mineral resources & energy

Department:
Mineral Resources and Energy
REPUBLIC OF SOUTH AFRICA

DRAFT BASIC ASSESSMENT REPORT

AND

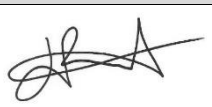
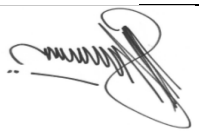
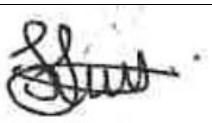
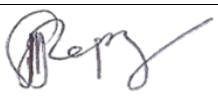
ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

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

NAME OF APPLICANT:	**LWABANTU MINERAL RESOURCES (PTY) LTD.**
CELL NO:	**073 217 3483**
PHYSICAL ADDRESS:	**91 WHITEHOUSE AVENUE, FARRARMERE, BENONI, 1501, SOUTH AFRICA**
FILE REFERENCE NO SAMRAD:	**KZN 30/5/1/3/2/10885 MP**
MINING PERMIT REF NO:	**KZN 30/5/1/3/2/10885 MP**

DOCUMENT REVIEW AND APPROVAL

Client	Lwabantu Mineral Resources (Pty) Ltd. (**'Lwabantu'**)
Report Type:	Draft Basic Assessment Report (BAR) and Environmental Management Programme (EMPr) for the proposed Prospecting Right Application without Bulk Sampling on Portion 2 of the Farm Rustplaats 38 HU, situated in the Magisterial District of Vryheid in Abaqulisi Local Municipality within Zululand District Municipality, KwaZulu Natal Province. The proposed project area is located approximately 20 km North West of Vryheid town.
Project Name:	Rustplaats Prospecting Right Application
Project Number:	LEM-A0663-06-2023

Name and Surname	**Position and Qualifications**	**Responsibility**	**Signature**	**Date**
Liketso Phoole	Environmental Scientist: MSc. (Groundwater Management)	Report Compiler		19 July 2023
Vuyo Ubisi	National Diploma in Environmental Science	Report Compiler		24 July 2023
Nkhensani Sibanyoni	National Diploma in Environmental Science	Report Compiler		26 July 2023
Mafego Johny	Environmental Scientist: Advanced Diploma (Environmental Sciences) EAPASA Registration Number: 2021/4147	Report Compiler		28 July 2023
Lindokuhle Nsibande (Cert.Nat Sc)	Senior Environmental Scientist BSc. Hons (Hydrology) SACNASP Registration Number: 121682	Report Reviewer		01 August 2023
Ralph Repinga (Pr Sci.Nat)	Principal Environmental Scientist : MSc (Environmental Sciences) SACNASP Registration Number: 400097/02 EAPASA Registration Number: 2020/2084	Report Reviewer		03 August 2023

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TERMS AND ABBREVIATIONS

ALM	Abaqulisi Local Municipality
BAP	Biodiversity Action Plan
BAR	Basic Assessment Report
DFFE	Department of Forestry and Fisheries and the Environment
DEA	Department of Environmental Affairs (National)
DMRE	Department of Mineral Resources and Energy
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
EMPR	Environmental Management Programme as required by the Mineral and Petroleum Resources Development Act (28 of 2008)
EMPr	Environmental Management Program as required by the National Environmental Management Act (107 of 1998)
GNR	Government Notice Regulation
Ha	Hectare
I&AP	Interested and Affected Party
LEM	Licebo Environmental and Mining (Pty) Ltd
LOWMA	Lower Orange Water Management Area
km	kilometer
m	meter (measurement for distance)
m^2	square meter (measurement for surface area)
m^3	cubic meter (measurement for volume)
MAP	Mean Annual Precipitation
mbgl	meters below ground level

MPRDA	Mineral and Petroleum Resources Development Act (No. 28 of 2002), as amended
NEMA	National Environmental Management Act (No. 107 of 1998), as amended
MDV	Magisterial District of Vryheid
NWA	National Water Act (No. 36 of 1998), as amended
PPP	Public Participation Process
RE	Remaining Extent
SABS	African Bureau of Standards
SANBI	South African National Biodiversity Institute
SAHRA	South African Heritage Resources Agency
SANS	South African National Standards
WMA	Water Management Area
ZDM	Zululand District Municipality

EXECUTIVE SUMMARY

Licebo Environmental and Mining (Pty) Ltd **(**Hereafter referred as **'LEM'**) has been appointed by Lwabantu (Pty) Ltd (herein referred as **'Lwabantu'**) as the Environmental Assessment Practitioner (EAP) to undertake the required Environmental Authorisation process for the proposed mining permit application situated at the Magisterial District of Vryheid in Abaqulisi Local Municipality within the Zululand District Municipality, KwaZulu Natal Province. The proposed project area is located approximately 20 km North West of Vryheid town.

As the Environmental Assessment Practitioner to conduct an environmental regulatory process, this application process will be undertaken in terms of the EIA Regulations 2014, as amended, specifically GNR 983 as amended by GNR 327 Listing Notice 1 in respect to the following listed activities: 20 and 24 which will involve the compilation of a Basic Assessment Report (BAR) and Environmental Management Programme (EMPr). An acceptance letter for the prospecting right application (reference: **KZN 30/5/1/1/2/1/10886 MP**) was issued by Department of Mineral Resources and Energy (DMRE) requesting Lwabantu to undertake consultation with Interested and Affected Parties and Environmental Authorisation Application involving the compilation of the Basic Assessment Report (BAR) and Environmental Management Programme (EMPr) process as promulgated under the National Environmental Management Act, 1998 (Act No. 107 of 1998) as amended (NEMA) and applicable regulations associated with the mining right project on Portion of Portion 2 of the Farm Rustplaats 38 HU and submit the consultation results and the required Basic Assessment Report and Environmental Management Programme (BAR & EMPr) to the KwaZulu Natal Region DMRE as required.

Lwabantu lodged application for mining permit on the online SAMRAD system governed by Department of Mineral Resources and Energy (DMRE). The application was lodged and accepted on the 14th of June 2023 under DMRE reference number: **KZN 30/5/3/2/10886 MP**. The application was accepted in terms of the National Environmental Management Act (Act 107 of 1998) as amended and the Environmental Impact Assessment (EIA) Regulations 2014 as amended (Government Notice Regulation 982 as amended). Lwabantu intends to undertake mining activities for byrites, copper ore, feldspar, gold ore, graphite, heavy minerals (generals), lead, nickel ore, platinum group metals, rare earths and silver ore on Portion of Portion 2 of the farm Rustplaats 165 HU on above-mentioned farm. The proposed mining permit study area covers the extent of approximately 5 hectares (Ha).

PROJECT APPLICANT

The details of the applicant for this project are indicated on the table below:

Name of Applicant:	Lwabantu Mineral Resources (Hereafter referred as **'Lwabantu'**)		
Registration Number (if any):	2019/199865/07		
Trading Name (if any):			
Responsible person:	Peter Makgato		
Name of Project:	Rustplasts Mining Permit		
Contact Person	Peter Makgato		
Postal Address:			
Postal Code		**Cell phone**	078 173 9680
Telephone:		**Fax:**	
E-mail:	pmakgato@gmail.com		

Brief description and location

Activity description and location	The proposed area is located approximately 20 km North West of Vryheid town. The proposed mining permit study area covers the extent of approximately 5 hectares (Ha). The activities to be undertaken include the development of a box cut which will involve the stripping and stockpiling of topsoil material, removal and stockpiling of softs (subsoil), removal and stockpiling of overburden material and extraction of mineral ore and stockpiling thereof.
DMRE Environmental Management Reference Number	**KZN 30/5/1/3/2/10885 MP**
Acceptance letter Issue Date	An acceptance letter for the proposed mining permit was issued on the 14th of June 2023 and the amended acceptance letter was also issued on the 24th of April 2023 by DMRE.
Holder of the Prospecting Rights and Environmental Authorisations	Lwabantu Mineral Resources (Pty) Ltd (Company Registration Number: 2019/199865/07.

Municipality and Magisterial District	Magisterial District of Vryheid in the Abaqulisi Local Municipality, KwaZulu Natal Province.

APPROACH AND METHODOLOGY FOR THE PUBLIC PARTICIPATION

The Environmental Impact Assessment (EIA) Regulations, 2014 (GNR 982 of 4 December 2014 as amended by GNR 326 of 7 April 2017) (EIA Regulations, 2014), as amended promulgated under the NEMA, and applicable PPP guidelines and regulations have been considered for this application process. The Public Participation Process (PPP) is central to the investigation of environmental and social impacts. Stakeholders who are affected by the proposed Project are given an opportunity to raise concerns to ensure that local knowledge, needs, and values are understood and taken into consideration as part of the EA process.

Listed Activities Applied for

The below listed activities has been applied to be authorised as part of this environmental impact report

BASELINE ENVIRONMENTAL DESCRIPTION

Geology

The ZDM is predominately comprised of the Karoo Sequence i.e., Dwyka, Ecca, Beaufort, Lebombo, and Zululand Groups, with Jurassic dolerite intrusions and quartzite of the Mozaan Group. Ecca Group outcrops occur within the study area (Figure) and surrounding regions. The study area is generally underlain by Ecca Group rocks which are subdivided into the Vryheid Formation, Volkrust Formation, Normandien Formation, Delfkom Formation, Granite Formation, and Mpongoza Formation.

Climate

Vryheid has a warm and temperate climate that varies from west to east as a result of elevation. The escarpment region above 1200 mamsl is classified as a sub-tropical highland; regions between 800 - 1200 mamsl are classified as humid subtropical while humid subtropical climate dominates the coastal plain. Thunderstorms are the prevalent form of precipitation. Mist and hail are uncommon across the majority of ZDM.

Soil and Land Capability

Abaqulusi Municipal areas are mainly comprised of plantations and commercial agricultural activities with limited high-density settlement, game farming, ecotourism and conservation areas (Ezemvelo KZN Wildlife, 2015). Agriculture is dominant within highveld areas and fertile valleys along where major rivers flow through the municipality (ALM, 2022). Natural areas rich in biodiversity and water bodies which

promote ecotourism industry are present within ALM. The study area is comprised of natural land cover and a wetland (i.e., flat wetland) as illustrated in Figure 7 below. However, most of the municipality has been transformed by agricultural practices (e.g., plantations) and built-up land uses such as roads, urban areas and rural dwellings amongst others (Ezemvelo KZN Wildlife, 2015).

Topography

The relief of ZDM is diverse and determined by altitude, slope position, aspect, climate, topography, and geology. The study area's elevation ranges between 1290 – 1340 mamsl as illustrated in Figure below and falls within the central highlands of the ZDM. The region has given rise to a rugged terrain associated with valleys and ridges. The highest areas lie along the region's western boundary, with the height increasing from south to north. The highest point within the region is located at the extreme north-western side (2068 m) while the lowest areas lie on the eastern portion of the municipality, with height generally decreasing northwards and southwards from the centre of the eastern boundary. The lowest point comprises the Jozini Dam and areas below the dam (approximately 480 mamsl), followed by a point on the Black Mfolozi where it exits the district.

Air quality

South Africa have established the legislation that governs and monitor the level of ambient air quality as per province. In terms of Section 24 of the Constitution of Republic of South Africa, as well as the National Environmental Air Quality Act (AQA, 2004), government is enjoined to ensure that South Africans are breathing air that is not harmful to their health and wellbeing. Section 8 of the AQA provides for national monitoring and information management standards and stipulates that the Minister must, in the National Framework, establish national standards for municipalities and provinces to monitor ambient air quality, among other requirements, in order to report compliance with ambient air quality standards. In order to meet this requirement, ambient air quality needs to be monitored, and this is done through deploying ambient monitoring stations in order to measure the quality of the air.

Fauna

Macro- and micro-habitat scales are utilized by faunal species within a given area, with certain ecological and behavioural factors (such as food availability, niche habitat, and decreased predation risk) determining continuing occurrence. Faunal diversity and assemblages have probably been damaged by anthropogenic land conversion, habitat degradation, and fragmentation brought on by past and present agricultural activities as well as mining practices. The remaining natural habitats (grassland-wetland

mosaics and rocky outcrops) are likely home to a greater concentration of species with more specialized habitat needs.

According to the DFFE online National Web-based Environmental Screening Tool, the animal species theme has medium theme sensitivity with due to the potential presence of bird species of concern including Ludwig's Bustard (*Neotis ludwigii*) **(EN)**, Red lark (*Calendulauda burra*) **(VU)**, Secretarybird (*Saggittarius serpentarius*) (**EN)***.*

Flora

The biodiversity of ALM is mainly comprised of large vegetation areas which have been transformed by anthropogenic activities. The dominant vegetation types include tall grass veld, warm sour sand veld, warm moist transitional tall grassland, and dry Zululand thornveld. The terrestrial Biodiversity Theme for the study area is rated very high sensitivity on the screening tool due to the potential of encountering animal as Aves-Falco biarmicus, Aves-Geronticus calvus, Mammalia-Hydrictis maculicollis, Mammalia-Ourebia ourebi ourebi, and Sensitive species 8. Plant Species Theme was rated as a medium sensitivity on account of the potential presence of flora species such as Sensitive species 1252, Dierama erectum, Sensitive species 998, and Sensitive species 1152.

Wetland

The wetland types bushmanland Bioregion (depression) wetlands. Priority wetlands, referred to as Freshwater Ecosystem Priority Area (FEPA) wetlands; and wetland clusters were identified, which represent the range of wetland ecosystem types that need to be safeguarded. FEPA wetlands are considered important due to the presence of rare plants, threatened frogs and/or wetland-dependent birds. Wetland vegetation provides food and critical habitat for organisms that live in or near water resources, such as algae, macroinvertebrates, amphibians, fish, and birds. Wetland plants can also improve water quality through the uptake of nutrients, metals, and other contaminants (Driver et al., 2011).

The wetland types range from valley head seeps, seeps, flats, depressions, channelled and un-channelled valley bottom wetlands to floodplain wetlands. Priority wetlands, referred to as Freshwater Ecosystem Priority Area (FEPA) wetlands; and wetland clusters were identified, which represent the range of wetland ecosystem types that need to be safeguarded. FEPA wetlands are considered important due to the presence of rare plants, threatened frogs and/or wetland-dependent birds. Wetland vegetation provides food and critical habitat for organisms that live in or near water resources, such as algae, macroinvertebrates, amphibians, fish, and birds. Wetland plants can also improve water quality through the uptake of nutrients, metals, and other contaminants (Driver et al., 2011).

Surface water

The study area falls within quaternary catchment W21B from Usutu to Mhlathuze Water Management Area. Mfolozi secondary catchment is the main drainage system that influences the hydrological characteristics of the study area (Figure). This secondary catchment is mainly comprised of the Black and White Mfolozi Rivers however, they do not flow and/or near the study area. Both the Black and White Rivers discharge into the Indian Ocean. Klipfontein Dam is located on the White Mfolozi River in the quaternary catchment W21A. Klipfontein Dam serves as a domestic water supply dam for Vryheid and surrounding areas. Wetlands within ALM are either saturated with water either permanently or seasonally which contributes to the hydrological functioning of the catchments and aquifers. Wetland flat exists within the study area.

Groundwater

The Mfolozi Catchment is situated within three hydrogeological regions; the North Western Middleveld, North Eastern Middleveld, and Southern Lebombo. Groundwater occurs within primary and secondary aquifers within Usutu to Mhlathuze Water Management Area. The ZDM's hydrogeological regime has an intergranular and fractured regional aquifer. Groundwater flow is controlled by fracture flow on a local scale while it is influenced by dolerite dykes that intruded karoo strata on a regional scale. Intergranular and fractured type aquifers contain groundwater within the intergranular voids and fractures intersecting the sedimentary rock layers.

Review of the Draft BAR and EMPr

The Draft BAR and EMPr reports are made available for public review for a period of 30 days, from the **04th of August 2023** to **04th of September 2023**. The I&APs are given time to review the reports and the receipt of the I&AP's comments, concerns and comments received will be incorporated into the Draft BAR and EMPr to be finalised and submitted to the DMRE, the KwaZulu Natal Region.

The Draft BAR and EMPr will be available for public review for a period of 30 days, from **04th of August 2023** to **04th of September 2023** by following the below information:

Location	Contact
Hard Copies	
Vryheid Library (Mark Street, Vryheid, 3100) ; Coordinates, : -27.7690449852, 30.7941085166	(034) 982 2133
Electronic Copies	
Licebo Environmental and Mining (Pty) Ltd website (https://licebo.co.za) under Public Review Documents: https://www.licebo.co.za/projects/public-review-documents under the Project: Rustplaats Mining Permit bAR-EMPr or you may contact Licebo's offices to get the copy of the report.	013 692 0210 / 083 257 8869 ralph.repinga@licebo.co.za

After 30 days public participation process come to an end, the comments received from Interested and Affected Parties will be captured and addressed in the Consultation Report's Comments and Response Register (CRR) which is attached as part of **Appendix 5** of the Draft BAR and EMPr. The Draft BAR and EMPr will be submitted to DMRE KwaZulu Natal Regional Office for decision making on the **27th of September 2023**.

Invitation to a Public Meeting

A Public Meeting will be held to discuss the content of the Proposed Mining Permit and to obtain further stakeholder comments.

Notification for a Public Meeting	
Venue:	Xulu Community Hall
Date:	18 August 2023
Time:	13h00

PART A: BASIC ASSESSMENT REPORT

1. CONTACT PERSON AND CORRESPONDENCE ADDRESS

1.1. Details of the EAP

1.1.1. Qualifications of the EAP

LEM was appointed by the Applicant as the Environmental Assessment Practitioner (EAP) to compile this report. The contact details of the LEM consultant who compiled the report are as follows:

Name and Surname	Liketso Phoole
Qualification	Environmental Scientist MSc. Groundwater Management
Professional Affiliation	South African Council for Natural Scientific Professions (SACNASP)
Registration Number	Cand.Sci. Nat No.157063 (In Progress)
Professional Affiliation	Environmental Assessment Practitioners Association of South Africa (EAPASA)
Registration Number	In Progress

Name and Surname	Johny Mafego
Qualification	Environmental Scientist Advanced Diploma in Environmental Sciences (Tshwane University of Technology)
Professional Affiliation	South African Council for Natural Scientific Professions (SACNASP)
Registration Number	148669 Cert. Sc. Nat
Professional Affiliation	Environmental Assessment Practitioners Association of South Africa (EAPASA)
Registration Number	Registered EAP
Registration Number	2021/4147

Name and Surname	Lindokuhle Nsibande
Qualification	Senior Environmental Scientist BSc. Geography and Hydrology (University of Zululand) BSc Honours Hydrology (University of Zululand)
Professional Affiliation	South African Council for Natural Scientific Professions (SACNASP)
Registration Number	121682 Cert. Sc. Nat

Professional Affiliation	Environmental Assessment Practitioners Association of South Africa (EAPASA)
Registration Number	Candidate

Environmental Assessment Practitioner company details	Licebo Environmental and Mining (Pty) Ltd.
Name of the Practitioner	Mandla Ralph Repinga
Postal Address	Postal Address: P.O. Box 20519, Del Judor Extension 4, Witbank, 1044
Tel No.:	013 692 0212 or 083 257 8869
Fax No.:	086 667 1169
E-mail address:	ralph.repinga@licebo.co.za

1.2. Expertise of the EAP

1.2.1. Summary of the EAP's past experience

Liketso Phoole (Report Compiler) has been appointed as Junior Environmental Scientist and Environmental Assessment Practitioner (EAP) for Licebo Environmental and Mining (Pty) Limited. He has been an environmental scientist since 2022, with the following roles and responsibilities:

- Undertaking and compilation of Environmental Authorisations (BARs, EIRs and EMPrs), Water Use License applications (WULAs), Waste Management Licenses and Atmospheric Emission Licenses and other relevant environmental authorisation documents;
- Development and implementation of Environmental Management Programs (action plans), standard operation procedure and work instructions for projects where required;
- Conducting environmental site inspection and compilation of the weekly and monthly Environmental Control Officer's monitoring compliance reports;
- Conduct environmental authorization, waste management and water use license audits;
- Conducting environmental inspection and awareness training;
- Advice clients on environmental issues relating to air, land and water contamination (surface and groundwater) waste, water, noise, blasting, heritage and archeologist impacts as part of the ECO and audits;
- Compilation and updating of Integrated Water and Waste Management Plans (IWWMP) and Environmental Management Programme Performance Assessments;

- Compilation of prospecting and mining rights application and associated environmental authorisation documentations;
- Development of waste, water, energy and land management plans;
- Conduct environmental inspections and audits as required in terms of NEMA, NWA, NEM WA, NEM BA, MPRDA and other applicable environmental legal requirements and environmental management systems;
- Conduct field surveys: collecting data and data interpretation;
- Working in close collaboration with specialists from other disciplines;
- Ensure compliance and conducting of relevant Health, Safety, Environment and Quality documentations as required by the client; and
- Compilation of technical / scientific reports.
- Conduct environmental inspections and audits as required in terms of NEMA, NWA, NEM WA, NEM BA, MPRDA and other applicable environmental legal requirements and environmental management systems;
- Conduct field surveys: collecting data and data interpretation;
- Working in close collaboration with specialists from other disciplines;
- Ensure compliance and conducting of relevant Health, Safety, Environment and Quality documentations as required by the client; and
- Compilation of technical / scientific reports.

Johny Mafego (Report Compiler) has been appointed as an Environmental Scientist and Environmental Assessment Practitioner (EAP) for Licebo Environmental and Mining (Pty) Limited. He has been an environmental scientist since 2019, with the following roles and responsibilities:

- Undertaking and compilation of Environmental Authorisations (BARs, EIRs and EMPrs), Water Use License applications (WULAs), Waste Management Licenses and Atmospheric Emission Licenses and other relevant environmental authorisation documents;
- Development and implementation of Environmental Management Programs (action plans), standard operation procedure and work instructions for projects where required;
- Conducting environmental site inspection and compilation of the weekly and monthly Environmental Control Officer's monitoring compliance reports;
- Conduct environmental authorization, waste management and water use license audits;
- Conducting environmental inspection and awareness training;

- Advice clients on environmental issues relating to air, land and water contamination (surface and groundwater) waste, water, noise, blasting, heritage and archeologist impacts as part of the ECO and audits;
- Compilation and updating of Integrated Water and Waste Management Plans (IWWMP) and Environmental Management Programme Performance Assessments;
- Compilation of prospecting and mining rights application and associated environmental authorisation documentations;
- Development of waste, water, energy and land management plans;

Lindokuhle Nsibande (Report Reviewer) has been appointed as a Senior Environmental Scientist and Environmental Assessment Practitioner (EAP) for Licebo Environmental and Mining (Pty) Limited. She has been an environmental scientist since 2018, with the following roles and responsibilities:

- Undertaking and compilation of Environmental Authorisations (BARs, EIRs and EMPrs), Water Use License applications (WULAs), Waste Management Licenses and Atmospheric Emission Licences.
- Conducting environmental site inspection and compilation of the weekly and monthly Environmental Control Officer's monitoring compliance reports;
- Implementation of the environmental Management Strategy;
- Development and implementation of Environmental Management Programs (action plans), standard operation procedure and work instructions for projects where required,
- Compilation of Integrated Water and Waste Management Plan (IWWMP), Rehabilitation Strategy and Implementation Plan (RSIP) as required in terms of the National Water Act and issued Water Use Licenses;
- Compilation of HSEC risk assessment and incident investigation with MH&S Act for LEM projects.
- Conducting environmental inspection and awareness training;
- Development of waste, water, energy and land management plans.
- Advice clients on environmental issues relating to air, land and water contamination (surface and groundwater) waste, water, noise, blasting, heritage and archeologist impacts as part of the ECO and audits.
- Conduct environmental authorization, waste management and water use license audits.
- •Compilation of technical reports/scientific reports.

Ralph Repinga (Reviewer) has more than 24 years of experience in the field of Environmental Impact Assessment and management, with 12 of those years spent in the coal mining sector. He is a registered professional environmental scientist with a MSc (Environmental Sciences) degree and registered professional natural scientist with the South African Council for Natural Scientific Professions (SACNASP) (Registration number: 400097/02) and is registered with the Environmental Assessment Practitioners Association of South Africa (EAPASA) as an Environmental Assessment Practitioner (EAP) (Registration number: 2020/2084 (EAP).

He started his career as an Environmental Officer with the Mpumalanga Department of Environmental Affairs and Tourism. He also worked for Transvaal Sugar Ltd as a Safety, Health, Environmental and Quality Training Officer. In March 2001, he was appointed by Ingwe Collieries (now BHP Billiton Energy Coal South Africa (BECSA)) started as an Environmental Officer to Environmental Manager (for 6 years) within its various operations. He is currently working as the Managing Director and environmental consultant for Licebo Environmental and Mining (Pty) Ltd (LEM) since March 2012. He has an extensive environmental management experience especially focusing mostly construction projects, water management and coal mining industry.

As part of LEM, he has been involved in several environmental projects which includes environmental auditing (auditing of environmental authorisations and approvals), compilation of EIAs, EMPrs, WULs, Waste Management Licences, undertaking public participation, socio-economic assessments supervision of environmental projects and other environmental related projects.

1.2.2. Summary of the EAP.

Ralph Repinga has more than 24 years of experience in the field of Environmental Impact Assessment and management, with 12 of those years spent in the coal mining sector. He is a registered professional environmental scientist with a MSc (Environmental Sciences) degree and registered professional natural scientist with the South African Council for Natural Scientific Professions (SACNASP) (Registration number: 400097/02).

He started his career as an Environmental Officer with the Mpumalanga Department of Environmental Affairs and Tourism. He also worked for Transvaal Sugar Ltd as a Safety, Health, Environmental and Quality Training Officer. In March 2001, he was appointed by Ingwe Collieries (now BHP Billiton Energy Coal South Africa (BECSA)) started as an Environmental Officer to Environmental Manager (for 6 years) within its various operations. He is currently working as the Managing Director and environmental consultant for Licebo Environmental and Mining (Pty) Ltd (LEM) since March 2012. He has an extensive environmental management experience especially focusing mostly construction projects, water management and coal mining industry.

As part of LEM, he has been involved in a number of environmental projects which includes environmental auditing (auditing of environmental authorisations and approvals), compilation of EIAs, EMPRs, WULs, Waste Management Licences, undertaking public participation, socio-economic assessments supervision of environmental projects and other environmental related projects. Refer to Table 3 below for some of the recent projects that he has undertaken:

Table 1: List of projects completed by the EAP.

Company	Project	Reference Person	Contact
Undertaking and compilation of EIA, Water Use Licences, Waste Management Licence and EMPR in terms of MPRDA)			
Seriti Power (Pty) LimitedLtd (BECSA) Khutala Colliery	EIA, EMP and Water Use Licence applications for Khutala Colliery: Khutala Southern Access Extension on behalf of Jaco – K Consulting – Completed.	Jaco Kleynhans (Jaco – K Consulting) Clinton Lee (BECSA)	082 417 6901/013 243 7110 jaco.kleynhans@telkomsa.net 082 458 7746 clinton.lee@south32.net
Shanduka Coal – Middelkraal Colliery	Updating of an Integrated Water and Waste Management Plan for Middelkraal Colliery on behalf of	Jaco Kleynhans (Jaco – K Consulting) Sunil Mungaroo (Shanduka Coal)	082 417 6901/013 243 7110 jaco.kleynhans@telkomsa.net or jaco.kleynhans@jacokconsulting.co.za 079 495 4930 Sunil.Mungaroo@Shandukacoal.com

Company	Project	Reference Person	Contact
	Jaco – K Consulting – Completed		
Shanduka Coal – Lakeside Mine and Springboklaagte Mine	Undertaking and compilation of a Water Use Licence and Basic Assessment for a water pipeline on behalf of Jaco – K Consulting – Completed	Jaco Kleynhans (Jaco – K Consulting) Sunil Mungaroo (Shanduka Coal)	082 417 6901/013 243 7110 jaco.kleynhans@telkomsa.net or jaco.kleynhans@jacokconsulting.co.za 079 495 4930 Sunil.Mungaroo@Shandukacoal.com
Seriti Power (Pty) LimitedLtd (BECSA) Khutala Colliery	Undertaking and compilation of EIA, EMP, Water Use and Waste Management Licence applications for Khutala Colliery: Khutala Opencast Mining Project on behalf of Jaco – K Consulting – Completed	Jaco Kleynhans (Jaco – K Consulting) Clinton Lee (BECSA)	082 417 6901/013 243 7110 jaco.kleynhans@telkomsa.net or jaco.kleynhans@jacokconsulting.co.za 082 458 7746 clinton.lee@south32.net
Seriti Power (Pty) Limited Wolvekrans Colliery	Undertaking and compilation of a Basic Assessment Report for the Relocation and Construction of Power Line at Wolvekrans Colliery – Completed	Collen Mabada	Tel: 013 689 4028 Cell: 079 506 7249 E-mail: collen.mabada@south32.net
Seriti Power (Pty) Limited Wolvekrans Colliery	Undertaking and compilation of a Basic Assessment Report for Fuel Storage Facilities at Wolvekrans Colliery – Completed	Collen Mabada	Tel: 013 689 4028 Cell: 079 506 7249 E-mail: collen.mabada@south32.net
Ikoti Coal (Pty) Ltd: KwaZanele Colliery	Conducting and compilation of the Integrated Water Use Licence Application (IWULA) – Completed	Zabilon Inama (Director)	Tel: 078 520 8222 E-mail: zabiloninama@yahoo.co.uk
Groenfontein Collieries (Pty) Ltd	EIA, EMP and Water Use Licence applications for Groenfontein Colliery – Completed.	Malose Ledwaba	Tel: 012 253 1164 Fax: 012 253 1163 Cell: 083 378 0054
Anglo American Inyosi Coal (Pty) Ltd (AAIC) Kriel Colliery	Revision and updating of Kriel Colliery Rehabilitation Strategy and Implementation Plan (RSIP) – Completed	Maphuti Boloka (Environmental Coordinator)	Tel: +27 17 617 1157 Cell: +27 82 889 4214 Fax: +27 17 648 3910 E-mail: maphuti.boloka@seritiza.com
Universal Coal Development I (Pty) Ltd	Undertaking and compilation of Kangala Colliery EMP	Minah Moabi	Tel: +27 12 460 0805 Cell: +27 76 431 3968 E-mail: m.moabi@universalcoal.com

Company	Project	Reference Person	Contact
	amendment to include the Middelbult Section – Completed	(Chief Environmental Manager)	
Amatala Mining Services cc	Nooyensfontein prospecting right environmental authorisation applications involving the Basic Assessment Report and Environmental Management Programmes – 2016	Jimmy Mjoli	+27 82 575 3673 jimmy@amatala.co.za
Mahulong Projects cc	Schulspruit and Palmietfontein prospecting right environmental authorisation applications involving the Basic Assessment Report and Environmental Management Programmes – Completed	Peter Makgato	+27 82 575 3673 jimmy@amatala.co.za
Anglo American Inyosi Coal (Pty) Ltd (AAIC) Zibulo Colliery	Compilation of Zibulo Colliery Opencast Operations Environmental Impact Assessment, Water Use Licence Application and Integrated Water and Waste Management Plan (IWWMP) – 2017	Melchior Joseph (Environmental Coordinator)	Tel: +27 13 643 4455 Cell: +27 83 292 1984 E-mail: melchior.joseph@thungela.com
Seriti Power (Pty) Limited Khutala Colliery	Undertaking and compilation of Khutala Colliery EIR and EMPr consolidation – 2017.	Shudufhadzo Tshusa (Specialist Environment)	Tel: +27136485264; Cell: +27 84 976 5903; E-mail: Shudufhadzo.tshusa@seritiza.com
Seriti Power (Pty) Limited Khutala Colliery	Undertaking and compilation of Khutala Colliery EIR, EMPr and WULA for the proposed 5 Seam Mining Project – 2021/2022**.**	Nosipho Mosito (Specialist Environment)	Tel: +27 13 689 3196; Fax: +27 86 718 2070; Cell: +27 82 349 5665 E-mail: Nosipho.mosito1@south32.net
Universal Coal and Energy Holdings South Africa (Pty) Limited North Block Complex (Pty) Ltd	Undertaking and compilation of Glisa Siding Environmental Authorisation and WULA – 2021/2022: Completed	Nokuthula Cebekhulu. (Environmental Manager)	Cell: +27 82 856 8588 Tel: +27 10 900 0358 Email: N.Cebekhulu@universalcoal.com

