitation phase.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Potential contamination of footprint area and surface runoff because of hydrocarbon spillages.</li> <li>⌘ Soil contamination from hydrocarbon spills and/or littering.</li> <li>⌘ Potential contamination of environment due to improper waste management.</li> <li>⌘ Potential impact associated with litter/waste left at the mining area.</li> </ul>	Contamination of the footprint area will negatively impact the soil, surface runoff and potentially the groundwater. It will also incur additional costs to the permit holder.	Site Establishment-, Operational-, and Decommissioning Phase	<ul style="list-style-type: none"> <li>⌘ Low-Medium</li> <li>⌘ Medium</li> <li>⌘ Medium</li> <li>⌘ Medium</li> </ul>	<u>Control &amp; Remedy:</u> Proper housekeeping and implementation of an emergency response plan and waste management plan.	<ul style="list-style-type: none"> <li>⌘ Low</li> <li>⌘ Low</li> <li>⌘ Low</li> <li>⌘ Low</li> </ul>
<ul style="list-style-type: none"> <li>⌘ Drilling and blasting.</li> <li>⌘ Excavation, loading and hauling to the processing plant.</li> <li>⌘ Sloping and landscaping during rehabilitation phase.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Health and safety risk posed by blasting activities.</li> <li>⌘ Unsafe working environment for employees.</li> <li>⌘ Safety risk posed by un-sloped areas.</li> </ul>	An unsafe working environment affects the labour force, as well as pose a threat to animals and humans that may enter the mining footprint.	Operational-, and Decommissioning Phase	<ul style="list-style-type: none"> <li>⌘ Medium</li> <li>⌘ Medium</li> <li>⌘ Medium</li> </ul>	<u>Stop &amp; Control:</u> Adherence to the blasting rules and regulations, demarcation of the mining area and proper housekeeping.	<ul style="list-style-type: none"> <li>⌘ Low</li> <li>⌘ Low</li> <li>⌘ Low</li> </ul>
<ul style="list-style-type: none"> <li>⌘ Processing, stockpiling, and transporting of material.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Overloading of trucks impacting road infrastructure.</li> </ul>	Collapse of the internal road infrastructure will affect the	Operational phase	<ul style="list-style-type: none"> <li>⌘ Medium-High</li> <li>⌘ Medium</li> </ul>	<u>Control &amp; Remedy:</u> Maintaining the access road for the duration of the operational phase,	<ul style="list-style-type: none"> <li>⌘ Low</li> <li>⌘ Low</li> </ul>

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
	⌘ Degradation of the access road.	community and lawful occupiers negatively. If the mine negatively affects public traffic, it may incur additional costs and complaints from the public.			as well as leaving it in a representative or better condition than prior to mining.	
⌘ Sloping and landscaping during rehabilitation	⌘ Rehabilitation of the abandoned pits and tailings dump (+)	The area will be returned to the landowner for future use.	Decommissioning Phase	⌘ Medium-High+	N/A	⌘ Medium-High+

The supporting impact assessment conducted by the EAP must be attached as an appendix, marked Appendix I.



**k) Summary of specialist reports.**

(This summary must be completed if any specialist reports informed the impact assessment and final site layout process and must be in the following tabular form):-

Table 23: Summary of specialist reports

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with an X where applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED
<p><b><u>Terrestrial Biodiversity Impact Assessment</u></b></p> <p>Mining Permit Application on Portion of the farm Steinkopf No 22, within Nama Khoi Municipality in Northern Cape Province.</p> <p>May 2022</p> <p><i>(See Appendix G for a full copy of the report)</i></p>	<p><b><u>Conclusion and Recommendations:</u></b></p> <p>The proposed mining will be located on a previously mined site, which was not rehabilitated. There are several habitats within the proposed site that have been exposed to high levels of disturbance resulting from excavations. There are also areas that still have provincially protected plant species. As a result, conservation of the said plant species should be prioritised.</p>	<p>All the mitigation measures proposed by the specialist were included in this report.</p>	<p>Part A(1)(h)(iv)(c) Description of specific environmental features and infrastructure on the site – Site Specific Terrestrial Biodiversity, Conservation Areas, and Groundcover.</p> <p>Part A(1)(h)(viii) The possible mitigation measures that could be applied and the level of risk.</p> <p>Part B(1)(g)-(k) Mechanisms for monitoring compliance with and performance assessment against the environmental management programme and reporting thereon...</p>

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with an X where applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED
<p><b><u>Heritage Impact Assessment</u></b></p> <p>For the proposed mining permit over a portion of the farm Steinkopf No 22 in the Nama Khoi municipal area of the Northern-Cape Province.</p> <p>May 2022</p> <p><i>(See Appendix H for a full copy of the report)</i></p>	<p><b><u>Recommendations:</u></b></p> <p>The following recommendations for Environmental Authorisation apply and the project may only proceed based on approval from SAHRA:</p> <ul style="list-style-type: none"> <li>⌘ Documentation (scaled mapping) of the mining-related structures at Norrabees 1 and 2;</li> <li>⌘ The enclosures recorded as Feature 3 are just outside of the development footprint and it is recommended that these features should be avoided and preserved <i>in situ</i> with 30 meter buffer zone;</li> <li>⌘ After documentation of the features a destruction permit can be applied for the sites that will be impacted on (for Feature 1 and 2) from Ngwao-Boswa Jwa Kapa Bokone (Northern Cape PHRA) prior to mining activities starting;</li> <li>⌘ Feature 4 is located outside of the impact area and should be demarcated and avoided during mining activities;</li> <li>⌘ Implementation of a Chance Find Procedure for the project (as outlined under Section 10.2);</li> <li>⌘ Monitoring of the project by the ECO.</li> </ul>	<p>All the mitigation measures proposed by the specialist were included in this report.</p>	<p>Part A(1)(h)(iv)(c) Description of specific environmental features and infrastructure on the site – Site Specific Cultural and Heritage Environment.</p> <p>Part A(1)(h)(viii) The possible mitigation measures that could be applied and the level of risk.</p> <p>Part B(1)(g)-(k) Mechanisms for monitoring compliance with and performance assessment against the environmental management programme and reporting thereon...</p>

## **l) Environmental impact statement**

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

The key findings of the environmental impact assessment entail the following:

#### **Project proposal:**

Namli Exploration and Mining (Pty) Ltd, applied for environmental authorisation, a mining permit, and waste licence over 5 ha of the farm Steinkopf No 22 in the Nama Khoi Magisterial District. The objective is the extraction of minerals containing the elements Ta, Li and Nb from Norrabees 1 and 2. The project will first process the existing tailings on the site, upon which the extraction of in-situ material will commence. Presently, it is proposed that mining will be contained to the already disturbed areas. The proposed project will appoint at least 15 employees and make use of temporary/mobile infrastructure.

#### **Topography:**

The proposed activity will impact the topography of the mountain in that depressions will be created with stepped side walls as mining progress. The proposed mine should create an excavation with three faces that will be benched as the mining depth increases. It is proposed that the final layout of the excavation (following rehabilitation) will be safer and more attractive, as the abandoned excavations and -tailing would have been corrected.

#### **Visual Characteristics:**

The proposed footprint will only be visible from the immediate surroundings, and the activity will therefore have a low visual impact on the receiving environment.

#### **Air and Noise Quality:**

Due to the remote nature of the site no residents/occupants are expected to be impacted by the proposed activities. The impact on the air quality of the surrounding environment is deemed to be of low significance.

Although the proposed activity will have a cumulative impact on the ambient noise levels, the development will not take place near any residents, and the impact is therefore deemed to be of low significance.

### **Geology:**

The Norrabees pegmatite is one of numerous mineralized pegmatites that occur on the farms Steinkopf 22 and Vioolsdrift 226. The pegmatite has been exposed during earlier spodumene and beryl mining and it is these minerals that the Applicant is interested in.

### **Hydrology:**

There are no rivers, streams or other watercourses present within the proposed mining footprint, and the erosion potential of the site is of low significance.

### **Terrestrial Biodiversity, Conservation Areas, and Groundcover:**

The TBIA revealed that although the vegetation of the area has been exposed to disturbance, the site still has important plant species that warrant conservation. The biodiversity sensitivity of the study area is predominantly low to medium.

No faunal species were observed on site, and the bird species that were observed are all Least Concern. Therefore the potential impact of the proposed project on the faunal component of the area is deemed to be of low significance.

### **Cultural and Heritage Environment:**

Four features of importance were identified on/near the proposed mining footprint. The HIA concludes that the overall (cultural/heritage) impact of the project is low and residual impacts can be managed to an acceptable level through implementation of the recommendations made in this report. The socio-economic benefits also outweigh the possible impacts of the development if the correct mitigation measures are implemented for the project. The site is palaeontologically of insignificant risk/value.

### **Socio-economic Environment:**

The proposed mine will create approximately 15 employment opportunities to locals. The abandoned mining areas will be rehabilitated and rendered safe. The existing roads/tracks will be upgraded (where needed) and maintained by the Applicant for the duration of the project. The presence of the proposed operation will contribute (directly & indirectly) to the local economy with preference given to HDSA & women owned local suppliers, and the successful mining of the area could lead to the development of a larger long-term mine with more work opportunities.

## **ii) Final Site Map**

Provide a map at an appropriate scale which superimposes the proposed overall activity and its associated structure and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers. Attach as Appendix.

See the map indicating site activities attached as Appendix C.

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

The positive impacts associated with the proposed project include the following:

- ⌘ The permit holder will be able to exploit the resources available within the earmarked area and enter the rising lithium market that will directly contribute to the economy of the country;
- ⌘ Mining of the abandoned areas will enhance the rehabilitation possibilities of the area;
- ⌘ Mining will be confined to the already disturbed areas, minimising the potential impact on the biodiversity of the area;
- ⌘ The proposed layout offers the Applicant a level area that could be used for the partial processing of the material;
- ⌘ The existing roads and tracks can be used, and will be maintained by the Applicant for the duration of the project;
- ⌘ The project will have a very low significance on the air quality, noise ambiance and visual character of the site due to its remote nature;
- ⌘ At least fifteen new job opportunities will be created by the proposed activity;
- ⌘ The presence of the proposed operation will contribute (directly & indirectly) to the local economy with preference give to HDSA & women owned local suppliers;
- ⌘ Upon closure, the area will be rendered safe;
- ⌘ Temporary infrastructure will be used on site that will have a lesser impact than permanent structures;
- ⌘ Successful mining could lead to development of a larger long-term mine with more work opportunities.

The following table shows the potential negative impacts associated with the proposed activity that were deemed to have a Low-Medium or higher significance/risk:

*Table 24: Potential negative impacts associated with the proposed activity with a Low-Medium or higher significance/risk*

<b>ACTIVITY</b>	<b>POTENTIAL IMPACT</b>	<b>SIGNIFICANCE (BEFORE MITIGATION)</b>	<b>SIGNIFICANCE (AFTER MITIGATION)</b>
⌘ Drilling and Blasting.	⌘ Dust nuisance caused by blasting activities.	⌘ Low-Medium	⌘ Low-Medium
⌘ Drilling and blasting.	⌘ Noise nuisance because of blasting.	⌘ Low-Medium	⌘ Low-Medium

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

Based on the assessment and where applicable the recommendations from specialist reports, the recording of proposed impact management objectives, and the impact management outcomes for the development for inclusion in the EMPr as well as for inclusion as condition of authorisation.

*Table 25: Proposed impact management objectives and the impact management outcomes for inclusion in the EMPr*

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
<p><b>TOPOGRAPHY</b></p> <p>Landscaping of Mining Area</p>	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMPr.</p> <p>Compliance to be monitored by the Environmental Control Officer.</p>	<ul style="list-style-type: none"> <li>⌘ Use the excavated area for the final depositing of overburden.</li> <li>⌘ Dump rocks and coarse material removed from the excavation into the excavation upon completion.</li> <li>⌘ Remove coarse natural material used for the construction of ramps and dump it into the excavations.</li> <li>⌘ Remove stockpiles during the decommissioning phase, rip the area and return the topsoil (if available) to its original depth to provide a growth medium.</li> <li>⌘ Do not permit any waste to be deposited into the excavations.</li> <li>⌘ Return the previously stored topsoil (if any) to its original depth, once overburden, rocks and coarse natural materials have been added to the excavation and it was profiled with acceptable contours and erosion control measures.</li> <li>⌘ If necessary, fertilize the area to allow vegetation to establish rapidly. Seed the site with a local or adapted indigenous seed mix to propagate the locally or regionally occurring flora.</li> <li>⌘ If required by the Regional Manager (DMRE) the soil must be analysed and any deleterious effects on the soil arising from the mining operation must be corrected and the area be seeded with a vegetation seed mix to his/her specification.</li> <li>⌘ On completion of operations, deal with all structures or objects in accordance with section 44 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002).</li> <li>⌘ On completion of mining operations, scarify the surface of all plant-, stockpiling-, and/or office areas, if compacted due to hauling and</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Effectively restoring the mined area to allow the return of land use to agricultural purposes.</li> </ul>

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		dumping operations, to a depth of at least 200 mm and graded to an even surface condition. Where applicable/possible return topsoil to its original depth over the area.	
<b>VISUAL CHARACTERISTICS</b> Visual mitigation	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.  Compliance to be monitored by the Environmental Control Officer.	<ul style="list-style-type: none"> <li>∞ Ensure that the site have a neat appearance and is always kept in good condition.</li> <li>∞ Store mining equipment in a dedicated area when not in use.</li> <li>∞ Limit vegetation removal, and only strip overburden immediately prior to the mining/use of a specific area.</li> <li>∞ Contain excavations to the approved footprint of the permitted area.</li> <li>∞ Upon closure, rehabilitate the site to ensure that the visual impact on the aesthetic value of the area is reduced to the minimum.</li> </ul>	<ul style="list-style-type: none"> <li>∞ Minimise the impact of the mining operations on the visual characteristics of the receiving environment during the operational phase and minimise the residual impact after closure.</li> </ul>
<b>AIR AND NOISE QUALITY</b> Dust Mitigation	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.  Compliance to be monitored by the Environmental Control Officer.	<ul style="list-style-type: none"> <li>∞ Control the liberation of dust into the surrounding environment using; inter alia, water spraying and/or other dust-allaying agents.</li> <li>∞ Ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression.</li> <li>∞ Limit speed on the haul roads to 20 km/h and 40 km/h on the access road to prevent the generation of excess dust.</li> <li>∞ Minimise areas devoid of vegetation, and only remove vegetation immediately prior to mining.</li> <li>∞ Install water sprayers at the crusher plant to alleviate dust generation from the conveyor belts.</li> <li>∞ Minimise fines, blowing from the drop end of the crusher plant by attaching strips of used conveyor belts to the conveyor's end.</li> <li>∞ Weekly remove compacted dust from the crusher plant to eliminate the dust source.</li> <li>∞ Flatten loads to prevent spillage during transportation on public roads.</li> <li>∞ Consider weather conditions upon commencement of daily operations. Limit operations during very windy periods to reduce airborne dust and resulting impacts.</li> </ul>	<ul style="list-style-type: none"> <li>∞ Dust prevention measures are applied to minimise the impact.</li> </ul>



MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		<ul style="list-style-type: none"> <li>⌘ Ensure dust generating activities comply with the National Dust Control Regulations, GN No R827 promulgated in terms of NEM:AQA, 2004 and ASTM D1739 (SANS 1137:2012).</li> <li>⌘ Implement best practice measures during the stripping of overburden, excavation, and transporting of material from site to minimize potential dust impacts.</li> </ul>	
<p><b>AIR AND NOISE QUALITY</b></p> <p>Noise Mitigation</p>	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.</p> <p>Compliance to be monitored by the Environmental Control Officer.</p>	<ul style="list-style-type: none"> <li>⌘ Ensure that employees and staff conduct themselves in an acceptable manner while on site.</li> <li>⌘ No loud music may be permitted at the mining area.</li> <li>⌘ Ensure that all project related vehicles are equipped with silencers and maintained in a road worthy condition in terms of the National Road Traffic Act, 1996.</li> <li>⌘ Plan the type, duration, and timing of the blasting procedures with due cognizance of other land users and structures in the vicinity. Notify the surrounding land users in writing prior to each blasting occasion.</li> <li>⌘ Contract a qualified occupational hygienist to quarterly monitor and report on the personal noise exposure of the employees working at the mine. Monitoring must be in accordance with SANS 10083:2004 (Edition 5) sampling method as well as NEM:AQA 2004, SANS 10103:2008.</li> <li>⌘ Implement best practice measures to minimise potential noise impacts.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Prevent unnecessary noise to the environment by ensuring that noise from development activity is mitigated.</li> </ul>
<p><b>GEOLOGY AND SOIL</b></p> <p>Soil Handling</p>	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.</p> <p>Compliance to be monitored by the Environmental Control Officer.</p>	<ul style="list-style-type: none"> <li>⌘ Treat any soil as a valuable and essential resource for rehabilitation and manage it carefully to conserve and maintain it throughout the stockpiling and rehabilitation processes.</li> <li>⌘ Ensure soil stripping, stockpiling, and re-spreading is done in a systematic way. Plan mining in such a way that soil is stockpiled for the minimum possible time.</li> <li>⌘ Place the soil on a levelled area, within the mining footprint. Do not stockpile soil in undisturbed areas.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Fertile soil is available to rehabilitate the mined area.</li> </ul>

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		<ul style="list-style-type: none"> <li>⌘ Protect soil stockpiles against losses by water- and wind erosion. Position stockpiles so it is not vulnerable to erosion by wind and water. The establishment of plants (weeds or a cover crop) on the stockpiles will help to prevent erosion.</li> <li>⌘ Keep temporary soil stockpiles free of invasive plant species.</li> <li>⌘ Spread the soil evenly over the rehabilitated area upon closure of the site.</li> <li>⌘ Strive to re-instate soil at a time of the year when vegetation cover can be established as quickly as possible afterwards, so that erosion of returned soil is minimized. The best time of year is at the end of the rainy season.</li> <li>⌘ Monitor the rehabilitated area for erosion, and appropriately stabilize if erosion do occur, for at least 12 months after reinstatement.</li> </ul>	
<p><b>HYDROLOGY</b></p> <p>Erosion Control and Storm Water Management</p>	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.</p> <p>Compliance to be monitored by the Environmental Control Officer.</p>	<ul style="list-style-type: none"> <li>⌘ Limit clearing of vegetation to the proposed mining footprint and associated infrastructure. Ensure no clearing takes place outside the minimum required footprint.</li> <li>⌘ Divert stormwater around the soil heaps and mining areas to prevent erosion.</li> <li>⌘ Protect stockpiles from erosion and store it on flat areas surrounded by appropriate berms where possible.</li> <li>⌘ Ensure that adequate slope protection is provided when mining within steep slopes.</li> <li>⌘ Control the outflow of run-off water from the mining excavation to prevent down-slope erosion, by constructing temporary banks and ditches that will direct run-off water (if needed). These must be in place at any points where overflow out of the excavation might occur.</li> <li>⌘ Regularly monitor roads and other disturbed areas within the project for erosion and ensure problem areas receive follow-up monitoring to assess the success of the remediation.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Impact on the environment caused by stormwater discharge is avoided and erosion is managed.</li> </ul>

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		<ul style="list-style-type: none"> <li>⌘ Rectify erosion problems within the mining area because of the mining activities immediately (within 48 hours) and monitored thereafter to ensure that it does not re-occur.</li> <li>⌘ Conduct activity in terms of the Best Practice Guidelines for small-scale mining as developed by DWS.</li> <li>⌘ Restrict polluting activities including storage of mining fleet, equipment wash down facilities and vehicle maintenance yards to the workshop areas and ensure it takes place on impermeable hard standing surfaces, which formally drain to a dirty water drainage system at the site.</li> <li>⌘ Contain all fuels and chemicals stored or used on site in fit purpose containers and store within designated storage areas. Ensure the designated storage areas are situated on an impermeable surface with a perimeter bund and a drainage sump. Size the volume of the bund and sump to contain at least 110% of the total volume of the fuel and chemicals being stored within the designated storage area.</li> </ul>	
<p><b>TERRESTRIAL BIODIVERSITY, CONSERVATION AREAS AND GROUNDCOVER</b></p> <p>Management of vegetation removal.</p>	<p>Permit holder to apply for a destruction/removal plant permit.</p> <p>Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.</p> <p>Compliance to be monitored by the Environmental Control Officer.</p>	<ul style="list-style-type: none"> <li>⌘ Clearly demarcate the mining boundaries and contain all operations to the approved mining area. Declare the area outside the mining boundaries a no-go area and educate all staff accordingly.</li> <li>⌘ Obtain permits for the removal of protected plant species and keep it on-site in the possession of the flora search and rescue team.</li> <li>⌘ Arrange a pre-commencement environmental induction for all staff on site to ensure that basic environmental principles are adhered to. This must include awareness of no littering, appropriate handling of pollution and chemical spills, avoiding fire hazards, minimising wildlife interactions, remaining within demarcated construction areas, etc.</li> <li>⌘ Only commence with bush-clearance once the plant permits were obtained, and the protected plants successfully relocated by an appropriately qualified person.</li> <li>⌘ The on-site ECO must provide supervision and oversight of vegetation clearing activities and other activities which may cause damage to the</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Vegetation clearing is restricted to the authorised development footprint of the mine.</li> </ul>

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		<p>environment, especially during the site establishment phase, when most of the vegetation clearing is taking place.</p> <ul style="list-style-type: none"> <li>⌘ Ensure all vehicles remain on demarcated roads and prevent unnecessary driving in the veld outside these areas.</li> <li>⌘ Do not translocate, uproot, or disturb plants for rehabilitation or other purposes without express permission from the ECO and without the relevant permits.</li> <li>⌘ Do not allow fires on-site.</li> <li>⌘ Reseed all cleared areas that are no longer or not required for drilling activities with locally sourced seed of suitable species. Also consider the packing of bare areas with brush removed from other parts of the site to encourage natural vegetation regeneration and limit erosion.</li> </ul>	
<p><b>TERRESTRIAL BIODIVERSITY, CONSERVATION AREAS AND GROUND COVER</b></p> <p>Management of invasive plant species.</p>	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.</p> <p>Compliance to be monitored by the Environmental Control Officer.</p>	<ul style="list-style-type: none"> <li>⌘ Implement an invasive plant species management plan to control all invasive plant species on site in terms of NEM:BA, 2004 and CARA, 1983. Do weed/alien ongoing clearing on throughout the life of the mining activities.</li> <li>⌘ Do not allow planting or importing of any alien species to the site for landscaping, rehabilitation, or any other purpose.</li> <li>⌘ Keep all stockpiles (topsoil &amp; overburden) free of invasive plant species.</li> <li>⌘ Control declared invader or exotic species on the rehabilitated areas.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Mining area is kept free of invasive plant species.</li> </ul>
<p><b>FAUNA</b></p> <p>Protection of fauna</p>	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.</p> <p>Compliance to be monitored by the Environmental Control Officer.</p>	<ul style="list-style-type: none"> <li>⌘ Ensure no fauna is caught, killed, harmed, sold, or played with.</li> <li>⌘ The ECO or other suitably qualified person must remove any fauna directly threatened by the operational activities to a safe location.</li> <li>⌘ Arrange that all personnel undergo environmental induction regarding fauna management and in particular awareness about not harming or collecting species such as snakes, tortoises, and owls. Instruct workers to report any animals that may be trapped in the working area.</li> <li>⌘ Ensure no snares are set or nests raided for eggs or young.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Disturbance to fauna is minimised.</li> </ul>

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		<ul style="list-style-type: none"> <li>⌘ Ensure all vehicles adhere to a low speed limit (40 km/h is recommended) to avoid collisions with susceptible species such as snakes and tortoises.</li> <li>⌘ Prevent litter, food or other foreign material thrown or left around the site. Keep such items in waste bins with lids at the processing area.</li> </ul>	
<p><b>CULTURAL AND HERITAGE ENVIRONMENT</b></p> <p>Archaeological, heritage and palaeontological aspects.</p>	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.</p> <p>Destruction permit obtained from Northern Cape PHRA.</p> <p>Compliance to be monitored by the Environmental Control Officer.</p>	<ul style="list-style-type: none"> <li>⌘ Confine all mining to the development footprint area.</li> <li>⌘ Arrange for the documentation (scaled mapping of the mining-related structures at Norrabees 1 and 2.</li> <li>⌘ After documentation of Features 1 and 2, obtain a destruction permit from Ngwao-Boswa Jwa Kapa Bokone (Northern Cape PHRA) prior to this area being worked.</li> <li>⌘ Maintain a 30 m buffer around Feature 3 to preserve it <i>in situ</i> and avoid any damage to the feature.</li> <li>⌘ Demarcate and avoid Feature 4 during mining activities.</li> <li>⌘ Ensure ECO monitor the project.</li> <li>⌘ Implement the following change find procedure when discoveries are made on site: <ul style="list-style-type: none"> <li>• If during the pre-construction phase, construction, operations or closure phases of this project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance or heritage site, this person must cease work at the site of the find and report this find to their immediate supervisor, and through their supervisor to the senior on-site manager.</li> <li>• It is the responsibility of the senior on-site Manager to make an initial assessment of the extent of the find and confirm the extent of the work stoppage in that area.</li> <li>• The senior on-site Manager will inform the ECO of the chance find and its immediate impact on operations. The ECO will then contact</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>⌘ Impact to cultural/heritage resources is avoided or at least minimised.</li> </ul>

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		<p>a professional archaeologist for an assessment of the finds who will notify the SAHRA/PHRA.</p> <ul style="list-style-type: none"> <li>• Work may only continue once the go-ahead was issued by SAHRA/PHRA.</li> </ul>	
<p><b>EXISTING INFRASTRUCTURE</b></p> <p>Management of the access road.</p>	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.</p> <p>Compliance to be monitored by the Environmental Control Officer.</p>	<ul style="list-style-type: none"> <li>⌘ When applicable, divert storm water around the access road to prevent erosion.</li> <li>⌘ Restrict vehicular movement to the existing access road to prevent crisscrossing of tracks through undisturbed areas.</li> <li>⌘ Repair rutting and erosion of the access road caused as a direct result of the mining activities.</li> <li>⌘ Prevent the overloading of the trucks and file proof of load weights for auditing by relevant officials.</li> <li>⌘ Restrict the speed of all mining equipment/vehicles to 40 km/h on the access roads.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ The access road remains accessible to the land users and lawful occupiers during the operational phase, and upon closure, the road is returned in a better, or at least the same state as received by the permit holder.</li> </ul>
<p><b>GENERAL</b></p> <p>Waste management</p>	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.</p> <p>Compliance to be monitored by the Environmental Control Officer.</p>	<ul style="list-style-type: none"> <li>⌘ Ensure regular vehicle maintenance, repairs and services only take place at the workshop and service area. Ensure drip trays are present if emergency repairs are needed on equipment not able to move to the workshop. Dispose all waste products in a closed container/bin to be removed from the emergency service area (same day) to the workshop to ensure proper disposal. Treat this as hazardous waste and dispose of it at a registered hazardous waste handling facility, alternatively arrange collection by a registered hazardous waste handling contractor. File safe disposal certificates for auditing purposes.</li> <li>⌘ If a diesel bowser is used on site, always equip it with a drip tray. Use drip trays during each refuelling event. The nozzle of the bowser needs to rest in a sleeve to prevent dripping after refuelling.</li> <li>⌘ Ensure drip trays are cleaned after each use. Do not allow dirty drip trays to be used on site. Dispose of dirty rags used to clean the drip trays as hazardous waste into a designated bin at the workshop, where it is incorporated into the hazardous waste removal system.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Wastes are appropriately handled and safely disposed of at recognised waste facilities.</li> </ul>

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		<ul style="list-style-type: none"> <li>⌘ Collect any effluents containing oil, grease or other industrial substances in a suitable receptacle and remove it from the site, either for resale or for appropriate disposal at a recognized facility. File proof.</li> <li>⌘ Obtain an oil spill kit and train the employees in the emergency procedures to follow when a spill occurs as well as the application of the spill kit.</li> <li>⌘ Clean spills immediately, within two hours of occurrence, to the satisfaction of the Regional Manager (DMRE) by removing the spillage together with the polluted soil and containing it in a designated hazardous waste bin until it is disposed of at a recognised facility. File proof.</li> <li>⌘ Ensure suitable covered receptacles are always available and conveniently placed for the disposal of general waste.</li> <li>⌘ Store non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., in a container with a closable lid at a collecting point to be collected at least once a month and disposed of at a recognized landfill site. Take specific precautions to prevent refuse from being dumped on or in the vicinity of the mine area. File proof of disposal.</li> <li>⌘ Handle biodegradables as indicated above.</li> <li>⌘ Encourage re-use or recycling of waste products.</li> <li>⌘ Do not bury or burn waste on the site.</li> <li>⌘ Provide ablution facilities in the form of a chemical toilet/s. Anchor the chemical toilet (to prevent blowing/falling over) and arrange that it is serviced at least once a week for the duration of the mining activities by a registered liquid waste handling contractor. File the safe disposal certificates.</li> <li>⌘ Ensure that the use of any temporary, chemical toilet facilities do not cause any pollution to water sources or pose a health hazard. In addition, ensure that no form of secondary pollution arise from the disposal of refuse or sewage from the temporary, chemical toilets. Address any pollution problems arising from the above immediately.</li> </ul>	

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		<ul style="list-style-type: none"> <li>⌘ Do not discharge water containing waste into the natural environment.</li> <li>⌘ Implement measures to contain the wastewater and safely dispose thereof.</li> <li>⌘ Report any significant spillage of chemicals, fuels etc. during the lifespan of the mining activities to the Department of Water and Sanitation and other relevant authorities.</li> <li>⌘ Implement the use of waste registers to keep record of the waste generated and removed from the mining area.</li> </ul>	
<p><b>GENERAL</b></p> <p>Storage/handling of hazardous substances/chemicals.</p>	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.</p> <p>Compliance to be monitored by the Environmental Control Officer.</p>	<ul style="list-style-type: none"> <li>⌘ Place chemical storage areas on level ground to prevent offsite migration of any spilled product.</li> <li>⌘ Ensure that the floor of the storage area is impermeable to prevent seepage of spilled products into the ground or ground water.</li> <li>⌘ Control access to the chemicals/substances and implement a notification system of an appropriate staff member.</li> <li>⌘ Maintain a Hazardous Substances Register and keep Safety Data Sheets (SDS) current for all chemicals used on site.</li> <li>⌘ Ensure any fuel/used oil tanks have secondary containment in the form of an impermeable bund wall and base within which the tanks sit, raised above the floor, on plinths. Check that the bund capacity is sufficient to contain 110% of the tank's maximum capacity. Ensure that the distance and height of the bund wall relative to that of the tank is taken into consideration to ensure that any spillage does not result in hydrocarbons/other substances spouting beyond the confines of the bund.</li> <li>⌘ Establish a formal inspection routine to check all equipment in the bund area, as well as the bund area itself for malfunctions or leakages. Inspect the bund area at least weekly and remove any accumulated rainwater and hand it as contaminated water. Check all valves and outlets to ensure that its intact and closed securely.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ The chemical/hazardous substances used on site are stored according to specifications without contaminating the receiving environment.</li> </ul>



MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		<ul style="list-style-type: none"> <li>⌘ Ensure that the bund base slope towards an oil sump of sufficient size. Do not allow contaminated water to mix with clean water and contain it until it is collected by a registered hazardous waste handling contractor or disposed of at a registered hazardous waste handling facility.</li> <li>⌘ Use drip trays under all stationary equipment or vehicles. Place used drip trays within a bunded area and do not store on the bare soil. Discard the wastewater originating from the cleaning of drip trays into the oil sump.</li> </ul>	
<p><b>GENERAL</b></p> <p>Management of health and safety risks</p>	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.</p> <p>Compliance to be monitored by the Environmental Control Officer.</p>	<ul style="list-style-type: none"> <li>⌘ Ensure that workers have access to the correct PPE as required by law.</li> <li>⌘ Locate sanitary facilities within 100 m from any point of work.</li> <li>⌘ Manage all operations in compliance with the Mine Health and Safety Act, 1996 (Act No 29 of 1996).</li> <li>⌘ Plan the type, duration, and timing of blasting with due cognizance of other land users and structures in the vicinity.</li> <li>⌘ Inform the surrounding land users and communities in writing ahead of any blasting event.</li> <li>⌘ Monitor the compliance of ground vibration and airblast levels to USBM standards with each blasting event.</li> <li>⌘ Record all blasts with a vibro recorder.</li> <li>⌘ Give audible warning of a pending blast at least 3 minutes in advance of the blast.</li> <li>⌘ Limit fly rock and collect and remove flyrock and rock spill that falls beyond the working area.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Employees work in a healthy and safe environment.</li> </ul>

**n) Aspects for inclusion as conditions of Authorisation.**

Any aspects which must be made conditions of the Environmental Authorisation

The management objectives listed in this report under *Part A(1)(m) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPr* above should be considered for inclusion in the environmental authorisation.

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

(Which relate to the assessment and mitigation measures proposed)

The assumptions made in this document which relate to the assessment and mitigation measures proposed, stem from site specific information gathered from site inspections, specialist and desktop studies, and background information that were gathered. No uncertainty regarding the proposed project or the receiving environment could be identified at this stage.

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

**i) Reasons why the activity should be authorised or not.**

Should the mitigation measures and monitoring programmes proposed in this document be implemented on site, no fatal flaws could be identified that were deemed as severe as to prevent the activity continuing.

**ii) Conditions that must be included in the authorisation**

The management objectives listed in this report under *Part A(1)(m) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPr* should be considered for inclusion in the environmental authorisation.

**q) Period for which the Environmental Authorisation is required.**

The Applicant requests the Environmental Authorisation to be valid for a five-year period to correspond with the validity of the mining permit.

**r) Undertaking**

Confirm that the undertaking required to meet the requirements of this section is provided at the end of the EMPr and is applicable to both the Basic assessment report and the Environmental Management Programme report.

The undertaking required to meet the requirements of this section is provided at the end of the EMPr and is applicable to both the Basic Assessment Report and the Environmental Management Programme report.

**s) Financial Provision**

State the amount that is required to both manage and rehabilitate the environment in respect of rehabilitation.

**i) Explain how the aforesaid amount was derived**

The amount required to annually manage and rehabilitate the affected environment was estimated to be R 496 729.77. Please refer to Part B(1)(f)(i)(1)(e) *Calculate and state the quantum of the financial provision required to manage and rehabilitate the environment in accordance with the applicable guideline* for and explanation as to how this amount was arrived at.

**ii) Confirm that this amount can be provided from operating expenditure.**

(Confirm that the amount is anticipated to be an operating cost and is provided for as such in the Mining Work Programme, Financial and Technical Competence Report or Prospecting Work Programme as the case may be).

Namli Exploration and Mining (Pty) Ltd will be responsible for the financial and technical aspects of the proposed mining project. The operating expenditure is provided for as such in the Financial and Technical Competence Report submitted with the mining permit application to the DMRE.

**t) Specific Information required by the competent Authority**

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

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

(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 an Appendix)

*Also refer to Part A(1)(i) Full description of the process undertaken to identify, assess and rank the impacts and risks the activity will impose on the preferred site through the life of the activity.*

As shown in this report, no impacts of significant nature were identified that may affect the socio-economic conditions of the directly affected persons in a negative manner. The project will however generate various positive impacts such as job creation, upgrading of roads (where needed), rehabilitation of the abandoned mining areas, and various direct and indirect contributions to the economy of the surrounding area.

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

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

The Applicant will apply for a destruction permit (after documentation) for Features 1 and 2 (as identified in the HIA) when needed, and a 30 m buffer will be maintained around Feature 3 to safeguard the site from any disturbance. Feature 4 falls outside the application area and will therefore not be impacted by the proposed mining activity.

Once the destruction permit was issued by Ngwao-Boswa Jwa Kapa Bokone (Northern Cape PHRA), the archaeologist deems the impact of the proposed project on the receiving environment of low significance and acceptable.

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

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

The alternatives associated with the proposed activity, investigated during the impact assessment process, were done at the hand of information obtained during the site investigation, public participation process, specialist studies as well as desktop studies conducted of the study area. Refer to Part A(1)(g) *Motivation for the overall preferred site, activities, and technology alternative.*

## PART B

### ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

#### 1. DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME.

##### a) Details of the EAP,

(Confirm that the requirements for the provision of the details and expertise of the EAP are already included in Part A, section 1(a) herein as required).

The details and expertise of Christine Fouché of Greenmined Environmental that acts as EAP on this project has been included in Part A Section 1(a) as well as Appendix M as required.

##### b) Description of the Aspects of the Activity

(Confirm that the requirements to describe the aspects of the activity that are covered by the draft environmental management programme is already included in PART A, section (1)(h) herein as required).