Company	Project	Reference Person	Contact
Mpumalanga Department of Public Works, Roads, and Transport (MDPWRT)	Mpumalanga Department of Public Works, Roads, and Transport (MDPWRT) New Witbank (eMalahleni) Tertiary Hospital Project including the Scoping & Environmental Impact Report and Environmental Management Programmes, and Water Use License Application (WULA) - Completed	Phumudzo Sinugo	Mobile: 072 648 0204 Tel: 013 766 8921 Email: publicworksnst@gmail.com
Undertaking and compilation of mining permits, prospecting rights applications including public consultation and associated BAR and EMPrs			
Amatala Mining Services cc	Undertaking and compilation of the prospecting right applications involving the Basic Assessment Report and Environmental Management Programmes – Completed	Jimmy Mjoli Peter Makgato	013 692 0000 / 082 575 3673 jimmy@amatala.co.za 013 692 0000 / 079 713 0821 peter@amatala.co.za
Amatala Mining Services cc	Compilation of the Nooitgedacht prospecting right applications involving the Basic Assessment Report and Environmental Management Programmes for Amatala Mining Services cc – Completed	Jimmy Mjoli Peter Makgato	013 692 0000 / 082 575 3673 jimmy@amatala.co.za 013 692 0000 / 079 713 0821 peter@amatala.co.za
Amatala Mining Services cc	Undertaking and compilation of the Kreiger Holm prospecting right application involving the Basic Assessment Report and Environmental Management Programmes – Completed	Jimmy Mjoli Peter Makgato	013 692 0000 / 082 575 3673 jimmy@amatala.co.za 013 692 0000 / 079 713 0821 peter@amatala.co.za
Sebenzani Trading 94	Kaallaagte prospecting right applications involving the Basic Assessment	Jacob Mnisi (Director)	061 889 3857 sebenzani.trading.94@webmail.co.za

Company	Project	Reference Person	Contact
	Report and Environmental Management Programmes – Completed		
Sebenzani Trading 94	Kafferstad prospecting right applications involving the Basic Assessment Report and Environmental Management Programmes – Completed	Jacob Mnisi (Director)	061 889 3857 sebenzani.trading.94@webmail.co.za
Lizwelakhe Solutions (Pty) Ltd	Lizwelakhe Mining Permit and Environmental Authorisation application – Oct 2021 – May 2022	James Lukhele (Director)	Mobile: 082 518 8878 james.nkosisikileconstruction@gmail.com
Fairy Wing Trading 52 (Pty) Ltd	Fairy Wing Nooitgedacht Prospecting Right Applications including involving the Basic Assessment Report and Environmental Management Programmes – Completed	Sipho Msane (Director)	Mobile: 073 217 3483 E-mail: mebsresources@gmail.com
Bonizenzo Holdings (Pty) Ltd	Bonizenzo Rooderand 41 JP Prospecting Right with Bulk Sampling involving the Basic Assessment Report and Environmental Management Programmes – Completed	Peter Makgato (Director)	Mobile: 078 173 9680 Email: pmakgato@gmail.com Fax No: 086 247 6794
Bonizenzo Holdings (Pty) Ltd	Bonizenzo Rooderand_902 JP and 41 JP Prospecting Right Applications involving the Basic Assessment Report and Environmental Management Programmes – Completed	Peter Makgato (Director)	Mobile: 078 173 9680 Email: pmakgato@gmail.com Fax No: 086 247 6794
Lihlesandy (Pty) Ltd	Lihlesandy Prospecting Right Applications involving	Peter Makgato (Director)	Mobile: 078 173 9680 Email: pmakgato@gmail.com Fax No: 086 247 6794

Company	Project	Reference Person	Contact
	the Scoping & Environmental Impact Report and Environmental Management Plans - Completed		
Mebs Resources (Pty) Ltd	Mebs Vlakvlei Prospecting Right Applications involving the Basic Assessment Report and Environmental Management Programmes – Completed	Sipho Msane (Director)	Mobile: 073 217 3483 E-mail: mebsresources@gmail.com
Mebs Resources (Pty) Ltd	Mebs Nooigedacht_17 Prospecting Right Applications involving the Basic Assessment Report and Environmental Management Programmes – Completed	Sipho Msane (Director)	Mobile: 073 217 3483 E-mail: mebsresources@gmail.com
Zee Minerals (Pty) Ltd	Zee Minerals Wolgevonden Prospecting Right Applications involving the Basic Assessment Report and Environmental Management Programmes – Completed	Sipho Msane (Director)	Mobile: 073 217 3483 E-mail: mebsresources@gmail.com
Zee Minerals (Pty) Ltd	Zee Minerals Giglio Prospecting Right Applications involving the Basic Assessment Report and Environmental Management Programmes – Completed	Sipho Msane (Director)	Mobile: 073 217 3483 E-mail: mebsresources@gmail.com
MM4C Investments (Pty) Ltd	MM4C Holpan Prospecting Right Application with Bulk sampling and Environmental Management Plans – Completed	Peter Makgato (Director)	Mobile: 078 173 9680 Email: pmakgato@gmail.com Fax No: 086 247 6794
MM4C Investments (Pty) Ltd	MM4C Heidelberg Prospecting Right Applications involving	Peter Makgato (Director)	Mobile: 078 173 9680 Email: pmakgato@gmail.com Fax No: 086 247 6794

Company	Project	Reference Person	Contact
	the Basic Assessment Report and Environmental Management Programmes – Completed		
African Exploration Mining and Finance Corporation Soc (Pty) Ltd	AEMFC Prospecting Right Applications involving the Basic Assessment Report and Environmental Management Programmes – Completed	Pitsoe Lemogang Alvin	Mobile: 073 220 6388 Email: lemogangp@aemfc.co.za / phillipm@aemfc.co.za Fax No: 087 236 5061
Lwabantu Mineral Resources (Pty) Ltd	Lwabantu Mining Permit and Environmental Authorisation application – Pending	Peter Makgato	
Corobrik (Pty) Ltd	Corobrik Mining Right application – Pending		Mobile: Tel: Email:
Environmental awareness training			
Lerumo la Setshaba Trading Enterprise 32 cc	Conducting and compilation of environmental training for clients including Eskom: Environmental Legislation ISO 14001 Environmental Management System Awareness Training Waste Management Environmental Impact Assessment	Langi Mabaso	Tel: 013 243 3452/ 015 295 9450; Fax: 086 605 5560; Cell: 079 499 6732 Email: langi@lerumoconsulting.co.za
Undertaking of public participation and socio-economic assessments			
Prime Resources	Public Participation Process for the KaNgwane Central Anthracite Mine – Completed	Jonathan van de Wouw	011 447 4888/072 602 3164 jonathan@resources.co.za
Prime Resources	Public Participation Process for the KaNgwane South Anthracite Mine – Completed	Peter Theron	011 447 4888 peter@resources.co.za
Seriti Power (Pty) LimitedLtd (BECSA) Pegasus Coal Mine	Conducting and compilation of specialist study: Public participation, community baseline survey and socio-	Jaco Kleynhans (Jaco – K Consulting) Clinton Lee (BECSA)	082 417 6901/013 243 7110 jaco.kleynhans@telkomsa.net or jaco.kleynhans@jacokconsulting.co.za 082 458 7746 clinton.lee@south32.net

Company	Project	Reference Person	Contact
	economic assessment for Pegasus Coal Mine Opencast operation on behalf of Jaco – K Consulting – Completed		
Koornfontein Mines	Conducting and compilation of specialist study: Community baseline survey and socio-economic assessment for Vlaklaagte Opencast operation on behalf of Jaco – K Consulting – Completed	Jaco Kleynhans (Jaco – K Consulting) Kubashni Mari (Koornfontein Mines)	082 417 6901/013 243 7110 jaco.kleynhans@telkomsa.net or jaco.kleynhans@jacokconsulting.co.za 082 9299585 Kubashni.Mari@optimumcoal.com
Koornfontein Mines	Conducting and compilation of specialist study: Community baseline survey and socio-economic assessment for Vlaklaagte Opencast operation on behalf of Jaco – K Consulting – Completed	Jaco Kleynhans (Jaco – K Consulting)	082 417 6901/013 243 7110 jaco.kleynhans@telkomsa.net
Provision of environmental services and environmental control officer			
Optimum Holdings Limited	Environmental Control Officer for the construction of a haul road at Optimum Coal – Completed	Mbali Mbhele (Environmental Manager: Optimum Complex)	013 296 5008/082 319 0259 Fax: 086 580 6103 Mbali.Mbhele@optimumcoal.com
Seriti Power (Pty) LimitedLtd (BECSA) Khutala Colliery	Appointment to provide Environmental Specialist service for Khutala Colliery: Khutala Opencast Mining Project on behalf of Jaco – K Consulting – Completed	Jaco Kleynhans (Jaco – K Consulting) Clinton Lee (BECSA)	082 417 6901/013 243 7110 jaco.kleynhans@telkomsa.net or jaco.kleynhans@jacokconsulting.co.za 082 458 7746 clinton.lee@south32.net
Eskom Holdings SOC Ltd: Limpopo Operating Unit	The provision of consultants to undertake Environmental Control Officer roles and responsibilities at Jane Furse Powerline and Mamatsekele	Monica Mokgawa (Environmental Manager Acting)	E-mail: monica.mokgawa@eskom.co.za Tel: +27 15 230 1683 / +27 299 0035 Cell: +27 84 967 5116

Company	Project	Reference Person	Contact
	Substation within the Limpopo Operating Unit – 2016 to December 2017.		
Eskom Holdings SOC Ltd: Limpopo Operating Unit	The provision of services to undertake Environmental Control Officer roles and responsibilities at Witkop-Silica Powerline within the Limpopo Operating Unit – 2016 to 2017.	Monica Mokgawa (Environmental Manager Acting)	E-mail: monica.mokgawa@eskom.co.za Tel: +27 15 230 1683 / +27 299 0035 Cell: +27 84 967 5116
Eskom Holdings SOC Ltd: Limpopo Operating Unit	The provision of services to undertake Environmental Control Officer roles and responsibilities at Pitso/Malatji Substation and Powerline within the Limpopo Operating Unit – 2017.	Monica Mokgawa (Environmental Manager Acting)	E-mail: monica.mokgawa@eskom.co.za Tel: +27 15 230 1683 / +27 299 0035 Cell: +27 84 967 5116
Eskom Holdings SOC Ltd: Limpopo Operating Unit (Contract Number: 4600055706)	The provision of consultants to undertake Environmental Control Officer roles and responsibilities on reticulation, sub transmission power lines and other projects within the Limpopo Operating Unit on an as and when required basis over a period of 36 months – January 2015 to December 2017.	Monica Mokgawa (Environmental Manager Acting)	E-mail: monica.mokgawa@eskom.co.za Tel: +27 15 230 1683 / +27 299 0035 Cell: +27 84 967 5116
Seriti Power (Pty) Limited Khutala Colliery	Monthly Environmental Control Officer for Khutala Colliery: Block A and Portion 16 Opencast Mining Areas – 2016 to June 2021 (Monthly reporting).	Shudufhadzo Tshusa (Environmental Superintended)	Tel: +27136485543; Cell: +27 72 225 3474 E-mail: Shudufhadzo.tshusa@seritiza.com
Seriti Power (Pty) Limited Khutala Colliery	Monthly Environmental Control Officer for Khutala Colliery: Khutala Southern Access Mining	Shudufhadzo Tshusa (Environmental Superintended)	Tel: +27136485543; Cell: +27 72 225 3474 E-mail: Shudufhadzo.tshusa@seritiza.com

Company	Project	Reference Person	Contact
	Extension Project, 2015 to June 2021 (Monthly reporting).		
Seriti Power (Pty) Limited Klipspruit Extension Weltevreden Project	Monthly Environmental Control Officer for Klipspruit Extension Weltevreden Project (In Progress from March 2017 to June 2021 (Monthly reporting).	Nosipho Mosito (Specialist Environment)	Tel: +27 13 689 3196; Fax: +27 86 718 2070; Cell: +27 82 349 5665 E-mail: Nosipho.mosito1@south32.net
Eskom Holdings SOC Ltd: Limpopo Operating Unit	The provision of services to undertake Environmental Control Officer roles and responsibilities at Bochum Customer Network Centre within the Limpopo Operating Unit – 2017/2018	Monica Mokgawa (Environmental Manager Acting)	E-mail: monica.mokgawa@eskom.co.za Tel: +27 15 230 1683 / +27 299 0035 Cell: +27 84 967 5116
Anglo American Inyosi Coal (Pty) Ltd (AAIC) Zibulo Colliery	The provision of services to undertake Environmental Control Officer roles and responsibilities for Underground Ventilation Shaft Construction Works 2017/2018	Melchior Joseph (Environmental Coordinator)	Tel: +27 13 643 4455 Cell: +27 83 292 1984 E-mail: melchior.joseph@thungela.com
Eskom Holdings SOC Ltd: Mpumalanga Operating Unit	The provision of services to undertake Environmental Control Officer roles and responsibilities at Hillside Substation within the Mpumalanga Operating Unit – 2018/2019	Palesa Kuaho (Environmental Officer)	E-mail: KuahoP@eskom.co.za Tel: +27 13 693 3146 Cell: +27 72 623 5379
Eskom Holdings SOC Ltd	The provision of services to undertake Environmental Control Officer roles and responsibilities for the Kusile-Lulamisa Transmission Powerline for a period of 24 months – 2020/2022 (Current until October 2022)	Lené Grobbelaar (Senior Environmental Advisor: Power Delivery Projects: Northern Grid Group Capital)	E-mail: LegranL@eskom.co.za Tel: +27 11 800 4896 Cell: +27 82 227 2892

Company	Project	Reference Person	Contact
Pilanesburg Platinum Mines (Pty) Ltd (Sedibelo Platinum Mine)	The provision of services to undertake Environmental Control Officer roles and responsibilities for Sedibelo Platinum Mine from August 2022 to current	Peter Lentsoane (Environmental Manager)	E-mail: plentsone@sedibeloplatinum.com Tel: +27 14 555 1800 Cell: +27 82 319 0247
Lizwelakhe Klipspruit 136 HT Mining Permit	The provision of services to undertake Environmental Control Officer roles and responsibilities for Lizwelakhe Klipspruit 136 HT Mining Permit for a period of 6 months – July 2022 to December 2022.	Dirk Syffert (Chief Executive Officer)	E-mail: Lizwelakhe.dirk@gmail.com Cell: +27 76 394 9907
Eskom Holdings SOC Ltd	The provision of services to undertake Environmental Control Officer roles and responsibilities for Zonnebloem Substation within Mpumalanga Operating Unit – 2023 (Current)	Lerato Mathibela	E-mail: mathibal@eskom.co.za Cell: +27 76 339 0613
Auditing of authorisations, approvals, and licences			
Koornfontein Mines	Conducting of compliance assessment for Koornfontein Mines on behalf of Jaco – K Consulting: Environmental Management Programme Performance Assessment – Completed	Jaco Kleynhans (Jaco – K Consulting) Kubashni Mari (Koornfontein Mines)	082 417 6901/013 243 7110 jaco.kleynhans@telkomsa.net or jaco.kleynhans@jacokconsulting.co.za Cell: +27 82 929 9585 Kubashni.Mari@optimumcoal.com
Shanduka Coal – Middelkraal Colliery	Conducting of compliance assessment for Middelkraal Colliery on behalf of Jaco – K Consulting: Environmental Management Programme Performance Assessment – Completed	Jaco Kleynhans (Jaco – K Consulting) Sunil Mungaroo (Shanduka Coal)	Cell: +27 82 417 6901 Tel: +27 13 243 7110 jaco.kleynhans@telkomsa.net or jaco.kleynhans@jacokconsulting.co.za Cell: +27 79 495 4930 Sunil.Mungaroo@Shandukacoal.com

Company	Project	Reference Person	Contact
Vlakfontein Mine (AEMFC)	Pollution control dam inspection for Vlakfontein Mine – Completed	Sonia Chipu	Cell: +27 76 413 0920 soniac@aemfc.co.za
Shanduka Coal – Brakfontein/Nowersco Colliery	Updating of an Integrated Water and Waste Management Plan and compilation of Environmental Management Programme Performance Assessment for Brakfontein/Norwesco Colliery – Completed	Jaco Kleynhans (Jaco – K Consulting) Sunil Mungaroo (Shanduka Coal)	Cell: +27 82 417 6901 Tel: +27 13 243 7110 jaco.kleynhans@telkomsa.net or jaco.kleynhans@jacokconsulting.co.za Cell: +27 79 495 4930 Sunil.Mungaroo@Shandukacoal.com
Koornfontein Mines	Conducting of compliance assessment for Koornfontein Mines on behalf of Jaco – K Consulting: Environmental Management Programme Performance Assessment – Completed in 2013	Jaco Kleynhans (Jaco – K Consulting) Kubashni Mari (Koornfontein Mines)	Cell: +27 82 417 6901 Tel: +27 13 243 7110 jaco.kleynhans@telkomsa.net or jaco.kleynhans@jacokconsulting.co.za 082 9299585 Kubashni.Mari@optimumcoal.com
Anglo American Thermal Coal: Kleinkopje Colliery	Conducting of EMPR compliance assessment for Kleinkopje Colliery: Environmental Management Programme Performance Assessment – Completed in 2014	Dolly Mthethwa	Tel: +27 13 693 0256 Cell: +27 83 434 9267 / dolly.mthethwa@thungela.com
Shanduka Coal and Umcebo Operations: Brakfontein (Norwesco) Environmental Authorisation Audit including EMP PA	Conduct and compile Environmental Authorisation Audit and Environmental Management Programme Performance Assessment – Completed in 2016	Kubashni Mari (Environmental Manager)	Tel: +27 13 244 8125; Cell: +27 82 929 9585 Kubashni.Mari@shandukacoal.com
Glencore – Optimum Coal Holdings	Conducting and compilation of a water use licence audit for Klipbank Section at Optimum Colliery – Completed in 2015.	Mbali Mbhele	Tel: +27 13 296 5008 Cell: +27 82 319 0259 Fax: 086 580 6103 E-mail: Mbali.Mbhele@optimumcoal.com

Company	Project	Reference Person	Contact
Seriti Power (Pty) Limited Khutala Colliery	Conducting and compilation of a water use licence audit for KSA mining extension project at Khutala Colliery – Completed in 2016.	Shudufhadzo Tshusa (Environmental Superintended)	Tel: +27 13 648 5543 Cell: +27 72 225 3474 E-mail:Shudufhadzo.tshusa@seritiza.com
Kangra Coal (Pty) Ltd on behalf of Jaco – K Consulting	Revision and updating of Maquasa Operation Integrated Water and Waste Management Plan (IWWMP) – Completed in 2016	Jaco Kleynhans (Jaco – K Consulting) Cornelius Kgope (Technical Control Manager)	Cell: +27 82 417 6901 jaco.kleynhans@telkomsa.net or jaco.kleynhans@jacokconsulting.co.za Tel: +27 17 730 6249 Cell: +27 76 423 1752 E-mail: cornelius@kangracoal.co.za
Seriti Power (Pty) Limited: Khutala Colliery	Revision and updating of Khutala Colliery Integrated Water and Waste Management Plan (IWWMP) – Completed in 2016	Shudufhadzo Tshusa (Specialist Environment)	Tel: +27 13 648 5543 Cell: +27 72 225 3474 E-mail: Shudufhadzo.tshusa@seritiza.com
Seriti Power (Pty) Limited: Klipspruit Colliery	Undertaking and compilation of WUL Audits for Klipspruit Colliery – Completed in 2017/2018 period	Nosipho Mosito (Specialist Environment)	Tel: +27 13 689 3196 Fax: +27 86 718 2070 Cell: +27 82 349 5665 E-mail: Nosipho.mosito1@south32.net
Seriti Power (Pty) Limited: Klipspruit Extension (KPSX) Weltevreden	Undertaking and compilation of WUL Audits for KPSX Weltevreden – Completed in 2017, 2018, 2019 and 2020	Nosipho Mosito (Specialist Environment)	Tel: +27 13 689 3196 Fax: +27 86 718 2070; Cell: +27 82 349 5665 E-mail: Nosipho.mosito1@south32.net
Seriti Power (Pty) Limited: Klipspruit Extension South	Undertaking and compilation of WUL Audits for KPSX South – Completed in 2018, 2019 and 2020	Nosipho Mosito (Specialist Environment)	Tel: +27 13 689 3196; Fax: +27 86 718 2070; Cell: +27 82 349 5665 E-mail: Nosipho.mosito1@south32.net
Seriti Power (Pty) Limited: Khutala Colliery	Undertaking and compilation of Environmental Authorisation Audits – Completed in 2017, 2018, 2019 and 2020	Shudufhadzo Tshusa (Specialist Environment) /Shudufhadzo Tshusa (Specialist Environment)	Tel: +27136485543; Cell: +27 72 225 3474 E-mail: Shudufhadzo.tshusa@seritiza.com
Seriti Power (Pty) Limited: Khutala Colliery	Undertaking and compilation of Water Use Licences Audits – Completed in 2019, 2020 and 2021	Shudufhadzo Tshusa (Specialist Environment) /Shudufhadzo Tshusa (Specialist Environment)	Tel: +27136485543 Cell: +27 72 225 3474 E-mail: Shudufhadzo.tshusa@seritiza.com

Company	Project	Reference Person	Contact
Anglo American Inyosi Coal (Pty) Ltd (AAIC) Kriel Colliery	Revision and updating of Kriel Colliery Integrated Water and Waste Management Plan (IWWMP) – Completed in 2016	Maphuti Boloka (Environmental Coordinator)	Tel: +27 17 617 1157 Cell: +27 82 889 4214 Fax: +27 17 648 3910 E-mail: maphuti.boloka@angloamerican.com
Forzando Coal Mines	Undertaking and compilation of Environmental Authorisation Audits	Rebone Motipa (Environmental Practitioner)	Cell: +27 83 776 0438/ +27 69 586 0368 Rebone.Modipa@overlooked.co.za
Review of documentations			
Eskom Holdings Limited – Primary Energy Department	Conducting of life of mine review New Vaal and New Denmark Collieries for Eskom Holdings Limited as part of the Amatala Mining Services Consortium – Completed in 2012	Irene Setshedi (Eskom) Peter Makgato (Amatala Mining Services cc)	Cell: +27 82 295 2963 SetsheIG@eskom.co.za Cell: +27 79 713 0821 peter@amatala.co.za

2. LOCATION OF THE OVERALL ACTIVITY

2.1. Description of the property to which the authorisations are being applied

The table below provides details on the properties that fall within the Prospecting Right area.

Table 2: Location of activity

Farm Name:	Portion of Portion 2 of the farm Rustplaats 165 HU
Application Area (Ha):	5 Ha.
Magisterial District:	The proposed project is situated within Magisterial District of Vryheid in Abaqulisi Local within the Zululand District in KwaZulu Natal Province, South Africa.
Distance and direction from nearest town	The proposed area (farm) is located at the approximately 20 km of North West of Vryheid town, respectively, within the Zululand Administrative District Municipality.
21-digit Surveyor General Code for each farm portion	**PORTION OF PORTION 2 OF THE FARM RUSTPLAATS 165 HU:** **K0HU000000000038000002**

2.2. Locality Map

*(Show nearest town, scale not smaller than 1: 250 000 as **Appendix 2**)*

Locality map	The nearest town to the proposed development site is Vryheid which situated approximately 20km east of Vryheid town, at Magisterial District of Vryheid in the Abaqulisi Local Municipality within the Zululand District Municipality, KwaZulu Natal Province, South Africa. **Figure 1** and **Figure 2** for the proposed project's locality maps.

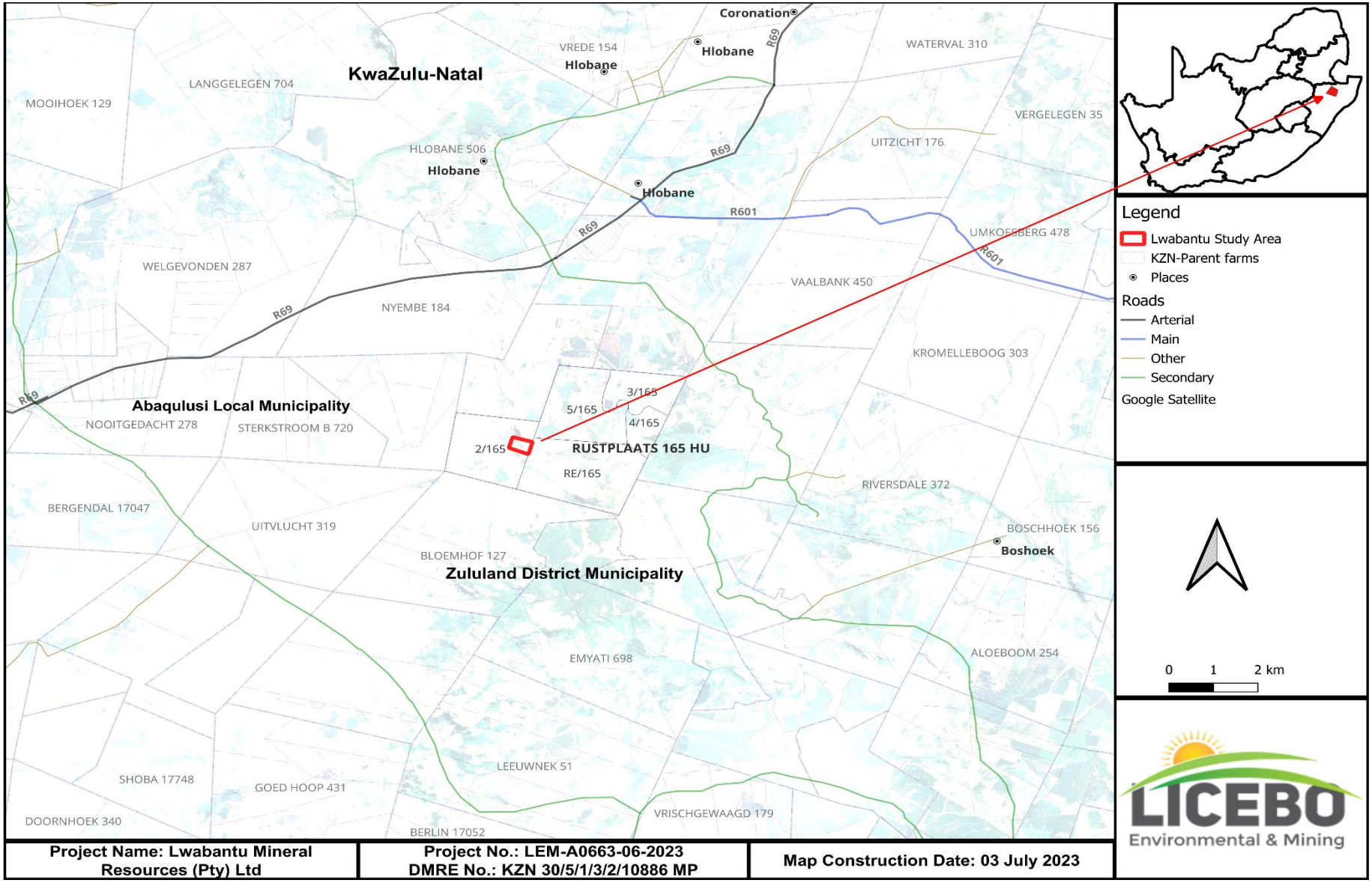


Figure 1: Locality map of the proposed project area.

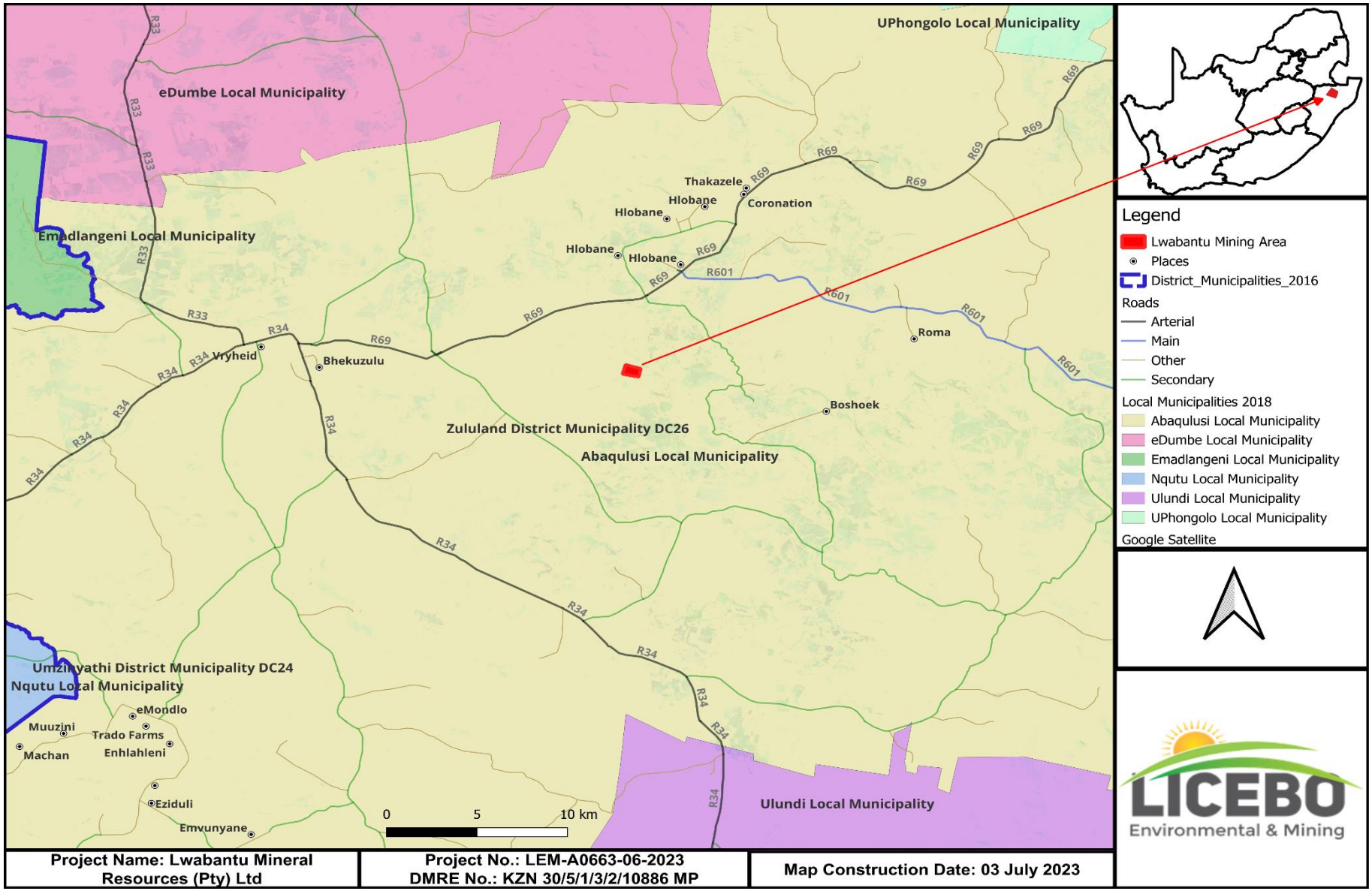


Figure 2: Regional map of the proposed application project area.

Table 3: Landowners and surface rights ownership

Farm	Farm Portion	Surface Rights Owner	Tittle Deeds	Registration Date	SG Code	Extent (Ha)
Rustplaats 165 HU	Re2	PIENAAR JOHANNES THEODORUS	T24427/2019	2019/08/20	N0HU00000000016500002	321,3358
Total Extent (Ha)	**321,3358 Ha**					

Table 4: Adjacent landowners and surface rights ownerships

Farm Name	Portion	Surface Rights Owner	Title Deed	Extent
Beta 844 Ht	0	Duiker Mining Pty Ltd	T9745/992	645.835SQM
Rietvlei 150 Hu	35	Emhlangeni Communal Property Association	T12099/2019	
Langkrans 833 Hu	0	Mnyathi Community Trust-Trustees	T9085/990	247,7395HA
Langkrans 367 HU	2	Mnyathi Community Trust-Trustees	T25918/2008	
Uitvlucht 319 HT	1	CELE SHAKA	T15056/2023	
Vaalkrantz 306 Hu	9	Mnyathi Community Trust-Trustees	T17253/2008	
	10	Eskom Finance Co Pty Ltd	T9125/1987	
Sterkstroom A	1	Hlahlindlela Community Trusttrustees	T27669/2004	
	4	Hlahlindlela Community Trusttrustees	T27669/2004	
Bloemhof 127 HT	5	Bloemhof Communal Property Association	T24975/2015	

3. DESCRIPTION OF THE SCOPE OF THE PROPOSED OVERALL ACTIVITY

The provisional layout plan is illustrated in **Figure 1**. The project activities as well as the aerial extents of the activities are provided in **Table 5**. The table also provides an indication of those activities listed in terms of the EIA Regulations, 2014 and the List of Waste Management Activities listed in terms of the NEWM: WA, refer to **Table 5** below.