The aspects of the activity that are covered by the draft environmental management programme has been described and included in Part A, section (1)(h).

##### c) Composite Map

(Provide a map (Attached as an Appendix) at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that any areas that should be avoided, including buffers)

As mentioned under Part A, section (1)(l)(ii) this map has been compiled and is attached as Appendix C to this document.

##### d) Description of impact management objectives including management statements

###### i) Determination of closure objectives. (Ensure that the closure objectives are informed by the type of environment described)

The primary objective, at the end of the mine's life, is to obtain a closure certificate at minimum cost and in as short a time as possible whilst still complying with the requirements of the Minerals and Petroleum Resources Development Act (Act No. 28 of 2002) [MPRDA]. To realise this, the following main objectives must be achieved:

- ✘ Remove all temporary infrastructure and waste from the mine as per the requirements of this EMPR and of the Provincial DMRE.
- ✘ Shape and contour disturbed areas in compliance with the EMPR.
- ✘ Ensure that permanent changes in topography (due to mining) are sustainable and do not cause erosion or the uncontrolled damming of surface water.

- ⌘ Make all excavations safe.
- ⌘ Use the topsoil (if any) effectively to promote the re-establishment of vegetation.
- ⌘ Ensure that all rehabilitated areas are stable and self-sustaining in terms of vegetation cover.
- ⌘ Eradicate all weeds/invader plant species by intensive management of the mining area.

The site-specific closure objectives are discussed in the attached Closure Plan (Appendix J), however, a summary of the closure objectives for the proposed mine were included below.

The decommissioning phase will entail the reinstatement of the processing area by removing the stockpiled material, and site infrastructure/equipment and landscaping the disturbed footprints. Due to the impracticality of importing large volumes of fill to restore excavations to their original topography, the rehabilitation option is to develop the site into a minor landscape feature that is safe to future land users. This will entail creating a series of irregular benches along the excavation faces, the top edges of each face being blasted away to form scree slopes on the benches below, thereby reducing the overall face angle. The benches will be top-dressed with overburden and vegetated with an appropriate seed mix.

The decommissioning activities will therefore consist of the following:

- ⌘ Sloping and landscaping the excavations;
- ⌘ Removing all stockpiled material;
- ⌘ Removing all mining machinery and equipment from site;
- ⌘ Landscaping all disturbed areas;
- ⌘ Vegetating the reinstated area; and
- ⌘ Controlling/monitoring the invasive plant species.

The future land use of the proposed area will be agriculture. Upon landscaping, the area around the excavation will be available for grazing purposes (if needed), and the planting of the cover crop will tie in with the proposed land use.

The Applicant will comply with the minimum closure objectives as prescribed by the DMRE and detailed below:

⌘ Rehabilitation of the excavated area:

The excavated area must serve as a final depositing area for the placement of overburden. Rocks and coarse material removed from the excavation must be dumped into the excavation.

No waste may be permitted to be deposited in the excavations.

Once overburden, rocks and coarse natural materials has been added to the excavation and it was profiled with acceptable contours and erosion control measures, the topsoil previously stored must be returned to its original depth over the area.

The area must be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local or adapted indigenous seed mix to propagate the locally or regionally occurring flora, should natural vegetation not re-establish within 6 months from closure of the site.

If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a vegetation seed mix to his or her specification.

⌘ Rehabilitation of plant, office, and service areas:

Coarse natural material used for the construction of ramps must be removed and dumped into the excavations.

Stockpiles must be removed during the decommissioning phase, the area ripped, and the topsoil returned to its original depth to provide a growth medium.

On completion of operations, all structures or objects shall be dealt with in accordance with section 44 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002):

- Where sites have been rendered devoid of vegetation/grass or where soils have been compacted owing to traffic, the surface shall be scarified or ripped.
- Areas containing French drains shall be compacted and covered with a final layer of topsoil to a height of 10 cm above the surrounding ground surface.

- The site shall be seeded with a vegetation seed mix adapted to reflect the local indigenous flora.

Photographs of the camp and office sites, before and during the mining operation and after rehabilitation, shall be taken at selected fixed points and kept on record for the information of the DMRE Regional Manager.

On completion of mining operations, the surface of these areas, if compacted due to hauling and dumping operations, shall be scarified to a depth of at least 200mm and graded to an even surface condition. Where applicable/possible topsoil needs to be returned to its original depth over the area.

The area shall then be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local, adapted indigenous seed mix.

If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the DMRE Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a seed mix to his or her specification.

⌘ Final rehabilitation:

Rehabilitation of the surface area shall entail landscaping, levelling, top dressing, land preparation, seeding (if required) and maintenance, and invasive plant species clearing.

All mining equipment, and other items used during the mining period must be removed from the site (section 44 of the MPRDA).

Waste material of any description, including receptacles, scrap, rubble, and tyres, must be removed entirely from the mining area, and disposed of at a recognized landfill facility. It will not be permitted to be buried or burned on the site.

The management of invasive plant species must be done in a sporadic manner during the life of the mining activities. Species regarded as Category 1a and 1b invasive species in terms of NEM:BA (National Environmental Management: Biodiversity Act 10 of 2004 and regulations applicable thereto) will be eradicated from the site.



Final rehabilitation shall be completed within a period specified by the Regional Manager.

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

**ii) Volume and rate of water use required for the operation**

As mentioned earlier,  $\pm 5\,000\text{ m}^3$  water will be required for the DMS and shaking table operations per month of which 90% of the water will be recycled. Apart from the processing water, some water ( $\pm 550\text{ m}^3/\text{month}$ ) will also be needed for dust suppression at the processing plant.

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

The proposed project does not require authorisation in terms of Section 21 of the National Water Act No. 36 of 1998 and Notice 509 of 2016.

**iv) Impacts to be mitigated in their respective phases**

Table 26: Impact to be mitigated in their respective phases

ACTIVITIES  (As listed in 2.11.1)	PHASE  of operation in which activity will take place.  State; Planning and design, Pre-Construction, Operational, Rehabilitation, Closure, Post closure	SIZE AND SCALE OF DISTURBANCE  (Volumes, tonnages and hectares or m <sup>2</sup> )	MITIGATION MEASURES  (Describe how each of the recommendations herein will remedy the cause of pollution or degradation and migration of pollutants)	COMPLIANCE WITH STANDARDS  (A description of how each of the recommendations herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)	TIME PERIOD FOR IMPLEMENTATION  Describe the time period when the measures in the environmental management programme must be implemented. Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either – Upon cessation of the individual activity or Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
⌘ Demarcation of site with visible beacons.	Site Establishment phase	5 ha	Demarcation of the site will ensure that all employees are aware of the boundaries of the mining area, and that work stay within the approved area.	Mining is only allowed within the boundaries of the approved area. ⌘ MPRDA, 2008 ⌘ NEMA, 1998	Beacons need to be in place throughout the life of the activity.
⌘ Site establishment and infrastructure development.	Site Establishment & Operational Phase	5 ha	<b>Visual Mitigation:</b> ⌘ The site must have a neat appearance and always be kept in good condition.	Management of the mining activities must be in accordance with the: ⌘ MPRDA, 2008 ⌘ NEMA, 1998	Throughout the site establishment- and operational phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			<ul style="list-style-type: none"> <li>⌘ Mining equipment must be stored neatly in dedicated areas when not in use.</li> <li>⌘ The permit holder must limit vegetation removal, and stripping of overburden may only be done immediately prior to the mining/use of a specific area.</li> <li>⌘ The excavation must be contained within the approved footprint of the permitted area.</li> <li>⌘ Upon closure the site must be rehabilitated to ensure that the visual impact on the aesthetic value of the area is reduced to the minimum.</li> </ul>		
<ul style="list-style-type: none"> <li>⌘ Site establishment and infrastructure development.</li> <li>⌘ Cumulative Impacts</li> </ul>	Site Establishment phase	5 ha	<p><b><u>Management of vegetation removal:</u></b></p> <ul style="list-style-type: none"> <li>⌘ The mining boundaries must be clearly demarcated, and all operations must be contained to the approved mining area. The area outside the mining boundaries must be declared a no-go area, and all staff must be educated accordingly.</li> <li>⌘ Permits for the removal of protected plant species must be obtained and always kept on-site in the possession of the flora search and rescue team.</li> <li>⌘ A pre-commencement environmental induction for all site staff must be provided to ensure that basic environmental principles are adhered to. This includes awareness of no</li> </ul>	<p>All vegetated areas must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>⌘ NEM:BA, 2004</li> <li>⌘ NCNCA, 2009</li> </ul>	Throughout the site establishment- and operational phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			<p>littering, appropriate handling of pollution and chemical spills, avoiding fire hazards, minimising wildlife interactions, remaining within demarcated construction areas, etc.</p> <ul style="list-style-type: none"> <li>⌘ Bush-clearance may only commence once the plant permits were obtained, and the protected plants successfully relocated by an appropriately qualified person.</li> <li>⌘ The on-site ECO must provide supervision and oversight of vegetation clearing activities and other activities which may cause damage to the environment, especially during the site establishment phase, when most of the vegetation clearing is taking place.</li> <li>⌘ All vehicles must remain on demarcated roads and no unnecessary driving in the veld outside these areas may be allowed.</li> <li>⌘ No plants may be translocated or otherwise uprooted or disturbed for rehabilitation or other purposes without express permission from the ECO and without the relevant permits.</li> <li>⌘ No fires must be allowed on-site.</li> <li>⌘ All cleared areas that are no longer or not required for drilling activities must be re-seeded with locally sourced seed of suitable species. Bare areas can also be packed with brush</li> </ul>		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			removed from other parts of the site to encourage natural vegetation regeneration and limit erosion.		
<ul style="list-style-type: none"> <li>⌘ Site establishment and infrastructure development.</li> <li>⌘ Processing of tailings, vegetation removal, and stripping of overburden.</li> </ul>	Site Establishment & Operational Phase	5 ha	<p><b><u>Protection of Fauna:</u></b></p> <ul style="list-style-type: none"> <li>⌘ The site manager must ensure no fauna is caught, killed, harmed, sold, or played with.</li> <li>⌘ Any fauna directly threatened by the operational activities must be removed to a safe location by the ECO or other suitably qualified person.</li> <li>⌘ All personnel must undergo environmental induction regarding fauna management and in particular awareness about not harming or collecting species such as snakes, tortoises, and owls. Workers must be instructed to report any animals that may be trapped in the working area.</li> <li>⌘ No snares may be set, or nests raided for eggs or young.</li> <li>⌘ All vehicles must adhere to a low speed limit (40 km/h is recommended) to avoid collisions with susceptible species such as snakes and tortoises.</li> <li>⌘ No litter, food or other foreign material may be thrown or left around the site. Such items must be kept in waste bins with sealable lids at the processing area.</li> </ul>	<p>Site specific fauna must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>⌘ NEM:BA, 2004</li> <li>⌘ NCNCA, 2009</li> </ul>	Throughout the site establishment-, and operational phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
<p>⌘ Site establishment and infrastructure development.</p> <p>⌘ Excavation, loading and hauling to the processing plant.</p>	<p>Site Establishment, &amp; Operational Phase.</p>	<p>5 ha</p>	<p><b><u>Archaeological, Heritage and Palaeontological Aspects:</u></b></p> <p>⌘ All mining must be confined to the development footprint area.</p> <p>⌘ Documentation (scaled mapping) must be done of the mining-related structures at Norrabees 1 and 2.</p> <p>⌘ After documentation of Features 1 and 2 a destruction permit must be applied for from Ngwao-Boswa Jwa Kapa Bokone (Northern Cape PHRA) prior to this area being worked.</p> <p>⌘ A 30 m buffer must be maintained around Feature 3 to preserve it in situ, and any damage to the feature must be avoided.</p> <p>⌘ Feature 4 must be demarcated and avoided during mining activities.</p> <p>⌘ The ECO must monitor the project.</p> <p>⌘ A Chance Find Procedure must be implemented for the project as listed below:</p> <ul style="list-style-type: none"> <li>• If during the pre-construction phase, construction, operations or closure phases of this project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance or heritage site, this person must cease work at the site of the find and report</li> </ul>	<p>Cultural/heritage aspects on site must be managed in accordance with the:</p> <p>⌘ NHRA, 1999;</p> <p>⌘ Conditions of the destruction Permit.</p>	<p>Throughout the site establishment-, and operational phases.</p>

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			<p>this find to their immediate supervisor, and through their supervisor to the senior on-site manager.</p> <ul style="list-style-type: none"> <li>• It is the responsibility of the senior on-site Manager to make an initial assessment of the extent of the find and confirm the extent of the work stoppage in that area.</li> <li>• The senior on-site Manager must inform the ECO of the chance find and its immediate impact on operations. The ECO must then contact a professional archaeologist for an assessment of the finds who must notify the SAHRA.</li> <li>• Work may only continue once the go-ahead was issued by SAHRA.</li> </ul>		
<ul style="list-style-type: none"> <li>⌘ Processing of tailings, vegetation removal, and stripping of overburden.</li> <li>⌘ Drilling and Blasting.</li> <li>⌘ Excavation, loading and hauling to the processing plant.</li> </ul>	<p>Site Establishment-, Operational-, and Decommissioning Phase</p>	<p>5 ha</p>	<p><b><u>Fugitive Dust Emission Mitigation Measures:</u></b></p> <ul style="list-style-type: none"> <li>⌘ The liberation of dust into the surrounding environment must be effectively controlled using, inter alia, straw, water spraying and/or environmentally friendly dust-allaying agents that contains no PCB's (e.g. DAS products).</li> <li>⌘ The site manager must ensure continuous assessment of all dust suppression equipment to confirm its</li> </ul>	<p>Dust generation on site must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>⌘ NEM:AQA, 2004 Regulation 6(1)</li> <li>⌘ National Dust Control Regulations, GN No R827</li> <li>⌘ ASTM D1739 (SANS 1137:2012)</li> </ul>	<p>Throughout the site establishment-, and operational phases.</p>

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
<ul style="list-style-type: none"> <li>⌘ Processing, stockpiling and transporting of material.</li> </ul>			<p>effectiveness in addressing dust suppression.</p> <ul style="list-style-type: none"> <li>⌘ Speed on the haul roads must be limited to 20 km/h and 40 km/h on the access road to prevent the generation of excess dust.</li> <li>⌘ Areas devoid of vegetation, which could act as a dust source, must be minimized and vegetation removal may only be done immediately prior to mining.</li> <li>⌘ The crusher plant must have operational water sprayers to alleviate dust generation from the conveyor belts.</li> <li>⌘ Fines, blowing from the drop end of the crusher plant, can be minimized by attaching strips of used conveyor belts to the conveyor's end.</li> <li>⌘ Compacted dust must weekly be removed from the crusher plant to eliminate the dust source.</li> <li>⌘ Loads must be flattened to prevent spillage during transportation on public roads.</li> <li>⌘ Weather conditions must be taken into consideration upon commencement of daily operations. Limiting operations during very windy periods would reduce airborne dust and resulting impacts.</li> <li>⌘ All dust generating activities shall comply with the National Dust Control</li> </ul>		



ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			<p>Regulations, GN No R827 promulgated in terms of NEM:AQA (Act 39 of 2004) and ASTM D1739 (SANS 1137:2012).</p> <p>⌘ Best practice measures shall be implemented during the stripping of overburden, excavation, and transporting of material from site to minimize potential dust impacts.</p>		
<p>⌘ Processing of tailings, vegetation removal, and stripping of overburden.</p> <p>⌘ Drilling and blasting.</p> <p>⌘ Excavation, loading and hauling to the processing plant.</p> <p>⌘ Processing, stockpiling, and transporting of material.</p>	<p>Site Establishment-, Operational-, and Decommissioning Phase</p>	<p>5 ha</p>	<p><b><u>Noise Handling:</u></b></p> <p>⌘ The permit holder must ensure that employees and staff conduct themselves in an acceptable manner while on site.</p> <p>⌘ No loud music may be permitted at the mining area.</p> <p>⌘ All mining vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the National Road Traffic Act, 1996 (Act No 93 of 1996).</p> <p>⌘ The type, duration and timing of the blasting procedures must be planned with due cognizance of other land users and structures in the vicinity. Surrounding land users must be notified in writing prior to each blasting occasion.</p> <p>⌘ A qualified occupational hygienist must be contracted to quarterly monitor and report on the personal noise exposure of the employees</p>	<p>Noise generation on site must be managed in accordance with the:</p> <p>⌘ NEM:AQA, 2004 Regulation 6(1)</p> <p>⌘ NRTA, 1996</p>	<p>Throughout the site and establishment-, operational phases.</p>

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			<p>working at the mine. The monitoring must be done in accordance with the SANS 10083:2004 (Edition 5) sampling method as well as NEM:AQA, 2004, SANS 10103:2008.</p> <ul style="list-style-type: none"> <li>⌘ Best practice measures shall be implemented to minimize potential noise impacts.</li> </ul>		
<ul style="list-style-type: none"> <li>⌘ Processing of tailings, vegetation removal, and stripping of overburden.</li> <li>⌘ Sloping and landscaping during rehabilitation phase.</li> </ul>	<p>Site Establishment-, Operational, and Decommissioning Phase</p>	<p>5 ha</p>	<p><b><u>Management of Invasive Plant Species:</u></b></p> <ul style="list-style-type: none"> <li>⌘ An invasive plant species management plan (Appendix K) must be implemented at the site to ensure the management and control of all species regarded as Category 1a and 1b invasive species in terms of NEM:BA (National Environmental Management: Biodiversity Act 10 of 2004 and regulations applicable thereto). Weed/alien clearing must be done on an ongoing basis throughout the life of the mining activities.</li> <li>⌘ No planting or importing of any alien species to the site for landscaping, rehabilitation or any other purpose may be allowed.</li> <li>⌘ All stockpiles must be kept free of invasive plant species.</li> <li>⌘ Management must take responsibility to control declared invader or exotic species on the rehabilitated areas. The following control methods can be used:</li> </ul>	<p>Weeds and invader plants on site must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>⌘ CARA, 1983</li> <li>⌘ NEM:BA, 2004</li> </ul>	<p>Throughout the site establishment-, operational, and decommissioning phases.</p>

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			<ul style="list-style-type: none"> <li>• The plants can be uprooted, felled, or cut off and can be destroyed completely.</li> <li>• The plants can be treated chemically by a registered pest control officer (PCO) using an herbicide recommended for use by the PCO in accordance with the directions for the use of such an herbicide.</li> </ul>		
<ul style="list-style-type: none"> <li>⌘ Processing of tailings, vegetation removal, and stripping of overburden.</li> <li>⌘ Excavation, loading and hauling to the processing plant.</li> <li>⌘ Sloping and landscaping during rehabilitation.</li> </ul>	<p>Site Establishment-, Operational and Decommissioning Phase</p>	<p>5 ha</p>	<p><b><u>Erosion Control and Storm Water Management:</u></b></p> <ul style="list-style-type: none"> <li>⌘ Clearing of vegetation must be limited to the proposed mining footprint and associated infrastructure. No clearing outside of the minimum required footprint to take place.</li> <li>⌘ Stormwater must be diverted around the soil heaps and mining areas to prevent erosion.</li> <li>⌘ Stockpiles must be protected from erosion and stored on flat areas where possible.</li> <li>⌘ When mining within steep slopes, it must be ensured that adequate slope protection is provided.</li> <li>⌘ During mining, the outflow of run-off water from the mining excavation must be controlled to prevent down-slope erosion. This must be done by way of the construction of temporary banks and ditches that will direct run-</li> </ul>	<p>Erosion and storm water must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>⌘ CARA, 1983</li> <li>⌘ NEMA, 1998</li> <li>⌘ NWA, 1998</li> </ul>	<p>Throughout the site establishment-, and operational phases.</p>

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			<p>off water (if needed). These must be in place at any points where overflow out of the excavation might occur.</p> <ul style="list-style-type: none"> <li>⌘ Roads and other disturbed areas within the project area must be regularly monitored for erosion and problem areas must receive follow-up monitoring to assess the success of the remediation.</li> <li>⌘ Any erosion problems within the mining area because of the mining activities observed must be rectified immediately (within 48 hours) and monitored thereafter to ensure that it does not re-occur.</li> <li>⌘ Mining must be conducted only in accordance with the Best Practice Guideline for small scale mining that relates to storm water management, erosion and sediment control and waste management, developed by the Department of Water and Sanitation (DWS), and any other conditions which that Department may impose: <ul style="list-style-type: none"> <li>• Clean water (e.g. rainwater) must be kept clean and be routed to a natural watercourse by a system separate from the dirty water system. You must prevent clean water from running or spilling into dirty water systems.</li> </ul> </li> </ul>		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			<ul style="list-style-type: none"> <li>• Dirty water must be collected and contained in a system separate from the clean water system.</li> <li>• Dirty water must be prevented from spilling or seeping into clean water systems.</li> </ul> <p>⌘ Polluting activities including storage of mining fleet, equipment wash down facilities and vehicle maintenance yards must be restricted to the workshop areas and must be undertaken on impermeable hard standing surfaces, which are formally drained to a dirty water drainage system at the site.</p> <p>⌘ All fuels and chemicals stored or used on site must be contained within fit for purpose containers and stored within designated storage areas. To prevent pollution of the surrounding environment during an accidental spillage, the designated storage areas must be situated on an impermeable surface and must feature a perimeter bund and a drainage sump. The volume of the bund and sump must be sized to contain at least 110% of the total volume of the fuel and chemicals being stored within the designated storage area.</p>		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
<ul style="list-style-type: none"> <li>⌘ Processing of tailings, vegetation removal, and stripping of overburden.</li> <li>⌘ Excavation, loading and hauling to the processing plant.</li> <li>⌘ Processing, stockpiling, and transporting of material.</li> <li>⌘ Sloping and landscaping during rehabilitation phase.</li> </ul>	<p>Site Establishment-, Operational-, and Decommissioning Phase</p>	<p>5 ha</p>	<p><b><u>Waste Management:</u></b></p> <ul style="list-style-type: none"> <li>⌘ Regular vehicle maintenance, repairs and services may only take place at the workshop and service area. If emergency repairs are needed on equipment not able to move to the workshop, drip trays must be present. All waste products must be disposed of in a closed container/bin to be removed from the emergency service area (same day) to the workshop to ensure proper disposal. This waste must be treated as hazardous waste and must be disposed of at a registered hazardous waste handling facility, alternatively collected by a registered hazardous waste handling contractor. The safe disposal certificates must be filed for auditing purposes.</li> <li>⌘ If a diesel bowser is used on site, it must always be equipped with a drip tray. Drip trays must be used during each refuelling event. The nozzle of the bowser needs to rest in a sleeve to prevent dripping after refuelling.</li> <li>⌘ Site management must ensure drip trays are cleaned after each use. No dirty drip trays may be used on site. The dirty rags used to clean the drip trays must be disposed as hazardous waste into a designated bin at the</li> </ul>	<p>Mining related waste must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>⌘ NWA, 1998</li> <li>⌘ NEM:WA, 2008</li> </ul>	<p>Throughout the site establishment-, operational and decommissioning phases.</p>

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			<p>workshop, where it is incorporated into the hazardous waste removal system.</p> <ul style="list-style-type: none"> <li>⌘ Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. Proof of safe disposal must be filed for auditing purposes.</li> <li>⌘ An oil spill kit must be obtained, and the employees must be trained in the emergency procedures to follow when a spill occurs as well as the application of the spill kit.</li> <li>⌘ Spills must be cleaned up immediately, within two hours of occurrence, to the satisfaction of the Regional Manager (DMRE) by removing the spillage together with the polluted soil and containing it in a designated hazardous waste bin until it is disposed of at a recognised facility. Proof must be filed.</li> <li>⌘ Suitable covered receptacles must always be available and conveniently placed for the disposal of general waste.</li> <li>⌘ Non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., must be stored in a container with a closable lid at a</li> </ul>		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			<p>collecting point to be collected at least once a month and disposed of at a recognized landfill site. Specific precautions must be taken to prevent refuse from being dumped on or in the vicinity of the mine area. Proof of disposal must be available for auditing purposes.</p> <ul style="list-style-type: none"> <li>⌘ Biodegradable refuse must be handled as indicated above.</li> <li>⌘ Re-use or recycling of waste products must be encouraged on site.</li> <li>⌘ No waste may be buried or burned on the site.</li> <li>⌘ Ablution facilities must be provided in the form of a chemical toilet/s. The chemical toilet must be anchored (to prevent blowing/falling over) and shall be serviced at least once a week for the duration of the mining activities by a registered liquid waste handling contractor. The safe disposal certificates must be filed for auditing purposes.</li> <li>⌘ The use of any temporary, chemical toilet facilities must not cause any pollution to water sources or pose a health hazard. In addition, no form of secondary pollution should arise from the disposal of refuse or sewage from the temporary, chemical toilets. Any pollution problems arising from the</li> </ul>		



ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			<p>above are to be addressed immediately by the permit holder.</p> <ul style="list-style-type: none"> <li>⌘ When small volumes of wastewater are generated during the life of the mine the following is applicable: <ul style="list-style-type: none"> <li>• Water containing waste must not be discharged into the natural environment.</li> <li>• Measures to contain the wastewater and safely dispose thereof must be implemented.</li> </ul> </li> <li>⌘ It is important that any significant spillage of chemicals, fuels etc. during the lifespan of the mining activities is reported to the Department of Water and Sanitation and other relevant authorities.</li> <li>⌘ Site management must implement the use of waste registers to keep record of the waste generated and removed from the mining area.</li> </ul>		
<ul style="list-style-type: none"> <li>⌘ Drilling and blasting.</li> <li>⌘ Excavation, loading and hauling to the processing plant.</li> <li>⌘ Sloping and landscaping during</li> </ul>	Operational-, and Decommissioning Phase	5 ha	<p><b>Management of health and safety risks:</b></p> <ul style="list-style-type: none"> <li>⌘ Workers must have access to the correct personal protection equipment (PPE) as required by law.</li> <li>⌘ Sanitary facilities must be located within 100 m from any point of work.</li> <li>⌘ All operations must comply with the Mine Health and Safety Act, 1996 (Act No 29 of 1996).</li> <li>⌘ The type, duration and timing of the blasting procedures must be planned</li> </ul>	<p>Health and safety aspects on site must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>⌘ MHSA, 1996</li> <li>⌘ OHSA, 1993</li> <li>⌘ OHSAS 18001</li> <li>⌘ USBM standards</li> </ul>	Throughout the site establishment-,operational and decommissioning phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
rehabilitation phase.			<p>with due cognizance of other land users in the vicinity.</p> <ul style="list-style-type: none"> <li>⌘ The surrounding land users must be informed in writing ahead of each blasting event.</li> <li>⌘ The compliance of ground vibration and airblast levels must be monitored to USBM standards with each blasting event.</li> <li>⌘ A vibro recorder must be used to record all blasts.</li> <li>⌘ Audible warning of a pending blast must be given at least 3 minutes in advance of the blast.</li> <li>⌘ Measures to limit flyrock must be taken. All flyrock (of diameter 150 mm and larger) which falls beyond the working area, together with the rock spill must be collected and removed.</li> </ul>		
⌘ Processing, stockpiling, and transporting of material.	Operational phase	±12 km	<p><b><u>Access road Management:</u></b></p> <ul style="list-style-type: none"> <li>⌘ When applicable, storm water must be diverted around the access road to prevent erosion.</li> <li>⌘ Vehicular movement must be restricted to the existing access road and crisscrossing of tracks through undisturbed areas must be prohibited.</li> <li>⌘ Rutting and erosion of the access road caused as a direct result of the mining activities must be repaired by the permit holder.</li> </ul>	<p>The access road must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>❖ NRTA, 1996</li> </ul>	<p>Throughout the site establishment-, and operational phases.</p>

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			<ul style="list-style-type: none"> <li>⌘ Overloading of the trucks must be prevented, and proof of load weights must be filed and be available for auditing by relevant officials.</li> <li>⌘ The speed of all mining equipment/vehicles must be restricted to 40 km/h on the access roads.</li> </ul>		
<ul style="list-style-type: none"> <li>⌘ Site establishment and infrastructure development.</li> </ul>	Site Establishment, & Operational Phase.	±500 m <sup>2</sup>	<p><b><u>Storage/Handling of Hazardous Substances/Chemicals:</u></b></p> <ul style="list-style-type: none"> <li>⌘ Chemical storage areas must be placed on level ground to prevent offsite migration of any spilled product.</li> <li>⌘ The floor of the storage area must be impermeable to prevent seepage of spilled products into the ground or ground water.</li> <li>⌘ Access to the chemicals/substances must be controlled and require prior notification of an appropriate staff member.</li> <li>⌘ A Hazardous Substances Register must be maintained, and Safety Data Sheets (SDS) must be kept current for all chemicals used on site.</li> <li>⌘ Any fuel/used oil tanks must have secondary containment in the form of an impermeable bund wall and base within which the tanks sit, raised above the floor, on plinths. The bund capacity must be sufficient to contain 110% of the tank's maximum</li> </ul>	Chemicals/hazardous substances must be stored in accordance with the: <ul style="list-style-type: none"> <li>⌘ HSA,1973</li> <li>⌘ NWA, 1998</li> <li>⌘ NEM:WA, 2008</li> </ul>	Throughout the site establishment-, and operational phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			<p>capacity. The distance and height of the bund wall relative to that of the tank must also be taken into consideration to ensure that any spillage does not result in hydrocarbons/other substances spouting beyond the confines of the bund.</p> <ul style="list-style-type: none"> <li>⌘ The site manager must establish a formal inspection routine to check all equipment in the bund area, as well as the bund area itself for malfunctions or leakages. The bund area must be inspected at least weekly, and any accumulated rainwater removed and handled as contaminated water. All valves and outlets must be checked to ensure that its intact and closed securely.</li> <li>⌘ The bund base must slope towards an oil sump of sufficient size. Contaminated water may not be allowed to mix with clean water and must be contained until it is collected by a registered hazardous waste handling contractor or disposed of at a registered hazardous waste handling facility.</li> <li>⌘ Drip trays must be used underneath all stationary equipment or vehicles. Used drip trays must be placed within a bunded area and are not to be stored on bare soil. The wastewater</li> </ul>		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			<p>originating from the cleaning of drip trays must be discarded into the oil sump</p>		
<p>⌘ Sloping and landscaping during rehabilitation phase.</p>	<p>Decommissioning Phase</p>	<p>5 ha</p>	<p><b><u>Rehabilitation/landscaping of mining area:</u></b></p> <ul style="list-style-type: none"> <li>⌘ The excavated area must serve as a final depositing area for the placement of overburden.</li> <li>⌘ Rocks and coarse material removed from the excavation must be dumped into the excavation upon completion.</li> <li>⌘ Coarse natural material used for the construction of ramps must be removed and dumped into the excavations.</li> <li>⌘ Stockpiles must be removed during the decommissioning phase, the area ripped, and the topsoil (if available) returned to its original depth to provide a growth medium.</li> <li>⌘ No waste may be permitted to be deposited in the excavations.</li> <li>⌘ Once overburden, rocks and coarse natural materials have been added to the excavation and it was profiled with acceptable contours and erosion control measures, the topsoil previously stored (if any) must be returned to its original depth over the area.</li> <li>⌘ The area must be fertilized if necessary to allow vegetation to</li> </ul>	<p>Rehabilitation of the mining area must be in accordance with the:</p> <ul style="list-style-type: none"> <li>❖ CARA, 1983</li> <li>❖ NEM:BA, 2004</li> <li>❖ MPRDA, 2002</li> <li>❖ Closure Plan (Appendix J)</li> </ul>	<p>Throughout the decommissioning phase.</p>

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			<p>establish rapidly. The site shall be seeded with a local or adapted indigenous seed mix to propagate the locally or regionally occurring flora.</p> <ul style="list-style-type: none"> <li>⌘ If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a vegetation seed mix to his or her specification.</li> <li>⌘ On completion of operations, all structures or objects shall be dealt with in accordance with section 44 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002).</li> <li>⌘ On completion of mining operations, the surface of all plant-, stockpiling-, and/or office areas, if compacted due to hauling and dumping operations, shall be scarified to a depth of at least 200mm and graded to an even surface condition. Where applicable/possible topsoil needs to be returned to its original depth over the area.</li> </ul>		

## e) Impact Management Outcomes

(A description of impact management outcomes, identifying the standard of impact management required for the aspects contemplated in paragraph ());

Table 27: Impact Management Outcomes

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
<p>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.)</p>	<p>(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc...etc..)</p>		<p>In which impact is anticipated  (e.g. Construction, commissioning, operational Decommissioning, closure, post-closure))</p>	<p>(Modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc...etc..)  E.g.  <ul style="list-style-type: none"> <li>• Modify through alternative method.</li> <li>• Control through noise control</li> <li>• Control through management and monitoring</li> <li>• Remedy through rehabilitation.</li> </ul> </p>	<p>(Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.</p>
<p>⌘ Demarcation of site with visible beacons.</p>	<p>⌘ No impact could be identified other than the beacons being outside the boundaries of the approved mining area.</p>	<p>N/A</p>	<p>Site Establishment phase</p>	<p>Control through management and monitoring.</p>	<p>Mining is only allowed within the boundaries of the approved area.            ⌘ MPRDA, 2008            ⌘ NEMA, 1998</p>
<p>⌘ Site establishment and infrastructure development.</p>	<p>⌘ Visual intrusion because of site establishment.</p>	<p>The visual impact may affect the aesthetics of the landscape.</p>	<p>Site Establishment &amp; Operational Phase</p>	<p><u>Control:</u> Implementing proper housekeeping.</p>	<p>Management of the mining activities must be in accordance with the:            ⌘ MPRDA, 2008            ⌘ NEMA, 1998</p>

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
<ul style="list-style-type: none"> <li>⌘ Site establishment and infrastructure development.</li> <li>⌘ Cumulative Impacts</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Potential impact on the CBA/NPAESFA objectives.</li> <li>⌘ Impact the broad-scale ecological processes.</li> </ul>	This will impact on the biodiversity of the receiving environment.	Site Establishment & Operational Phase	<u>Control:</u> Implementing proper housekeeping and comply with recommendations of the botanist.	Areas of conservation importance must be managed in accordance with the: <ul style="list-style-type: none"> <li>⌘ NEM:BA, 2004</li> <li>⌘ NCNCA, 2009</li> </ul>
<ul style="list-style-type: none"> <li>⌘ Site establishment and infrastructure development.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Potential impact on vegetation and listed and/or protected plant species.</li> </ul>	This will impact on the biodiversity of the receiving environment.	Site Establishment phase	<u>Control &amp; Stop:</u> Implementing good management practices and adhering to the recommendations of the botanist.	All vegetated areas must be managed in accordance with the: <ul style="list-style-type: none"> <li>⌘ NEM:BA, 2004</li> <li>⌘ NCNCA, 2009</li> </ul>
<ul style="list-style-type: none"> <li>⌘ Site establishment and infrastructure development.</li> <li>⌘ Processing of tailings, vegetation removal, and stripping of overburden.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Potential impact on fauna within the footprint area.</li> <li>⌘ Potential impact on local fauna due to disturbance and loss of available habitat.</li> </ul>	This will impact on the biodiversity of the receiving environment.	Site Establishment & Operational Phase	<u>Control &amp; Stop:</u> Implementing good management practices and adhering to the recommendations of the ecologist.	Site specific fauna must be managed in accordance with the: <ul style="list-style-type: none"> <li>⌘ NEM:BA, 2004</li> <li>⌘ NCNCA, 2009</li> </ul>
<ul style="list-style-type: none"> <li>⌘ Site establishment and infrastructure development.</li> <li>⌘ Excavation, loading and hauling to the processing plant.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Potential impact on archaeological artefacts.</li> <li>⌘ Potential impact on areas of palaeontological concerns.</li> </ul>	This could impact on the cultural and heritage legacy of the receiving environment.	Site Establishment, & Operational Phase.	<u>Control &amp; Stop:</u> Implementing good management practices and adhering to the recommendations of the archaeologist.	Cultural/heritage aspects on site must be managed in accordance with the: <ul style="list-style-type: none"> <li>⌘ NHRA, 1999</li> <li>⌘ Conditions of the destruction Permit.</li> </ul>
<ul style="list-style-type: none"> <li>⌘ Processing of tailings, vegetation removal, and stripping of overburden.</li> <li>⌘ Drilling and Blasting.</li> <li>⌘ Excavation, loading and hauling to the processing plant.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Dust nuisance because of the disturbance of soil.</li> <li>⌘ Dust nuisance caused by blasting activities.</li> <li>⌘ Dust nuisance due to excavation and from loading</li> </ul>	Increased dust generation will impact on the air quality of the receiving environment.	Site Establishment-, Operational-, and Decommissioning Phase	<u>Control:</u> Dust suppression methods and proper housekeeping.	Dust generation on site must be managed in accordance with the: <ul style="list-style-type: none"> <li>⌘ NEM:AQA, 2004 Regulation 6(1)</li> <li>⌘ National Dust Control Regulations, GN No R827</li> </ul>



ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
<ul style="list-style-type: none"> <li>⌘ Processing, stockpiling and transporting of material.</li> </ul>	<ul style="list-style-type: none"> <li>and vehicles transporting the material.</li> </ul>				<ul style="list-style-type: none"> <li>⌘ ASTM D1739 (SANS 1137:2012)</li> </ul>
<ul style="list-style-type: none"> <li>⌘ Processing of tailings, vegetation removal, and stripping of overburden.</li> <li>⌘ Drilling and blasting.</li> <li>⌘ Excavation, loading and hauling to the processing plant.</li> <li>⌘ Processing, stockpiling, and transporting of material.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Noise nuisance generated by earthmoving machinery.</li> <li>⌘ Noise nuisance because of blasting.</li> <li>⌘ Noise nuisance because of the mining activities.</li> <li>⌘ Noise nuisance stemming from operation of the processing plant.</li> </ul>	<ul style="list-style-type: none"> <li>Should noise levels become excessive it may have an impact on the noise ambiance of the receiving environment.</li> </ul>	<ul style="list-style-type: none"> <li>Site Establishment-, Operational-, and Decommissioning Phase</li> </ul>	<ul style="list-style-type: none"> <li><u>Control:</u> Noise suppression methods and proper housekeeping.</li> </ul>	<ul style="list-style-type: none"> <li>Noise generation on site must be managed in accordance with the: <ul style="list-style-type: none"> <li>⌘ NEM:AQA, 2004 Regulation 6(1)</li> <li>⌘ NRTA, 1996</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>⌘ Processing of tailings, vegetation removal, and stripping of overburden.</li> <li>⌘ Sloping and landscaping during rehabilitation phase.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Infestation of the mining area with weeds or invader plant species.</li> <li>⌘ Infestation of the reinstated areas by weeds and invader plant species.</li> </ul>	<ul style="list-style-type: none"> <li>Infestation of the footprint by invader plant species may affect the biodiversity of the receiving environment.</li> </ul>	<ul style="list-style-type: none"> <li>Site Establishment-, Operational, and Decommissioning Phase</li> </ul>	<ul style="list-style-type: none"> <li><u>Control &amp; Remedy:</u> Implementation of an invasive plant species management plan.</li> </ul>	<ul style="list-style-type: none"> <li>Weeds and invader plants on site must be managed in accordance with the: <ul style="list-style-type: none"> <li>⌘ CARA, 1983</li> <li>⌘ NEM:BA, 2004</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>⌘ Processing of tailings, vegetation removal, and stripping of overburden.</li> <li>⌘ Excavation, loading and hauling to the processing plant.</li> <li>⌘ Sloping and landscaping during rehabilitation.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Potential erosion of denuded areas.</li> <li>⌘ Facilitation of erosion due to mining activities.</li> <li>⌘ Erosion of landscaped area after rehabilitation.</li> </ul>	<ul style="list-style-type: none"> <li>Erosion of the footprint will affect the rehabilitation of the excavation upon closure of the site.</li> </ul>	<ul style="list-style-type: none"> <li>Site Establishment-, Operational and Decommissioning Phase</li> </ul>	<ul style="list-style-type: none"> <li><u>Control &amp; Remedy:</u> Proper housekeeping and storm water management.</li> </ul>	<ul style="list-style-type: none"> <li>Erosion and storm water must be managed in accordance with the: <ul style="list-style-type: none"> <li>⌘ CARA, 1983</li> <li>⌘ NEMA, 1998</li> <li>⌘ NWA, 1998</li> </ul> </li> </ul>

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
<ul style="list-style-type: none"> <li>⌘ Processing of tailings, vegetation removal, and stripping of overburden.</li> <li>⌘ Excavation, loading and hauling to the processing plant.</li> <li>⌘ Processing, stockpiling, and transporting of material.</li> <li>⌘ Sloping and landscaping during rehabilitation phase.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Potential contamination of footprint area and surface runoff because of hydrocarbon spillages.</li> <li>⌘ Soil contamination from hydrocarbon spills and/or littering.</li> <li>⌘ Potential contamination of environment due to improper waste management.</li> <li>⌘ Potential impact associated with litter/waste left at the mining area.</li> </ul>	Contamination of the footprint area will negatively impact the soil, surface runoff and potentially the groundwater. It will also incur additional costs to the permit holder.	Site Establishment-, Operational-, and Decommissioning Phase	<u>Control &amp; Remedy:</u> Proper housekeeping and implementation of an emergency response plan and waste management plan.	Mining related waste must be managed in accordance with the: <ul style="list-style-type: none"> <li>⌘ NWA, 1998</li> <li>⌘ NEM:WA, 2008</li> </ul>
<ul style="list-style-type: none"> <li>⌘ Drilling and blasting.</li> <li>⌘ Excavation, loading and hauling to the processing plant.</li> <li>⌘ Sloping and landscaping during rehabilitation phase.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Health and safety risk posed by blasting activities.</li> <li>⌘ Unsafe working environment for employees.</li> <li>⌘ Safety risk posed by un-sloped areas.</li> </ul>	An unsafe working environment affects the labour force, as well as pose a threat to animals and humans that may enter the mining footprint.	Operational-, and Decommissioning Phase	<u>Stop &amp; Control:</u> Adherence to the blasting rules and regulations, demarcation of the mining area and proper housekeeping.	Health and safety aspects on site must be managed in accordance with the: <ul style="list-style-type: none"> <li>⌘ MHSA, 1996</li> <li>⌘ OHSA, 1993</li> <li>⌘ OHSAS 18001</li> <li>⌘ USBM standards</li> </ul>
<ul style="list-style-type: none"> <li>⌘ Processing, stockpiling, and transporting of material.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Overloading of trucks impacting road infrastructure.</li> <li>⌘ Degradation of the access road.</li> </ul>	Collapse of the internal road infrastructure will affect the community and lawful occupiers negatively. If the mine negatively affects public traffic, it may incur additional costs and complaints from the public.	Operational phase	<u>Control &amp; Remedy:</u> Maintaining the access road for the duration of the operational phase, as well as leaving it in a representative or better condition than prior to mining.	The access road must be managed in accordance with the: <ul style="list-style-type: none"> <li>❖ NRTA, 1996</li> </ul>

## f) Impact Management Actions

(A description of impact management actions, identifying the way the impact management objectives and outcomes in paragraph (c) and (d) will be achieved)

Table 28: Impact Management Actions

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
<p>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.)</p>	<p>(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc...etc..)</p>	<p>(Modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc... etc.)</p> <p>E.g.</p> <ul style="list-style-type: none"> <li>• Modify through alternative method.</li> <li>• Control through noise control</li> <li>• Control through management and monitoring</li> <li>• Remedy through rehabilitation.</li> </ul>	<p>Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required.</p> <p>With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either:</p> <p>Upon cessation of the individual activity Or. Upon the cessation of mining bulk sampling or alluvial diamond prospecting as the case may be.</p>	<p>(A description of how each of the recommendations in 2.11.6 read with 2.12 and 2.15.2 herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)</p>
<p>⌘ Demarcation of site with visible beacons.</p>	<p>⌘ No impact could be identified other than the beacons being outside the boundaries of the approved mining area.</p>	<p>Control through management and monitoring.</p>	<p>Beacons need to be in place throughout the life of the mine.</p>	<p>Mining of the site is only allowed within the boundaries of the approved area.</p> <p>⌘ MPRDA, 2008 ⌘ NEMA, 1998</p>
<p>⌘ Site establishment and infrastructure development.</p>	<p>⌘ Visual intrusion because of site establishment.</p>	<p><u>Control:</u> Implementing proper housekeeping.</p>	<p>Throughout site establishment- and operational phases.</p>	<p>Management of the mining activities must be in accordance with the:</p> <p>⌘ MPRDA, 2008 ⌘ NEMA, 1998</p>

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
<ul style="list-style-type: none"> <li>⌘ Site establishment and infrastructure development.</li> <li>⌘ Cumulative Impacts</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Potential impact on the CBA/NPAESFA objectives.</li> <li>⌘ Impact the broad-scale ecological processes.</li> </ul>	<p><u>Control:</u> Implementing proper housekeeping and comply with recommendations of the botanist.</p>	<p>Applicable during the site establishment phase, and to be managed throughout the operational and decommissioning phases.</p>	<p>Areas of conservation importance must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>⌘ NEM:BA, 2004</li> <li>⌘ NCNCA, 2009</li> </ul>
<ul style="list-style-type: none"> <li>⌘ Site establishment and infrastructure development.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Potential impact on vegetation and listed and/or protected plant species.</li> </ul>	<p><u>Control &amp; Stop:</u> Implementing good management practices and adhering to the recommendations of the botanist.</p>	<p>Applicable during the site establishment phase, and to be managed throughout the operational and decommissioning phases.</p>	<p>All vegetated areas must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>⌘ NEM:BA, 2004</li> <li>⌘ NCNCA, 2009</li> </ul>
<ul style="list-style-type: none"> <li>⌘ Site establishment and infrastructure development.</li> <li>⌘ Processing of tailings, vegetation removal, and stripping of overburden.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Potential impact on fauna within the footprint area.</li> <li>⌘ Potential impact on local fauna due to disturbance and loss of available habitat.</li> </ul>	<p><u>Control &amp; Stop:</u> Implementing good management practices and adhering to the recommendations of the ecologist.</p>	<p>Throughout operational- and decommissioning phases.</p>	<p>Site specific fauna must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>⌘ NEM:BA, 2004</li> <li>⌘ NCNCA, 2009</li> </ul>
<ul style="list-style-type: none"> <li>⌘ Site establishment and infrastructure development.</li> <li>⌘ Excavation, loading and hauling to the processing plant.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Potential impact on archaeological artefacts.</li> <li>⌘ Potential impact on areas of palaeontological concerns.</li> </ul>	<p><u>Control &amp; Stop:</u> Implementing good management practices and adhering to the recommendations of the archaeologist.</p>	<p>Throughout site establishment-, and operational phase.</p>	<p>Cultural/heritage aspects on site must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>⌘ NHRA, 1999</li> <li>⌘ Conditions of the destruction Permit.</li> </ul>
<ul style="list-style-type: none"> <li>⌘ Processing of tailings, vegetation removal, and stripping of overburden.</li> <li>⌘ Drilling and Blasting.</li> <li>⌘ Excavation, loading and hauling to the processing plant.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Dust nuisance because of the disturbance of soil.</li> <li>⌘ Dust nuisance caused by blasting activities.</li> <li>⌘ Dust nuisance due to excavation and from loading</li> </ul>	<p><u>Control:</u> Dust suppression methods and proper housekeeping.</p>	<p>Throughout site establishment- and operational phases.</p>	<p>Dust generation on site must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>⌘ NEM:AQA, 2004 Regulation 6(1)</li> <li>⌘ National Dust Control Regulations, GN No R827</li> </ul>

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
<ul style="list-style-type: none"> <li>⌘ Processing, stockpiling and transporting of material.</li> </ul>	<ul style="list-style-type: none"> <li>and vehicles transporting the material.</li> </ul>			<ul style="list-style-type: none"> <li>⌘ ASTM D1739 (SANS 1137:2012)</li> </ul>
<ul style="list-style-type: none"> <li>⌘ Processing of tailings, vegetation removal, and stripping of overburden.</li> <li>⌘ Drilling and blasting.</li> <li>⌘ Excavation, loading and hauling to the processing plant.</li> <li>⌘ Processing, stockpiling, and transporting of material.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Noise nuisance generated by earthmoving machinery.</li> <li>⌘ Noise nuisance because of blasting.</li> <li>⌘ Noise nuisance because of the mining activities.</li> <li>⌘ Noise nuisance stemming from operation of the processing plant.</li> </ul>	<p><u>Control:</u> Noise suppression methods and proper housekeeping.</p>	<p>Throughout site establishment- and operational phases.</p>	<p>Noise generation on site must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>⌘ NEM:AQA, 2004 Regulation 6(1)</li> <li>⌘ NRTA, 1996</li> </ul>
<ul style="list-style-type: none"> <li>⌘ Processing of tailings, vegetation removal, and stripping of overburden.</li> <li>⌘ Sloping and landscaping during rehabilitation phase.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Infestation of the mining area with weeds or invader plant species.</li> <li>⌘ Infestation of the reinstated areas by weeds and invader plant species.</li> </ul>	<p><u>Control &amp; Remedy:</u> Implementation of an invasive plant species management plan.</p>	<p>Throughout operational- and decommissioning phases.</p>	<p>Weeds and invader plants on site must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>⌘ CARA, 1983</li> <li>⌘ NEM:BA, 2004</li> </ul>
<ul style="list-style-type: none"> <li>⌘ Processing of tailings, vegetation removal, and stripping of overburden.</li> <li>⌘ Excavation, loading and hauling to the processing plant.</li> <li>⌘ Sloping and landscaping during rehabilitation.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Potential erosion of denuded areas.</li> <li>⌘ Facilitation of erosion due to mining activities.</li> <li>⌘ Erosion of landscaped area after rehabilitation.</li> </ul>	<p><u>Control &amp; Remedy:</u> Proper housekeeping and storm water management.</p>	<p>Throughout operational- and decommissioning phases.</p>	<p>Erosion and storm water must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>⌘ CARA, 1983</li> <li>⌘ NEMA, 1998</li> <li>⌘ NWA, 1998</li> </ul>

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
<ul style="list-style-type: none"> <li>⌘ Processing of tailings, vegetation removal, and stripping of overburden.</li> <li>⌘ Excavation, loading and hauling to the processing plant.</li> <li>⌘ Processing, stockpiling, and transporting of material.</li> <li>⌘ Sloping and landscaping during rehabilitation phase.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Potential contamination of footprint area and surface runoff because of hydrocarbon spillages.</li> <li>⌘ Soil contamination from hydrocarbon spills and/or littering.</li> <li>⌘ Potential contamination of environment due to improper waste management.</li> <li>⌘ Potential impact associated with litter/waste left at the mining area.</li> </ul>	<p><u>Control &amp; Remedy:</u> Proper housekeeping and implementation of an emergency response plan and waste management plan.</p>	<p>Throughout operational- and decommissioning phases.</p>	<p>Mining related waste must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>⌘ NWA, 1998</li> <li>⌘ NEM:WA, 2008</li> </ul>
<ul style="list-style-type: none"> <li>⌘ Drilling and blasting.</li> <li>⌘ Excavation, loading and hauling to the processing plant.</li> <li>⌘ Sloping and landscaping during rehabilitation phase.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Health and safety risk posed by blasting activities.</li> <li>⌘ Unsafe working environment for employees.</li> <li>⌘ Safety risk posed by un-sloped areas.</li> </ul>	<p><u>Stop &amp; Control:</u> Adherence to the blasting rules and regulations, demarcation of the mining area and proper housekeeping.</p>	<p>Throughout operational- and decommissioning phases.</p>	<p>Health and safety aspects on site must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>⌘ MHSA, 1996</li> <li>⌘ OHSA, 1993</li> <li>⌘ OHSAS 18001</li> <li>⌘ USBM standards</li> </ul>
<ul style="list-style-type: none"> <li>⌘ Processing, stockpiling, and transporting of material.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Overloading of trucks impacting road infrastructure.</li> <li>⌘ Degradation of the access road.</li> </ul>	<p><u>Control &amp; Remedy:</u> Maintaining the access road for the duration of the operational phase, as well as leaving it in a representative or better condition than prior to mining.</p>	<p>Throughout site establishment- and operational phases.</p>	<p>The access road must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>❖ NRTA, 1996</li> </ul>

**i) Financial Provision**

**(1) Determination of the amount of Financial Provision.**

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

The decommissioning phase will entail the reinstatement of the processing area by removing the stockpiled material, and site infrastructure/equipment and landscaping the disturbed footprints. Due to the impracticality of importing large volumes of fill to restore the excavations to its original topography, the rehabilitation option is to develop the site into a minor landscape feature. This will entail creating a series of irregular benches along the excavation faces, the top edges of each face being blasted away to form scree slopes on the benches below, thereby reducing the overall face angle. The benches will be top-dressed with overburden and vegetated with an appropriate seed mix. The applicant will comply with the minimum closure objectives as prescribed by DMRE.

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

This report, the Draft Basic Assessment Report, includes all the environmental objectives in relation to closure and will be made available for perusal by the landowner, registered I&AP's and stakeholders over a 30-days commenting period.

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

The requested rehabilitation plan is attached as Appendix E.

**(d) Explain why it can be confirmed that the rehabilitation plan is compatible with the closure objectives.**

The decommissioning phase will entail the final rehabilitation of the mining site. Final landscaping, levelling and top dressing will be done on all areas to be rehabilitated. The rehabilitation of the mining area as indicated on the rehabilitation plan attached as Appendix E will comply with the minimum closure objectives as prescribed by DMRE and detailed below, and therefore is deemed to be compatible:

#### Rehabilitation of the excavated area:

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

#### Rehabilitation of plant, office, and service areas:

- ⌘ Coarse natural material used for the construction of ramps must be removed and dumped into the excavations.
- ⌘ Stockpiles must be removed during the decommissioning phase, the area ripped, and the topsoil returned to its original depth to provide a growth medium.
- ⌘ On completion of operations, all structures or objects shall be dealt with in accordance with section 44 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002):
  - Where sites have been rendered devoid of vegetation/grass or where soils have been compacted owing to traffic, the surface shall be scarified or ripped.
  - Areas containing French drains shall be compacted and covered with a final layer of topsoil to a height of 10 cm above the surrounding ground surface.
  - The site shall be seeded with a vegetation seed mix adapted to reflect the local indigenous flora.



- ⌘ Photographs of the camp and office sites, before and during the mining operation and after rehabilitation, shall be taken at selected fixed points and kept on record for the information of the DMRE Regional Manager. \_
- ⌘ On completion of mining operations, the surface of these areas, if compacted due to hauling and dumping operations, shall be scarified to a depth of at least 200mm and graded to an even surface condition. Where applicable/possible topsoil needs to be returned to its original depth over the area.
- ⌘ The area shall then be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local, adapted indigenous seed mix.
- ⌘ If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the DMRE Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a seed mix to his or her specification.