3.1. Listed and specific activities

With reference to the proposed prospecting, the following listed activities in terms of NEMA EIA Regulation 2014 Government Notice (GN R) 982 will be triggered. The listed activities triggered are mainly associated with the area that will be cleared for the development of the project related infrastructure.

Table 5: Listed and specific activities applied as part of this project.

NAME OF ACTIVITY **(E.g. For prospecting -** drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route, **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.)	**Aerial extent of the Activity** **Ha or m²**	**LISTED ACTIVITY** (**Mark with an X where applicable or affected).**	**APPLICABLE LISTING NOTICE** ***(GNR 983, GNR 984 or GNR 985)***	**WASTE MANAGEMENT AUTHORISATION** (Indicate whether an authorisation is required in terms of the Waste Management Act). (Mark with an X)
The developments of – (i) Dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; or (ii) Infrastructure or structures with a physical footprint of 100 square metres or more; Where such development occurs – Within a watercourse; or (c) If no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse. **Activities associated with the development and construction of the Mining Permit and associated infrastructure in proximity to watercourses.**	Approximately 500 m²	Activity Number 12	GNR 983, as amended by GNR 327 – Listing Notice 1.	GNR 633 on 24 July 2015. Activity 15: The establishment or reclamation of a residue stockpile or residue deposit resulting from activities which require a mining permit, in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).
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 contained in this Listing Notice or	Approximately 5 ha	Activity Number 21	GNR 983, as amended by GNR 327 – Listing Notice 1.	Not Applicable

NAME OF ACTIVITY **(E.g. For prospecting -** drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route, **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.)	**Aerial extent of the Activity** **Ha or m²**	**LISTED ACTIVITY** (**Mark with an X where applicable or affected).**	**APPLICABLE LISTING NOTICE** ***(GNR 983, GNR 984 or GNR 985)***	**WASTE MANAGEMENT AUTHORISATION** (Indicate whether an authorisation is required in terms of the Waste Management Act). (Mark with an X)
in Listing Notice 3 of 2014, required to exercise the mining permit. **Activities associated with the development and construction of the Mining Permit and associated infrastructure.**				
The development of a road– (ii) with a reserve wider than 13.5 metres, or where no reserve exists where the road is wider than 8 metres. **Activities associated with the development, construction and operation of the Mining Permit hauling and access roads.**	Approximately 300m²	Activity Number 24	GNR 983, as amended by GNR 327 – Listing Notice 1.	Not Applicable
The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for – (i) The undertaking of a linear activity; or (ii) Maintenance purposes undertaken in accordance with a maintenance management plan. **Activities associated with the development and construction of the Mining Permit and associated infrastructure within the proposed study area of 5 Ha.**	Approximately 5 Ha	Activity Number 27	GNR 983, as amended by GNR 327 – Listing Notice 1.	Not applicable
Residential, mixed, retail, commercial, industrial, or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development: (ii) Will occur outside an urban area, where the total land to be developed is bigger than 1 hectare;		Activity Number 28	GNR 983, as amended by GNR 327 – Listing Notice 1.	Not applicable

Environmental authorisation for the above-mentioned listed activities will be applied for through the undertaking of a Basic Assessment (BA) Process as stipulated in Chapter 4, Regulation 19 of NEMA EIA Regulation 2014 as amended.

3.2. Project activities and phase description

This section provides a preliminary description of activities that are part of the Rustplaats Mining Permit Area. Each activity can be linked to the mining processes, waste management and any other associated activities. These activities act as driving forces that exert pressure on the natural environment, ultimately resulting in impacts on the biophysical, social and cultural environments.

Lwabantu is planning to mine on the proposed mining permit areas as opencast operation. Infrastructure will be constructed as part of the proposed mining, infrastructure such as mobile offices, clean water storage dams will be constructed as part of the proposed mining development. Activities that will be undertaken as part of the proposed Rustplaats mining area are listed in **Table 6** below:

Table 6:Planned activities of the proposed Rustplaats mining area.

Activity	**Description**
Construction Phase	
Activity 1:	Recruitment, procurement and employment
Activity 2:	Transport of construction material
Activity 3:	Storage of fuel, lubricant and explosives
Activity 4:	Site clearing and topsoil removal
Activity 5:	Construction of surface infrastructure
Activity 6:	Establishment of initial box-cut and access ramps
Activity 7:	Temporary waste and sewage handling and treatment
Operational phase	
Activity 8:	Employment
Activity 9:	Workshop activity and storage of fuel, lubricant and explosives
Activity 10:	Topsoil and overburden removal and stockpiling
Activity 11:	Drilling and soft-blasting of hard overburden
Activity 12:	Ore removal, loading and stockpiling
Activity 13:	Vehicular activity on haul roads and conveying of ore
Activity 14:	Water use around site
Activity 15:	Screening and washing

Activity	Description
Activity 16:	Discard dumps
Activity 17:	Pollution control dams
Activity 18:	Waste and sewage generation and disposal
Activity 19:	Concurrent replacement of overburden and topsoil and revegetation
Decommissioning phase	
Activity 20:	Retrenchment
Activity 21:	Demolition of infrastructure no longer required
Activity 22:	Final replacement of overburden and topsoil and revegetation
Activity 23:	Waste and sewage handling
Post-closure phase	
Activity 24:	Post-closure monitoring and rehabilitation

3.2.1. Construction phase

The construction phase consists of activities to be performed in preparation of mining and associated infrastructure associated with the proposed Rustplaats mining area and rehabilitation, as well as the construction of supporting infrastructure. The following activities are part of the construction phase:

Activity 1: Recruitment, procurement and employment

Recruitment, employment and business opportunities relating to the construction activities will result in employment and business opportunities for local community. Any operational, decommissioning and closure phase opportunities that will be available as the mining activities progresses, preference will be given to the local communities with focus to Boshoek, Hlobane, KwaMnyathi, Vaalbank, Coronation, and Roma Thakazele including surrounding areas.

Activity 2: Transport of construction material

Large trucks to be used to transport construction material to the construction site via national, provincial and local roads. The existing roads will be used to transport and bring any additional construction and development equipment and machinery onsite.

Activity 3: Storage of fuel, lubricant and explosives

Construction equipment utilise large amounts of fuel and lubricants. In addition, explosives are used for excavation of box-cuts. Diesel and lubrication facilities will be stored of side and will only be transported when needed at the mine. These substances are classified as hazardous in terms of the Hazardous Substances Act 15 of 1973. Explosives to be used at the opencast area to be brought on site by explosives and blasting contractor, therefore there are no explosives materials and substances that are stored within the mining premises.

Activity 4: Site clearance and topsoil removal

Vegetation is cleared from construction areas prior to the commencement of physical construction activities. Topsoil to be removed from construction areas using excavators and dump trucks, prior to the commencement of physical construction activities.

The activities that will be undertaken at this pit will involve the removal of the overburden material from the area to be placed on areas where mining will be undertaken as part of life of mine. Once areas mined out areas are available for rehabilitation, rehabilitation will be undertaken, and material overburden stockpile materials will be stockpiled on rehabilitated area by so doing the whole 5 ha will be mined out. It should be indicated that this process will facilitate the backfilling of the mined-out areas since the overburden material will be placed closure to the pit area and will be used as rehabilitation backfilling material.

Activity 5: Construction of surface infrastructure

Earthmoving activities include the material to be used for road construction material, the establishment of box-cuts, cut-and-fill activities and the levelling of surface areas for infrastructure construction.

Surface infrastructure includes office buildings, haul roads, pollution control dams, weighbridge, and clean water storage dam will be constructed.

Activity 6: Establishment of initial box-cut and access ramps

Establishment of initial box-cuts and access ramps to opencast strip areas will be done. Overburden material that will be generated from this box-cut will be stored on areas that will be mined as part of the LoM and once areas available for rehabilitation backfilling will be undertaken and overburden material generated as mining continues will be stockpiled on rehabilitated areas.

Topsoil that will be stripped will be stockpiled separately along the borders of the pit and some also to be used as part of direct placement during concurrent rehabilitation activities.

Activity 7: Temporary waste and sewage handling and treatment

Chemical toilet facilities will be used during the construction, operational and decommissioning phase of the Rustplaats mining activity.

3.2.2. Operational phase

The operational phase is the commencement of mining activities associated with the proposed Rustplaat Mine. All related mining activities, including solid waste management, as well as concurrent rehabilitation forms part of this phase. The following activities are part of the operational phase:

Activity 8: Employment

Recruitment, employment and business opportunities relating to the operational activities will give preference to local communities.

Activity 9: Workshop activity and storage of fuel, lubricant and explosives

Trucks and mineral ore hauling trucks to be used to transport material to the mine via national, provincial and local roads. The existing roads will be used to transport equipment and machinery onsite that might be required as part of the operational phase.

Construction equipment utilise large amounts of fuel and lubricants. In addition, explosives will be used for excavation of box-cuts. Diesel and lubrication facilities will be transported to the mine when required no diesel storage facilities will be constructed as part of the Rustplaats mining activities. These substances are classified as hazardous in terms of the Hazardous Substances Act 15 of 1973. Explosives used at the opencast are brought on site by the explosives and blasting contractor, therefore there are no explosives materials and substances that are stored within the mining premises

Activity 10: Topsoil and overburden removal and stockpiling

Topsoil will be removed from opencast areas using excavators and dump trucks, prior to the commencement of strip mining at that location. The topsoil will be stored on topsoil stockpiles located near the opencast areas, for use during rehabilitation. Following the removal of topsoil from opencast areas, soft overburden is excavated and stored on overburden stockpiles. Once mining of an opencast strip is completed, the soft overburden will be replaced.

Topsoil that will be stripped at the Rustplaat mining area will be stockpiled separately along the borders of the pit and some also used as part of direct placement during concurrent rehabilitation activities.

Activity 11: Drilling and blasting of hard overburden

Hard overburden consists of solid rock which is not easily excavated. This requires drilling and blasting to break up the rock for easy removal by excavators and dump trucks. Blasting activities will be undertaken using a blasting contractor

Activity 12: Coal removal and stockpiling

Once the ore is exposed by opencast strip mining, will be removed with shovels and transported with trucks to the Processing plant area for further crushing, screening, washing and beneficiation.

Activity 13: Vehicular activity on haul roads and conveying of coal

Mining equipment will utilise haul roads to access opencast areas, plants and waste management facilities, or to transport the ore from the mining areas to the plants.

Activity 14: Water use around site

No plant will be constructed as part of this process; coal processing will be undertaken at a local plan. Agreement between Thembani and local coal processing plant will be undertaken in due time. Water will be required for dust suppression, as well as for domestic use. The water that will be stored at the existing PCD will be used for dust suppression.

Activity 15: Screening and washing

Screening involves the separation of the crushed run-of-mine ore fragments into coarse and fine particles, as well as the removal of coarse waste rock particles. The ore is then washed to remove further impurities.

Activity 16: Discard dumps

Ore to be mined at Rustplaats will be transported to the processing plant, slurry dam and/or discard dump is planned as part of the proposed opencast mining.

Activity 17: Pollution control dams

Water that comes into contact with shale contaminated material in the opencast mining areas, overburden stockpiles, and any dirty water generating areas will be separated from clean water. The polluted water that will be generated including in pit dewatering as part of the proposed mining activities will be diverted or discharged or pumped to the existing pollution control dams for containment.

Dirty runoff generated from the runoff from the live stockpile area, will be contained in a stormwater attenuation dam. Water generated during the opencast mining will initially be pumped to the pollution control dam, from where the water is pumped to a dust suppression dam.

Activity 18: Waste and sewage generation and disposal

Large quantities of domestic, industrial and hazardous waste will be produced during the mining activities. This includes waste cans, plastics, used tyres or oil, all of which must be disposed of in an appropriate manner.

A waste management plan will be developed by licensed waste management contractor in order to managed waste. The following water will be generated:

Hazardous Waste

Hazardous waste that cannot be re-used or recycled are disposed of to a permitted hazardous waste facility through a contracted waste company. Hazardous waste is will be disposed of at a licensed hazardous waste facility. Recyclable oil is removed by oil recycling company.

Industrial Waste

Industrial waste is removed by an approved contractor and disposed of or recycled at a licensed waste disposal site.

Domestic waste

General Waste is stored on site on designated waste bins and skips. This waste is then collected and removed for disposal at a licensed General Waste Landfill Site by a designated Abaqulisi Local Municipality waste service provider.
Sewage generated at the opencast operation discharges will be collected by a licenced contractor and disposed at municipal sewage plant.

Activity 19: Concurrent replacement of overburden and topsoil and revegetation

Once mining of an opencast strip is completed, the strip is filled with overburden and compacted. This is followed by the replacement of stockpiled topsoil for the purpose of revegetation. Following the filling of opencast strips and replacement of topsoil, the disturbed area is revegetated. This is done on a continuous basis throughout the operational phase.

Vegetation is cleared from construction areas prior to the commencement of physical construction activities. Topsoil will be removed from construction areas using excavators and dump trucks, prior to the commencement of physical construction activities.

3.2.3. Decommissioning phase

The decommissioning phase involves the cessation of mining and ore beneficiation activities. During this phase, all disturbed areas are rehabilitated. The following activities are defined as part of the decommissioning phase:

Activity 20: Retrenchment

The cessation of mining and ore beneficiation activities result in retrenchment of staff. Only staff involved in the demolition of infrastructure or rehabilitation remains.

Activity 21: Demolition of infrastructure

Infrastructure that cannot be used after decommissioning is demolished and removed. This includes the beneficiation plants, pollution control dams and mine infrastructure such as the workshops, offices, weighbridge, and water storage dam. Ore residue removed from these facilities will be disposed of at the floor of the pit, but contaminated hazardous waste material will be disposed of as hazardous waste into a hazardous landfill site. Uncontaminated building rubble will be disposed of as general waste at a general landfill site.

Activity 22: Final replacement of overburden and topsoil and revegetation

Once mining of the final opencast strip has been completed, the void and the open-pit will be filled with overburden, levelled and topsoil replaced. Areas disturbed by surface infrastructure and opencast strip mining will be top soiled and vegetated. These areas (opencast and infrastructure areas) will be made to be free draining at closure.

As part of the decommissioning and closure phase, the mine will undertake the rehabilitation activities whereby the mined-out areas will be reinstated in line with the proposed rehabilitation strategy.

Activity 23: Waste and sewage handling

Large quantities of waste, including scrap metal and used oil, will be produced during the demolition of mining infrastructure and the operation of the mining activities.

Ore residue removed from these waste facilities will be disposed of at the floor of the pit, but contaminated hazardous waste material will be disposed of as hazardous waste into a hazardous landfill site. Uncontaminated building rubble will be disposed of as general waste at a general landfill site. Scrap metals will be removed and recycled as part of the scrap material by a reputable waste contractor.

3.2.4. Post-closure phase

The post-closure phase is the final phase and continues long after mining and decommissioning activities have ceased.

Activity 24: Post-closure monitoring and rehabilitation

Environmental monitoring will be done post-closure in order to determine the level of success of rehabilitation, as well as to identify any additional measures that have to be undertaken to ensure that the mining area is restored to an adequate state. This includes monitoring of the groundwater seepage plume, soil fertility and erosion scars, natural vegetation and alien invasive species, as well as dust generation from the site.

4. DESCRIPTION OF THE ACTIVITIES TO BE UNDERTAKEN

(*Description methodology of technology to be employed, and for a linear activity, a description of the route of the activity*)

Background Information for the proposed mining permit areas

Licebo Environmental and Mining (Pty) Ltd (Hereafter referred as 'LEM') has been appointed by Lwabantu (Pty) Ltd (herein referred as 'Lwabantu') as the Environmental Assessment Practitioner (EAP) to undertake the required Environmental Authorisation process for the proposed prospecting right application situated at the Magisterial District of Vryheid in Abaqulisi Local Municipality within the Zululand District Municipality, KwaZulu Natal Province. The proposed project area is located approximately 20 km North West of Vryheid town.

As the Environmental Assessment Practitioner to conduct an environmental regulatory process, this application process will be undertaken in terms of the EIA Regulations 2014, as amended, specifically GNR 983 as amended by GNR 327 Listing Notice 1 in respect to the following listed activities: 20 and 24 which will involve the compilation of a Basic Assessment Report (BAR) and Environmental Management Programme (EMPr). An acceptance letter for the prospecting right application (reference: KZN 30/5/1/1/2/1/10886 MP) was issued by Department of Mineral Resources and Energy (DMRE) requesting Lwabantu to undertake consultation with Interested and Affected Parties and Environmental Authorisation Application involving the compilation of the Basic Assessment Report (BAR) and Environmental Management Programme (EMPr) process as promulgated under the National Environmental Management Act, 1998 (Act No. 107 of 1998) as amended (NEMA) and applicable regulations associated with the mining right project on Portion of Portion 2 of the Farm Rustplaats 38 HU and submit the consultation results and the required Basic Assessment Report and Environmental Management Programme (BAR & EMPr) to the KwaZulu Natal Region DMRE as required.

Lwabantu lodged application for mining permit on the online SAMRAD system governed by Department of Mineral Resources and Energy (DMRE). The application was lodged and accepted on the 14th of June 2023 under DMRE reference number: KZN 30/5/1/1/2/1/10886 MP. The application was accepted in terms of the National Environmental Management Act (Act 107 of 1998) as amended and the Environmental Impact Assessment (EIA) Regulations 2014 as amended (Government Notice Regulation 982 as amended). Lwabantu intends to undertake mining activities for byrites, copper ore, feldspar, gold ore, graphite, heavy minerals (generals), lead, nickel ore, platinum group metals, rare earths and silver ore on Portion of Portion 2 of the farm Rustplaats 165 HU on above-mentioned farm. The proposed mining permit study area covers the extent of approximately 5 hectares (Ha).

The proposed development requires Lwabantu to obtain the following authorisations / licences prior to operation commencing:

- Environmental Authorization in terms of the National Environmental Management Act (Act No 107 of 1998) (NEMA) and Mineral and Petroleum Resources Development Act, (Act 28 of 2002) as amended; and
- Waste License in terms of the National Environmental: Waste Act (Act 39 of 2008).

4.1. Mining area

The proposed total mining areas to be mined is 5 hectares, refer to **Figure 1** and **Figure 2** showing the farm Portions to be impacted by proposed mining activities.

4.2. Ore processing

The mineral ore processing will be undertaken as part of the mining activities will be processed at the nearest processing plant.

4.3. Supporting mining activities and associated infrastructure

The proposed Rustplaats is situated on the cultivation fields, no infrastructure was observed on site. New infrastructure will be constructed as part of the Rustplaats mining activity. Infrastructure to be constructed includes;

- Parking area (office and visitors).
- Parking area.
- Ore stockpile.
- Dust suppression filling point.
- Haul roads and ramps.
- A pollution control dams
- Clean and dirty water drains.
- Topsoil stockpiles.
- Overburden and softs dumps.

4.4. Proposed mining operational plan

The reserves at the property will be mined as an opencast operation, no processing plant will be constructed in the study area.

4.5. Mine infrastructure

Mine infrastructure will be constructed as part of the construction phase of the proposed Rustplaats, this infrastructure includes offices, haul roads, access roads, mineral ore stockpiles, overburden and mid-burden dumps, topsoil stockpiles, pollution control dams, water management canals, diesel and lubrication storage tanks and security access control.

4.6. Roads, railway lines, powerlines

The R69 and R601 road runs on the north-western side of the proposed Rustplaats Mining area. Haul road will be constructed to gain access from the R601 to the mine. No railway lines and powerlines has been identified nearby the proposed application study area.

4.7. Housing, recreation and other employee facilities

No housing or recreational facilities will be constructed on the proposed site.

5. POLICY AND LEGISLATIVE CONTEXT

Table 7: Applicable policies, guidelines, and legal requirements for this project

-Applicable legislation and guidelines used to compile the report *(A description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are appliable to this activity and are to be considered in the assessment process)*				**How does this development comply with and respond to the legislation and policy context** *(E.g., In terms of the National Water Act a Water Use Licence has/has not been applied for)*	**Reference where applied**
	Legislation	**Regulations / Guidelines**	**Description / Requirement**	**Project Implication**	
EIA Process and Listed Activities	**Mineral and Petroleum Resources Development Act (Act No. 28 of 2002) (MRPDA)**	Section 2 of NEMA	Sets out the principles of environmental management	Section 2 principles are to be considered during the environmental impact assessment process	Whole document
		Chapter 5 of NEMA	Integrated environmental management, provides information on environmental management tools that promote the implementation of principles set out in Section 2 of NEMA	Environmental management tools are to be considered during the EIA process for the project.	Whole document

-Applicable legislation and guidelines used to compile the report *(A description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are appliable to this activity and are to be considered in the assessment process)*				**How does this development comply with and respond to the legislation and policy context** *(E.g., In terms of the National Water Act a Water Use Licence has/has not been applied for)*	**Reference where applied**
	Legislation	**Regulations / Guidelines**	**Description / Requirement**	**Project Implication**	
		Government Notice Regulation (GNR) 982 as amended by GNR 326 of 2017.	Chapter 2: Timeframes Chapter 3: General requirements for applications Chapter 4: Application for environmental authorisation Part 1 and 2) Chapter 6: Public participation process Chapter 7: General matters	Basic Assessment must be undertaken in accordance to Regulation 983.	Whole document
		GNR 983 as amended by GNR 327 of 2017 (Listing Notice 1).	Lists activities requiring a basic environmental assessment	Environmental authorisation must be obtained prior to commencement with listed activities	Whole document and section 3.1.
		GNR 985 as amended by GNR 324 of 2017 (Listing Notice 3).	Lists activities for specific identified geographical areas.	Environmental authorisation must be obtained prior to commencement with listed activities	Whole document and section 3.1

-Applicable legislation and guidelines used to compile the report *(A description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are appliable to this activity and are to be considered in the assessment process)*				**How does this development comply with and respond to the legislation and policy context** *(E.g., In terms of the National Water Act a Water Use Licence has/has not been applied for)*	**Reference where applied**
	Legislation	**Regulations / Guidelines**	**Description / Requirement**	**Project Implication**	
		Guideline 4 and Guideline Series 7	Public Participation in support of the EIA regulations Public Participation Guideline	The public participation process to be followed.	Section 8 and Appendix 4 Public Participation Report
		Guideline 5	Assessment of Alternatives and Impacts	The EIA process to be followed	Section 8
Mining	**Minerals and Petroleum Resources Development Act, Act 28 of 2002 as amended**	GNR 527	Pollution Control and Waste Management Regulation	The following impacts are included in the BAR: Prospecting drilling associated impacts; Surface and groundwater impacts; Socio-economic impacts; Waste management; and Soil.	Section 8 and the EMPr
Biodiversity	**National Environmental Management: Biodiversity Act, Act 10 of 2004 as amended**	Regulation 151 Publication of critically endangered, vulnerable and protected species	No person may carry out a restricted activity involving a specimen of a listed threatened or protected species without a permit.	A permit might be required prior to removal of endangered, vulnerable and protected species that might be identified and impacted within the study area.	Section 18 and the EMPr.

-Applicable legislation and guidelines used to compile the report *(A description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are appliable to this activity and are to be considered in the assessment process)*				**How does this development comply with and respond to the legislation and policy context** *(E.g., In terms of the National Water Act a Water Use Licence has/has not been applied for)*	**Reference where applied**
	Legislation	**Regulations / Guidelines**	**Description / Requirement**	**Project Implication**	
	National Environmental Management: Protected Areas Act, Act 57 of 2003 as amended	Applicability to the whole Act.	In respect to the declaration of protected areas and management thereof.	Presence of protected and privately owned nature and conservations reserves / areas.	Section 18 and the EMPr.
	National Forests Act, Act 84 of 1998	Notice 835 List of Protected tree species under the Act	No person may carry out a restricted activity on any protected tree except if there is a licence granted by the minister.	A licence might be obtained prior to removing any protected trees on site.	Section 18 and the EMPr.
	Northern Cape Nature Conservation Act, 2009 Act 9 of 2009 as amended	NEMBA variuos applicable sections	Any person may carry out a restricted activity involving a specimen of an exempted species without a permit or license mentioned in section 24(1)	A permit will be required for the removal of protected plants that may be cleared as a result of the extension project.	Section 18 and the EMPr.

-Applicable legislation and guidelines used to compile the report *(A description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are appliable to this activity and are to be considered in the assessment process)*				**How does this development comply with and respond to the legislation and policy context** *(E.g., In terms of the National Water Act a Water Use Licence has/has not been applied for)*	**Reference where applied**
	Legislation	**Regulations / Guidelines**	**Description / Requirement**	**Project Implication**	
Waste Management	**National Environmental Management: Waste Act, Act 59 of 2008 as amended**	NEMWA variuos applicable sections	Waste management as part part of the project's construction and operation.	Management of waste that will be generated as part of this project to prevent environmental pollution and littering.	Section 18 and the EMPr.
Water Use	**National Water Act, 36 of 1998**	NWA variuos applicable sections	Water management as part part of the project's construction and operation.	Water management as part of this project to prevent the contamination and pollution of water resources.	Section 8.2.7
Protection of water resources	**National Water Act, 36 of 1998 GN 704**	All applicable regulation forming part of GN 704	Regulations on use of water for mining and related activities aimed at the protection of water resources	Application for the exemption from the requirements of the identified activities.	Section 8.2.7

-Applicable legislation and guidelines used to compile the report *(A description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are appliable to this activity and are to be considered in the assessment process)*				**How does this development comply with and respond to the legislation and policy context** *(E.g., In terms of the National Water Act a Water Use Licence has/has not been applied for)*	**Reference where applied**
	Legislation	**Regulations / Guidelines**	**Description / Requirement**	**Project Implication**	
Heritage Resources	**National Heritage Resources Act , Act 11 of 1999**	Section 38	Any person who intends to undertake a linear development exceeding 300m and undertaking a development exceeding 5 000m² must inform the responsible heritage resources authority.	South African Heritage Resources Agency (SAHRA) has to be notified of the proposed development.	Section 8.2.8

-Applicable legislation and guidelines used to compile the report *(A description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are appliable to this activity and are to be considered in the assessment process)*				**How does this development comply with and respond to the legislation and policy context** *(E.g., In terms of the National Water Act a Water Use Licence has/has not been applied for)*	**Reference where applied**
	Legislation	**Regulations / Guidelines**	**Description / Requirement**	**Project Implication**	
		Section 3 and other applicable sections of NHRA Act 11 of 1999 as amended.	Battlefield sites, archaeological sites, rock art sites, palaeontological sites, historic fortifications, meteorite or meteorite impact sites.	If any heritage resources of significance are exposed during the project in the South African Heritage Resources Authority (SAHRA) should be notified immediately, all development activities must be stopped, and an archaeologist accredited with the Association for Southern African Professional Archaeologist (ASAPA) should be notify in order to determine appropriate mitigation measures for the discovered finds. If any heritage resources, including graves or human remains, are encountered these must be reported to South African Heritage Resources Agency immediately.	EMPr.

-Applicable legislation and guidelines used to compile the report *(A description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are appliable to this activity and are to be considered in the assessment process)*				**How does this development comply with and respond to the legislation and policy context** *(E.g., In terms of the National Water Act a Water Use Licence has/has not been applied for)*	**Reference where applied**
	Legislation	**Regulations / Guidelines**	**Description / Requirement**	**Project Implication**	
Veld Fires	**National Veld and Forest Act 101 of 1998**	Chapter 4 Section 12	Places a duty on owners to prepare and maintain firebreaks. The procedure in this regard and the role of adjoining owners and the fire protection association are dealt with.	A firebreak must be maintained around the mine perimeter fence.	Refer to the EMPr
Land Use Management	**Conservation of Agricultural Resources Act 1983 (Act No 43 of 1983)**	Regulation 280 of 2001	Requires the landowner to manage agricultural resources i.e. the removal of invasive species, protection of soils against water and wind erosion and the management of water resources.	An alien invasive species plan must be developed for the mine and a land use and soil management plan must be developed.	Section 9.2.4 including for Fauna and Flora and the EMPr

-Applicable legislation and guidelines used to compile the report *(A description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are appliable to this activity and are to be considered in the assessment process)*				**How does this development comply with and respond to the legislation and policy context** *(E.g., In terms of the National Water Act a Water Use Licence has/has not been applied for)*	**Reference where applied**
	Legislation	**Regulations / Guidelines**	**Description / Requirement**	**Project Implication**	
	Abaqulisi Local Municipality Spatial Planning and Land Use Management By-Law NKwaZulu Natal Province (Notice 1783 of 2017)	Chapter II Development Management: Section 5: Rezoning of Land	The rezoning of land may be made applicable to a land unit or part thereof, and zoning of land need not follow the boundaries of land as registered in terms of the Deeds Registries Act.	Any other application for temporary use submitted in accordance with the By-laws of the Municipality.	Table 5

6. NEED AND DESIRABILITY OF THE PROPOSED ACTIVITY

The Broad-Based Socio-Economic Empowerment Charter for the South African Mining industry, hereafter referred to as "the Mining charter", is a government instrument designed to effect sustainable growth and meaningful transformation of the mining industry. The Mining Charter seeks to achieve the following objectives:

- To promote equitable access to the nation's mineral resources to all the people of South Africa.
- To expand opportunities substantially and meaningfully for Historically Disadvantaged South Africans (HDSA) to enter the mining and metals industry and to benefit from the exploitation of the nation's mineral resources.
- To utilise and expand the existing skills base for the empowerment of HDSA and to serve the community.
- To promote beneficiation of South Africa's mineral commodities; and
- Promote sustainable development and growth of the mining industry.

If the prospecting application is approved and the prospecting activities undertaken, this will mean that the quality and quantity of the potential available Lithium mineral will be verified and confirmed as part of the prospecting activities. The viability of mining this mineral that will be found occurring within the study area in a safe manner, environmentally friendly and economically will be known. After the proposed prospecting right application is approved and related activities completed, the applicant can then initiate the process of applying for the Mining Right only then will it meet the Mining Charter objectives. This will also result in sale of Lithium mineral to both domestic and international markets, and thus contribute to poverty reduction, poverty relief and poverty alleviation as measures for both economic and humanitarian measures intended to permanently lift people out of poverty and furthermore contribute to the country's economic development benefits. In terms of 2(1)(f) of Appendix 2 of GNR. 982 of the 2014 EIA Regulations, as amended, this section discusses the need and desirability of the project. The format contained in the Guideline on Need and Desirability (DEA&DP, 2009) has been used in (see **Table 8**).

Table 8: Need and Desirability for the Proposed Lwabantu Mining Activity

Item No.	Need and Desirability Requirement	Response
Need (Timing of the project)		
1.	Is the land use (associated with the activity being applied for) considered within the timeframe intended by the existing approved Spatial Development Framework (SDF) agreed to by the	The SDF for the ALM acknowledges and provides the need for mining as part of economic development for the municipality.

Item No.	Need and Desirability Requirement	Response
	relevant environmental authority? (i.e., is the proposed development in line with the projects and programmes identified as priorities within the IDP).	The 2022/22 IDP ALM has identified mining as one of the main economic driver.
2.	Should development, or if applicable, expansion of the town/area concerned in terms of this land use (associated with the activity being applied for) occur here at this point in time?	Refer to response for item 1 above.
3.	Does the community/area need the activity and the associated land use concerned (is it a societal priority)? This refers to the strategic as well as local level (e.g., development is a national priority, but within a specific local context it could be inappropriate)	It should be indicated that the ALM has already considered and identified mining as part of the SDF and IDP. Also as indicated above, mining as a key sector for the municipality will result in economic benefits for the domestic and international markets, and thus contribute to poverty reduction, poverty relief and poverty alleviation as measures for both economic and humanitarian measures which will permanently lift people out of poverty.
4.	Are the necessary services with appropriate capacity currently available (at the time of application), or must additional capacity be created to cater for the development?	As part of the mining activities, water will be used on a large scale. Existing water resources will be utilized to source water. All services required for the development of the proposed mining permit, are explained in Section 3.**2**
5.	Is this development provided for in the infrastructure planning of the municipality, and if not what will the implication be on the infrastructure planning of the municipality (priority and placement of services)?	The project aims to improve the socio-economic aspect in both the ALM and surroundings. See the response in item no. 1 above in terms of the reference.