Final rehabilitation:

- ⌘ Rehabilitation of the surface area shall entail landscaping, levelling, top dressing, land preparation, seeding (if required), maintenance, and clearing of invasive plant species.
  - ⌘ All equipment, plant, and other items used during the mining period must be removed from the site (section 44 of the MPRDA).
  - ⌘ Waste material of any description, including receptacles, scrap, rubble, and tyres, must be removed entirely from the mining area and disposed of at a recognized landfill facility. It will not be permitted to be buried or burned on the site.
  - ⌘ The management of invasive plant species must be done in a sporadic manner during the life of the mining activities. Species regarded as Category 1a and 1b invasive species in terms of NEM:BA (National Environmental Management: Biodiversity Act 10 of 2004 and regulations applicable thereto) need to be eradicated from the site.
  - ⌘ Final rehabilitation must be completed within a period specified by the Regional Manager (DMRE).
- (e) Calculate and state the quantum of the financial provision required to manage and rehabilitate the environment in accordance with the applicable guideline.**

The calculation of the quantum for financial provision was according to Section B of the working manual.

**Mine type and saleable mineral by-product**

According to Tables B.12, B.13 and B.14

Mine type	Lithium ore (Li), Nickel (Ni), Manganese (Mn), Lead (Pb), Copper (Cu), Iron (Fe), Cobalt (Co), Gold (Au), Zinc (Zn), Silver (Ag), Tungsten (W), Uranium (U), Beryllium (Be), Rare Earths, Tantalum (Ta).
Saleable mineral by-product	None

### **Risk ranking**

According to Tables B.12, B.13 and B.14

Primary risk ranking (either Table B.12 or B.13)	B (Low Risk)
Revised risk ranking (B.14)	N/A

### **Environmental sensitivity of the mine area**

According to Table B.4

Environmental sensitivity of the mine area	Low
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### **Level of information**

According to Step 4.2:

Level of information available	Extensive
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### **Identify closure components**

According to Table B.5 and site-specific conditions

Component No.	Main description	Applicability of closure components (Circle Yes or No)	
1	Dismantling of processing plant and related structures (including overland conveyors and power lines)	-	<b>NO</b>
2(A)	Demolition of steel buildings and structures	-	<b>NO</b>
2(B)	Demolition of reinforced concrete buildings and structures	-	<b>NO</b>
3	Rehabilitation of access roads	-	<b>NO</b>
4(A)	Demolition and rehabilitation of electrified railway lines	-	<b>NO</b>
4(B)	Demolition and rehabilitation of non-electrified railway lines	-	<b>NO</b>
5	Demolition of housing and facilities	-	<b>NO</b>
6	Opencast rehabilitation including final voids and ramps	<b>YES</b>	-
7	Sealing of shafts, adits, and inclines	-	<b>NO</b>
8(A)	Rehabilitation of overburden and spoils	-	<b>NO</b>
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (basic, salt-producing)	-	<b>NO</b>

8(C)	Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich)	-	NO
9	Rehabilitation of subsided areas	-	NO
10	General surface rehabilitation, including grassing of all denuded areas	YES	-
11	River diversions	-	NO
12	Fencing	-	NO
13	Water management (Separating clean and dirty water, managing polluted water, and managing the impact on groundwater)	-	NO
14	2 to 3 years of maintenance and aftercare	YES	-

### **Unit rates for closure components**

According to Table B.6 master rates and multiplication factors for applicable closure components.

Component No.	Main description	Master rate	Multiplication factor
1	Dismantling of processing plant and related structures (including overland conveyors and power lines)	-	-
2(A)	Demolition of steel buildings and structures	-	-
2(B)	Demolition of reinforced concrete buildings and structures	-	-
3	Rehabilitation of access roads	-	-
4(A)	Demolition and rehabilitation of electrified railway lines	-	-
4(B)	Demolition and rehabilitation of non-electrified railway lines	-	-
5	Demolition of housing and facilities	-	-
6	Opencast rehabilitation including final voids and ramps	284 292	0.04
7	Sealing of shafts, adits, and inclines	-	-
8(A)	Rehabilitation of overburden and spoils	-	-
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (basic, salt-producing)	-	-
8(C)	Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich)	-	-
9	Rehabilitation of subsided areas	-	-
10	General surface rehabilitation, including grassing of all denuded areas	150 138	1.00
11	River diversions	-	-
12	Fencing	-	-
13	Water management (Separating clean and dirty water, managing polluted water, and managing the impact on groundwater)	-	-
14	2 to 3 years of maintenance and aftercare	19 980	1.00

### **Determine weighting factors**

According to Tables B.7 and B.8

Weighting factor 1: Nature of terrain/accessibility	1.20 (Rugged)
Weighting factor 2: Proximity to urban area where goods and services are to be supplied	1.05

**Calculation of closure costs**

Table B.10 Template for Level 2: "Rules-based" assessment of the quantum for financial provision

Table 29: Calculation of closure cost

CALCULATION OF THE QUANTUM							
<b>Mine:</b>	Steinkopf Mine			<b>Location:</b>	Steinkopf		
<b>Evaluators:</b>	C Fouché			<b>Date:</b>	30 May 2022		
No	Description	Unit	A Quantity	B Master rate	C Multiplication factor	D Weighting factor 1	E=A *B*C*D Amount (Rand)
			Step 4.5	Step 4.3	Step 4.3	Step 4.4	
1	Dismantling of processing plant and related structures (including overland conveyors and power lines)	m <sup>2</sup>	0	19	1.00	1.20	R 0.00
2(A)	Demolition of steel buildings and structures	m <sup>2</sup>	0	271	1.00	1.20	R 0.00
2(B)	Demolition of reinforced concrete buildings and structures	m <sup>2</sup>	0	400	1.00	1.20	R 0.00
3	Rehabilitation of access roads	m <sup>2</sup>	0	49	1.00	1.20	R 0.00
4(A)	Demolition and rehabilitation of electrified railway lines	m	0	471	1.00	1.20	R 0.00
4(B)	Demolition and rehabilitations of non-electrified railway lines	m	0	257	1.00	1.20	R 0.00
5	Demolition of housing and/or administration facilities	m <sup>2</sup>	0	542	1.00	1.20	R 0.00
6	Opencast rehabilitation including final voids and ramps	ha	4	284 292	0.04	1.20	R 54 584.06
7	Sealing of shaft, audits, and inclines	m <sup>3</sup>	0	146	1.00	1.20	R 0.00
8(A)	Rehabilitation of overburden and spoils	ha	0	189 528	1.00	1.20	R 0.00
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (basic, salt-producing waste)	ha	0	236 054	1.00	1.20	R 0.00
8(C)	Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich waste)	ha	0	685 612	0.51	1.20	R 0.00
9	Rehabilitation of subsided areas	ha	0	158 701	1.00	1.20	R 0.00

10	General surface rehabilitation	ha	1	150 138	1.00	1.20	R 180 165.60
11	River diversions	ha	0	150 138	1.00	1.20	R 0.00
12	Fencing	m	0	171	1.00	1.20	R 0.00
13	Water Management	ha	0	57 087	0.17	1.20	R 0.00
14	2 to 3 years of maintenance and aftercare	ha	5	19 980	1.00	1.20	R 119 880.00
15(A)	Specialists study	Sum	0				R 0.00
15(B)	Specialists study	Sum	0				R 0.00
Sum of items 1 to 15 above							R 354 629.66
Multiply Sum of 1-15 by Weighting factor 2 (Step 4.4)		1.05		R 354 629.66		<b>Sub Total 1</b>	R 372 361.15

1	Preliminary and General	6% of Subtotal 1 if Subtotal 1 <R100 000 000.00	R 22 341.67
		12% of Subtotal 1 if Subtotal 1 >R100 000 000.00	-
2	Contingency	10.0% of Subtotal 1	R 37 236.11
<b>Sub Total 2</b> (Subtotal 1 plus management and contingency)			R 431 938.93
Vat (15%)			R 64 790.84
GRAND TOTAL (Subtotal 3 plus VAT)			<b>R 496 729.77</b>

The amount that will be necessary for the rehabilitation of damages caused by the operation, both sudden closures during the normal operation of the project and at final, planned closure gives a sum of **R 496 729.77**.

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

Herewith I, the person, whose name is stated below confirm that I am the person authorised to act as representative of the Applicant in terms of the resolution submitted with the application. I herewith confirm that the company will provide the amount that will be determined by the Regional Manager in accordance with the prescribed guidelines.

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

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

*Table 30: Mechanisms for monitoring compliance with and performance assessment against the EMPR and reporting thereon.*

<b>SOURCE ACTIVITY</b>	<b>IMPACTS REQUIRING MONITORING PROGRAMMES</b>	<b>FUNCTIONAL REQUIREMENTS FOR MONITORING</b>	<b>ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)</b>	<b>MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS</b>
Demarcation of site with visible beacons	Maintenance of beacons	<ul style="list-style-type: none"> <li>⌘ Visible beacons to be placed at the corners of the mining area and 30 m buffer around Feature 3.</li> </ul>	<p><u>Responsibility:</u></p> <ul style="list-style-type: none"> <li>⌘ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR.</li> <li>⌘ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit.</li> </ul> <p><u>Role:</u></p> <ul style="list-style-type: none"> <li>⌘ Ensure beacons are in place throughout the life of the mine.</li> </ul>	<p>Applicable throughout site establishment-, operational-, and decommissioning phases.</p> <ul style="list-style-type: none"> <li>⌘ Daily compliance monitoring by site management.</li> <li>⌘ Annual compliance monitoring of site by an Environmental Control Officer.</li> </ul>
<ul style="list-style-type: none"> <li>⌘ Site establishment and infrastructure development.</li> </ul>	<p><u>Visual Characteristics:</u></p> <ul style="list-style-type: none"> <li>⌘ Visual intrusion because of site establishment.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Minimize the visual impact of the activity on the surrounding environment through</li> </ul>	<p><u>Responsibility:</u></p> <ul style="list-style-type: none"> <li>⌘ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR.</li> </ul>	<p>Applicable throughout site establishment-, operational-, and decommissioning phases.</p>

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
		<p>proper site management and implementing good housekeeping practices.</p>	<p>⌘ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit.</p> <p><u>Role:</u></p> <p>⌘ Ensure that the site have a neat appearance and is always kept in good condition.</p> <p>⌘ Store mining equipment in a dedicated area when not in use.</p> <p>⌘ Limit vegetation removal, and only strip overburden immediately prior to the mining/use of a specific area.</p> <p>⌘ Contain excavations to the approved footprint of the permitted area.</p> <p>⌘ Upon closure, rehabilitate the site to ensure that the visual impact on the aesthetic value of the area is reduced to the minimum.</p>	<p>⌘ Daily compliance monitoring by site management.</p> <p>⌘ Annual compliance monitoring of site by an Environmental Control Officer.</p>
<p>⌘ Site establishment and infrastructure development.</p> <p>⌘ Cumulative Impacts</p>	<p><u>Terrestrial Biodiversity, Conservation Areas and Groundcover:</u></p> <p>⌘ Potential impact on the CBA/NPAESFA objectives;</p> <p>⌘ Potential impact on vegetation and listed and/or protected plant species.</p>	<p>⌘ Visible beacons indicating the boundary of the mineable area.</p> <p>⌘ Removal permit for protected or red data species.</p> <p>⌘ Cover crop to seed reinstated areas upon closure.</p>	<p><u>Responsibility:</u></p> <p>⌘ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR.</p> <p>⌘ Botanist to advise on plants of importance.</p> <p>⌘ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit.</p> <p><u>Role:</u></p> <p>⌘ Clearly demarcate the mining boundaries and contain all operations to the approved mining</p>	<p>Applicable throughout site establishment-, operational-, and decommissioning phases.</p> <p>⌘ Daily compliance monitoring by site management.</p> <p>⌘ Annual compliance monitoring of site by an</p>

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
	<ul style="list-style-type: none"> <li>⌘ Impact the broad-scale ecological processes.</li> </ul>		<p>area. Declare the area outside the mining boundaries a no-go area and educate all staff accordingly.</p> <ul style="list-style-type: none"> <li>⌘ Obtain permits for the removal of protected plant species and keep it on-site in the possession of the flora search and rescue team.</li> <li>⌘ Arrange a pre-commencement environmental induction for all staff on site to ensure that basic environmental principles are adhered to. This must include awareness of no littering, appropriate handling of pollution and chemical spills, avoiding fire hazards, minimising wildlife interactions, remaining within demarcated construction areas, etc.</li> <li>⌘ Only commence with bush-clearance once the plant permits were obtained, and the protected plants successfully relocated by an appropriately qualified person.</li> <li>⌘ The on-site ECO must provide supervision and oversight of vegetation clearing activities and other activities which may cause damage to the environment, especially during the site establishment phase, when most of the vegetation clearing is taking place.</li> <li>⌘ Ensure all vehicles remain on demarcated roads and prevent unnecessary driving in the veld outside these areas.</li> </ul>	<p>Environmental Control Officer.</p>



SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			<ul style="list-style-type: none"> <li>⌘ Do not translocate, uproot, or disturb plants for rehabilitation or other purposes without express permission from the ECO and without the relevant permits.</li> <li>⌘ Do not allow fires on-site.</li> <li>⌘ Reseed all cleared areas that are no longer or not required for drilling activities with locally sourced seed of suitable species. Also consider the packing of bare areas with brush removed from other parts of the site to encourage natural vegetation regeneration and limit erosion.</li> </ul>	
<ul style="list-style-type: none"> <li>⌘ Site establishment and infrastructure development.</li> <li>⌘ Processing of tailings, vegetation removal, and stripping of overburden.</li> </ul>	<p><u>Fauna:</u></p> <ul style="list-style-type: none"> <li>⌘ Potential impact on fauna within the footprint area.</li> <li>⌘ Potential impact on local fauna due to disturbance of habitat.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Toolbox talks to educate employees how to handle fauna that enter the work areas.</li> </ul>	<p><u>Responsibility:</u></p> <ul style="list-style-type: none"> <li>⌘ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR.</li> <li>⌘ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit.</li> </ul> <p><u>Role:</u></p> <ul style="list-style-type: none"> <li>⌘ Ensure no fauna is caught, killed, harmed, sold, or played with.</li> <li>⌘ The ECO or other suitably qualified person must remove any fauna directly threatened by the operational activities to a safe location.</li> <li>⌘ Arrange that all personnel undergo environmental induction regarding fauna management and in particular awareness about not harming or collecting species such as</li> </ul>	<p>Applicable throughout site establishment-, and operational phases.</p> <ul style="list-style-type: none"> <li>⌘ Daily compliance monitoring by site management.</li> <li>⌘ Annual compliance monitoring of site by an Environmental Control Officer.</li> </ul>

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			<p>snakes, tortoises, and owls. Instruct workers to report any animals that may be trapped in the working area.</p> <ul style="list-style-type: none"> <li>⌘ Ensure no snares are set or nests raided for eggs or young.</li> <li>⌘ Ensure all vehicles adhere to a low speed limit (40 km/h is recommended) to avoid collisions with susceptible species such as snakes and tortoises.</li> <li>⌘ Prevent litter, food or other foreign material thrown or left around the site. Keep such items in waste bins with lids at the processing area.</li> </ul>	
<ul style="list-style-type: none"> <li>⌘ Site establishment and infrastructure development.</li> <li>⌘ Excavation, loading and hauling to the processing plant.</li> </ul>	<p><u>Cultural and Heritage Environment:</u></p> <ul style="list-style-type: none"> <li>⌘ Potential impact on archaeological artefacts.</li> <li>⌘ Potential impact on areas of palaeontological concern.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Contact number of an archaeologist &amp; palaeontologist that can be contacted when a discovery is made on site.</li> </ul>	<p><u>Responsibility:</u></p> <ul style="list-style-type: none"> <li>⌘ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR.</li> <li>⌘ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit.</li> </ul> <p><u>Role:</u></p> <ul style="list-style-type: none"> <li>⌘ Confine all mining to the development footprint area.</li> <li>⌘ Arrange for the documentation (scaled mapping of the mining-related structures at Norra-bees 1 and 2.</li> <li>⌘ After documentation of Features 1 and 2, obtain a destruction permit from Ngwao-Boswa</li> </ul>	<p>Applicable throughout site establishment-, and operational phases.</p> <ul style="list-style-type: none"> <li>⌘ Daily compliance monitoring by site management.</li> <li>⌘ Annual compliance monitoring of site by an Environmental Control Officer.</li> </ul>

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			<p>Jwa Kapa Bokone (Northern Cape PHRA) prior to the area being worked.</p> <ul style="list-style-type: none"> <li>⌘ Maintain a 30 m buffer around Feature 3 to preserve it in situ and avoid any damage to the feature.</li> <li>⌘ Demarcate and avoid Feature 4 during mining activities.</li> <li>⌘ Ensure ECO monitor the project.</li> <li>⌘ Implement the following change find procedure when discoveries are made on site: <ul style="list-style-type: none"> <li>• If during the pre-construction phase, construction, operations or closure phases of this project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance or heritage site, this person must cease work at the site of the find and report this find to their immediate supervisor, and through their supervisor to the senior on-site manager.</li> <li>• It is the responsibility of the senior on-site Manager to make an initial assessment of the extent of the find and confirm the extent of the work stoppage in that area.</li> <li>• The senior on-site Manager will inform the ECO of the chance find and its immediate impact on operations. The ECO will then contact a professional archaeologist for an</li> </ul> </li> </ul>	

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			<p>assessment of the finds who will notify the SAHRA.</p> <ul style="list-style-type: none"> <li>• Work may only continue once the go-ahead was issued by SAHRA.</li> </ul>	
<ul style="list-style-type: none"> <li>⌘ Processing of tailings, vegetation removal, and stripping of overburden.</li> <li>⌘ Drilling and Blasting.</li> <li>⌘ Excavation, loading and hauling to the processing plant.</li> <li>⌘ Processing, stockpiling and transporting of material.</li> </ul>	<p><u>Air and Noise Quality:</u></p> <ul style="list-style-type: none"> <li>⌘ Dust nuisance because of the disturbance of soil.</li> <li>⌘ Dust nuisance caused by blasting activities.</li> <li>⌘ Dust nuisance due to excavation and from loading and vehicles transporting the material.</li> <li>⌘ Dust nuisance generated at the processing plant.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Gravimetric dust monitoring equipment.</li> <li>⌘ Dust suppression equipment such as a water car, water dispenser and sprayers on the crusher plant.</li> <li>⌘ Signage that clearly reduce the speed on the access roads.</li> </ul>	<p><u>Responsibility:</u></p> <ul style="list-style-type: none"> <li>⌘ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR.</li> <li>⌘ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit.</li> </ul> <p><u>Role:</u></p> <ul style="list-style-type: none"> <li>⌘ Control the liberation of dust into the surrounding environment using; inter alia, water spraying and/or other dust-allaying agents.</li> <li>⌘ Ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression.</li> <li>⌘ Limit speed on the haul roads to 20 km/h and 40 km/h on the access road to prevent the generation of excess dust.</li> <li>⌘ Minimise areas devoid of vegetation, and only remove vegetation immediately prior to mining.</li> <li>⌘ Install water sprayers at the crusher plant to alleviate dust generation from the conveyor belts.</li> </ul>	<p>Applicable throughout site establishment-, and operational phases.</p> <ul style="list-style-type: none"> <li>⌘ Daily compliance monitoring by site management.</li> <li>⌘ Annual compliance monitoring of site by an Environmental Control Officer.</li> </ul>

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			<ul style="list-style-type: none"> <li>⌘ Minimise fines, blowing from the drop end of the crusher plant by attaching strips of used conveyor belts to the conveyor's end.</li> <li>⌘ Weekly remove compacted dust from the crusher plant to eliminate the dust source.</li> <li>⌘ Flatten loads to prevent spillage during transportation on public roads.</li> <li>⌘ Consider weather conditions upon commencement of daily operations. Limit operations during very windy periods to reduce airborne dust and resulting impacts.</li> <li>⌘ Ensure dust generating activities comply with the National Dust Control Regulations, GN No R827 promulgated in terms of NEM:AQA, 2004 and ASTM D1739 (SANS 1137:2012).</li> <li>⌘ Implement best practice measures during the stripping of overburden, excavation, and transporting of material from site to minimize potential dust impacts.</li> </ul>	
<ul style="list-style-type: none"> <li>⌘ Processing of tailings, vegetation removal, and stripping of overburden.</li> <li>⌘ Drilling and blasting.</li> </ul>	<p><u>Air and Noise Quality:</u></p> <ul style="list-style-type: none"> <li>⌘ Noise nuisance generated by earthmoving machinery.</li> <li>⌘ Noise nuisance because of blasting.</li> <li>⌘ Noise nuisance because of the mining activities.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Personal noise exposure monitoring equipment.</li> <li>⌘ Signage indicating noise zones.</li> <li>⌘ Silencers fitted to all project related vehicles, and the use of vehicles that</li> </ul>	<p><u>Responsibility:</u></p> <ul style="list-style-type: none"> <li>⌘ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR.</li> <li>⌘ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit.</li> </ul> <p><u>Role:</u></p>	<p>Applicable throughout site establishment-, and operational phases.</p> <ul style="list-style-type: none"> <li>⌘ Daily compliance monitoring by site management.</li> </ul>

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
<ul style="list-style-type: none"> <li>⌘ Excavation, loading and hauling to the processing plant.</li> <li>⌘ Processing, stockpiling, and transporting of material.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Noise nuisance stemming from operation of the processing plant.</li> </ul>	<ul style="list-style-type: none"> <li>are in road worthy condition in terms of the National Road Traffic Act, 1996.</li> <li>⌘ Noise mufflers fitted to generators.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Ensure that employees and staff conduct themselves in an acceptable manner while on site.</li> <li>⌘ No loud music may be permitted at the mining area.</li> <li>⌘ Ensure that all project related vehicles are equipped with silencers and maintained in a road worthy condition in terms of the National Road Traffic Act, 1996.</li> <li>⌘ Plan the type, duration, and timing of the blasting procedures with due cognizance of other land users and structures in the vicinity. Notify the surrounding land users in writing prior to each blasting occasion.</li> <li>⌘ Contract a qualified occupational hygienist to quarterly monitor and report on the personal noise exposure of the employees working at the mine. Monitoring must be in accordance with SANS 10083:2004 (Edition 5) sampling method as well as NEM:AQA 2004, SANS 10103:2008.</li> <li>⌘ Implement best practice measures to minimise potential noise impacts.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Annual compliance monitoring of site by an Environmental Control Officer.</li> </ul>
<ul style="list-style-type: none"> <li>⌘ Processing of tailings, vegetation removal, and</li> </ul>	<u>Terrestrial biodiversity, conservation areas and groundcover:</u>	<ul style="list-style-type: none"> <li>⌘ Designated team to cut or pull out invasive plant species that germinated on site.</li> </ul>	<u>Responsibility:</u> <ul style="list-style-type: none"> <li>⌘ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR.</li> </ul>	Applicable throughout site establishment-, operational-, and decommissioning phases.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
<p>stripping of overburden.</p> <p>⌘ Sloping and landscaping during rehabilitation phase.</p>	<p>⌘ Infestation of the mining area with weeds or invader plant species.</p> <p>⌘ Infestation of the reinstated areas by weeds and invader plant species.</p>	<p>⌘ Herbicide application equipment.</p>	<p>⌘ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit.</p> <p><u>Role:</u></p> <p>⌘ Implement an invasive plant species management plan to control all invasive plant species on site in terms of NEM:BA, 2004 and CARA, 1983. Do weed/alien ongoing clearing on throughout the life of the mining activities.</p> <p>⌘ Do not allow planting or importing of any alien species to the site for landscaping, rehabilitation, or any other purpose.</p> <p>⌘ Keep all stockpiles (topsoil &amp; overburden) free of invasive plant species.</p> <p>⌘ Control declared invader or exotic species on the rehabilitated area.</p>	<p>⌘ Daily compliance monitoring by site management.</p> <p>⌘ Annual compliance monitoring of site by an Environmental Control Officer.</p>
<p>⌘ Site establishment &amp; infrastructure development.</p>	<p><u>Geology and Soil:</u></p> <p>⌘ Soil Handling</p>	<p>⌘ Earthmoving equipment to strip and stockpile soil.</p> <p>⌘ Erosion control infrastructure (if needed).</p>	<p><u>Responsibility:</u></p> <p>⌘ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR.</p> <p>⌘ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit.</p> <p><u>Role:</u></p> <p>⌘ Treat any soil as a valuable and essential resource for rehabilitation and manage it</p>	<p>Applicable throughout site establishment-, operational-, and decommissioning phases.</p> <p>⌘ Daily compliance monitoring by site management.</p> <p>⌘ Annual compliance monitoring of site by an</p>

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			<p>carefully to conserve and maintain it throughout the stockpiling and rehabilitation processes.</p> <ul style="list-style-type: none"> <li>⌘ Ensure soil stripping, stockpiling, and re-spreading is done in a systematic way. Plan mining in such a way that soil is stockpiled for the minimum possible time.</li> <li>⌘ Place the soil on a levelled area, within the mining footprint. Do not stockpile soil in undisturbed areas.</li> <li>⌘ Protect soil stockpiles against losses by water and wind erosion. Position stockpiles so it is not vulnerable to erosion by wind and water. The establishment of plants (weeds or a cover crop) on the stockpiles will help to prevent erosion.</li> <li>⌘ Keep temporary soil stockpiles free of invasive plant species.</li> <li>⌘ Spread the soil evenly over the rehabilitated area upon closure of the site.</li> <li>⌘ Strive to re-instate soil at a time of the year when vegetation cover can be established as quickly as possible afterwards, so that erosion of returned soil is minimized. The best time of year is at the end of the rainy season.</li> <li>⌘ Monitor the rehabilitated area for erosion, and appropriately stabilize if erosion do occur, for at least 12 months after reinstatement.</li> </ul>	<p>Environmental Control Officer.</p>
<ul style="list-style-type: none"> <li>⌘ Processing of tailings,</li> </ul>	<p><u>Hydrology:</u></p>	<ul style="list-style-type: none"> <li>⌘ Storm water management structures such as berms</li> </ul>	<p><u>Responsibility:</u></p>	<p>Applicable throughout site establishment,</p>



SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
<p>vegetation removal, and stripping of overburden.</p> <ul style="list-style-type: none"> <li>⌘ Excavation, loading and hauling to the processing plant.</li> <li>⌘ Sloping and landscaping during rehabilitation.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Potential erosion of denuded areas.</li> <li>⌘ Facilitation of erosion due to mining activities.</li> <li>⌘ Erosion of landscaped area after rehabilitation.</li> </ul>	<p>to direct storm- and runoff water around the stockpiled topsoil area (when applicable).</p>	<ul style="list-style-type: none"> <li>⌘ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR.</li> <li>⌘ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit.</li> </ul> <p><u>Role:</u></p> <ul style="list-style-type: none"> <li>⌘ Limit clearing of vegetation to the proposed mining footprint and associated infrastructure. Ensure no clearing takes place outside the minimum required footprint.</li> <li>⌘ Divert stormwater around the soil heaps and mining areas to prevent erosion.</li> <li>⌘ Protect stockpiles from erosion and store it on flat areas surrounded by appropriate berms where possible.</li> <li>⌘ Ensure that adequate slope protection is provided when mining within steep slopes.</li> <li>⌘ Control the outflow of run-off water from the mining excavation to prevent down-slope erosion, by constructing temporary banks and ditches that will direct run-off water (if needed). These must be in place at any points where overflow out of the excavation might occur.</li> <li>⌘ Regularly monitor roads and other disturbed areas within the project for erosion and ensure problem areas receive follow-up monitoring to assess the success of the remediation.</li> </ul>	<p>operational-, and decommissioning phases.</p> <ul style="list-style-type: none"> <li>⌘ Daily compliance monitoring by site management.</li> <li>⌘ Annual compliance monitoring of site by an Environmental Control Officer.</li> </ul>

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			<ul style="list-style-type: none"> <li>⌘ Rectify erosion problems within the mining area because of the mining activities immediately (within 48 hours) and monitored thereafter to ensure that it does not re-occur.</li> <li>⌘ Conduct activity in terms of the Best Practice Guidelines for small-scale mining as developed by DWS.</li> <li>⌘ Restrict polluting activities including storage of mining fleet, equipment wash down facilities and vehicle maintenance yards to the workshop areas and ensure it takes place on impermeable hard standing surfaces, which formally drain to a dirty water drainage system at the site.</li> <li>⌘ Contain all fuels and chemicals stored or used on site in fit for purpose containers and store within designated storage areas. Ensure the designated storage areas are situated on an impermeable surface with a perimeter bund and a drainage sump. Size the volume of the bund and sump to contain at least 110% of the total volume of the fuel and chemicals being stored within the designated storage area</li> </ul>	
<ul style="list-style-type: none"> <li>⌘ Processing of tailings, vegetation removal, and</li> </ul>	<p><u>General:</u></p> <ul style="list-style-type: none"> <li>⌘ Potential contamination of footprint area and surface</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Oil spill kit.</li> <li>⌘ Sealed drip trays.</li> </ul>	<p><u>Responsibility:</u></p> <ul style="list-style-type: none"> <li>⌘ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR.</li> </ul>	<p>Applicable throughout site establishment-, operational-, and decommissioning phases.</p>

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
<p>stripping of overburden.</p> <ul style="list-style-type: none"> <li>⌘ Excavation, loading and hauling to the processing plant.</li> <li>⌘ Processing, stockpiling, and transporting of material.</li> <li>⌘ Sloping and landscaping during rehabilitation phase.</li> </ul>	<p>runoff because of hydrocarbon spillages.</p> <ul style="list-style-type: none"> <li>⌘ Soil contamination from hydrocarbon spills and/or littering.</li> <li>⌘ Potential contamination of environment due to improper waste management.</li> <li>⌘ Potential impact associated with litter/waste left at the mining area.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Formal waste disposal system with waste registers.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit.</li> </ul> <p><u>Role:</u></p> <ul style="list-style-type: none"> <li>⌘ Ensure regular vehicle maintenance, repairs and services only take place at the workshop and service area. Ensure drip trays are present if emergency repairs are needed on equipment not able to move to the workshop. Dispose all waste products in a closed container/bin to be removed from the emergency service area (same day) to the workshop to ensure proper disposal. Treat this as hazardous waste and dispose of it at a registered hazardous waste handling facility, alternatively arrange collection by a registered hazardous waste handling contractor. File safe disposal certificates for auditing purposes.</li> <li>⌘ If a diesel bowser is used on site, always equip it with a drip tray. Use drip trays during each refuelling event. The nozzle of the bowser needs to rest in a sleeve to prevent dripping after refuelling.</li> <li>⌘ Ensure drip trays are cleaned after each use. Do not allow dirty drip trays to be used on site. Dispose of dirty rags used to clean the drip trays as hazardous waste into a designated bin</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Daily compliance monitoring by site management.</li> <li>⌘ Annual compliance monitoring of site by an Environmental Control Officer.</li> </ul>

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			<p>at the workshop, where it is incorporated into the hazardous waste removal system.</p> <ul style="list-style-type: none"> <li>⌘ Collect any effluents containing oil, grease or other industrial substances in a suitable receptacle and remove it from the site, either for resale or for appropriate disposal at a recognized facility. File proof.</li> <li>⌘ Obtain an oil spill kit and train the employees in the emergency procedures to follow when a spill occurs as well as the application of the spill kit.</li> <li>⌘ Clean spills immediately, within two hours of occurrence, to the satisfaction of the Regional Manager (DMRE) by removing the spillage together with the polluted soil and containing it in a designated hazardous waste bin until it is disposed of at a recognised facility. File proof.</li> <li>⌘ Ensure suitable covered receptacles are always available and conveniently placed for the disposal of general waste.</li> <li>⌘ Store non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., in a container with a closable lid at a collecting point to be collected at least once a month and disposed of at a recognized landfill site. Take specific precautions to prevent refuse from being dumped on or in the vicinity of the mine area. File proof of disposal.</li> <li>⌘ Handle biodegradables as indicated above.</li> </ul>	

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			<ul style="list-style-type: none"> <li>⌘ Encourage re-use or recycling of waste products.</li> <li>⌘ Do not bury or burn waste on the site.</li> <li>⌘ Provide ablution facilities in the form of a chemical toilet/s. Anchor the chemical toilet (to prevent blowing/falling over) and arrange that it is serviced at least once a week for the duration of the mining activities by a registered liquid waste handling contractor. File the safe disposal certificates.</li> <li>⌘ Ensure that the use of any temporary, chemical toilet facilities do not cause any pollution to water sources or pose a health hazard. In addition, ensure that no form of secondary pollution arise from the disposal of refuse or sewage from the temporary, chemical toilets. Address any pollution problems arising from the above immediately.</li> <li>⌘ Do not discharge water containing waste into the natural environment.</li> <li>⌘ Implement measures to contain the wastewater and safely dispose thereof.</li> <li>⌘ Report any significant spillage of chemicals, fuels etc. during the lifespan of the mining activities to the Department of Water and Sanitation and other relevant authorities.</li> <li>⌘ Implement the use of waste registers to keep record of the waste generated and removed from the mining area.</li> </ul>	

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<ul style="list-style-type: none"> <li>⌘ Drilling and blasting.</li> <li>⌘ Excavation, loading and hauling to the processing plant.</li> <li>⌘ Sloping and landscaping during rehabilitation phase.</li> </ul>	<p><u>Health and Safety:</u></p> <ul style="list-style-type: none"> <li>⌘ Health and safety risk posed by blasting activities.</li> <li>⌘ Unsafe working environment for employees.</li> <li>⌘ Safety risk posed by un-sloped areas.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Stocked first aid box.</li> <li>⌘ Level 1 certified first aider.</li> <li>⌘ All appointments in terms of the Mine Health and Safety Act, 1996.</li> <li>⌘ Vibro recorder.</li> </ul>	<p><u>Responsibility:</u></p> <ul style="list-style-type: none"> <li>⌘ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR.</li> <li>⌘ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit.</li> </ul> <p><u>Role:</u></p> <ul style="list-style-type: none"> <li>⌘ Ensure that workers have access to the correct PPE as required by law.</li> <li>⌘ Locate sanitary facilities within 100 m from any point of work.</li> <li>⌘ Manage all operations in compliance with the Mine Health and Safety Act, 1996 (Act No 29 of 1996).</li> <li>⌘ Plan the type, duration, and timing of blasting with due cognizance of other land users and structures in the vicinity.</li> <li>⌘ Inform the surrounding land users and communities in writing ahead of any blasting event.</li> <li>⌘ Monitor the compliance of ground vibration and airblast levels to USBM standards with each blasting event.</li> <li>⌘ Record all blasts with a vibro recorder.</li> <li>⌘ Give audible warning of a pending blast at least 3 minutes in advance of the blast.</li> </ul>	<p>Applicable throughout operational-, and decommissioning phases.</p> <ul style="list-style-type: none"> <li>⌘ Daily compliance monitoring by site management.</li> <li>⌘ Annual compliance monitoring of site by an Environmental Control Officer.</li> </ul>

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			<ul style="list-style-type: none"> <li>⌘ Limit fly rock and collect and remove flyrock and rock spill that falls beyond the working area.</li> </ul>	
<ul style="list-style-type: none"> <li>⌘ Processing, stockpiling, and transporting of material.</li> </ul>	<p><u>Existing Infrastructure:</u></p> <ul style="list-style-type: none"> <li>⌘ Overloading of trucks impacting road infrastructure.</li> <li>⌘ Degradation of the access road.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Grader to restore the road surface when needed.</li> </ul>	<p><u>Responsibility:</u></p> <ul style="list-style-type: none"> <li>⌘ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR.</li> <li>⌘ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit.</li> </ul> <p><u>Role:</u></p> <ul style="list-style-type: none"> <li>⌘ When applicable, divert storm water around the access road to prevent erosion.</li> <li>⌘ Restrict vehicular movement to the existing access road to prevent crisscrossing of tracks through undisturbed areas.</li> <li>⌘ Repair rutting and erosion of the access road caused as a direct result of the mining activities.</li> <li>⌘ Prevent the overloading of the trucks and file proof of load weights for auditing by relevant officials.</li> <li>⌘ Restrict the speed of all mining equipment/vehicles to 40 km/h on the access roads.</li> </ul>	<p>Applicable throughout operational phase.</p> <ul style="list-style-type: none"> <li>⌘ Daily compliance monitoring by site management.</li> <li>⌘ Annual compliance monitoring of site by an Environmental Control Officer.</li> </ul>