Item No.	Need and Desirability Requirement	Response
		No additional municipal infrastructure that will need to be constructed as part of this proposed prospecting mining activity
6.	Is this project part of a national programme to address an issue of national concern or importance?	Yes, the proposed prospecting mining activities forms part of the DMRE Mining Strategy to develop mineral resources and energy sector that promotes economic growth and development, social equity and environmental sustainability.
Project Desirability		
7.	Is the development the best practicable environmental option (BPEO) for this land/site?	The proposed site is situated within agricultural land use areas predominately used for livestock grazing and also closer to an urban developed area with light industrial, cattle feedlots, residential settlements and roads. The mining activities will be undertaken in the Abaqulusi Local Municipality which falls within the Zululand District Municipality in Kwa-Zulu Natal Province. The activities will be undertaken within the various farm portion as indicated on **Table 2** which are prime agricultural land and residential area. The activities will be undertaken within the various farm portions as mentioned which are prime agricultural land and few residential area close to the farms. An Environmental Authorisation process as per this application has been undertaken to ensure that the related potential environmental impacts are identified, assessed, and quantified in order to implement the best practicable environmental options associated with these prospecting activities. Refer to the environmental impacts and related EMP.

Item No.	Need and Desirability Requirement	Response
8.	Would the approval of this application compromise the integrity of the existing approved municipal IDP and SDF as agreed to by the relevant authorities?	It is not anticipated that the proposed project will contradict or be in conflict with the municipals IDPs and SDFs (refer to response provided above to item no. 1).
9.	Would the approval of this application compromise the integrity of the existing environmental management priorities for the area (e.g., as defined in EMFs), and if so, can it be justified in terms of sustainability considerations?	According to Mucina and Rutherford (2006), the study area is situated in the Income Sandy Grassland vegetation type which is found in a triangle between Newcastle, Vryheid, and Dundee and a bigger plygon in the Wasbank region of northern Kwa-Zulu Natal. Mfolozi secondary catchment is the main drainage system that influences the hydrological characteristics of the study area. However, no rivers and/or streams flow through the study area. According to the KwaZulu-Natal Spatial Development Framework specific environmental sensitive areas were identified (Intervention Zone Four). Critical bioregional categories need to be clearly protected and conserved. These are: Protected areas; Critically biodiversity area; Other Natural areas; and Areas where no Natural Habitats remains.
10.	Do location factors favour this land use (associated with the activity applied for) at this place? (This relates to the contextualisation of the proposed land use on this site within its broader context).	Refer to response on item 7 above.
11.	How will the activity or the land use associated with the activity applied for, impact on sensitive natural and cultural areas (built and rural/natural environment)?	Refer to a discussion of the status quo of the built, natural and socio-economic environment, and potential impacts in **Section 4.5.**

Item No.	Need and Desirability Requirement	Response
12.	How will the development impact on project contained in as part of the potential environmental impacts on people's health and wellbeing (e.g., in terms of noise, odours, visual character and sense of place, etc.)?	See compilation of the identified environmental impacts associated with the proposed project contained in **Section 11.1**
13.	Will the proposed activity or the land use associated with the activity applied for, result in unacceptable opportunity costs?	If the mining permit application is approved and the mining activities are undertaken, this will mean that the minerals/commodities that the authorization was approved for will be mined for the period of 2 years. This will also result in sale of minerals to both domestic and international markets, and thus contribute to poverty reduction, poverty relief and poverty alleviation as measures for both economic and humanitarian measures intended to permanently lift people out of poverty and furthermore contribute to the country's economic development benefits.

6.1. Economic Consideration

Lwabantu will conduct prospecting mining activities to find mineral reserve on the prospecting permit application area. If the mining permit application is approved and the mining activities are undertaken, this will mean that the minerals/commodities that the authorization was approved for will be mined for the period of 2 years. This will also result in sale of minerals to both domestic and international markets, and thus contribute to poverty reduction, poverty relief and poverty alleviation as measures for both economic and humanitarian measures intended to permanently lift people out of poverty and furthermore contribute to the country's economic development benefits. Jobs and business opportunities will then be created as part of the development, construction, and operation of the mine on areas.

6.2. Social Consideration

The proposed activity will have several advantages for the local community. The proposed mining activity will provide an income generation for the area, as well as a cash injection into the country's

economy. The continuation of the existing current local labour workforce at Lwabantu will ensure that it maintains the reduced unemployment rate in the area, as well as allow for the uplifting of the project construction employees.

The Social and Labour Plan (SLP) will be implemented to ensure that workforce and local community are empowered. In addition to the aforesaid, the socio-economic benefits, the proposed development will result will result in employment opportunities and skills development in the area mostly during the construction phase.

It is also anticipated that the proposed project might result in noise from mining activities and although minimal, there is also a potential for the following socio-economic impacts:

- Influx of migrate job seekers, increase crime as a result of job seekers not finding employment and resulting in undertaking of criminal activities; and
- Influx of hawkers seeking for business opportunities and increase in traffic.

These health and safety risks will be addressed as part of the proposed recommended mitigation measures as per the specialist's recommendations.

6.3. Environmental Consideration

The proposed project aims to manage the environmental conditions through the following processes which have been discussed below:

- Implementation of the proposed mitigation measures as detailed on the EMPr.
- Managing of storm water within the proposed drilling areas; and
- Avoid and/or minimise the impacts on nature conservation areas.

6.4. Health and Safety Consideration

As these prospecting mining activities will be undertaken within active and prime agricultural land with predominately sheep/cattle farming and feedlots located within some of the affected farms, this has a potential risk of posing health and safety risks during the mining activities. It should be indicated that sheep/cattle farming is sensitive to disease such as the outbreak of foot and mouth diseases. Strict access control to such areas will need to be monitored and adhered to.

7. DESCRIPTION OF THE PROCESS FOLLOWED TO REACH THE PROPOSED PREFERRED SITE.

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

7.1. Details of all alternatives considered.

One of the objectives of an environmental authorisation process is to investigate alternatives to the proposed project. The Integrated Environmental Management procedure stipulates that the environmental investigation needs to consider feasible alternatives for any proposed development. Therefore, several possible proposals or alternatives for accomplishing the same objectives should be identified and investigated. To ensure that the proposed development enables sustainable development, feasible alternatives must be explored.

The identification, description, evaluation, and comparison of alternatives are important for ensuring a sound environmental process. Alternatives should be considered as a norm within the Environmental Process. The alternatives considered for the proposed development includes associated infrastructure location alternatives, prospecting method alternatives, technology alternatives, and the No-go option. The preferred alternatives will be assessed against the status quo in the draft BAR, in terms of environmental, social and technical feasibility.

The proposed Rustplaats mine

The proposed Rustplaats Mine will be located on Portion of Portion 2 of the farm Rustplaat 165 HU. The Basic Assessment is aimed at identifying and screening alternatives to ensure that they are reasonable and feasible. It must be indicated that the location for this project is based on the mineral resource.

The following section provides an overview of the alternatives identified; these include:

- Associated infrastructure and layout alternatives;
- Mining method alternatives;
- Ore handling and processing alternatives
- No-go option.

7.1.1. Associated infrstructure location and layout alternative.

As mentioned before the proposed study area is predominately agricultural and no infrastructure was observed. part of the application process within the DMRE SAMRAD Online system and several information including the Council for Geoscience, the applicant has considered the following geological

information when making a decision to proposed mining permit within the selected farming portion. On the DMRE SAMRAD Online system, the system reflects areas where the existing or pending applications have been lodged, those areas were then excluded as part of this application and also, the below geological formations also contributed on the decision made by the applicant in selecting this area as potential location for obtaining some of the applied commodities.

7.1.2. Mining Method Alternatives

Mineral reserves are to be mined using opencast mining method. The choice of mining method is largely determined by the geology of the mineral reserve deposit. An array of surface mining techniques exists; however, technical and economic feasibility studies are required to determine which process is best. These studies are based on the regional geologic conditions, including characteristics of the site; ore; thickness; structure; quality; and depth and strength.

The mining method that will be undertaken in order to extract or remove various commodities including graphite and opencast truck and shovel roll to be utilized over method at an average strip ratio of 2.5:1. Roll over mining or strip mining is undertaken by creating an initial cut or strip which is mined out.

7.1.3. Mineral ore processing

Mineral ore processing is going to be undertaken to separate the valuable minerals from waste rock. The ore will be transported to the processing plant to provide a more concentrated material for the procedures of the following extractive metallurgy.

7.1.4. No-go alternative (Option of not implementing the activity)

The Impact Assessment Phase requires that all development alternatives be included into the investigation process. The No-Go alternative will be comparatively assessed against the above-mentioned alternatives during the Impact Assessment Phase and will act as a baseline against which all the other development alternatives are measured. The No-Go alternative will entail leaving the site in its present state and the proposed prospecting activities will not take place. This will mean that the potential mineral resource(s) within the study area remains undetermined.

- No knowledge if the accepted commodities are present within the study area and that the opportunity of mining these minerals will be of economic value or not.
- Future socio-economic opportunities if the project were to be approved to undertake the prospecting activities and thus create potential value to apply for the Mining Right and thus create socio-economic benefits including jobs and business opportunities.

8. DETAILS OF THE PUBLIC PARTICIPATION PROCESS TO BE FOLLOWED

8.1. Public Participation Methodology

The Public Participation Process (PPP) is a requirement of several pieces of South African Legislation and aims to ensure that all relevant I&AP's are consulted, involved and their opinions are considered, and a record included in the reports submitted to Authorities. The process ensures that all stakeholders are provided this opportunity as part of a transparent process which allows for a robust and comprehensive environmental study. Basic Assessment Report has been prepared in accordance with Chapter 4 of the GNR 327. The BA was made available for a period of 30 day-public review. Registered I&APs were informed of the availability of the BAR and EMPr for review.

8.2. Identification of I&AP'S

An initial I&APs list was compiled using Windeed searches to determine the contact details of the registered landowners of the project affected land parcels, and by consultations with the local farmers union and the local municipalities, as well as the distribution of notification documentation in person on site and/or via emails. The I&AP database was compiled containing the following categories of stakeholders:

- Host Communities;
- Landowners;
- Adjacent Landowners and occupiers;
- Traditional Authority;
- Land Claimants;
- Lawful Land Occupier;
- Department of Land Affairs;
- Local and District Municipality;
- Agricultural Sector;
- Organised Businesses;
- Other organisations, clubs, communities, and unions; and
- Various NGO's.
- The relevant Government Departments, agencies and institutions responsible for various aspects of the environment and for infrastructure which may be affected by the proposed project; and
- Any other person (including adjacent and non-adjacent properties) whose socio-economic conditions may be directly affected by the proposed prospecting operation.

8.3. List of authorities identified and notified

- Department of Mineral Resources (DMR);
- Department of Mineral Resources and Energy (DMRE), KZN Region.
- KZN Department of Economic Development and Tourism.
- KZN Department of Local Government and Housing.
- KZN Department of Public Works, Roads and Transport.
- KZN Department of Agriculture, Rural Development and Environmental Affairs.
- KZN Department of Cooperative Governance and Traditional Affairs.
- Department of Agriculture, Rural Development and Land Reform.
- Land Claims Commissioner.
- Department of Water and Sanitation (DWS).
- South African Heritage Resources Agency (SAHRA).
- KZN Heritage Resources Agency (MPHRA).
- South African National Biodiversity Institute (SANBI).
- KZN Tourism and Parks Agency.
- Ithaca Game Reserve
- Vryheid Hill Reserve
- Ezemvelo Nature Reserve
- Imbabala Support System CC
- Rustplaats
- Abaqulisi Local Municipality
- Zululand District Municipality
- Magisterial District of Vryheid and other relevant government departments. agencies that will be identified as part of this application process.
- Landowners of the affected various farm portions and lawful occupiers.
- Other relevant government departments and agencies that will be further identified as part of this application process.
- Adjacent landowners and occupiers;
- Other identified surrounding community members;
- Non-Governmental Organisations and etc.

8.3.1. Details of Public Participation Process Followed

Newspaper adverts (English and IsiZulu) was published by the Vryheid Herald Newspaper Advertiser on the 28th July of 2023**.** Several site notices were also posted at different locations as indicated in **Table 9**. Distribution by email of Background Information documents (BIDs) in English to the relevant government departments, local municipalities', non-governmental organisations and other identified Interested and Affected Parties was conducted.

The public participation activities that were undertaken by LEM for the proposed development are outlined in **Table 9** below.

Table 9: Public Participation and Consultation Information

Activity	Date
Notification letters to the government departments (Department of Mineral Resources, DARDLEA, DWS)	02nd of August 2023
Publication of newspaper adverts	28th of July 2023
Placement of project's site notices	27th of July 2023
BID distributed to landowners, adjacent landowners, non-governmental organisations and other Interested and Affected Parties.	02nd of July 2023
Publication of the Draft BAR and EMPr	04th of August 2023 to 04th of September 2023

The Draft Basic Assessment Report was distributed to all registered stakeholders via email and LEM website and were placed at Abaqulisi Local Municipality office. The BAR and EMPr can be requested by contacting LEM via email or a telephone or accessed at the Vryheid Library. All Interested and Affected Parties were notified via e-mails, and newspaper advert about the availability of the draft BAR and EMPr reports as well as through the public meeting to be held at Xulu Community Hall at 13h00 on the 18th of August 2023. The final hardcopy BAR and EMPr will be submitted to the DMRE KwaZulu Natal Region Office on or before the **24th of September 2023** for a final decision making.

8.3.2. Content of Advertisements and Notices

Please refer to **Table 10** for Site notices that were placed at various locations, and published Newspaper Advert (refer to as **Figure 3**) part of this application.

8.3.3. Placement of Notices

Site notices were placed on various locations around the study area, refer to **Table 10** overleaf for exact location of site notice.

Vryheid Herald Classifieds

0060 PERSONAL

ALCOHOLICS ANONYMOUS 12 STEP RECOVERY MEETINGS|"We throw life-lines for those still adrift cos we can best understand being over-board ourselves" Thursday @ 18:30 - 19:30 @ 21 Utopia Flats, 157 Utrecht Street. Contact Cally 071 575 7049 / 082 044 9758.

AFTERCARE is a group recovering addicts / alcoholics that come together once a week to share our experiences and support each other on our progress in recovery. In the aftercare group you discover that you are a part of a group on the same journey of recovery. Look back on each day, good or bad, and say, "Another sober and clean day. Ain't life great!". We meet on Tuesdays 18:30 to 19:30. We meet in the hall, cnr Heeren and Landdros Street. Contact: Tiekie 083 660 0673; Wilhelm 082 611 7053; Lothar 082 944 0639.

KINDLY ASSIST AGNESS N. MTHEMBU to trace Mr Nkosi who is the father of Zanelisiwe Amanda Buthelezi, Date of Birth: 2006-09-29 and the father of Simphiwe Siboniso Mthembu, Date of Birth: 2009-06-14. His identity and his whereabouts are unknown to Angness and Siboniso. Their biological mother was Thembisile Precious Buthelezi who is deceased. 072 741 6812

CHILD AND FAMILY WELFARE Crisis Line - A child or parent in need, phone 034 9821197. Email: vhdchildwelfare@telkomsa.net
CK039706

0824 EMPLOYMENT WANTED

THANDAZILE XABA 076 784 3518. Cleaner / Domestic / General Work / Cooking. Available any day/s. Sleep in / out. Experience.

0000 NOTICES

0055 CHURCH NOTICES

AFRIKAANSE PROTESTANTSE KERK Hoek van Park- en Smalstraat. 034 981 4661
CK039733

BETHANY BAPTIST CHURCH Past. Jannie Viljoen 082 615 9958.
CK039734

COASTAL ASSEMBLIES OF GOD Gary Hurst 083 661 8393 www.caog.org.za
CK039735

EVANGELIES GEREFORMEERDE KERK 39A Mason Street 034 983 2252
CK039736

FREEDOM CHURCH 15 Nyala Drive 034 980 8270
CK039737

HIS WAY ASSEMBLY OF GOD 10 Nyala Drive; 083 459 3605
CK039738

0055 CHURCH NOTICES

LOFDAL GELOOFSHUIS 034 982 2391
CK039739

LUTHERISCHE MICHAELIS-KIRCHE 109 Mark STreet Pastor Lutz 076 480 3557

NG GEMEENTE VRYHEID - SUID-OOS 034 982 2350
CK039741

NG VRYHEID GEMEENTE Kerkstraat 034 982 2862
CK039742

RUACH GEMEENTE 073 191 0817 209 Utrecht Street
CK039743

TRUTH CITY MINISTRIES 072 368 2266
CK039744

VOLLE EVANGELIE KERK Pastor Peter Niehuhr 060 614 7241; Visevoorsitter: Renette Kruger 083 454 1649; Koster: Tilla Oosthuizen 079 401 7279.

EVANGELICAL CHURCH VRYHEID, 66 Oak Street, Lakeside Park. Cell Rev TE Masuku 064 536 0021

Legal Notices

Notification of EIA Public Participation in terms of Section 24(5) of the National Environmental Management Act, 1998 (Act 107 of 1998) and Environmental Impact Regulations (Notice. No.) of (Notice. No. 40772 of 325) of the April 2017), Mineral and Petroleum Development Resources Act, Act 28 of 2002 and Notice is hereby given that a water use license is being applied for under Section 21 (a), (c) and (i) of the National Water Act (Act 36 of 1998).
Project Title: SHAKA Investment Properties and Coal Mining Operation
Project Description: The proposed establishment of a Coal Mining Operation. The project is situated Driekwart Van Geluk 18013 in an urban periphery of the town Vryheid.
Location: Abaqulusi Local Municipality; Zululand District Municipality, KwaZulu-Natal, SA.
Interested and affected parties (I &AP) desiring to object or comment to the above application may do so within 30 (thirty) days from the date of publication. The commenting time period is according to Chapter 6 of the 2017 EIA Regulations.
Enquiries/comments to: Environmental Assessment Practitioner Mr T,S Tshabalala (ZKN Green Economy Pty Ltd) Tel: 069 375 0065 Cell no.: 083 432 4061
Fax: 086 525 4400 thamit71@gmail.com

Cancellations and alterations must be submitted in writing.

ESTATE NOTICE

Estate late:	**MARTHA MAGDELENA LOUISA FERREIRA**
Identity number:	**3502090002082**
of	**63 CHURCH STREET Vryheid**
Estate number:	**2617/2023/PMB**
Date of Death:	**25/03/2023**

The FIRST AND FINAL LIQUIDATION AND DISTRIBUTION ACCOUNT IN THE ESTATE OF THE LATE MARTHA MAGDELENA LOUISA FERREIRA
Liquidation and Distribution Account in the above estate will lie for inspection of all persons interested therein, for a period of 21 days from 28/07/2023 at the Office of the Master of the Supreme Court Pietermaritzburg, Magistrate Vryheid

JM Steenkamp & Co
POSBUS 863 PO BOX
VRYHEID 3100
TEL: 083 273-9431

Legal Notices

PUBLIC NOTICE;
INTERESTED AND AFFECTED PARTIES: PROSPECTING RIGHT APPLICATION, ENVIRONMENTAL AUTHORISATION (EA), BASIC ASSESSMENT REPORT (BAR) AND ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT (EMPr)
THE COAL GROUP (PTY) LTD

NOTICE NOT FOR JOB APPLICATIONS

The Coal Group (Pty) Ltd applied for a prospecting right in terms of section 16 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) (MPRDA) and is also applying for Environmental Authorisation of listed activities in terms of sections 24 and 24D of the National Environmental Management Act, 1998 (Act no. 107 of 1998) (NEMA). This legislation is read together with Regulations 19 & 20 of the amended Environmental Impact Assessment Regulations, 2014 (Government Notice No. 982). The above-mentioned application involve the prospecting for coal and pseudocoal.

These activities will occur on **the remaining extent, portions 1, 3, 4, 6, 7, and a portion of portion 5 of the farm Beaufort 787 HT, a portion of portion 4 of the farm Beaufort 286 HT,** situated within the Zululand Magisterial District, KwaZulu-Natal province.

The Prospecting Right Application has been lodged onto the electronic system of the Department of Mineral Resources and Energy (DMRE), after which the following reference number was obtained: **KZN 30/5/1/1/2/11428 PR**.

Geovicon Environmental (Pty) Ltd has been appointed as the independent environmental consultant to compile the BAR & EMPr and to conduct consultation with Interested and Affected Parties regarding the project in terms of the MPRDA and the NEMA.

The Draft BAR & EMPr (One report) will be available at the Vryheid Public Library from 28 July 2023 until 28 August 2023 for public perusal.

As part of the Public Participation Process (PPP), as stipulated in Chapter 6 of the amended Environmental Impact Assessment Regulations, 2014 (Government Notice No. 982), any person who is interested in, or affected by the above-mentioned project is hereby invited to register as an Interested or Affected Party, and to comment on the Draft BAR and EMPr. With registration, the party's interest in the project must be declared. Comments regarding the proposed project must be submitted in writing, with reference number **KZN 30/5/1/1/2/11428 PR** on, or before 28 August to the consultant below.

Consultant:
Geovicon Environmental (Pty) Ltd
P. O. Box 4050
Middelburg
1050

Tel: 013 243 0542
Fax: 086 632 4936
Cell: 082 359 5604
E-mail: luyanda@geovicon.co.za
Contact person: Riana Bate

ENVIRONMENTAL AUTHORISATION APPLICATION PROCESS IN SUPPORT OF THE MINING PERMIT FOR BRYTES, COPPER ORE, FELDSPAR, GOLD ORE, GRAPHITE, HEAVY MINERALS (GENERAL), LEAD, NICKEL ORE, PLATINUM GROUP MEATLS, RARE EARTHS AND SILVER ORE ON PORTION OF PORTION 2 OF FARM RUSTPLAATS 165 HU, SITUATED AT MAGISTERIAL DISTRICT OF VRYHEID IN ABAQULUSI LOCAL MUNICIPALITY WITHIN ZULULAND DISTRICT MUNICIPALITY, KWAZULU-NATAL PROVINCE, SOUTH AFRICA.
Mining Permit Reference No.: KZN 30/5/1/3/2/10886 MP

Notice is hereby given, in terms of Section 24 (5) of the National Environmental Management Act, (Act No 107 of 1998) as amended (NEMA) and 2014 EIA Regulations as amended on 07 April 2017, that Lwabantu Mineral Resources (Pty) Ltd intends to undertake environmental authorization application processes for mining activities on the above-mentioned farm, situated at the Magisterial District of Vryheid in Abaqulusi Local municipality within Zululand District Municipality, KwaZulu-Natal Province. The proposed project area is located approximately 20 km east of Vryheid town. Licebo Environmental and Mining (Pty) Ltd (Hereafter referred as **'LEM')** has been appointed by Lwabantu Mineral Resources as the Environmental Assessment Practitioner to undertake the required Environmental Authorisation application process. This application process will be undertaken in terms of GNR 983 as amended by GNR 327 Listing Notice 1 in respect to listed activity 12, 21, 24, 27, 28, GNR 985, as amended by GNR 324, GNR 517 – Listing Notice 3; Listing Activity 12 and GNR 633 on 24 July 2015, Activity 15, which will involve the compilation of a Basic Assessment Report (BAR) and Environmental Management Programme (EMPr).

Description of activity:
Lwabantu Mineral Resources is intending to conduct prospecting activities for brytes, copper ore, feldspar, gold ore, graphite, heavy minerals (general), lead, nickel ore, platinum group metals, rare earths, and silver ore on the portion of the above-mentioned farm. The activities to be undertaken include the development of a box cut which will involve the stripping and stockpiling of topsoil material, removal and stockpiling of softs (subsoil), removal and stockpiling of overburden material and extraction of ore. Mining associated infrastructure such as water management structures, offices, ablution facilities, access and haul roads will also be constructed. The application process will include compilation of the required BAR and EMPr, as required in terms of the NEMA.

Location: Approximately 20 km east of Vryheid.
Extent of this project: Approximately 5 Ha (Extent of the Farm)
Name of Proponent: Lwabantu Minerals Resources (Pty) Ltd

Registration as an Interested and Affected Party
The Public Participation Process has been initiated to share project information and gather comments about the proposed project from all Interested and Affected Parties (I&APs). Should you wish to be registered as an I&AP, obtain additional information or comment on the proposed development, please register using the contact details below.

Notification for a Public Meeting
This advert also serves as a notification to invite all the I&APs to a public meeting that will be held as follows:
Venue: Xulu Community Hall
Date: 18 August 2023
Time: 13H00

Review of the draft Basic Assessment Report (BAR) and EMPr by I&APs
Please note that the draft BAR and EMPr will be made available for public review for a period of 30 days, from the **04th of August 2023 to the 04th of September 2023** on the Licebo Environmental and Mining Website: https://licebo.co.za/projects/public-review-documents or contact LEM's offices. The Draft BAR and EMPr will be placed at the local library and/or Abaqulusi Local Municipality office.

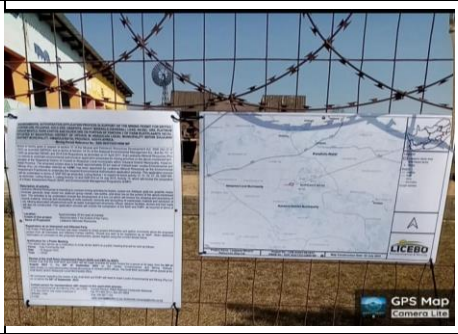
All comments regarding the review of the draft BAR and EMPr will need to reach Licebo Environmental and Mining (Pty) Ltd on or before the **04th of September 2023.**

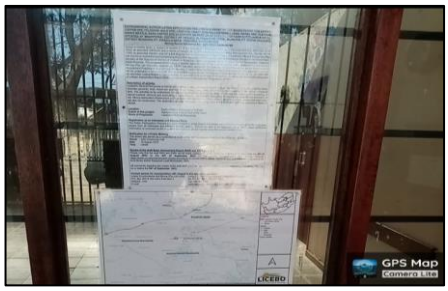
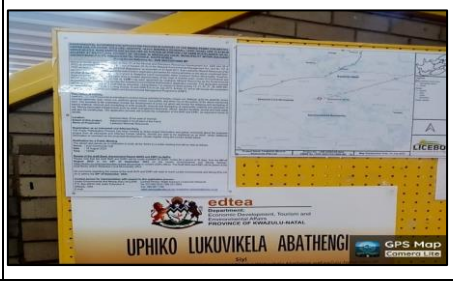
Contact person for representation with respect to this application process:
Licebo Environmental and Mining (Pty) Ltd (LEM)
P.O. Box 20519, Del Judor Extension 4
Witbank, 1044
E-mail:

Contact Person: Ralph Repinga/ Lindokuhle Nsibande
Tel: 013 692 0212 / 083 257 8869
Fax: 086 667 1169
ralph.repinga@licebo.co.za / lindokuhle.nsibande@licebo.co.za

Figure 3 : English Newspaper Advert (28 July 2023)

Table 10: Location of Site Notices (27 July 2023)

Location	Coordinates	Site Notice
116 Hoog St, Vryheid, 3100, South Africa	S: 30.794368333333335 E: -27.769146666666664	
Izinyambe creche)	S: 31.00641333333333 E:-27.777066666666663	
Izinyambe creche	S: 31.00130166666667 E: -27.718996666666666	
Izinyambe creche	S: 31.00641333333333 E:-27.777066666666663	

Location	Coordinates	Site Notice
Abaqulusi Municipality	S: 31.001398333333334 E: -27.718848333333334	
R69, Pumalanga, South Africa	S: 31.005695 E: -27.739944999999995	
195 Mark St, Vryheid, 3100, South Africa	S: 30.794281666666667 E: -27.76915	

8.4. Summary of Issues Raised by Interested and Affected Parties

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

Table 11: Comments and Response from I&APs

Please refer to **Appendix 5** for email engagement with I&APs

Interested and Affected Parties List the names of persons consulted in this column, and mark with an X where those who must be consulted were in fact consulted.	**Representing**	**Date Comments Received**	**Comment / Questions**	**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.**
Landowners						
Pienaar Francois Johannes	Portion 2 of the farm Rustplaats 165 HU	20 July 2023	According to the title deeds from windeed search the portion of the farm that the study area fall on is owned by Pienaar Francois Johannes and an E-mail will be sent to him to arrange a consultation meeting.	No	No feedback required at this stage.	
Land Claims						
Chief District Director: Zululand District - Mr Mzi Dlamini	Department of Agriculture, Land Reform and Rural Development (DALRRD)	20 July 2023	E-mail will be sent to Mr. Mzi Dlamini for verifying any existing or possible land claims on the farm portions. A Notification Letter with Background Information Document were sent via email communication to him.	No	No feedback required at this stage.	Refer to **Appendix D and E**
Chief Director of Commission on Restitution of Land Right – Advocate Bheki Mbili	Department of Agriculture, Land Reform and Rural Development (DALRRD) – Commission on Restitution of Land Right.	20 July 2023	E-mail will be sent to Advocate B A Mbili for verifying any existing or possible land claims on the farm portion.	No	No feedback required at this stage.	
Municipality						
Municipal Manager: Head of Administration - ZG Dhlamini	Abaqulusi Local Municipality	20 July 2023	Email notification with the BID and notification letter will be sent to Mr ZG Dhlamini	No	No feedback required at this stage.	
The Municipality Manager – Ms. Ntokozo Hlongwa	Zululand District Municipality	20 July 2023	Email notification with the BID and notification letter will be sent to Ms. Ntokozo Hlongwa	No	No feedback required at this stage.	
Traditional leaders						

Interested and Affected Parties List the names of persons consulted in this column, and mark with an X where those who must be consulted were in fact consulted.	**Representing**	**Date Comments Received**	**Comment / Questions**	**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.**
Msiyane Traditional Council Representative - Ms. Nelly Zulu	Msiyane Traditional Council	20 July 2023	Email notification with the BID and notification letter requesting a meeting with the council was sent to Ms. Nelly Zulu	No	No feedback required at this stage.	
Deputy director – Mr Chris Nkosi	Department of Cooperative, Governance and Traditional Affairs.	20 July 2023	Email notification with the BID and notification letter requesting a meeting with the council was sent to Ms. Nelly Zulu	No	No feedback required at this stage.	
Local Community						
Chairperson of Land Development – Mr. B Ntobela	Ward 5 of the Abaqulisi Local Municipality	20 July 2023	E-mail notification with the BID and notification letter will be send to Mr. B ntobela.	No	No feedback required at this stage.	
Ward Councillor – Mrs. T. E Vilakazi	Ward 5 of the Abaqulisi Local Municipality	20 July 2023	E-mail notification with the BID and notification letter will be send to Mrs. Vilakazi. As soon as his contact details are found	No	No feedback required at this stage.	
Organs of State (Responsible for Infrastructure that may be affected Roads Department, Eskom, Telkom, DWS, etc)						
Regional Manager: Mineral Regulation – Mrs Nontobeko Ncama	Department of Mineral Resources and Energy (DMRE)	14 June 2023	An application for the prospecting right was lodged and got accepted on the 14th of June 2023 by DMRE and DMRE requested Lwabantu Mineral Resources to consult with the landowners, land occupiers' adjacent communities and any interested and affected parties in relation of the proposed Mining Permit project. E-mail notification with the BID and notification letter will be send to Ms. Mrs. Nontobeko Ncama to notify her about the project and no comments are expected at this stage.	No	No feedback required at this stage.	Refer to **section 1.11**
Zululand District Municipality, Economic Development Tourism and Environmental Affairs – Mr. Njabulo Ndlela	Department of Economic Development, Tourism and Environmental Affairs, KwaZulu-Natal	20 July 2023	E-mail notification with the BID and notification letter will be send to Mr. Njabulo Ndlela	No	No feedback required at this stage.	Refer to **section 1.11**
KZN Chief Director: Department of Water	Department of Water and Sanitation (DWS) regional	20 July 2023	E-mail notification with the BID and notification letter will be send to Mr Ashley Starkey	No	No feedback required at this stage.	Refer to **section 1.11**

Interested and Affected Parties List the names of persons consulted in this column, and mark with an X where those who must be consulted were in fact consulted.	**Representing**	**Date Comments Received**	**Comment / Questions**	**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.**
and Sanitation – Mr Ashley Starkey.						
Director General: Department of Water and Sanitation-Dr Phillips	Department of Water and Sanitation (DWS) National	20 July 2023	E-mail notification with the BID and notification letter will be send to Dr. Phillips	No	No feedback required at this stage.	Refer to **section 1.11**
Deputy Director General – Ms. Judy Beaumont	Department of Forestry, Fisheries and Environment (DEFF)	20 July 2023	E-mail notification with the BID and notification letter will be send to Judy Beaumont.	No	No feedback required at this stage.	Refer to **section 1.11**
Non- Government Organisations (NGO's).						
Mr JF Verster	Imbabala Support Systems CC	18 July 2023	As per the DMRE directive to consult Imbabala Support Systems cc regarding the proposed Mining Permit project, E-mail notification with the BID and kml file for the mining permit was sent to Mr JF Verster notifying him about the project and requesting a meeting.	No	No feedback has been received yet.	
Amafa Heritage AkwaZulu Natali – Ms Nokukhanya Mkhize	Amafa Heritage AkwaZulu Natali	20 July 2023	E-mail notification with the BID and notification letter will be send to Ms Nokukhanya Mkhize.	No	No feedback required at this stage.	Refer to **section 1.11**
Ezemvelo KZN committee	Ezemvelo KZN Wildlife	20 July 2023	E-mail notification with the BID and notification letter will be send to Ezemvelo KZN Wildlife.	No	No feedback required at this stage.	Refer to **section 1.11**
Other parties						
No other parties were identified			No other parties were identified		No other parties were identified	

9. THE ENVIRONMENTAL ATTRIBUTES ASSOCIATED WITH THE ALTERNATIVES

9.1. Baseline Environment

This section presents an *overview* of the project study area. This information was obtained mostly by use of google map, published studies of Vryheid and within jurisdiction of Zululand District Municipality inclusive of the baseline Specialist studies (Desktop Aquatic & Wetland Assessment; Desktop Soil, land use, Land Capability and Utilisation (agricultural) Impact Assessment; Desktop Heritage and Archaeological Impact Assessment; Palaeontology Impact Assessment; Desktop terrestrial Biodiversity Impact Assessment and Desktop Surface Water and Geohydrology Impact Assessment) and its surroundings.