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
<ul style="list-style-type: none"> <li>⌘ Site establishment and infrastructure development.</li> </ul>	<p><u>General:</u></p> <ul style="list-style-type: none"> <li>⌘ Storage/handling of hazardous substance/chemicals.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Storage areas with impermeable surfaces and bund walls that can hold 110% of the product amount stored in it.</li> <li>⌘ Hazardous Substances Register and Safety Data Sheets.</li> <li>⌘ Drip trays.</li> <li>⌘ Inspection programme.</li> <li>⌘ Operational oil sump.</li> </ul>	<p><u>Responsibility:</u></p> <ul style="list-style-type: none"> <li>⌘ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR.</li> <li>⌘ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit.</li> </ul> <p><u>Role:</u></p> <ul style="list-style-type: none"> <li>⌘ Place chemical storage areas on level ground to prevent offsite migration of any spilled product.</li> <li>⌘ Ensure that the floor of the storage area is impermeable to prevent seepage of spilled products into the ground or ground water.</li> <li>⌘ Control access to the chemicals/substances and implement a notification system of an appropriate staff member.</li> <li>⌘ Maintain a Hazardous Substances Register and keep Safety Data Sheets (SDS) current for all chemicals used on site.</li> <li>⌘ Ensure any fuel/used oil tanks have secondary containment in the form of an impermeable bund wall and base within which the tanks sit, raised above the floor, on plinths. Check that the bund capacity is sufficient to contain 110% of the tank's maximum capacity. Ensure that the distance and height of the bund wall relative to that of the tank is taken into consideration to</li> </ul>	<p>Applicable throughout site establishment-, and operational phases</p> <ul style="list-style-type: none"> <li>⌘ Daily compliance monitoring by site management.</li> <li>⌘ Annual compliance monitoring of site by an Environmental Control Officer.</li> </ul>



SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			<p>ensure that any spillage does not result in hydrocarbons/other substances spouting beyond the confines of the bund.</p> <ul style="list-style-type: none"> <li>⌘ Establish a formal inspection routine to check all equipment in the bund area, as well as the bund area itself for malfunctions or leakages. Inspect the bund area at least weekly and remove any accumulated rainwater and hand it as contaminated water. Check all valves and outlets to ensure that its intact and closed securely.</li> <li>⌘ Ensure that the bund base slope towards an oil sump of sufficient size. Do not allow contaminated water to mix with clean water and contain it until it is collected by a registered hazardous waste handling contractor or disposed of at a registered hazardous waste handling facility.</li> <li>⌘ Use drip trays under all stationary equipment or vehicles. Place used drip trays within a bunded area and do not store on the bare soil. Discard the wastewater originating from the cleaning of drip trays into the oil sump.</li> </ul>	
<ul style="list-style-type: none"> <li>⌘ Sloping and landscaping during rehabilitation.</li> </ul>	<p><u>Topography:</u></p> <ul style="list-style-type: none"> <li>⌘ Landscaping of mining area.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Earthmoving equipment to reinstate mined-out areas.</li> </ul>	<p><u>Responsibility:</u></p> <ul style="list-style-type: none"> <li>⌘ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR.</li> </ul>	<p>Applicable throughout decommissioning phase.</p>

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
		<ul style="list-style-type: none"> <li>⌘ Cover crop to be established on reinstated area.</li> <li>⌘ Erosion control infrastructure (when needed).</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit.</li> </ul> <p><u>Role:</u></p> <ul style="list-style-type: none"> <li>⌘ Use the excavated area for the final depositing of overburden.</li> <li>⌘ Dump rocks and coarse material removed from the excavation into the excavation upon completion.</li> <li>⌘ Remove coarse natural material used for the construction of ramps and dump it into the excavations.</li> <li>⌘ Remove stockpiles during the decommissioning phase, rip the area and return the topsoil (if available) to its original depth to provide a growth medium.</li> <li>⌘ Do not permit any waste to be deposited into the excavations.</li> <li>⌘ Return the previously stored topsoil (if any) to its original depth, once overburden, rocks and coarse natural materials have been added to the excavation and it was profiled with acceptable contours and erosion control measures.</li> <li>⌘ If necessary, fertilize the area to allow vegetation to establish rapidly. Seed the site with a local or adapted indigenous seed mix to</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Daily compliance monitoring by site management.</li> <li>⌘ Annual compliance monitoring of site by an Environmental Control Officer.</li> </ul>

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			<p>propagate the locally or regionally occurring flora.</p> <ul style="list-style-type: none"> <li>⌘ If required by the Regional Manager (DMRE) the soil must be analysed and any deleterious effects on the soil arising from the mining operation must be corrected and the area be seeded with a vegetation seed mix to his/her specification.</li> <li>⌘ On completion of operations, deal with all structures or objects in accordance with section 44 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002).</li> <li>⌘ On completion of mining operations, scarify the surface of all plant-, stockpiling-, and/or office areas, if compacted due to hauling and dumping operations, to a depth of at least 200 mm and graded it to an even surface condition. Where applicable/possible return topsoil to its original depth over the area.</li> </ul>	

**l) Indicate the frequency of the submission of the performance assessment/environmental audit report.**

The Environmental Audit Report in accordance with Appendix 7 as prescribed in Regulation 34 of the EIA Regulations, 2014 (as amended) will annually be submitted to DMRE for compliance monitoring purposes or in accordance with the time stipulated by the Environmental Authorisation.

**m) Environmental Awareness Plan**

**i) Way the applicant intends to inform his or her employees of any environmental risk which may result from their work.**

Once the Applicant received the mining permit and may commence with the proposed activity, a copy of the Environmental Management Programme will be handed to the site manager for his perusal. Issues such as the mining boundaries, fire principals and hazardous waste handling will be discussed.

An induction meeting will be held with all the site workers to inform them of the Basic Rules of Conduct about the environment.

**ii) Way risk will be dealt with to avoid pollution or the degradation of the environment.**

The operations manager must ensure that he/she understands the EMPR document and its requirement and commitments before any mining takes place. An Environmental Control Officer needs to check compliance of the mining activity to the management programmes described in the EMPR.

The following list represents the basic steps towards environmental awareness, which all participants in this project must consider whilst carrying out their tasks.

⌘ **Site Management:**

- Stay within boundaries of site – do not enter adjacent properties.
- Keep tools and material properly stored.
- Smoke only in designated areas.
- Use toilets provided – report full or leaking toilets.

⌘ **Water Management and Erosion:**

- Check that rainwater flows around work areas and are not contaminated.
- Report any erosion.
- Check that dirty water is kept from clean water.
- Do not swim in or drink from quarry pits.

### § **Waste Management:**

- Take care of your own waste
- Keep waste separate into labelled containers – report full bins.
- Place waste in containers and always close lid.
- Don't burn waste.
- Pick-up any litter laying around.

### § **Hazardous Waste Management (Petrol, Oil, Diesel, Grease)**

- Never mix general waste with hazardous waste.
- Use only sealed, non-leaking containers.
- Keep all containers closed and store only in approved areas.
- Always put drip trays under vehicles and machinery.
- Empty drip trays after rain.
- Stop leaks and spills, if safe:
  - ✓ Keep spilled liquids moving away.
  - ✓ Immediately report the spill to the site manager/supervision.
  - ✓ Locate spill kit/supplies and use to clean-up, if safe.
  - ✓ Place spill clean-up wastes in proper containers.
  - ✓ Label containers and move to approved storage area.

### § **Discoveries:**

- Stop work immediately.
- Notify site manager/supervisor.
- Includes – archaeological finds, cultural artefacts, contaminated water, pipes, containers, tanks and drums, any buried structures.

### § **Air Quality:**

- Wear protection when working in very dusty areas.
- Implement dust control measures:
  - ✓ Water all roads and work areas.
  - ✓ Minimize handling of material.
  - ✓ Obey speed limit and cover trucks.

### § **Driving and Noise:**

- Use only approved access roads.
- Respect speed limits.
- Only use turn-around areas – no crisscrossing through undisturbed areas.

- Avoid unnecessary loud noises.
- Report or repair noisy vehicles.

⌘ **Vegetation and Animal life:**

- Do not remove any plants or trees without approval of the site manager.
- Do not collect firewood.
- Do not catch, kill, harm, sell or play with any animal, reptile, bird, or amphibian on site.
- Report any animal trapped in the work area.
- Do not set snares or raid nests for eggs or young.

⌘ **Fire Management:**

- Do not light any fires on site, unless contained in a drum at demarcated area.
- Put cigarette butts in a rubbish bin.
- Do not smoke near gas, paints, or petrol.
- Know the position of firefighting equipment.
- Report all fires.
- Don't burn waste or vegetation.

**n) Specific information required by the Competent Authority**

(Among others, confirm that the financial provision will be reviewed annually)

The Applicant undertakes to annually review and update the financial provision calculation, upon which it will be submitted to DMRE for review and approved as being sufficient to cover the environmental liability at the time and for closure of the mine at that time.

## 2. UNDERTAKING

The EAP herewith confirms

- a) the correctness of the information provided in the reports
- b) the inclusion of comments and inputs from stakeholders and I&AP's
- c) the inclusion of inputs and recommendations from the specialist reports where relevant, a
- d) that the information provided by the EAP to interested and affected parties and any response by the EAP to comments or inputs made by interested and affected parties are correctly reflected herein



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Signature of the environmental assessment practitioner:

Greenmined Environmental (Pty) Ltd

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Name of Company:

31 May 2022

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Date:

# UNDERTAKING

I,.....the undersigned and duly authorised thereto by.....Namli  
Exploration and Mining (Pty) Ltd

Company / ~~Closed Corporation~~ / Municipality or Council  
(Delete whichever is not applicable)

hereby undertake to implement all the aspects contained in the BAR and EMPR / ~~EIA and EMPR~~ and accept  
full responsibility, therefore.  
(Delete whichever is not applicable)

SIGNED at ..... this ..... day ..... 2022

## **FINAL DOCUMENT TO BE SIGNED BY APPLICANT**

\_\_\_\_\_  
SIGNATURE

### **WITNESSES:**

1.....

2.....

Official use

## **APPROVAL**

Approved in terms of the National Environmental Management Act (NEMA), 1998 (Act 107 of 1998), as  
amended.

SIGNED at ..... this ..... day ..... 2022

## **REGIONAL MANAGER**

### **NORTHERN CAPE**

Undertaking/eg

**-END-**



# APPENDIX A

## REGULATION 2(2) MINE MAP



# APPENDIX B

## LOCALITY MAP



# APPENDIX C

## SITE ACTIVITIES PLAN



**APPENDIX D**  
**SURROUNDING LAND USE MAP**



# APPENDIX E

## REHABILITATION PLAN



# APPENDIX F

## PROOF OF PUBLIC PARTICIPATION



**APPENDIX G**  
**TERRESTRIAL BIODIVERSITY IMPACT**  
**ASSESSMENT**



# APPENDIX H

## HERITAGE IMPACT ASSESSMENT





**APPENDIX I**  
**SUPPORTING IMPACT ASSESSMENT**



## ENVIRONMENTAL IMPACT STATEMENT

Taking the assessment of potential impacts into account, herewith please receive an environmental impact statement that summarises the impact that the proposed activity may have on the environment after the management and mitigation of impacts have been considered, with specific reference to types of impact, duration of impacts, likelihood of potential impacts occurring and the significance of impacts.

ENVIRONMENTAL IMPACT STATEMENT			
<u>FINAL PROJECT PROPOSAL</u>			
<u>TYPE OF IMPACT</u>	<u>DURATION</u>	<u>LIKELIHOOD</u>	<u>SIGNIFICANCE</u>
<u>Site Establishment &amp; Infrastructure Development:</u> <ul style="list-style-type: none"> <li>⌘ Visual intrusion because of site establishment.</li> <li>⌘ Potential impact on the CBA/NPAESFA objectives.</li> <li>⌘ Potential impact on vegetation and listed and/or protected plant species.</li> <li>⌘ Potential impact on fauna within the footprint area.</li> <li>⌘ Potential impact on archaeological artefacts.</li> <li>⌘ New job opportunities because of the mining operation (Positive Impact).</li> </ul>	<b>Duration of site establishment phase (±1 month)</b>	<p style="text-align: center;"><b>Possible</b></p> <p>Low Possibility</p> <p>Low Possibility</p> <p>Low Possibility</p> <p>Low Possibility</p> <p>Low Possibility</p> <p>Definite (+)</p>	<p>Low Concern</p> <p>Low Concern</p> <p>Low Concern</p> <p>Low Concern</p> <p>Low Concern</p> <p>High (+)</p>
<u>Processing of Tailings, Vegetation Removal, and Stripping of Overburden:</u> <ul style="list-style-type: none"> <li>⌘ Dust nuisance because of the disturbance of soil.</li> <li>⌘ Noise nuisance generated by earthmoving machinery.</li> <li>⌘ Infestation of the mining area with weeds or invader plant species.</li> <li>⌘ Potential impact on local fauna due to disturbance of habitat.</li> <li>⌘ Potential erosion of denuded areas.</li> <li>⌘ Potential contamination of footprint area and surface runoff because of hydrocarbon spillages.</li> </ul>	<b>Duration of operational phase (5 years maximum)</b>	<p style="text-align: center;"><b>LIKELIHOOD</b></p> <p>Low Possibility</p> <p>Low Possibility</p> <p>Low Possibility</p> <p>Low Possibility</p> <p>Low Possibility</p> <p>Low Possibility</p>	<p style="text-align: center;"><b>SIGNIFICANCE</b></p> <p>Low Concern</p> <p>Low Concern</p> <p>Low Concern</p> <p>Low Concern</p> <p>Low Concern</p> <p>Low Concern</p>
<u>Drilling and Blasting:</u> <ul style="list-style-type: none"> <li>⌘ Health and safety risk posed by blasting activities.</li> <li>⌘ Dust nuisance caused by blasting activities.</li> <li>⌘ Noise nuisance because of blasting.</li> </ul>	<b>Duration of operational phase (5 years maximum)</b>	<p style="text-align: center;"><b>LIKELIHOOD</b></p> <p>Low Possibility</p> <p>Low Possibility</p> <p>Low Possibility</p>	<p style="text-align: center;"><b>SIGNIFICANCE</b></p> <p>Low Concern</p> <p>Low-Medium Concern</p> <p>Low-Medium Concern</p>

**ENVIRONMENTAL IMPACT STATEMENT**

**FINAL PROJECT PROPOSAL**

<p><u>Excavation, Loading and Hauling to the Processing Plant:</u></p> <ul style="list-style-type: none"> <li>⌘ Dust nuisance due to excavation and from loading and vehicles transporting the material.</li> <li>⌘ Noise nuisance because of the mining activities.</li> <li>⌘ Unsafe working environment for employees.</li> <li>⌘ Soil contamination from hydrocarbon spills and/or littering.</li> <li>⌘ Facilitation of erosion due to mining activities.</li> <li>⌘ Potential impact on areas of palaeontological concern.</li> </ul>	<p align="center"><b>Duration of operational phase (5 years maximum)</b></p>	<p align="center"><b><u>LIKELIHOOD</u></b></p> <p align="center">Low Possibility</p> <p align="center">Low Possibility</p> <p align="center">Low Possibility</p> <p align="center">Low Possibility</p> <p align="center">Low Possibility</p> <p align="center">Low Possibility</p>	<p align="center"><b><u>SIGNIFICANCE</u></b></p> <p align="center">Low Concern</p> <p align="center">Low Concern</p> <p align="center">Low Concern</p> <p align="center">Low Concern</p> <p align="center">Low Concern</p> <p align="center">Low Concern</p>
<p><u>Processing, Stockpiling and Transporting of Material:</u></p> <ul style="list-style-type: none"> <li>⌘ Dust nuisance generated at the processing plant.</li> <li>⌘ Noise nuisance stemming from operation of the processing plant.</li> <li>⌘ Potential contamination of environment due to improper waste management.</li> <li>⌘ Overloading of trucks impacting road infrastructure.</li> <li>⌘ Degradation of the access road.</li> </ul>	<p align="center"><b>Duration of operational phase (5 years maximum)</b></p>	<p align="center"><b><u>LIKELIHOOD</u></b></p> <p align="center">Low Possibility</p> <p align="center">Low Possibility</p> <p align="center">Low Possibility</p> <p align="center">Low Possibility</p> <p align="center">Low Possibility</p>	<p align="center"><b><u>SIGNIFICANCE</u></b></p> <p align="center">Low Concern</p> <p align="center">Low Concern</p> <p align="center">Low Concern</p> <p align="center">Low Concern</p> <p align="center">Low Concern</p>
<p><u>Cumulative Impacts:</u></p> <ul style="list-style-type: none"> <li>⌘ Impact the broad-scale ecological processes.</li> <li>⌘ Successful mining could lead to development of a larger long-term mine with more work opportunities (Positive Impact).</li> </ul>	<p align="center"><b>Duration of operational phase (5 years maximum)</b></p>	<p align="center"><b><u>LIKELIHOOD</u></b></p> <p align="center">Low Possibility</p> <p align="center">Definite (+)</p>	<p align="center"><b><u>SIGNIFICANCE</u></b></p> <p align="center">Low Concern</p> <p align="center">Medium-High (+)</p>
<p><u>Sloping and Landscaping during Rehabilitation:</u></p> <ul style="list-style-type: none"> <li>⌘ Safety risk posed by un-sloped areas.</li> <li>⌘ Erosion of landscaped areas after rehabilitation.</li> <li>⌘ Infestation of the reinstated areas by weeds and invader plant species.</li> <li>⌘ Potential impact associated with litter/waste left at the mining area.</li> <li>⌘ Rehabilitation of the abandoned pits and tailings dump (Positive Impact).</li> </ul>	<p align="center"><b>Duration of decommissioning phase (±4 month)</b></p>	<p align="center"><b><u>LIKELIHOOD</u></b></p> <p align="center">Low Possibility</p> <p align="center">Low Possibility</p> <p align="center">Low Possibility</p> <p align="center">Low Possibility</p> <p align="center">Definite (+)</p>	<p align="center"><b><u>SIGNIFICANCE</u></b></p> <p align="center">Low Concern</p> <p align="center">Low Concern</p> <p align="center">Low Concern</p> <p align="center">Low Concern</p> <p align="center">Medium-High (+)</p>

# APPENDIX J

## CLOSURE PLAN



**APPENDIX K**  
**INVASIVE PLANT SPECIES MANAGEMENT**  
**PLAN**



# APPENDIX L

## PHOTOGRAPHS OF THE PROPOSED SITE



**PHOTOGRAPHS OF THE STUDY AREA**



**PHOTO OF THE AREA EAST OF THE PROPOSED PROCESSING SITE**



**PHOTO OF THE PROPOSED PROCESSING AREA**



**PHOTOS OF THE EXISTING EXCAVATIONS AT NORRABEES 1**



**PHOTOS OF THE EXISTING TAILINGS AT NORRABEES 1**





PHOTOS OF THE EXISTING EXCAVATIONS AT NORRABEES 2



**PHOTOS OF THE SURROUNDINGS AT NORRABEES 2**



**PHOTOS OF THE EXISTING ROAD BETWEEN NORRABEES 1 AND 2**

**APPENDIX M**  
**CV AND EXPERIENCE RECORD OF EAP**