9.2. Type of environmental affected by the proposed development

9.2.1. Geology

The ZDM is predominately comprised of the Karoo Sequence i.e., Dwyka, Ecca, Beaufort, Lebombo, and Zululand Groups, with Jurassic dolerite intrusions and quartzite of the Mozaan Group. Ecca Group outcrops occur within the study area (Figure) and surrounding regions. The study area is generally underlain by Ecca Group rocks which are subdivided into the Vryheid Formation, Volkrust Formation, Normandien Formation, Delfkom Formation, Granite Formation, and Mpongoza Formation.

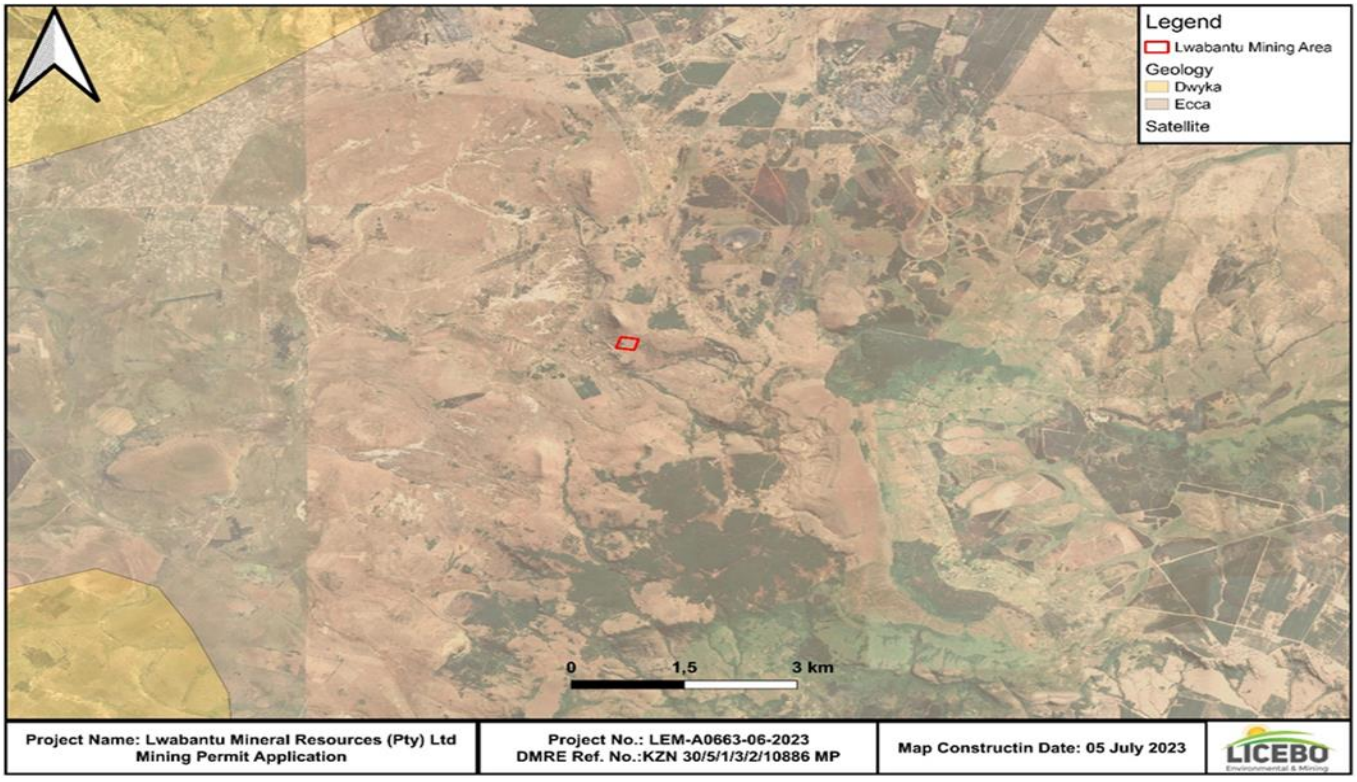


Figure 4: Ecca group outcrops in relation to the study area**.**

Karoo Supergroup is comprised of a sequence of units, mostly of nonmarine origin which were deposited between the Late Carboniferous and Early Jurassic, approximately 120 million years. Sedimentary

deposits of the Ecca Group were formed when Gondwana drifted away from the South Pole, resulting in glaciers melting and leaving a vast inland sea extending across South Africa and neighboring regions of Gondwana. This gave rise to extensive swampy deltas originating from rivers draining mountains to the Karoo Sea in the north. Glossopteris flora flourished in this period and accumulated as peat, which eventually cemented into coal deposits. These coal deposits are situated on the northern shores of the early Permian Karoo Sea, mined today in the Highveld and KwaZulu-Natal. Ecca Group is comprised mainly of shales and sandstones that extend over the entire former Karoo Sea

9.2.2. Climate

Vryheid has a warm and temperate climate that varies from west to east as a result of elevation. The escarpment region above 1200 mamsl is classified as a sub-tropical highland; regions between 800 - 1200 mamsl are classified as humid subtropical while humid subtropical climate dominates the coastal plain. Thunderstorms are the prevalent form of precipitation. Mist and hail are uncommon across the majority of ZDM. Inland rainfall ranges from 500 mm/a in the northern parts of the ZDM to 1500 mm/a on the coast near Richards Bay. The interior rainfall ranges between 600 - 900 mm/a. The majority of rainfall occurs during the summer months, while the winters have very little rainfall. The driest month is June, with an average of 14 mm of rain. Most of the precipitation here falls in December, with an average of 167 mm.

9.2.3. Topography

The relief of ZDM is diverse and determined by altitude, slope position, aspect, climate, topography, and geology. The study area's elevation ranges between 1290 – 1340 mamsl as illustrated in Figure below and falls within the central highlands of the ZDM. The region has given rise to a rugged terrain associated with valleys and ridges. The highest areas lie along the region's western boundary, with the height increasing from south to north. The highest point within the region is located at the extreme north-western side (2068 m) while the lowest areas lie on the eastern portion of the municipality, with height generally decreasing northwards and southwards from the centre of the eastern boundary. The lowest point comprises the Jozini Dam and areas below the dam (approximately 480 mamsl), followed by a point on the Black Mfolozi where it exits the district.

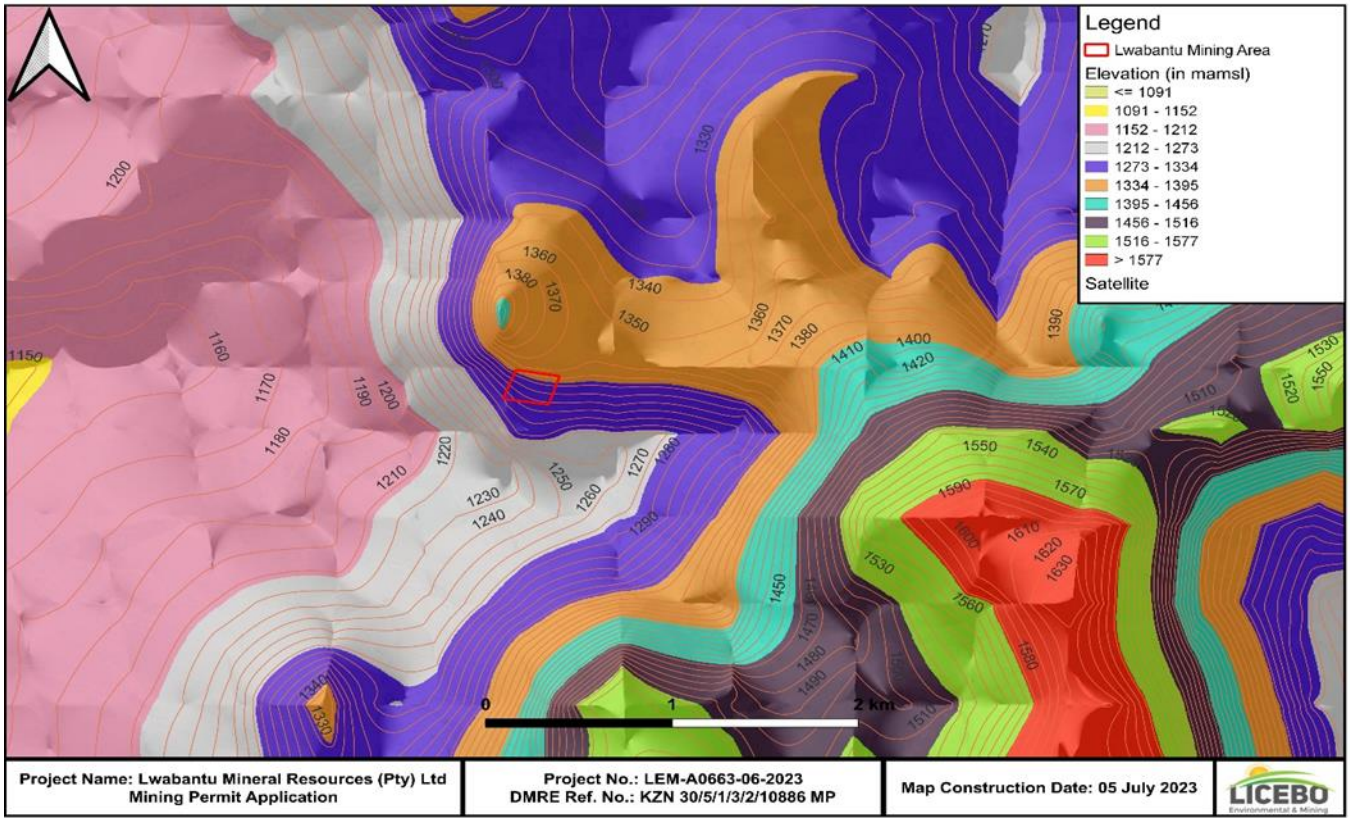


Figure 5: Topographical map illustrating elevation (in mamsl) across the study area.

9.2.4. Soil

Variable soil forms occur within the ZDM due to different contents of sodium, carbon, minerals; fertility, depth, drainage and resistance to erosion. The soils include plinthic, inter alia apedal, vertisol, melanic and duplex soils. Soil forms include Glenrosa, Rensburg, Arcadia, Bonheim, Mispah, Hutton, Clovelly, and Griffin. Shortlands, Sterkspruit, Valsrivier, and Swartland represent a wide range of soil potential. The study area falls within the association of classes 13 and 16 undifferentiated shallow soils and land classes.

9.2.4.1. Land Capability, cover and uses

The land within the proposed mining project is suitable for grazing, plowing, and cultivation of crops (Figure). Land capability is a function of soil conditions, climate, terrain characteristics, and slope.

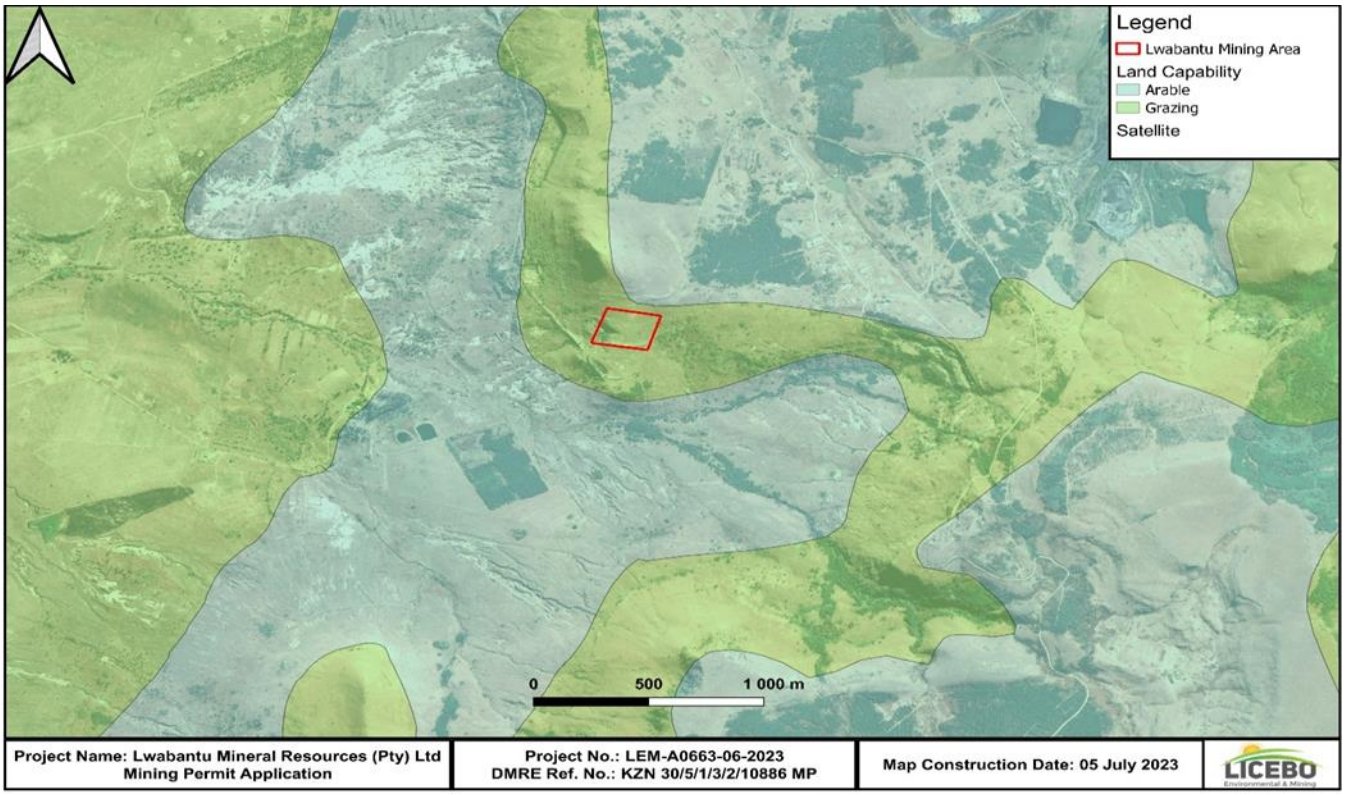


Figure 6: Land capability of the study area.

The dominant land use activities within ALM include plantations and commercial agricultural activities with limited high-density settlements, game farming, ecotourism, and conservation areas. Agriculture is dominant within highveld areas and fertile valleys along where major rivers flow through the municipality. Natural areas rich in biodiversity and water bodies which promote the ecotourism industry are present within ALM. The study area is comprised of natural land cover and a wetland (i.e., flat wetland) as illustrated in **Figure 7** below. However, most of the municipality has been transformed by agricultural practices (e.g., plantations) and built-up land uses such as coal mines, roads, urban areas, and rural dwellings amongst others. See **Appendix 14** (Soil, Land use, Land capability and Utilisation (Agricultural) Impact Assessment for more detailed information.

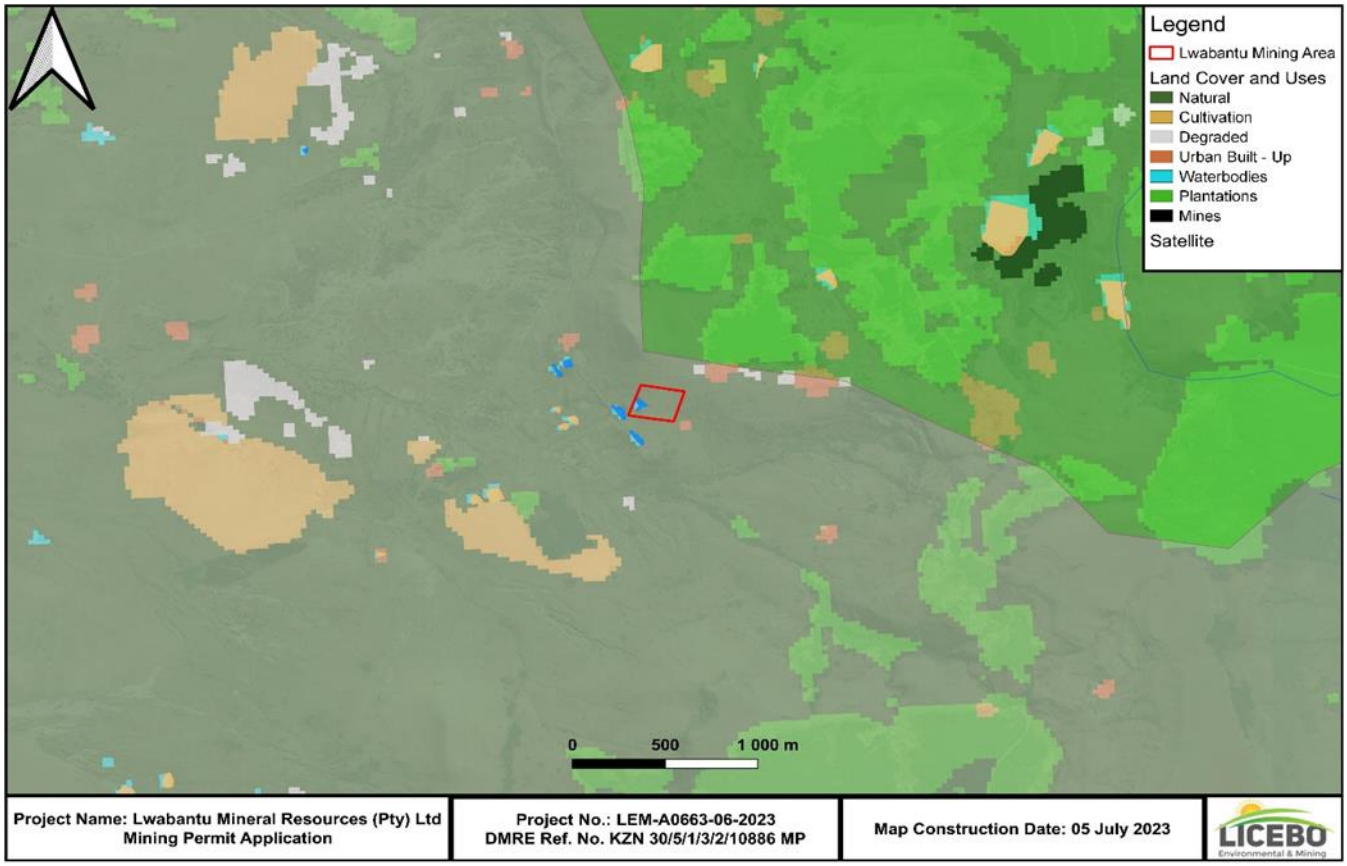


Figure 7: Land cover and uses within and around the study area.

9.2.4.2. Land Cover and Uses

Abaqulusi Municipal areas are mainly comprised of plantations and commercial agricultural activities with limited high-density settlement, game farming, ecotourism and conservation areas (Ezemvelo KZN Wildlife, 2015). Agriculture is dominant within highveld areas and fertile valleys along where major rivers flow through the municipality (ALM, 2022). Natural areas rich in biodiversity and water bodies which promote ecotourism industry are present within ALM. The study area is comprised of natural land cover and a wetland (i.e., flat wetland) as illustrated in **Figure 8** below. However, most of the municipality has been transformed by agricultural practices (e.g., plantations) and built-up land uses such as roads, urban areas and rural dwellings amongst others (Ezemvelo KZN Wildlife, 2015).).

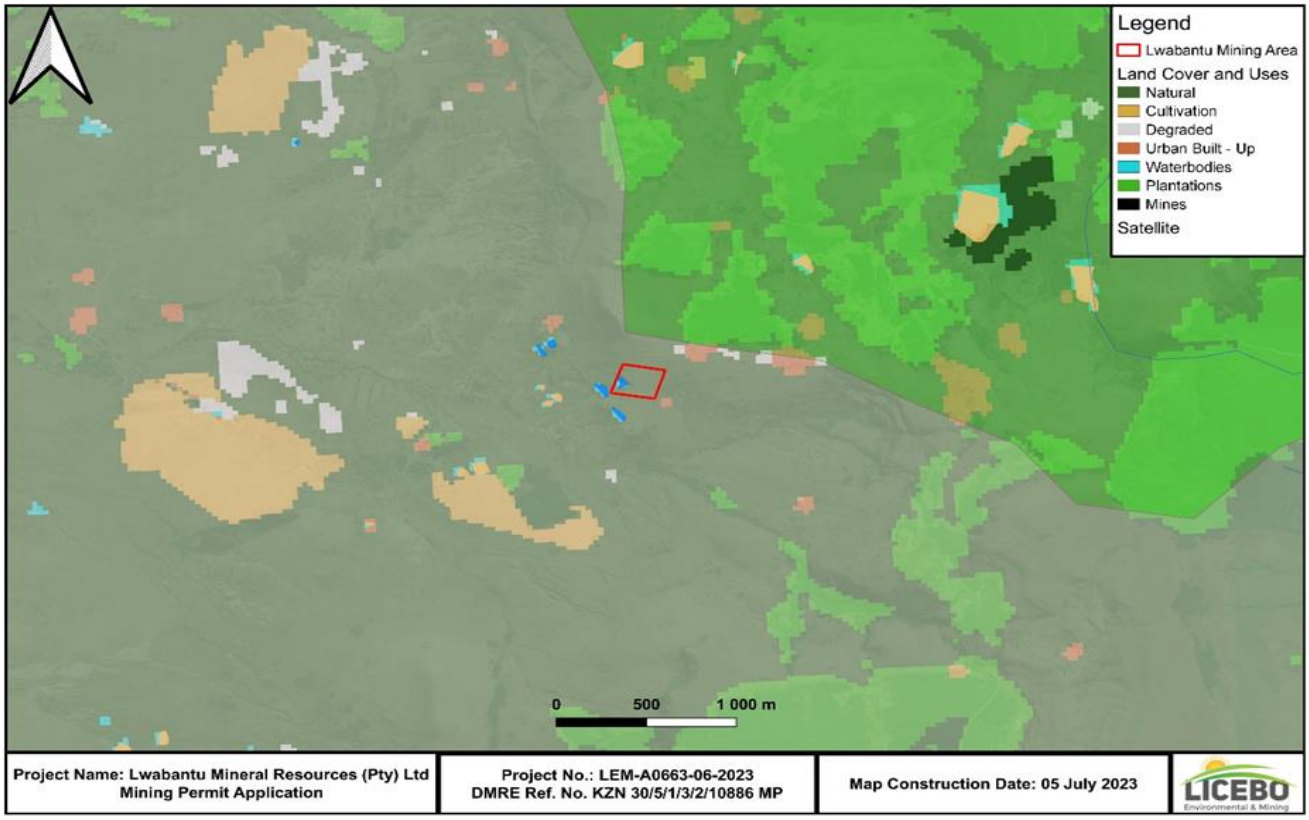


Figure 8: Land cover and uses within and around the project area.

Urban areas within ALM include the towns Vryheid and Louwsburg, King Bhekuzulu and Emondlo townships. Vryheid is a regional centre and main economic hub within ZDM and ALM. Louwsburg has declined in its significance and has degenerated from being a service centre into a simple urban settlement. King Bhekuzulu and Emondlo townships were developed as R293 townships. King Bhekuzulu is situated south east of Vryheid while Emondlo is located about 30km from Vryheid. It is surrounded by dense rural settlements to the South and North. Small urban settlements were such as Coronation, as Hlobane and Enyathi occur in places where coal mines were developed. A dense informal settlement known as Shoba is located approximately 13 km from Vryheid's Central Business District. It is situated along R69 land links Vryheid with Coronation, Hlobane, and Louwsburg. Hlahlindlela and Khambi are the only two relatively large concentrations of rural settlements (ALM, 2022).

Coal mines exist within the Vryheid coalfield which stretches from the west of Vryheid in a broad band to the east of Louwsburg. The coal field is further divided into the Zuinguin Mountain area, Hlobane/Matshongololo area, Thabankulu/Enyathi Mountain area and Ngwini Mountain area. Historically, coal mining was a major force of the Northern KwaZulu Natal economy. However, a number of mines have operations in the past 15 years which negatively impacted the regional economy. ALM was specifically affected by the closure of the Coronation and Hlobane mines in 1997 and 1998 respectively. However, Coal Mining sector has recently began to gain momentum and has been identified in the

integrated development plan as one of the key economic sectors due to high demand of coal in the country and internationally (ALM, 2022).

9.2.6. Terrestrial Ecology

9.2.6.1. Flora

According to Mucina and Rutherford (2006), the Income Sandy Grassland vegetation type in terms of ecosystems conservation status, is classified as VU. The national target for conservation protection for this vegetation types is 23%. Currently none conserved in statutory conservation areas. Some 27% has been transformed for cultivation, plantations and by urban sprawl. Small portion of the area has been lost to the building of dams (Klipfontein, Mvunyane). No serious invasions of aliens have been observed (probably due to low nutrient status of soils). Erosion moderate (38%), high (30%) and low (15%).

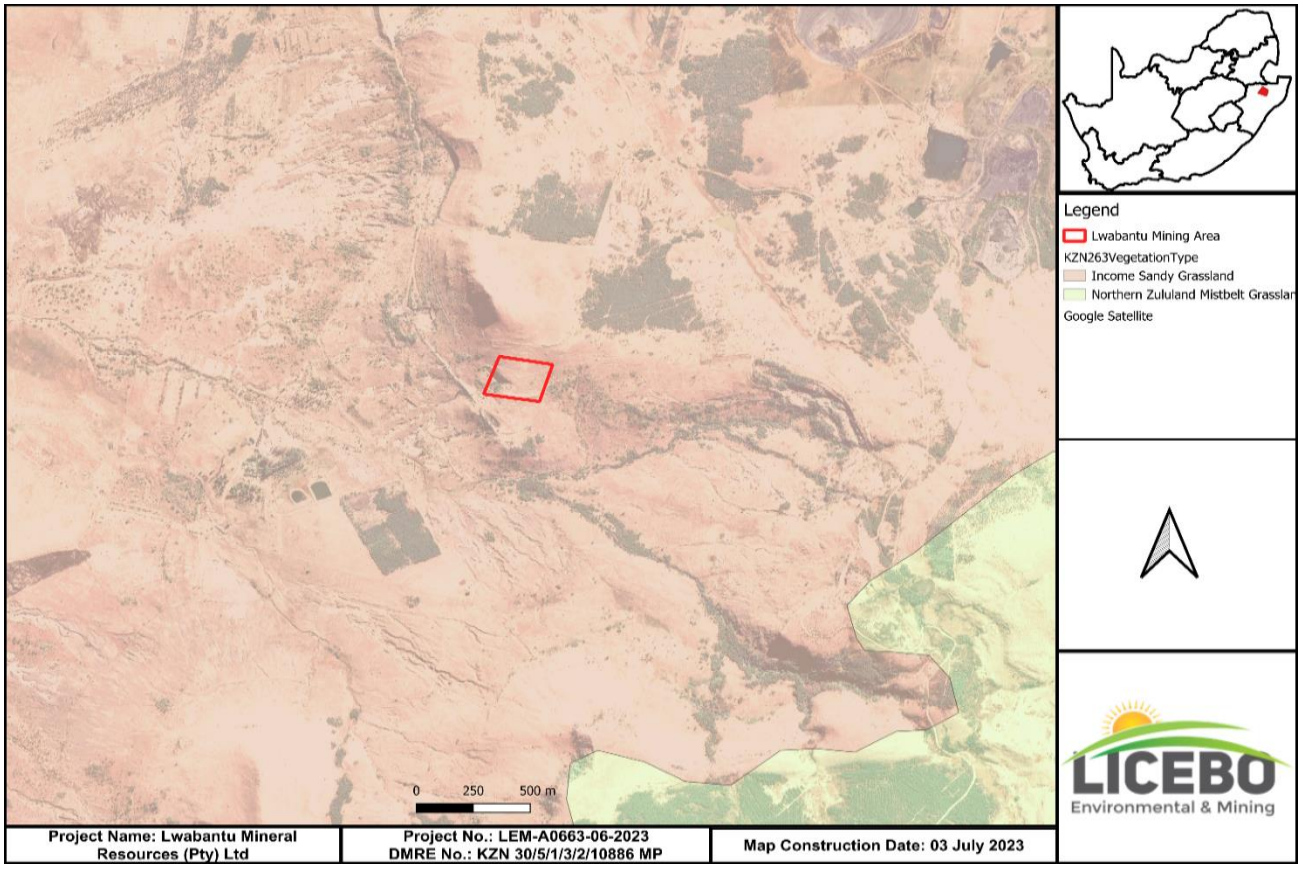


Figure 9: Vegetation types associated with the mining area.

The biodiversity of ALM is mainly comprised of large vegetation areas which have been transformed by anthropogenic activities. The dominant vegetation types include tall grass veld, warm sour sand veld, warm moist transitional tall grassland, and dry Zululand thornveld. The terrestrial Biodiversity Theme for the study area is rated very high sensitivity on the screening tool due to the potential of encountering animal as Aves-Falco biarmicus, Aves-Geronticus calvus, Mammalia-Hydrictis maculicollis, Mammalia-Ourebia ourebi ourebi, and Sensitive species 8. Plant Species Theme was rated as a medium sensitivity

on account of the potential presence of flora species such as Sensitive species 1252, Dierama erectum, Sensitive species 998, and Sensitive species 1152.

9.2.6.2. Fauna

The proposed study area is dominated by large herd of terrestrial mammal species, avifaunal species, and amphibians. Thirteen (13) of the 327 terrestrial mammal species found in the area are Red List species, with twenty-nine (29) being Vulnerable, thirty-four (34) being Near Threatened, and one (11) being Endangered. A total of 339 avifaunal species have been reported in the area, according to earlier avifaunal investigations. Twenty (20) of the 339 avifaunal species found in the area are Red List species, with two being Critically Endangered, five being Endangered, eight being Vulnerable, and five being Near Threatened. A total of 14 amphibian species have been previously recorded, all of which are classified as Least Concern. However, it is of importance to note that amphibians in the Zululand district are the most threatened class of vertebrate, with wetland-associated anurans in particular suffering high levels of habitat loss. Only one conservation-important amphibian species has been identified.

9.2.7. Wetland

9.2.7.1. Associated Water Resources

A number of organizations have collaborated on the National Freshwater Ecosystem Priority Areas (NFEPA) project, including the Council for Scientific and Industrial Research (CSIR), South African National Biodiversity Institute (SANBI), Water Research Commission, Department of Water Affairs (DWA; now Department of Water and Sanitation, or DWS), Department of Environmental Affairs (DEA), WWF, South African Institute of Aquatic Biodiversity (SAIAB), and South African National Parks (SANParks). The NFEPA initiative seeks to, in more detail:

- To achieve national biodiversity goals for freshwater environments, identify Freshwater Ecosystem Priority Areas, or "FEPAs"; and
- Create a framework that will allow for the efficient implementation of actions to protect FEPAs, such as free-flowing rivers.

The first aim uses systematic biodiversity planning to identify priorities for conserving South Africa's freshwater biodiversity, within the context of equitable social and economic development. The second aim comprises a national and sub-national component. The national component aims to align DWS and DEA policy mechanisms and tools for managing and conserving freshwater ecosystems. The subnational component aims to use three case study areas to demonstrate how NFEPA products should be implemented to influence land and water resource decision-making processes at a sub-national level. The project further aims to maximize synergies and alignment with other national level initiatives such as the National Biodiversity Assessment (NBA) and the Cross-Sector Policy Objectives for Inland Water Conservation.

According to the National Water Act (Act no 36 of 1998), a wetland is defined as, "land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil." Wetlands often exist where aquatic and terrestrial environments converge. As a result, they exhibit a gradient of wetness, ranging from permanent to seasonal to transient zones, which is reflected in the diversity of their plant species and the properties of their soil. It is crucial to recognize that not all wetlands have clearly visible surface water. A region with a high-water table just below the soil's surface qualifies as a wetland just as much as a pan with seasonal flooding.

The wetland types range from valley head seeps, seeps, flats, depressions, channelled and un-channelled valley bottom wetlands to floodplain wetlands. Priority wetlands, referred to as Freshwater Ecosystem Priority Area (FEPA) wetlands; and wetland clusters were identified, which represent the range of wetland ecosystem types that need to be safeguarded. FEPA wetlands are considered important

due to the presence of rare plants, threatened frogs and/or wetland-dependent birds. Wetland vegetation provides food and critical habitat for organisms that live in or near water resources, such as algae, macroinvertebrates, amphibians, fish, and birds. Wetland plants can also improve water quality through the uptake of nutrients, metals, and other contaminants (Driver et al., 2011).

Freshwater Biodiversity Assessments (FEPAs)

The Atlas of Freshwater Ecosystem Priority Areas in South Africa (Nel et al, 2011) which represents the culmination of the National Freshwater Ecosystem Priority Areas project (NFEPA), a partnership between SANBI, CSIR, WRC, DEA, DWA, WWF, SAIAB and SANParks, provides a series of maps detailing strategic spatial priorities for conserving South Africa's freshwater ecosystems and supporting sustainable use of water resources. The NFEPA project aims to:

- Identify Freshwater Ecosystem Priority Areas (FEPAs) to meet national biodiversity goals for freshwater ecosystems; and
- Develop a basis for enabling the effective implementation of measures to protect FEPAs, including free-flowing rivers.

FEPAs were identified through a systematic biodiversity planning approach that incorporated a range of biodiversity aspects such as ecoregion, the current condition of habitat, the presence of threatened vegetation, fish, frogs and birds, and the importance in terms of maintaining downstream habitat. FEPAs should be regarded as ecologically important and as generally sensitive to changes in water quality and quantity, owing to their role in protecting freshwater ecosystems and supporting sustainable use of water resources (Driver et al, 2011).

Wetlands are usually classified according to HGM (hydro geomorphic) type using the National Wetland Classification System which was developed for the South African National Biodiversity Institute (SANBI, 2009). The HGM classification system is based on three key parameters pertaining to the wetland: the geomorphic setting of the wetland, the source of water inputs into the wetland, and its hydrodynamics (how water moves through the wetland), (Brinson 1993; Kotze et al. 2005). Additionally, wetland types will also be identified based on the NFEPA (CSIR, 2011) wetland vegetation group in which wetlands are located. The conservation context and associated conservation significance of the project area will be described using available spatial datasets including the National Freshwater Ecosystem Priority Areas or NFEPA Project (CSIR, 2011).

The Description of the Ecological Categories used for PES assessments of inland aquatic ecosystems in South Africa is shown in **Table 12**.

Table 12: Description of the Ecological Categories used for PES assessments of inland aquatic ecosystems in South Africa (Macfarlane et al., 2020)

ECOLOGICAL CATEGORY	DESCRIPTION	IMPACT SCORE	PES SCORE (%)
A	Unmodified, Natural	0-0.9	90-00
B	Largely natural with few modifications. A slight change in ecosystem processes in discernible and a small loss of natural habitats and biota may have taken place.	1-1.9	80-89
C	Moderately modified. A moderate change in ecosystem process and loss of natural habitats has taken place but the natural habitat remains predominantly intact.	2-3.9	60-79
D	Largely modified. A large change in ecosystem processes and loss of natural habitat and biota has occurred.	4-5.9	40-59
E	Seriously modified. The change in ecosystem processes and loss of natural habitat and biota is great but some remaining natural habitat features are still recognizable.	6-7.9	20-39
F	Critically modified. Modifications have reached a critical level and the ecosystem processes have been modified completely with an almost complete loss of natural habitat and biota.	8.0-10	0-19

Wetlands within ALM are either saturated with water either permanently or seasonally which contribute to the hydrological functioning of the catchments and aquifers. A large number wetlands are located on the western part of Mfolozi catchment mainly around the town of Vryheid, especially around Bhekuzulu location. Wetlands are also present at Lakeside, Blood River Vlei, and Klipfontein Bird sanctuary (ALM, 2022). The former wetlands are classified as RAMSAR Sites which are home to all three Crane species recorded (Ezemvelo KZN Wildlife, 2015). Over-grazing, agriculture, frequent burning, drought and climate change severely drain wetlands resulting in reduced functionality of storm-water attenuation. The wetlands range from open water bodies, vleis, marshes to extensive wetlands associated with streams and/or rivers. Wetlands play a vital role of ensuring acceptable water quality and levels as well as maintaining regular streamflow patterns. They also provide critical ecosystem goods and services which preserve biodiversity (Ezemvelo KZN Wildlife, 2015).

The study area falls within the Sub-escarpment Grassland Group 4 wetland vegetation group. A flat wetland system type of HGM was mapped to occur within the project area as part of the National wetland Map Version 5 as shown in Figure **10** below. In addition to the identified wetland, further wetland types

were mapped and included within the wetland delineation, namely the seep, depression, and channelled valley bottom wetland types.

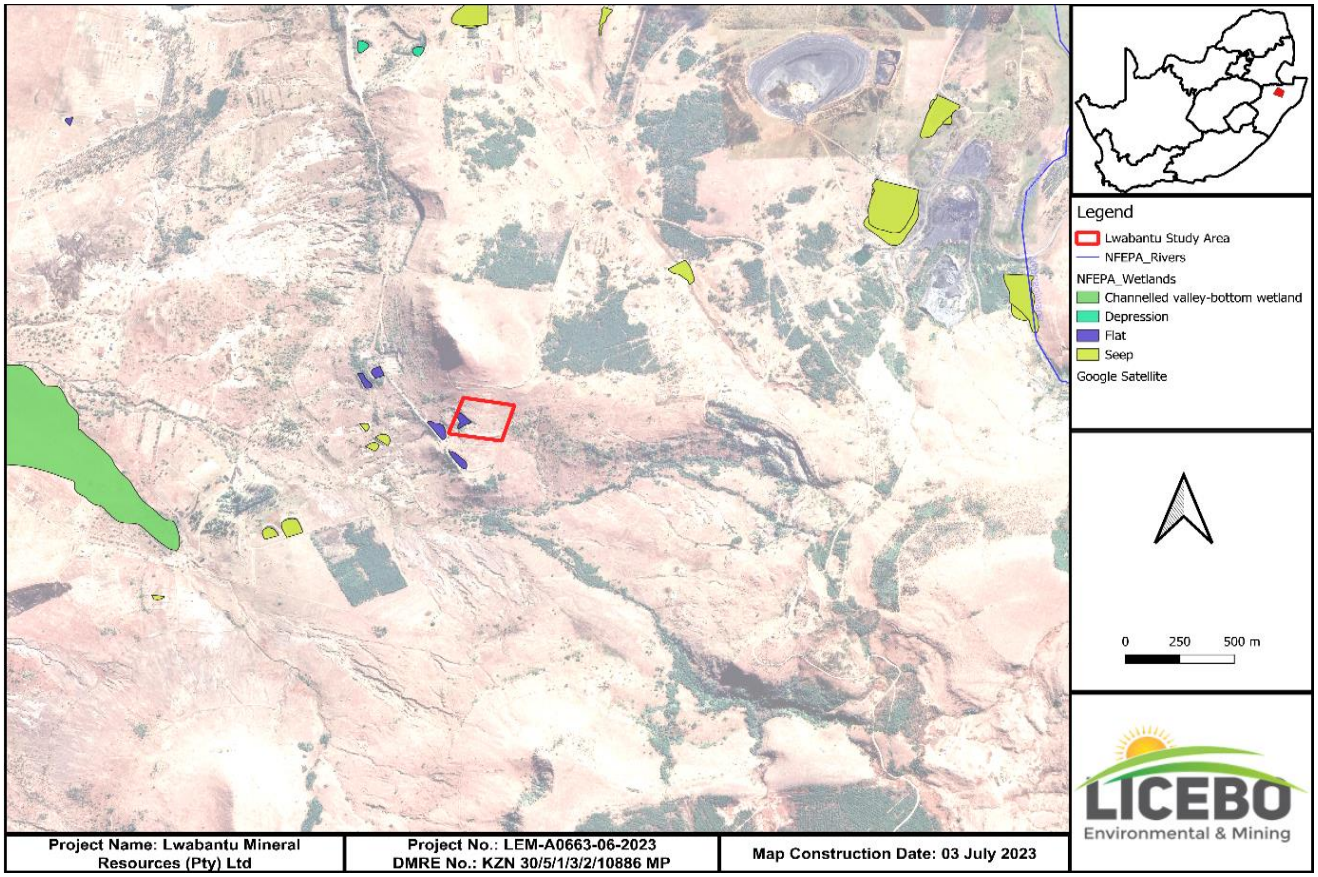


Figure 10: Delineated wetlands and watercourses within the mining area

9.2.8. Surface water

The study area falls within quaternary catchment W21B from Usutu to Mhlathuze Water Management Area. Mfolozi secondary catchment is the main drainage system that influences the hydrological characteristics of the study area (Figure). This secondary catchment is mainly comprised of the Black and White Mfolozi Rivers however, they do not flow and/or near the study area. Both the Black and White Rivers discharge into the Indian Ocean. Klipfontein Dam is located on the White Mfolozi River in the quaternary catchment W21A. Klipfontein Dam serves as a domestic water supply dam for Vryheid and surrounding areas. Wetlands within ALM are either saturated with water either permanently or seasonally which contributes to the hydrological functioning of the catchments and aquifers. Wetland flat exists within the study area. This is a near-level wetland area with little or no gradient, situated on a plain or a bench in terms of landscape setting with the primary source of water being precipitation. Mfolozi catchment has a definite and serious water quality problem. The water quality is degraded by municipal return flows from Vryheid and settlements on State land upstream of the dam which results in unacceptably poor water quality in the Klipfontein Dam. Eutrophication is a serious problem with the possibility of forming toxic blooms threatening human health, and the ecology of the dam, and rivers. Coal mining in the upper reaches of the catchment also impacts severely the water quality by decreasing the pH and salinity. See **Appendix 9** (Hydrology and Geohydrology Impact Assessment Report) for more information.

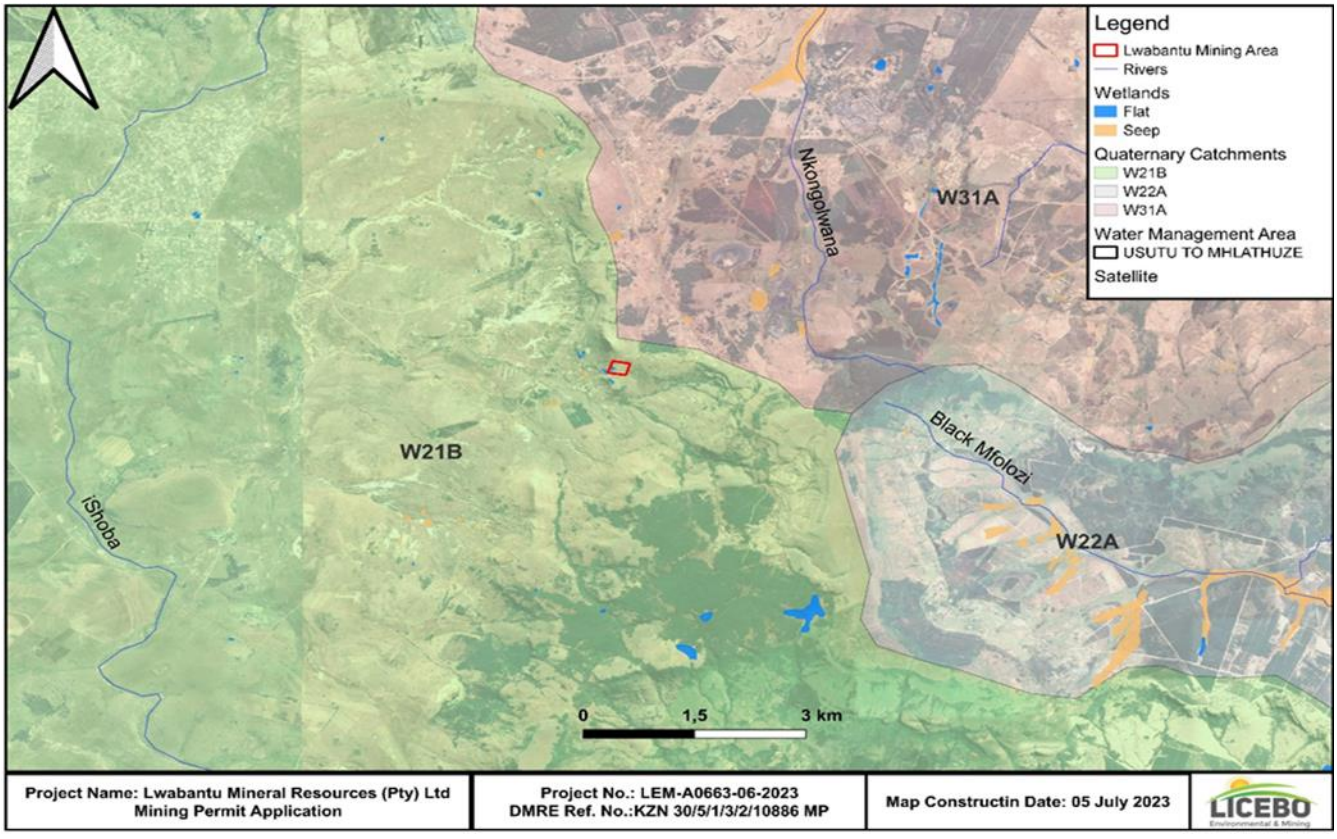


Figure 11: Hydrological setting of the study area within Usuthu to Mhlathuze Water Management Area**.**

Mfolozi secondary catchment is the main drainage system that influences hydrological characteristics of the study area **Figure 12.** However, no rivers and/or streams flow through the study area. The Mfolozi catchment has a land area of approximately10 008 km^2. Mfolozi River in northern KwaZulu-Natal is the main river in Mfolozi secondary catchment system. It is important to note that Mfolozi River and its tributaries do not flow through the study area. Mfolozi River is formed by the confluence of the Black Mfolozi and White Mfolozi Rivers (DWAF,2004).

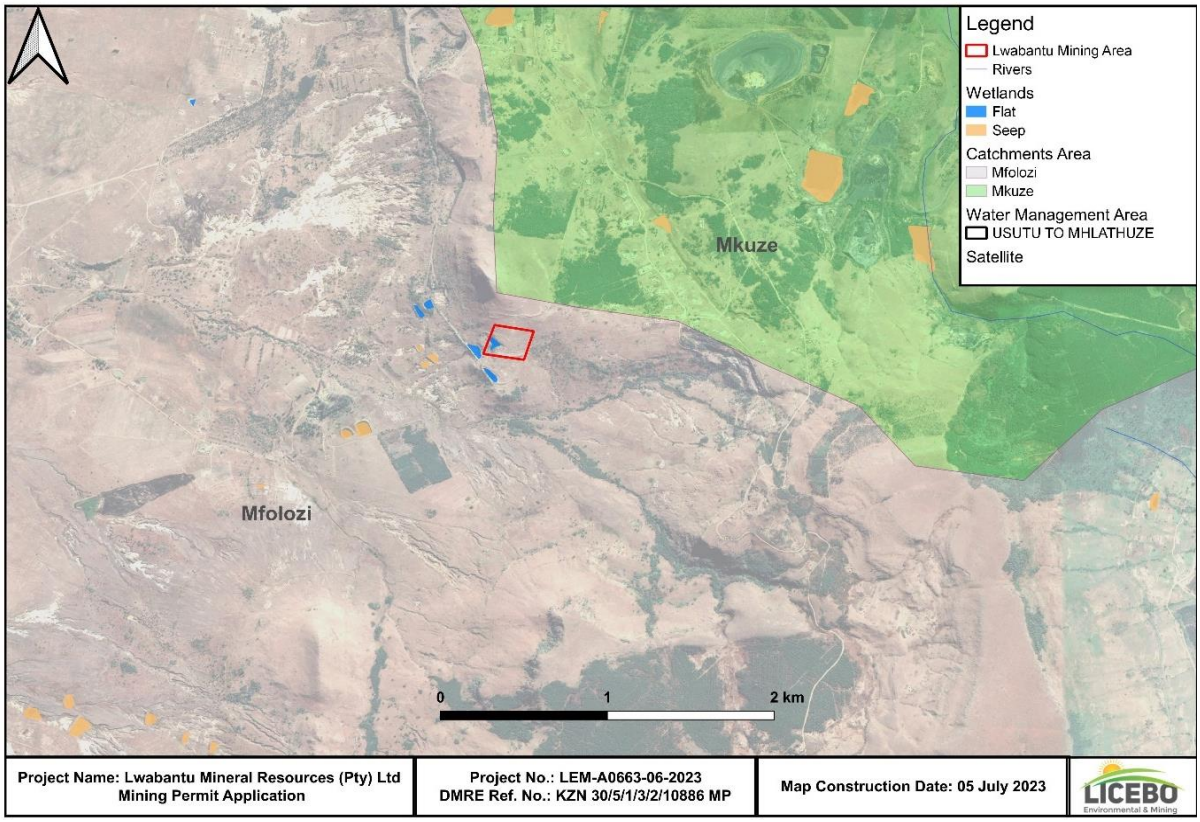


Figure 12: Mfolozi and Mkuze secondary catchment areas in relation to the study area.

The Mfolozi System is situated within secondary catchments W21, W22 and W23 with Klipfontein Dam located on the White Mfolozi River in the quaternary catchment W21A. Klipfontein Dam **Figure 13** serves as a domestic water supply dam for Vryheid and surrounding areas. The White Mfolozi River originates near Vryheid; flows eastwards past Ulundi towards Mfolozi Game Reserve and discharges into the Indian Ocean. Land use along the White Mfolozi catchment is comprised of commercial farming (i.e., cattle farming), Traditional Authority Land and commercial forestry. Only a small portion of the catchment area is used for irrigation due to farmers reducing their irrigation requirements because of the high cost of water (Scott & Sithole, 2021).

The Black Mfolozi River originates about 20 km east of Vryheid, from where it flows south east through Traditional Authority areas, towards Mfolozi Game Reserve and discharges into the Indian Ocean. The water resources of the Black Mfolozi catchments are mostly undeveloped and underutilised. The major water users are irrigation and domestic rural water supply. Summary of the hydrological characteristics of Mfolozi Systems are show in **Table 13** (Scott & Sithole, 2021).

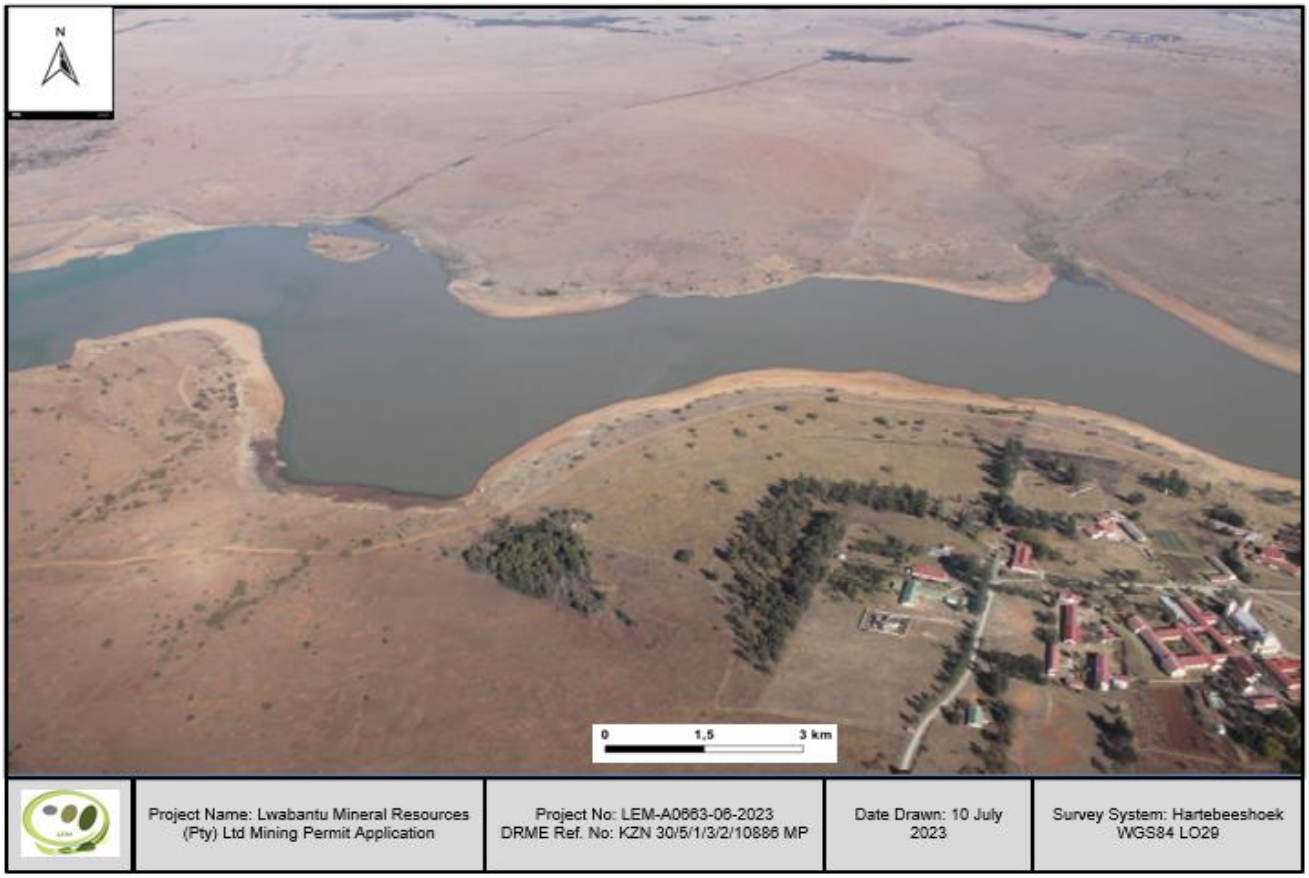


Figure 13: Klipfontein Dam Northern KwaZulu Natal [Modified after Scott & Sithole, 2021].

Table 13: Hydrological characteristics of the Mfolozi Region [Modified after Scott & Sithole, 2021].

River	Catchment	Area (km^2)	Annual Average			
			Evaporation (mm)	Rainfall (mm)	Natural Runn off (million m^3/a)	Natural Runoff (mm)
Mfolozi	W21	5274	1462	763	393.8	74.7
	W22	3566	1202	808	277.1	77.7

River	Catchment	Area (km^2)	Annual Average			
			Evaporation (mm)	Rainfall (mm)	Natural Runn off (million m^3/a)	Natural Runoff (mm)
	W23	1167	1368	972	153.9	131.9

9.2.9. Groundwater

The Mfolozi Catchment is situated within three hydrogeological regions; the North Western Middleveld, North Eastern Middleveld, and Southern Lebombo. Groundwater occurs within primary and secondary aquifers within Usutu to Mhlathuze Water Management Area. The ZDM's hydrogeological regime has an intergranular and fractured regional aquifer. Groundwater flow is controlled by fracture flow on a local scale while it is influenced by dolerite dykes that intruded karoo strata on a regional scale. Intergranular and fractured type aquifers contain groundwater within the intergranular voids and fractures intersecting the sedimentary rock layers. Groundwater yield potential is classified as low since 83% of boreholes on record produce less than 2 l/s and the average groundwater level is generally around 18.08 mbg/l. Groundwater quality in the region varies with fluoride, iron, and sodium levels exceeding the recommended limits for groundwater suitability. The indicative water quality can be classified as good to poor. See **Appendix 9** (Hydrology and Geohydrology Impact Assessment Report) for more information

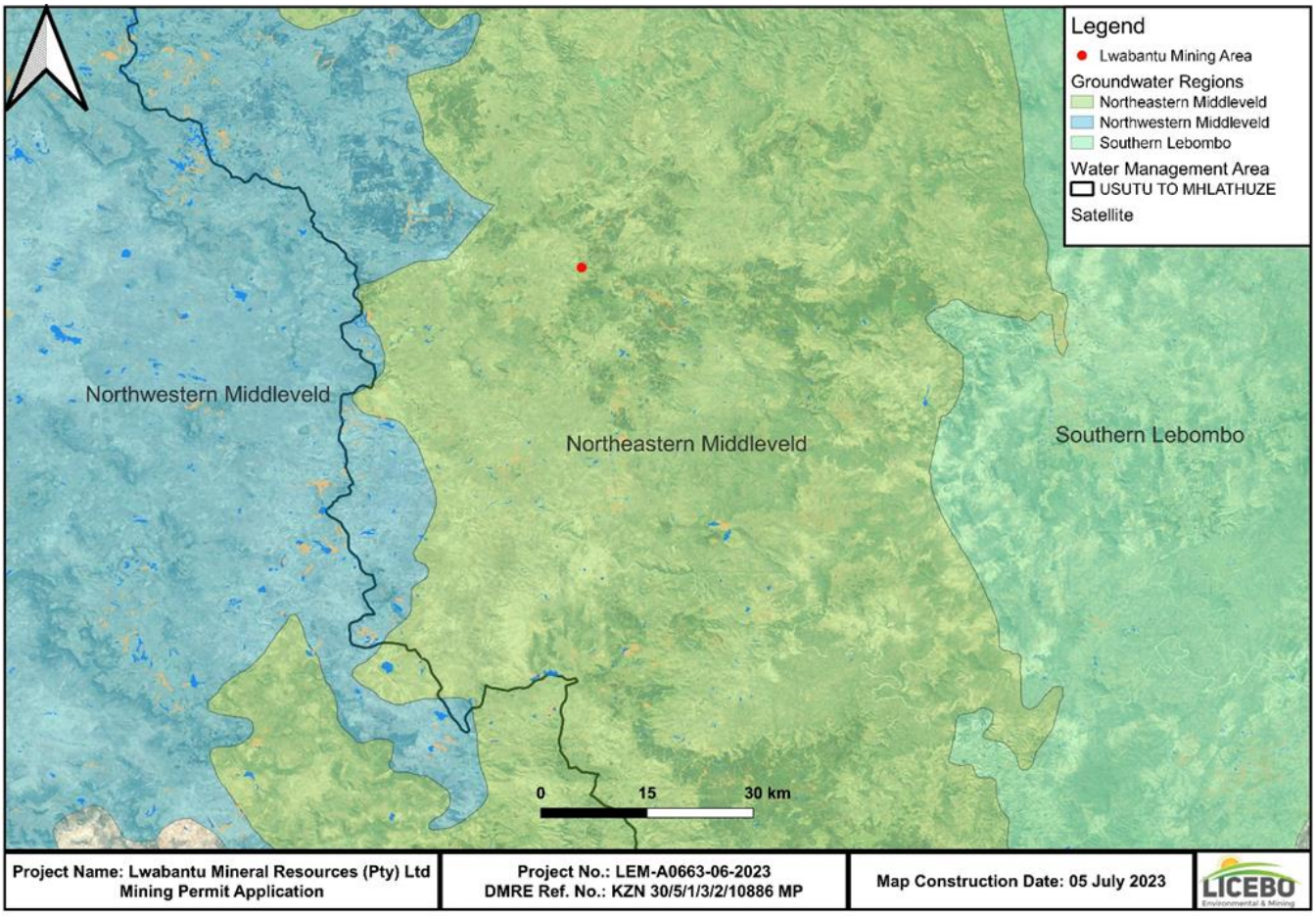


Figure 14: Hydrogeological regions of Mfolozi secondary catchment in relation to the study area.

9.2.10. Heritage

A Pelser Archaeological Consulting (APAC) conducted Heritage Impact Assessment study for Licebo Environmental and Mining (Pty) Ltd, on behalf of the applicant (Lwabantu Mineral Resources (Pty) Ltd) a for their Mining Rights Application (**Appendix 12**). This is likely due to the lack of focused archaeological and historical research in the specific area. The background research indicates that there are several cultural heritages (archaeological and historical) sites and features in the larger geographical area within which the study area falls, but no known ones were discovered in the study area and specific farm portion. With no physical field assessments conducted in the study and Mining Rights Application Area it is difficult to determine without a doubt if any sites, features or material of cultural heritage origin or significance are located here and if there will be any impacts on such sites as a result of future prospecting and any resultant future mining should the Application be granted.

Aerial images from google earth indicate that no major developmental impacts are present on the area. However, there is clear evidence of agricultural activities (terracing) and possible quarrying/mining in nearby places. If any cultural heritage sites, features and material were present here in the past it would have been severely impacted by these activities. The Screening Report for Environmental Authorization also indicates a Low Sensitivity for Archaeological and Cultural Heritage, and it is deemed highly unlikely that any cultural heritage sites would be located here.

The study area is centrally located between the Drakensberg with its abundance of Later Stone Age rock art sites to the east and the low altitude river valleys that were favored by Iron Age farmers, to the west. The available evidence, as captured in the KwaZulu-Natal Museum heritage site inventories, indicates that the general geographical area in which the study area falls contains a wide range of archaeological sites covering different time-periods and cultural traditions. These include Early Stone Age site, Middle Stone Age, Later Stone Age sites, Later Iron Age sites and numerous historical sites dating back to the colonial period. Some of the farms in the area contain graves and structures relating to early Voortrekker settlement. However, the majority of older buildings on farmsteads were erected by British colonists after 1850 who occupied farms previously inhabited by Voortrekker pioneers.

There are no known Stone Age, Iron Age or recent Historical Age sites, features or material in the study and proposed application area. If any are to be found it will most likely be in the form of individual stone tools or smaller scatters of stone tools on the surface of the area, as well as scatters of Iron Age material (pottery, etc.). These would be without any archaeological or historical context, and not present in any stratigraphical deposits.

9.2.11. Paleontology

The Ecca Group Vryheid Formation within the study area may contain fossils of diverse non-marine trace, Glossopteris flora, mesosaurid reptiles, palaeoniscid fish, marine invertebrates, insects, and crustaceans. Glossopteris trees rapidly colonized the large deltas along the northern margin of the Karoo Sea. It is only in the northern part of the Karoo Basin that the glossopterids and Cordaitales, ferns, clubmosses, and horsetails thrived. These are found in Karoo-age rocks across Africa, South America, Antarctica, Australia, and India. Rocks of Permian age in South Africa are particularly rich in fossil plants. The fossils are present in the grey shale interlayered with the coal seams. The fossils are not very rare and occur also in other parts of the Karoo stratigraphy. It is often difficult to spot the greyish fossils as they are the same color as the grey shale in which they are present as these coalified compressions have been weathered to leave surface replicas on the enclosing shale matrix. Vryheid Formation has yielded fossils of Scutum, Glossopteris leaves, Neoggerathiopsis leaves, the lycopod Cyclodendron leslii, various seeds, and scale leaves. See **Appendix 12** for a detailed Paleontological Impact Assessment Report.

Figure 15: Google Earth image showing development.

9.2.12. Socio-economic impacts

9.2.12.1. Economic activity

A community survey that was conducted in 2016 (refer to **Figure 16**) indicated that a total population of 448 330 in ZDM is considered economically active i.e., ages of 15-64. About 57% of the working age group was not economically active in 2011, with only 19 % of this group employed. The representation of the not economically active population is higher compared to the provincial average of 45% and the national average of 39%. This implies a relatively low labour participation rate at 23,7%.

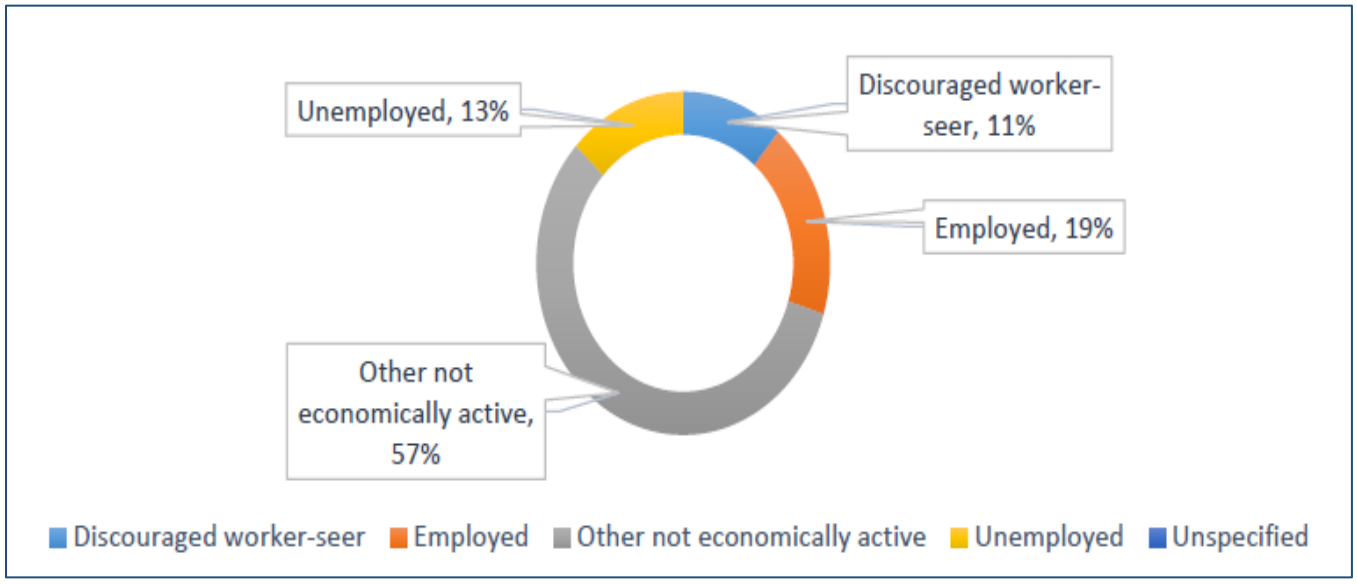


Figure 16: Population of ZDM employment status (ZDM, 2022).

The main economic drivers of ALM include Community Services, Mining and Finance Services. Community services contribute about 20% to the economy and is regarded as primary contributor to the economy. The potential to further increase the Mining, Agriculture, Trade and Transport sectors are high due to the rich history in Mining activities, large agricultural land and diverse productivity and its favourable location to promote trade and transport (ALM, 2023).

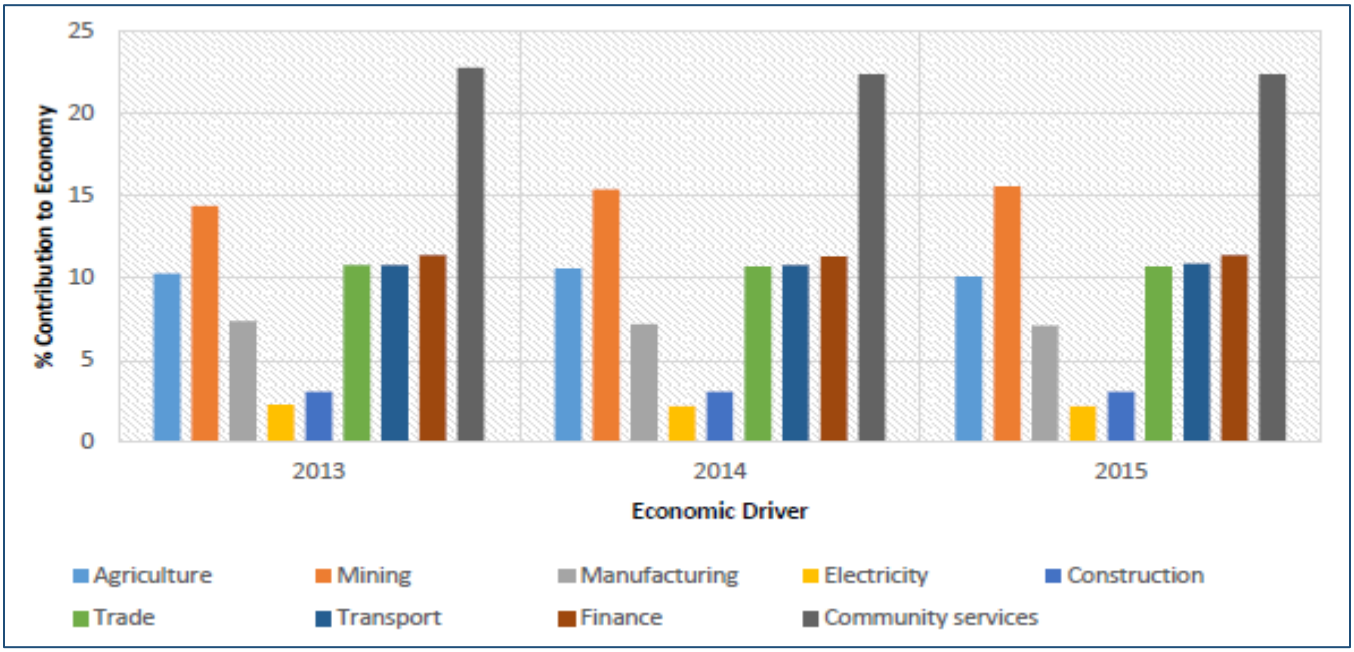


Figure 17: The main economic contributors of ALM (ALM, 2023).

9.2.12.2. Unemployment rate

ZDM has a 41% overall unemployment rate which is subsequently higher than the provincial average of 33%. The youth unemployment rate of 51,2% is higher than the provincial average of 42.1%. ALM has the largest economically active population at 165 020 within ZDM. Conversely, it has the largest unemployment rate at 30.5% within the district municipality. From 1998 to 2018, the total number of unemployed people in ZDM increased from 68 945 to 95 575 translating to a 28% increase. ALM contributed significantly to the increase of employment (ZDM, 2022).

Table 14: Population of unemployed in ZDM in1998, 2008 and 2018 (Modified after ZDM, 2022).

Municipality	Total number of unemployed people			Percentage share of unemployment in Zululand		
	1998	2008	2018	1998	2008	2018
eDumbe	8 546	11 737	10 842	12.4%	12.0%	11.3%
Uphongolo	8 538	12 126	11 807	12.4%	12.4%	12.4%
Abaqulusi	30 189	39 395	39 336	43.8%	40.2%	41.2%
Nongoma	7 267	13 714	14 055	10.5%	14.0%	14.7%
Ulundi	14 405	21 046	19 537	20.9%	21.5%	20.4%
Zululand	68 945	98 020	95 575	100.0%	100.0%	100.0%

9.2.12.3. Household income

The average annual income for households in ZDM is very low. Approximately 52% of households in the ZDM earn less than R20 000 per annum or R1 600 per month. 16% of households have zero income. 13,7% earn between R20 000 and R40 000 per annum. This takes the figure of households that earn less than R40 000 per annum or R3 333 per month up to 66,1%. This implies relatively low affordability levels for goods and services (ZDM, 2022).

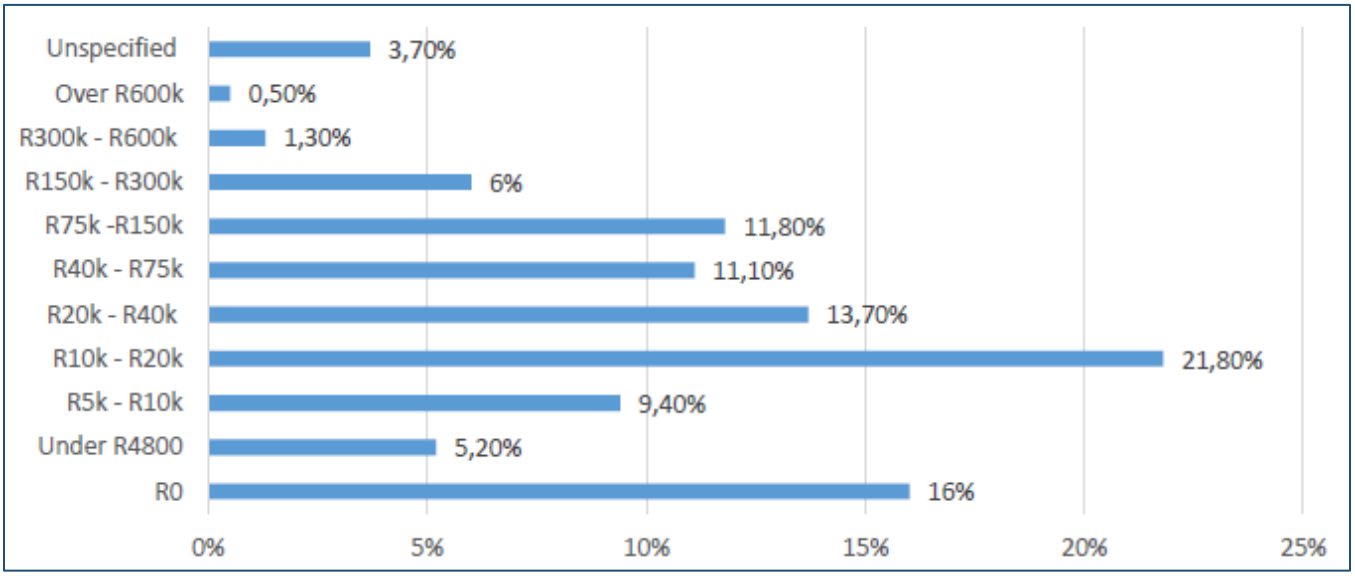


Figure 18: Annual household income in ZDM (ZDM, 2022).

9.2.12.4. Poverty profile

Low unemployment rates have consequently resulted in increased poverty rates in ZDM. There are households which are unable to pay for normal municipal services. ZDM has therefore adopted a poverty management policy to ensure that these households have access to basic municipal services. Basic Municipal Services provided under the policy include:

- Access to a minimum safe water supply as determined by Council.
- Adequate sanitation as determined by Council.
- Once off credit equivalent to the outstanding balance on the dwelling at the date of approval.
- Where there are leaks in the meter or in the property, they may be attended to in terms of the bylaws and the cost may be recovered from the Indigent Support allocation.
- Cost of restriction shall be recovered from the Indigent Support allocation.
- Excess usage in the event of death shall be recovered from the Indigent Support allocation.

Table 15: Assessment of indigent households per local municipality (ZDM, 2022).

Local Municipality	Total households	Poor households	% of poor households
Abaqulusi	46413	24058	0.52
eDumbe	17234	9351	0.54
Nongoma	44373	23841	0.54
Ulundi	44825	23227	0.52
uPhongolo	26644	15371	0.58

9.2.12.5. Education profile

There are more children attending educational institutions than those who are not attending in the ZDM . Children not in school are higher between the ages of 6 and 24 years as compared to 0 – 5-year-olds. Education is one of the basic human rights in South Africa, however, a significant number of people in ZDM have no formal schooling. About 70,2 % of the ALM population have studied up to secondary level (ZDM, 2022).

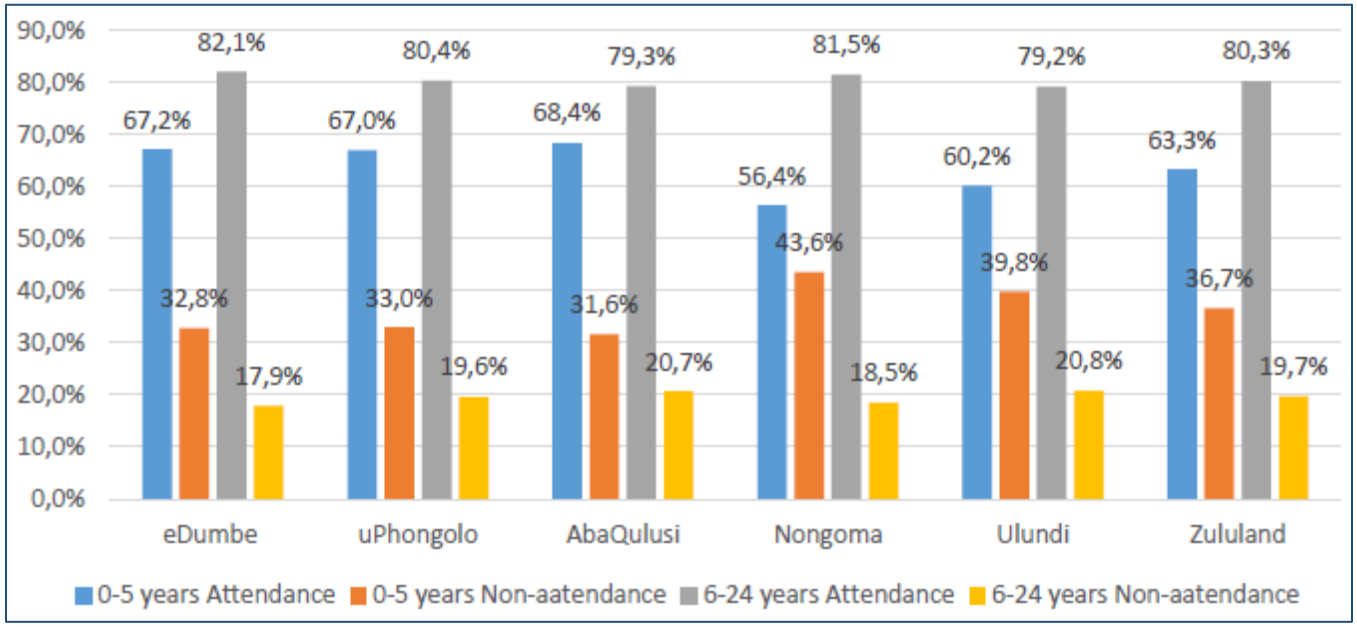


Figure 19: Population attending educational institution in 2016 (ZDM, 2022).

10. DESCRIPTION OF SPECIFIC ENVIRONMENTAL FEAUTURE AND INFRASTRUCTURE ON SITE

10.1. Environmental AND CURRENT LAND USE MAP

The land cover and uses associated with the proposed prospecting application right area is dominated by livestock farming including some cultivated land owing to the increased availability of groundwater from the underlying aquifers. The most part of the area is covered by woodland/open bush land, grassland, low shrubland, thicket/dense bush and some small patches of low lying cultivated filed, erosional dongas, plantations/woodlots mature and wetlands.

11. IMPACT AND RISKS IDENTIFIED INCLUDING THE NATURE, SIGNIFICANCE, CONSEQUENCE, EXTENT, DURATION AND PROBABILITY OF THE IMPACT, INCLUDING THE DEGREE TO WHICH THESE IMPACTS

11.1. Methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential impacts and risks

Impact Ranking Criteria to be used

The criteria used for assessing the assessing the significance of the impacts are given in **Table 16**.
The impact assessment method takes into account the current environment, the details of the proposed project and the findings of the specialist studies. Cognizance has been given to both positive and negative impacts that may result from the development. The significance of the impact is dependent on the consequence and the probability that the impact will occur.

Impact significance = (consequence x probability)

Where:

Consequence = (severity + extent)/2

and

Severity = [intensity + frequency + duration]/3

Each criterion is given a score from 1 to 5 based on the definitions given in **Table 16** although the criteria used for the assessment of impacts attempts to quantify the significance, it is important to note that the assessment is generally a qualitative process and therefore the application of this criteria is open to interpretation. The process adopted will therefore include the application of scientific measurements and professional judgement to determine the significance of environmental impacts associated with the project. The assessment thus largely relies on experience of the environmental assessment practitioner (EAP) and the information from the specialists' studies for the EIA.

Where the consequence of an event is not known or cannot be determined, the "precautionary principle" will be adhered to and the worst-case scenario assumed. Where possible, mitigation measures to reduce

the significance of negative impacts and enhance positive impacts will be recommended. The detailed actions, which are required to ensure that mitigation is successful, will be provided in the Environmental Management Programme report, which will form part of the EIR Phase.

Consideration will be given to the phase of the project during which the impact occurs. The phase of the development during which the impact will occur, will be noted to assist with the scheduling and implementation of management measures.

Table 16: Criteria for assessing the impact significance

SEVERITY CRITERIA

INTENSITY = MAGNITUDE OF IMPACT	**RATING**
Insignificant: impact is of a very low magnitude	1
Low: impact is of low magnitude	2
Medium: impact is of medium magnitude	3
High: impact is of high magnitude	4
Very high: impact is of highest order possible	5

FREQUENCY = HOW OFTEN THE IMPACT OCCURS	**RATING**
Seldom: impact occurs once or twice	1
Occasional: impact occurs every now and then	2
Regular: impact is intermittent but does not occur often	3
Often: impact is intermittent but occurs often	4
Continuous: the impact occurs all the time	5

DURATION = HOW LONG THE IMPACT LASTS	**RATING**
Very short-term: impact lasts for a very short time (less than a month)	1
Short-term: impact lasts for a short time (months but less than a year)	2
Medium-term: impact lasts for the for more than a year but less than the life of operation.	3
Long-term: impact occurs over the operational life of the proposed extension.	4
Residual: impact is permanent (remains after mine closure)	5

EXTENT

EXTENT = SPATIAL SCOPE OF IMPACT/ FOOTPRINT AREA / NUMBER OF RECEPTORS	**RATING**
Limited: impact affects the mining area	1
Small: impact extends to the neighbouring farmers	2
Medium: impact extends to surrounding farmers beyond the immediate neighbours	3
Large: impact affects the area covered by the municipal area	4
Very Large: The impact affects an area larger than the municipal area	5

PROBABILITY

PROBABILITY = LIKELIHOOD THAT THE IMPACT WILL OCCUR	RATING
Highly unlikely: the impact is highly unlikely to occur	0.2
Unlikely: the impact is unlikely to occur	0.4
Possible: the impact could possibly occur	0.6
Probable: the impact will probably occur	0.8
Definite: the impact will occur	1

IMPACT SIGNIFICANCE

NEGATIVE IMPACTS

≤1	Very low	Impact is negligible. No mitigation required.
>1≤2	Low	Impact is of a low order. Mitigation could be considered to reduce impacts. But does not affect environmental acceptability.
>2≤3	Moderate	Impact is real but not substantial in relation to other impacts. Mitigation should be implemented to reduce impacts.
>3≤4	High	Impact is substantial. Mitigation is required to lower impacts to acceptable levels.
>4≤5	Very High	Impact is of the highest order possible. Mitigation is required to lower impacts to acceptable levels. Potential Fatal Flaw.

POSITIVE IMPACTS

≤1	Very low	Impact is negligible.
>1≤2	Low	Impact is of a low order.
>2≤3	Moderate	Impact is real but not substantial in relation to other impacts.
>3≤4	High	Impact is substantial.
>4≤5	Very High	Impact is of the highest order possible.

Table 17: Significance rating associated with the potential impacts from the proposed

No	Activity	Potential Affected environment	Potential Impact	Project Phases	Possible Objectives	Possible Mitigation/Management measure
Mining right activities						
Construction Phase						
1	Recruitment, procurement and employment	Socio-economic	Socio-economic impact	Construction phase	Ensure that recruitment strategies for the mine prioritizes the sourcing of local labour and share in gender equality. Empower the workforce to develop skills that will equip them to obtain employment in other sectors of the economy. Contribute to the sustainable development of a community (not dependent on the mine) surrounding the area of operation.	Implement Social and Labour Plan in order to implement LED initiative to manage the needs of the local communities. Relationships with local government through LED programmes should be developed. Stakeholder database should be established to identify partners and develop collaborative networks.
3	Transport of construction material	Air quality	Dust generation from the movement of vehicles	Construction, operational, decommissioning and closure phase	To prevent the dust generated by the moving machinery and equipment	Dust suppression must be undertaken on all dirty roads at all times
		Soil	Disturbance of soil	Construction phase decommissioning and closure phase	Minimization of disturbed area and prevention of compaction of soil.	All heavy machinery operators and truck drivers should stay in designated areas.

No	Activity	Potential Affected environment	Potential Impact	Project Phases	Possible Objectives	Possible Mitigation/Management measure
		Noise	Noise pollution from the vehicles as the results of poor vehicular maintenance and lack of service.	Construction, operational, decommissioning and closure phase	To prevent the noise emanating from the transport vehicles from impacting on the sensitive receptors.	Mining-related machine and vehicles must be serviced on a regular basis to ensure noise suppression mechanisms are effective e.g., installing exhaust mufflers. Noisy machinery to be used during daylight hours preferably. Grievance mechanism to record complaints should be kept on site and investigated. Noise monitoring to take place.
		Surface water	Contamination of surface water	Construction, Operation phase	Prevent hydrocarbons spillages from the vehicular movement	All potential hydrocarbon spillages and leaks to be cleaned up immediately and the soils remediated; Ensure that all machinery and equipment are in a good working order.
		Biodiversity & Aquatic environment	Disturbance of vegetation	Construction, operational, decommissioning and closure phase	Restrict removal and disturbance of vegetation to the approved area.	Make use of existing roads and/or areas and roads designated for the mining operation.
			Excessive dust generation	Construction, operational, decommissioning and closure phase	Limit the negative effects of excessive dust and erosion	Remove lose earth from the roadsides. Periodic spraying of roads with water.
		Visual impact due to mining dumps.	To limit visual impact due to mining activity	Construction, operational, decommissionin	Limit the extent of the visual intrusion as far as possible.	Dirt roads need to be wet by a water browser so as to reduce dust plumes.

No	Activity	Potential Affected environment	Potential Impact	Project Phases	Possible Objectives	Possible Mitigation/Management measure
				g and closure phase		
		Traffic and safety on access roads to traffic increase.	Traffic congestion	Construction, operational, decommissioning and closure phase	Create safe environment for pedestrians, animals and motorists.	Speed limits must be implemented on site as well as safety controls. Investigations into the requirement of safety intersections must be undertaken.
4	Site clearing and topsoil removal	Air quality	Dust generation from the movement of vehicles	Construction, operational, decommissioning and closure phase	Limit dust generation by dust suppression.	Dust suppression must be undertaken on all dirty roads at all times.
		Noise	Increased ambient noise levels from vehicular movement	Construction, operational, decommissioning and closure phase	Limit excessive nose generation from vehicular movement.	Vehicles must be serviced on a regular basis to ensure noise suppression mechanisms are effective e.g., installed exhaust mufflers. All vehicles and machinery must be in a good working order.
		Vegetation	Disturbance of vegetation on the proposed study area	Construction phase	To ensure that the disturbance of vegetation is minimal.	Vegetation and topsoil removal to be minimised and restricted to the required footprint areas.
		Soil	Soil disturbance due to the excavation activities	Construction phase	To ensure that the mining activities are limited only to footprint areas and in this manner soil disturbance will be minimal.	All vehicles and machinery to be serviced in a hard park area or at off-site locations. Trenches and excavations shall be closed as soon as possible after

No	Activity	Potential Affected environment	Potential Impact	Project Phases	Possible Objectives	Possible Mitigation/Management measure
						services have been laid on them. To prevent them from posing hazards to staff, traffic, and animals as well as to prevent wind and soil erosion. Topsoil and subsoil must be stockpiled separately.
5	Construction of surface infrastructure	Air Quality	Dust generation from the movement of vehicles	Construction phase decommissioning and closure phase	Limit dust generation by dust suppression.	Dust suppression must be undertaken at all times.
		Soil	Disturbance of soil as a results of topsoil removal.	Construction phase	To limit soil disturbance within footprint area only.	Topsoil removal must be limited within development footprint area only. Topsoil and subsoil must be stockpiled separately.
		Noise	Noise generation emanating from the excavator.	Construction phase	To prevent noise generation emanating from the vehicles and machinery	Mining-related machine and vehicles must be serviced on a regular basis to ensure noise suppression mechanisms are effective e.g., installing exhaust mufflers. Noisy machinery to be used during daylight hours preferably. Grievance mechanism to record complaints should be kept on site and investigated. Noise monitoring to take place.
6.	Establishment of initial boxcut	Air quality	Dust generation emanating from	Operational phase	To limit dust generation emanating from the drilling activity.	Dust generated from the drilling activity must be supressed with water during the operation. Ensure that dust fall out

No	Activity	Potential Affected environment	Potential Impact	Project Phases	Possible Objectives	Possible Mitigation/Management measure
	and access ramps		the drilling activity.			programme implemented to monitor dust generated from the operation.
		Soil	Disturbance of soil as a results of mining activities.	Operational phase	To limit soil disturbance within footprint area only.	Drilling activity must be limited to only the mining project area. Ensure that the drilling machinery are regularly checked and maintained for the mining activity.
		Noise	Noise generation emanating from the heavy machinery.	Operational phase	To prevent nose generation emanating from the heavy machinery	Heavy machinery must be serviced on a regular basis to ensure noise suppression mechanisms are effective e.g., installing exhaust mufflers.
		Groundwater	Impacts to the groundwater bodies as are results of mining activity from the heavy machinery.	Operational phase	To limit groundwater disturbance as a result of mining activity	Mining activity must be limited to only the mining project area. Ensure that the heavy machinery are regularly checked and maintained for the mining activity
7.	Temporary waste and sewage handling and treatment			Construction phase Decommissioning and post closure phase	Ensure that temporary sewage is handled or or treatment facilities are required a the construction phase.	
Operational Phase						
8	Workshop activity and storage of fuel,	Air quality	Dust generation from the movement of vehicles	Construction, operational, decommissionin	To prevent the dust generated by the moving machinery and equipment.	A dust suppressant must be applied to gravel or dirt roads.

No	Activity	Potential Affected environment	Potential Impact	Project Phases	Possible Objectives	Possible Mitigation/Management measure
	lubricant and explosives			g and closure phase		
		Soil	Disturbance of soil as a result of excavation activities.	Construction phase decommissioning and closure phase	To limit soil disturbance within footprint area only	Topsoil removal must be limited within development footprint area only. Topsoil and subsoil must be stockpiled separately.
		Noise	Noise pollution from the vehicles as the results of poor vehicular maintenance and lack of service.	Construction, operational, decommissioning and closure phase	To prevent the noise emanating from the transport vehicles from impacting on the sensitive receptors.	Mining-related machine and vehicles must be serviced on a regular basis to ensure noise suppression mechanisms are effective e.g., installing exhaust mufflers. Noisy machinery to be used during daylight hours preferably. Grievance mechanism to record complaints should be kept on site and investigated. Noise monitoring to take place.
		Surface water	Contamination of surface water	Construction, Operation phase	Prevent hydrocarbons spillages from the vehicular movement	All potential hydrocarbon spillages and leaks to be cleaned up immediately and the soils remediated; Ensure that all machinery and equipment are in a good working order.
		Biodiversity & Aquatic environment	Disturbance of vegetation	Construction, operational, decommissioning and closure phase	Restrict removal and disturbance of vegetation to those areas absolutely essential for the development	Make use of existing roads and/or areas and roads designated for the mining operation.
			Excessive dust generation	Construction, operational,	Limit the negative effects of excessive dust and erosion	Remove lose earth from the roadsides. Periodic spraying of roads with water.

No	Activity	Potential Affected environment	Potential Impact	Project Phases	Possible Objectives	Possible Mitigation/Management measure
				decommissioning and closure phase		
		Traffic and safety on access roads to traffic increase.	Traffic congestion	Construction, operational, decommissioning and closure phase	Create safe environment for pedestrians, animals and motorists.	Speed limits must be implemented on site as well as safety controls. Investigations into the requirement of safety intersections must be undertaken.
9	Topsoil and overburden removal and stockpiling	Air quality	Dust generation from the movement of vehicles	Construction, operational, decommissioning and closure phase	Limit dust generation by dust suppression.	Dust suppression must be undertaken on all dirty roads at all times
		Noise	Increased ambient noise levels from vehicular movement	Construction, operational, decommissioning and closure phase	Limit excessive nose generation from vehicular movement.	Vehicles must be serviced on a regular basis to ensure noise suppression mechanisms are effective e.g., installed exhaust mufflers. All vehicles and machinery must be in a good working order.
		Vegetation	Disturbance of vegetation on the mining area	Construction phase	Ensure that the disturbance of vegetation is limited to the mining area.	Vegetation and topsoil removal to be restricted to the footprint areas.
		Soil	Soil disturbance due to the excavation activities.	Construction phase	To ensure that the excavation activities are limited only to footprint area.	All vehicles and machinery to be serviced in a hard park area or at off-site locations. Trenches and excavations shall be closed as soon as possible after services have been laid on them. To prevent them from posing hazards to

No	Activity	Potential Affected environment	Potential Impact	Project Phases	Possible Objectives	Possible Mitigation/Management measure
						staff, traffic, and animals as well as to prevent wind and soil erosion. Soil materials stripped should be stored at the designated stockpile area.
10	Removal of overburden	Air quality	Dust generation from the drilling activities	Construction phase	Limit dust generation by dust suppression.	Dust suppression must be undertaken on all dirty roads at all times.
		Surface Water		Construction phase	To protect existing users of surface water from impacts on water quality. To maximize the clean surface water run-off.	Areas of disturbance must be in line with the mine plan provided to minimize the loss of catchment area. Clean and dirty water separation must be undertaken, and clean water areas must be maximized. Reuse of inpit/dirty water needs to be maximized.
		Noise impacts from mining equipment		Construction phase	To prevent the noise emanating from the construction machinery from impacting on the sensitive receptors	As per mitigation for activity 4.
		Biodiversity & Aquatic environment	Contamination and disturbance of aquatic habitants	Construction, operational, decommissioning and closure phase	Limit areas suitable for alien invasive recruitment	Removal of vegetation during construction of infrastructure will be minimised to reduce the risk of open areas occurring.
				Construction, operational, decommissioning and closure phase	Limit the erosion potential of the site. Preserve the flora, including areas not directly affected by project activities. Ensure rehabilitation plans are initiated during construction	Make use of permeable materials for pavements and walk-ways. Introduce a storm water management programme. Restrict removal and disturbance of vegetation to those areas absolutely essential for the development.

No	Activity	Potential Affected environment	Potential Impact	Project Phases	Possible Objectives	Possible Mitigation/Management measure
						Community awareness should be implemented as part of the stakeholder engagement procedure to create awareness of biodiversity and preservation of natural habitats
				Construction and operational phase	Limit the reduction in catchment size	The planned reduction in catchment size will be managed to ensure that there will not be a dramatic reduction in catchment size.
		Visual		Construction phase	Reduce the visual impact of permanent infrastructure	To reduce the visual impact of permanent structures, colours for roofing, walls etc. should be of a matt finish to reduce reflection. The colour chosen should be one that softens the visual impact, colours that are suited to the natural tones in the area, such as pastel browns and greens. Avoid up lighting of structures but rather direct the light downwards and focused on the object to be illuminated.
11	Hauling and Stockpiling	Soil	Soil erosion	Construction, operational, decommissioning and closure phase	Prevent soil loss through erosion. Preserve topsoil for future rehabilitation.	Ensure all vehicles stay within the designated areas. Ensure storm water control measures are put in place to control surface run off over exposed areas. Remove and stockpile topsoil from roads, stockpile and dam areas prior to construction.
		Surface Water	Increased siltation of	Construction, operational,	Prevention of siltation of surface water bodies.	The areas excavated should have berms that are vegetated in order to

No	Activity	Potential Affected environment	Potential Impact	Project Phases	Possible Objectives	Possible Mitigation/Management measure
			surface water bodies.	decommissioning and closure phase		separate dirty and clean water systems, and as an erosion control measure. The stockpiles must be vegetated to prevent erosion and subsequent siltation of clean and dirty water streams as well as surface water resources. Upslope diversion and down slope silt containment structures will be constructed. Monitoring of surface water resource pre-mining and during construction must be implemented as per the monitoring programme. Construction of infrastructure located close to local streams should take place in the dry season, when possible.
		Air Quality	Increased dust generation	Construction, operational, decommissioning and closure phase	Reduction of dust fallout levels and particulate matter.	The removal of vegetation will be minimized during stripping to reduce the effects of dust pollution as a result of exposed soil. Dust suppression must take place. Dust monitoring must be undertaken in accordance with the monitoring programme. Topsoil stockpiles for more than two days should be kept moist and topsoil stockpiles for more than a year should be planted and water to sustain biological components as well as prevent dust emissions. Cover all trucks hauling soil.

No	Activity	Potential Affected environment	Potential Impact	Project Phases	Possible Objectives	Possible Mitigation/Management measure
		Noise	Noise generation emanating from the construction machinery	Construction, operational, decommissioning and closure phase	To prevent the noise emanating from the construction machinery from impacting on the sensitive receptors.	A noise barrier in the form of a berm should be constructed on the western as well as south eastern side of the proposed area of disturbance (as per current mine plan) so that it is situated between the main noise source and sensitive noise receptor UN9, as close to the noise sources as possible. The berm will help with the attenuation of noise produced by the mining activities. The barrier should be at least 13m tall for best performance (Sound Fighter Systems, 2007). Mining-related machine and vehicles must be serviced on a regular basis to ensure noise suppression mechanisms are effective e.g., installing exhaust mufflers. Switching off equipment when not in use.
		Biodiversity & aquatic environment.	Degradation and destruction of natural environment	Construction, operational, decommissioning and closure phase	Limit degradation and destruction of natural environment to designated project areas.	Keep the footprint of the disturbed area to the minimum and designated areas only. Vegetate and wet stockpiles to limit erosion. Berms created below the piles to trap particles and runoff from the stockpile. Community awareness should be implemented as part of the stakeholder engagement procedure to create awareness of biodiversity and preservation of natural habitats

No	Activity	Potential Affected environment	Potential Impact	Project Phases	Possible Objectives	Possible Mitigation/Management measure
				Construction, operational, decommissioning and closure phase	Restrict the growth of alien invasive plants.	Removal of vegetation during stripping and dump operation will be minimized to reduce the risk of open areas occurring.
				Construction, operational phases.	Limit erosion of exposed areas and stockpiles as well as sediment load reporting to wetlands.	Keep the footprint of the disturbed area to the minimum and designated areas only. Vegetate and wet stockpiles to limit erosion. Berms created below the piles to trap particles and runoff from the stockpile
				Construction, operational, decommissioning and closure phase	Limit reduction in the re-charge of aquifers.	Removal of vegetation during stripping and dump operation will be minimized to reduce the risk of the aquifers being drained and not properly recharged.
		Visual	Visual impact caused by site clearing and topsoil removal	Construction, operational phases	Reduce the visual impact caused by site clearing and topsoil removal.	Ensure site to be cleared is restricted to the mine plan. Topsoil stockpiles will need to be vegetated as soon as possible, to reduce the risk of erosion and decrease their visual disturbance.
12	Vehicular activity on haul roads	Soil	Soil erosion	Construction, operational, decommissioning and closure phase	Prevent soil loss through erosion. Preserve topsoil for future rehabilitation.	Ensure all vehicles stay within the designated areas. Ensure storm water control measures are put in place to control surface run off over exposed areas. Stockpile subsoil and topsoil separately.
		Surface Water	Increased siltation of	Construction, operational,	Prevention of siltation of surface water bodies.	The areas excavated should have berms that are vegetated in order to

No	Activity	Potential Affected environment	Potential Impact	Project Phases	Possible Objectives	Possible Mitigation/Management measure
			surface water bodies.	decommissioning and closure phase		separate dirty and clean water systems, and as an erosion control measure. The stockpiles must be vegetated to prevent erosion and subsequent siltation of clean and dirty water streams as well as surface water resources. Upslope diversion and down slope silt containment structures will be constructed. Monitoring of surface water resource pre-mining and during construction must be implemented as per the monitoring programme. Construction of infrastructure located close to local streams should take place in the dry season, when possible.
		Air Quality	Increased dust generation	Construction, operational, decommissioning and closure phase	Reduction of dust fallout levels and particulate matter.	The removal of vegetation will be minimized during stripping to reduce the effects of dust pollution as a result of exposed soil. Dust suppression must take place. Dust monitoring must be undertaken in accordance with the monitoring programme. Topsoil stockpiles for more than two days should be kept moist and topsoil stockpiles for more than a year should be planted and water to sustain biological components as well as prevent dust emissions. Cover all trucks hauling soil.

No	Activity	Potential Affected environment	Potential Impact	Project Phases	Possible Objectives	Possible Mitigation/Management measure
		Biodiversity & aquatic environment.	Degradation and destruction of natural environment	Construction, operational, decommissioning and closure phase	Limit degradation and destruction of natural environment to designated project areas.	Keep the footprint of the disturbed area to the minimum and designated areas only. Vegetate and wet stockpiles to limit erosion. Berms created below the piles to trap particles and runoff from the stockpile. Community awareness should be implemented as part of the stakeholder engagement procedure to create awareness of biodiversity and preservation of natural habitats
		Visual	Visual impact caused by site clearing and topsoil removal	Construction, operational phases	Reduce the visual impact caused by site clearing and topsoil removal.	Ensure site to be cleared is restricted to the mine plan. Topsoil stockpiles will need to be vegetated as soon as possible, to reduce the risk of erosion and decrease their visual disturbance.
13	Water use around site	Soil	Loss of soil structure from compacting of soil	Construction phase	Prevent loss of soil structure from compacting of soil. Preserve soil fertility for later use.	Remove and stockpile topsoil from roads, building platforms and infrastructure areas prior to construction and stockpile as per the rehabilitation guidelines.
		Surface Water	Contamination of surface water	Construction phase	To protect existing users of surface water from impacts on water quality. To maximize the clean surface water run-off.	Areas of disturbance must be in line with the mine plan provided to minimize the loss of catchment area. Clean and dirty water separation must be undertaken, and clean water areas must be maximized. Reuse of inpit/dirty water needs to be maximized.

No	Activity	Potential Affected environment	Potential Impact	Project Phases	Possible Objectives	Possible Mitigation/Management measure
		Noise impacts from mining equipment	Increased noise generation emanating from construction machinery	Construction phase	To prevent the noise emanating from the construction machinery from impacting on the sensitive receptors	As per mitigation for activity 4.
		Biodiversity & Aquatic environment	Disturbance of areas for alien invasive species.	Construction, operation and decommissioning phase.	Limit areas suitable for alien invasive recruitment	Removal of vegetation during construction of infrastructure will be minimised to reduce the risk of open areas occurring.
					Limit the erosion potential of the site. Preserve the flora, including areas not directly affected by project activities. Ensure rehabilitation plans are initiated during construction	Make use of permeable materials for pavements and walk-ways. Introduce a storm water management programme. Restrict removal and disturbance of vegetation to those areas absolutely essential for the development. Community awareness should be implemented as part of the stakeholder engagement procedure to create awareness of biodiversity and preservation of natural habitats
				Construction and operational phase	Limit the reduction in catchment size	The planned reduction in catchment size will be managed to ensure that there will not be a dramatic reduction in catchment size.
14	Screening and washing	Air quality	The movement and placing of soil will contribute to dust levels.	Construction, operation phase	soft drilling will be conducted. Limit dust generation emanating from drilling activity.	Apply control techniques for fugitive dust sources which generally involve watering, chemical stabilization, and the reduction of surface wind speed though

No	Activity	Potential Affected environment	Potential Impact	Project Phases	Possible Objectives	Possible Mitigation/Management measure
			Exposed soil will also contribute to dust levels.			the use of windbreaks and source enclosures
		Noise	Excessive noise and vibrations emanating from drilling of overburden material.	Construction, operation phase	Limit noise and vibrations due to drilling of overburden material.	Implement basting monitoring plan.
		Soil	Compaction of soil, erosion of exposed areas and decrease in available land for agricultural practices. Natural soil horizons are destroyed.	Construction, operation phases.	Prevent soil loss through erosion. Preserve topsoil for future rehabilitation.	Rip compacted areas and revegetate, rehabilitate amine out areas.
		Topography	The natural lie of the land will be altered. This alteration of the land will have further impacts on surface water flow dynamics as the natural	Construction, operation and decommissioning phases	soft drilling will be conducted.	Conduct rehabilitation activities within mining disturbed areas.

No	Activity	Potential Affected environment	Potential Impact	Project Phases	Possible Objectives	Possible Mitigation/Management measure
			drainage pattern is disrupted.			
		Visual.	Overburden stockpiles and discard dumps are expected to be approximately 30m in height, and will contribute the most severe visual disturbance to surrounding receptors	Construction, operation phase.	Limit the overburden stockpile to a height of approximately 30m.	Stockpile topsoil, subsoil and overburden material separately. Implement stockpile management plan. Continues rehabilitation will be undertaken to rehabilitate the proposed prospecting area after removal of the mineral reserves.
15	Discard dumps	Geology	The mineral reserves will be removed, permanently altering the geology	Operation phase	Ensure that the dump is specific to the footprint area (designated discard dump area)	Conduct rehabilitation activities within mining disturbed areas.
16	Pollution control dams	Soil, Surface Water, Biodiversity and Wetlands	Pollution of water, aquatic habitants and soil contamination	Decommissioning and post closure phase	Ensure that the area is not a source of pollution after closure of the mine.	Soil will be required to cover the disturbed areas. The quantities of soil required as well as the timing of the operation will depend on the design and operation of these facilities. Surface water runoff controls will be engineered to prevent future soil erosion

No	Activity	Potential Affected environment	Potential Impact	Project Phases	Possible Objectives	Possible Mitigation/Management measure
						of the rehabilitated areas. Re-vegetation will assist in controlling erosion by wind and water. Monitoring will be ongoing for 3 years to determine potential water contamination. After three years it will be assessed if further monitoring is required.
17	Rehabilitation and closure	Air Quality	The movement and placing of soil will contribute to dust levels. Exposed soil will also contribute to dust levels.	Decommissioning and closure	Limit dust generation emanating from drilling activity.	Control level of fugitive dust through implementing dust suppression techniques. Control level of ambient air pollutants through regular maintenance and services of all vehicles and equipment. Monitor and control through updating and implementing dust monitoring programme
		Soil	Soils, land use and land capability	Decommissioning and closure	Prevent soil loss through erosion. Preserve topsoil for future rehabilitation.	Rehabilitate the disturbed areas that were impacted by the drilling
		Flora and fauna	Limit the erosion potential of the site. Preserve the flora, including areas	Decommissioning and closure	Very high	Prepare the seedbed with application of fertilisers or kraal manure and lime. Vegetate the prepared area with government approved indigenous seed mix.

No	Activity	Potential Affected environment	Potential Impact	Project Phases	Possible Objectives	Possible Mitigation/Management measure
			not directly affected by project activities. Ensure rehabilitation plans are initiated during construction			Ensure that annual rehabilitation vegetation audits are undertaken on the rehabilitated areas.
		Surface Water	Contamination of surface water	Rehabilitation	Prevent hydrocarbons spillages from the vehicular movement	Construct erosion control measures as part of the rehabilitation activities (berms and contour drains where possible) Prevent stormwater runoff by conducting site rehabilitation work during dry season. Minimise area of disturbance and clearing by limiting the footprint area to as small as practically possible.

12. 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.

The proposed development will be conducted 20 km east of Vryheid. It is anticipated that the proposed project might have the potential to create employment opportunities for Vryheid and surrounding communities, preferably local community.

13. CUMULATIVE IMPACTS

In accordance with Regulation 326 of NEMA, cumulative impacts are defined as: “the impact of an activity that in itself may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area”. The importance of identifying and assessing cumulative impacts stems from the fact that the whole is more than the sum of its parts, implying that the total effect of multiple stressors or change processes acting simultaneously on a system may be greater than the sum of their effects when acting in isolation.

The aim of this section is to highlight the nature of the cumulative impacts that are expected to occur as a result of the combined effect of the proposed project and other current or planned operations in the region.

14. MOTIVATE WHERE ALTERNATIVE SITES WERE CONSIDERED

The proposed site was selected based on the geological formation of the area and the likelihood of the various commodities; the alternatives considered where based on the technological method instead of the proposed site.

a) Preferred site alternative

Refer to Section 7.1; the site was selected based on mineral reserves that are believed to exist in the study area.

b) Preferred activity alternative

Refer to Section 7.1.

c) Preferred technology alternative

Refer to Section 7.1.

d) No-go alternative

Refer to Section 7.1.

15. FULL DESCRIPTION OF THE PROCESS UNDERTAKEN TO IDENTIFY, ASSESS AND RANK THE IMPACTS AND RISK THE ACTIVITY WILL IMPOSE ON THE SITE (IN RESPECT TO FINAL SITE LAYOUT) THROUGH THE LIFE SPAN OF THE ACTIVITY.

The site selection process was determined using suitability of the overall site looking at factors such as proximity to existing mining, proximity to mine infrastructure and environmental impacts that the site might experience.

15.1. Assessment of each identified potential significant impact and risk

Additional information with respect to the mitigation measures are addressed as part of the EMPr.

NAME OF ACTIVITY	IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE (If not mitigated)	MITIGATION TYPE	SIGNIFICANCE (If mitigated)
Delivery of equipment on site.	Increase levels of noise	Noise	Planning phase	Low	Control through noise reduction measures	Very Low
	Increased levels of fugitive dust because of increased vehicle movement and transportation of material	Air Quality	Planning Phase	Low	Control level of fugitive dust through implementing dust suppression techniques. Control level of ambient air pollutants through regular maintenance and services of all vehicles and equipment. Monitor and control through updating and implementing dust monitoring programme	Very Low
	Accidental hydrocarbon spillages	Soil Quality	Planning Phase	Low	Prevent accidental spills from vehicles and equipment used through regular maintenance and services of such machinery. Control spills through effectively cleaning spills according to the Spill Management Plan.	Very Low
Construction activities including site clearance, topsoil, subsoil and overburden material removal	Increased levels of fugitive dust as a result of increased vehicle movement, site clearing and transportation of material. Potentially affecting the communities along the access route to the proposed mining development. Increased levels of ambient air pollutants, i.e., carbon monoxide (CO), nitrogen	Air Quality	Construction	Low	Control level of fugitive dust through implementing dust suppression techniques. Control level of ambient air pollutants through regular maintenance and services of all vehicles and equipment. Monitor and control through updating and implementing dust monitoring programme	Very Low

NAME OF ACTIVITY	IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE (If not mitigated)	MITIGATION TYPE	SIGNIFICANCE (If mitigated)
	dioxide (NO_2), sulphur dioxide (SO_2), particulate matter (PM_{10}).					
	Soil contamination from hydrocarbon spills Increased erosion	Soils	Construction	Low	Minimise area of disturbance and clearing by limiting the footprint area to as small as practically possible. Reduce erosion and compaction though: Vegetate and/or cover soil stockpiles. Install erosion berms, if required. Restrict vehicle movement to project related areas. Prevent accidental spills from vehicles and equipment used through regular maintenance and services of such machinery. Control spills through effectively cleaning spills according to the Spill Management Plan.	Very Low
	Vibrations from basting activity	Impact to small fauna occurring at the site.	Construction	Very High	Blasting must be positioned outside of the 500 m from wetland areas and on an area disturbed by agricultural activities.	Very Low
	Increased in silt load in runoff and erosion	Surface Water	Construction	Low	Prevent through the implementation of proper erosion protection and storm water management measures. Minimise stormwater runoff through conducting site clearing and construction during dry season. Minimise area of disturbance and clearing by limiting the footprint area to as small as practically possible.	Very Low
	Surface water contamination	Surface Water	Construction	Very high	Monitor and control surface water quality. Control spills through effectively cleaning spills according to the Spill Management Plan.	Very Low

NAME OF ACTIVITY	IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE (If not mitigated)	MITIGATION TYPE	SIGNIFICANCE (If mitigated)
					Prevent spills through placement of adequate bunded storage for chemicals and hazardous material. Prevent accidental spills from vehicles and equipment used through regular maintenance and services of such machinery.	
	Loss of Mean Annual Runoff	Surface Water	Construction	Low	Prevent through the implementation of proper erosion protection and storm water management measures. Control flow regime through conducting site clearing and construction during dry season.	Very Low
	Groundwater contamination	Groundwater	Construction	Very high	Control spills through effectively cleaning spills according to the Spill Management Plan. Prevent spills through placement of adequate bunded storage for chemicals and hazardous material. Prevent accidental spills from vehicles and equipment used through regular maintenance and services of such machinery. Sealing of impacted aquifers that will be intercepted when developing box cut	Very Low
	Increased ambient noise levels	Noise	Construction	Low	Control through noise control measures and limiting pre-construction activities to daytime periods.	Very Low
	Increased dust level	Visual	Construction	Low	Control level of nuisance dust through implementing dust suppression measures. Control through limiting pre-construction activities to daytime periods.	Very Low
	Job creation	Socio-Economic	Construction	Very Low	No Mitigation	Very Low
	Dust, noise, loss of soil and vegetation	Cumulative	Construction	Low	Control level of nuisance dust through implementing dust suppression measures. Control through limiting pre-construction activities to daytime periods.	Very Low
Open-cast operations	Increased levels of nuisance dust	Air Quality	Operations	Low	Control through implementing restricted speed limits when using access road.	Very Low

NAME OF ACTIVITY	IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE (If not mitigated)	MITIGATION TYPE	SIGNIFICANCE (If mitigated)
including development of initial box-cut					Control through regular maintenance and service of vehicles used for maintenance. Control level of fugitive dust through implementing dust suppression techniques, if required.	
	Soil contamination from accidental hydrocarbon spills	Soils and land use	Operations	Low	Prevent accidental spills from vehicles and equipment used through regular maintenance and services of such machinery. Control spills through effectively cleaning spills according to the Spill Management Plan. Limit through restricting vehicle movement to areas of need.	Very Low
	Loss of habitat/fauna species	Flora and Fauna	Operations	Very high	Prevent through waste management measures. Control through implementing the Spill Management Plan. Control through implementing Alien Plant Eradication Plan. Control level of fugitive dust through implementing dust suppression techniques, if required. Limit through restricting vehicle movement to areas of need. Prevent trapping or hunting of fauna through environmental awareness plan.	Very Low
	Increased erosion potential	Surface water	Operations	Low	Prevent through the implementation of proper erosion protection and storm water management measures. Minimise area of disturbance to as small as practically possible.	Very Low
	Surface water contamination	Surface water	Operations	Very high	Monitor and control surface water quality through updating and implementing the mine's water monitoring programme. Control spills through effectively cleaning spills according to the Spill Management Plan.	Very Low

NAME OF ACTIVITY	IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE (If not mitigated)	MITIGATION TYPE	SIGNIFICANCE (If mitigated)
					Prevent accidental spills from vehicles and equipment used through regular maintenance and services of such machinery.	
	Increased ambient noise level	Noise	Operations	Low	Control through noise control measures and limiting maintenance activities to daytime periods.	Very Low
	Alteration of natural landscape	Visual	Operations	Low	Control level of fugitive dust during maintenance activities through implementing dust suppression techniques, if required. Control through revegetation measurements and rehabilitation. Prevent littering through waste management control measures. Limit through landscaping and use of appropriate non-reflective infrastructure.	Very Low
	Positive impact on livelihoods	Socio-Economic	Operations	Very Low	Enhance through: Retaining employees. Implementing skills development policy in line with Social and Labour Plan. Adhering to the mine's local labour recruitment and procurement policies.	Very Low
	Noise, alteration of landscape	Cumulative	Operations	Low	Control level of fugitive dust through implementing dust suppression techniques. Control level of ambient air pollutants through regular maintenance and services of all vehicles and equipment. Monitor and control through updating and implementing dust monitoring programme as per the mine's requirements.	Very Low
Rehabilitation of mined areas	Increased levels of fugitive dust as a result of increased vehicle movement, due to shaft demolishing and rehabilitation activities associated with transportation of material.	Air Quality	Decommissioning and closure	Low	Control level of fugitive dust through implementing dust suppression techniques. Control level of ambient air pollutants through regular maintenance and services of all vehicles and equipment. Monitor and control through updating and implementing dust monitoring programme	Very Low

NAME OF ACTIVITY	IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE (If not mitigated)	MITIGATION TYPE	SIGNIFICANCE (If mitigated)
	Increased levels of ambient air pollutants, i.e., carbon monoxide (CO), nitrogen dioxide (NO_2), sulphur dioxide (SO_2), particulate matter (PM_{10}).					
	Waste generated as part of the demolishing activities: Littering or improper disposal of waste	Waste management impacting on soil and water	Decommissioning and closure	Low	Any waste contaminated with hazardous material including hydrocarbon must be disposed of as hazardous waste in a licensed hazardous waste landfill site.	Very Low
	Replacement of topsoil and reinstating of the land capability Increased erosion	Soils, land use and land capability	Decommissioning and closure	Low	Rehabilitate the disturbed areas that were impacted by the drilling	Very Low
	Soil contamination from hydrocarbon spills	Soil	Decommissioning and closure	Low	Prevent accidental spills from vehicles and equipment used through regular maintenance and services of such machinery. Control spills through effectively cleaning spills according to the mine's Spill Management Plan. Ensure the availability of drip trays and oil spill kits on site.	Very Low
	Reinstating of vegetation and possible returning of fauna and habitats	Fauna and flora	Decommissioning and closure	Very high	Prepare the seedbed with application of fertilisers or kraal manure and lime. Vegetate the prepared area with government approved indigenous seed mix. Ensure that annual rehabilitation vegetation audits are undertaken on the rehabilitated areas.	Very Low
	Increased in silt load in runoff and possible of erosion	Surface Water	Decommissioning and closure	Low	Construct erosion control measures as part of the rehabilitation activities (berms and contour drains where possible) Prevent stormwater runoff by conducting site rehabilitation work during dry season.	Very Low

NAME OF ACTIVITY	IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE (If not mitigated)	MITIGATION TYPE	SIGNIFICANCE (If mitigated)
					Minimise area of disturbance and clearing by limiting the footprint area to as small as practically possible.	
	Surface water contamination	Surface Water	Decommissioning and closure	Low	Continue to monitor and control surface water quality as per the mine's water monitoring programme until closure. Control spills through effectively cleaning spills according to the Spill Management Plan. Prevent spills through placement of adequate bunded storage for chemicals and hazardous material. Prevent accidental spills from vehicles and equipment used through regular maintenance and services of such machinery.	Very Low
	Groundwater contamination	Groundwater	Decommissioning and closure	Low	Continue to monitor groundwater quantities and qualities as part of the groundwater monitoring programme for the mine until closure. Control spills through effectively cleaning spills according to the Spill Management Plan. Prevent spills through placement of adequate bunded storage for chemicals and hazardous material. Prevent accidental spills from vehicles and equipment used through regular maintenance and services of such machinery. Sealing of the shaft as detailed above.	Very Low
	Increased ambient noise levels	Noise	Decommissioning and closure	Low	Control through noise control measures and limiting activities to daytime periods.	Very Low

NAME OF ACTIVITY	IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE (If not mitigated)	MITIGATION TYPE	SIGNIFICANCE (If mitigated)
	Increased dust level	Visual	Decommissioning and closure	Low	Control level of nuisance dust through implementing dust suppression measures during rehabilitation activities. Control through limiting activities to daytime periods.	Very Low
	Job creation and business opportunities	Socio-Economic	Decommissioning and closure	Very high	Enhance through adhering to the mine's recruitment of local labour and sourcing of local businesses as part of the recruitment and procurement policies.	Medium
	Dust, noise, loss of soil and vegetation	Cumulative	Decommissioning and closure	Low	Control level of nuisance dust through implementing dust suppression measures. Control through limiting activities to daytime periods.	Very Low

16. SUMMARY OF SPECIALIST STUDIES

List of Specialist Study Undertaken	Recommendations of Specialist Reports	Recommendations that have been included in this Report	Reference to applicable section of report where specialist recommendations have been included.
Soil Land use and land capability;	Professional advice indicates that, after considering all mitigation, the land is acceptable for the proposed mining activities on the Portion of Portion 2 of the farm Rustplaats 165 HU. The installation will never interfere with agricultural or wildlife activities, but it will benefit the local community's economy and the nation.	• Prevent accidental spills from vehicles and equipment used through regular maintenance and services of such machinery. • Control spills through effectively cleaning spills according to the Spill Management Plan. • Limit through restricting vehicle movement to areas of need	**Section 9.2.4** **Assessment of each identified potential significant impact and risk.**
Biodiversity and Wetland Impact Assessment	An impact statement is required as per the NEMA regulations with regards to the proposed development. The impacts as described, rated and mitigated in this report pose a moderate negative risk to flora and fauna. The ecological sensitivity of the area is determined to be moderate sensitive. With firm adherence to all the mitigation measures prescribed in this report, the risks have been rated as low. It is the opinion of the specialist that the proposed project be authorised provided that all mitigation measures are implemented, and the following conditions be included in the environmental authorisation for this project	• Any water resource areas and 80m buffer zones must be avoided for the duration of the project and all the proposed activities and secondary activities must be outside the wetland and buffer zones; • An Environmental Control Officer (ECO) must be appointed and be present for the duration of prospecting period; • No drilling boreholes should be within the wetland areas and the 80m buffer zone; and • A rehabilitation plan must be compiled and implemented for the for all phases of the project. The rehabilitation plan must make provision for the rehabilitation and/or remediation of wetland areas and include an action plan (emergencies) for environmental hazard.	**Section 9.2.5.** **Assessment of each identified potential significant impact and risk.**

List of Specialist Study Undertaken	Recommendations of Specialist Reports	Recommendations that have been included in this Report	Reference to applicable section of report where specialist recommendations have been included.
Hydrological and geohydrological Impact Assessment	An impact statement is required as per the NEMA regulations with regards to the proposed development. The impacts as described, rated and mitigated in this report pose a moderate negative risk to the wetland area. The ecological sensitivity of the area is determined to be moderate sensitive. With firm adherence to all the mitigation measures prescribed in this report, the risks have been rated as low. It is the opinion of the specialist that the proposed project be authorised provided that all mitigation measures are implemented, and the following conditions be included in the environmental authorisation for this project	• Any water resource areas and 80m buffer zones must be avoided for the duration of the project and all the proposed activities and secondary activities must be outside the water source and buffer zones; • An Environmental Control Officer (ECO) must be appointed and be present for the duration of prospecting period; • No drilling boreholes should be within any water source areas and the 80m buffer zone; and • A rehabilitation plan must be compiled and implemented for the for all phases of the project. The rehabilitation plan must make provision for the rehabilitation and/or remediation of water source areas and include an action plan (emergencies) for environmental hazard.	**Section 9.2.7- 9.2.8**
Paleontological Impact Assessment	Required routes to access drilling points and project-supporting infrastructures should be aligned along areas or corridors of existing disturbance, e.g., along existing roads.	• If any pottery or any significant resources is found on site the construction activities will be stopped and an palaeontologist must be called on site to conduct a proper survey and investigation.	**Section 9.2.11** **Assessment of each identified potential significant impact and risk.**
Heritage Impact Assessment	There is a high likelihood that the following types of cultural heritage resources could be present in the Application areas: • Individual Stone Age tools and scatters of material in an open-air context	• If any heritage resources, including graves or human remains, are encountered these must be reported to South African Heritage Resources Agency immediately.	**Section 9.2.10** **Assessment of each identified potential significant impact and risk.**

List of Specialist Study Undertaken	Recommendations of Specialist Reports	Recommendations that have been included in this Report	Reference to applicable section of report where specialist recommendations have been included.
	• Recent Historical farmsteads/homesteads and related infrastructure older than 60 years of age. The presence of informal farm Grave Yards/cemeteries is also possible, although the likelihood is fairly low based on the scrutiny of Google Earth images of the area.		

17. ENVIRONMENTAL IMPACT STATEMENT

17.1. Summary of the key findings of the Environmental Impact Assessment

The Usutu to Mhlathuze Water Management Area still remains mostly under its natural vegetative state (DWAF, 2004). Majority of the study area's landscape is in its natural state with minor transformations. However, it is important to note that major land uses within Zululand District Municipality are associated with agriculture and mining industries, while tourism and construction sectors are under development. Abaqulisi Local Municipality is an agricultural centre of stock farming. The major agricultural practices are crop production (occurring mainly in the highveld areas and fertile valleys of the major rivers that runs through the area), cattle farming ranching and game farming. A number of commercial farmlands are subject to land restitution. The regions comprise of Vryheid coalfield which stretches from the west of Vryheid to the east of Lousburg and is also divided into Zuinguin Mountain area, the Hlabane / Matshogololo area, the Thabankulu/Enyathi Mointain area and Ngwini Mountain area.

To date, there are no serious flaws that have been identified for the project, except that the area applied for is disturbed due to agricultural activity and few of the residential activities (farmers). An EMPr has been developed as part of Basic Assessment Process to enhance the mitigation of these impacts as far as practicable. It is anticipated that it will be possible to successfully mitigate the majority of the environmental impacts to acceptable levels and the implementation will be monitored and audited to determine the effectiveness of the measures implemented.

However, certain of the identified, potential impacts require careful mitigation and monitoring, these include:

- The clearance/ removal of the surface area and
- The management of noise and dust associated with the mining activities.

It is recommended that the proposed project is allowed to proceed, given the relatively insignificant potential impacts of the project to cumulative impacts (given appropriate environmental management) and also considering the positive social impacts associated with the project**.**

17.2. Final Site Map

Provide a map at an appropriate scale which superimposes the proposed overall activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers. Please refer to **Appendix 2** for the final site layout map including sensitive areas in relation to the project infrastructure.

18. PROPOSED IMPACT MANAGEMENT OBJECTIVES AND THE IMPACT MANAGEMENT OUT COMES FOR INCLUSION IN THE EMPR

This EMPr will be compiled to meet the following objectives

- Monitor the activities that may have a detrimental impact on the environment.
- Recommend mitigation measures that will need to be taken to mitigate or minimise impacts.
- Moreover, ensuring that the appointed onsite contractor maintains adequate control over the project environmental issues in order to: -
    - Minimize the extent of the impact during construction and operation of the mine and associated infrastructure.
    - Ensure appropriate restoration of areas affected by construction activities after construction has been completed, and
    - Prevent long-term environmental degradation.
- Ensure that the mitigation/rehabilitation measures and recommendation referred to in this report are implemented and to ensure the compliance with the provisions of the EMPr.

The closure objectives which will drive the closure criteria are:

- Adhere to all statutory and other legal requirements;
- Ensure safety & health of all stakeholders during closure and post closure and that communities using the site after closure are not exposed to unacceptable risks;
- Ensure that closure supports productive uses considering pre-mining conditions and are in agreement with commitments to stakeholders;
- Physically and chemically stabilise remaining structures to minimise residual risks;
- Promote bio-diversity and biological sustainability to the maximum extent practicable;
- Utilize closure strategies that promote self-sustaining conditions with little or no need for on-going care and maintenance.

19. ASPECTS OF INCLUSION AS CONDITION OF AUTHORISATION

No Conditions have been identified for inclusion.

20. DESCRIPTION OF ANY ASSUMPTIONS, UNCERTAINTIES AND GAPS IN KNOWLEDGE

The EAP is knowledgeable and experienced on the compilation of environmental impact assessment process, including prospecting and mining activities and related infrastructural developmental projects. In undertaking the investigation and compiling this report, the following has been assumed:

- The information provided by the client, Project Managers and previous undertaken specialists' studies are assumed to be correct, accurate and unbiased.
- The scope of this investigation is to assess the direct and cumulative environmental impacts associated with the proposed development.

In addition, the following recommendations can also be included as conditions of authorisation:

- Terrestrial ecological assessment (flora & fauna)
- Development footprint
    - It is recommended that the drilling activity and associated infrastructure be situated outside of any drainage features.
    - The footprint of the drilling area must be minimised, and all disturbed areas must be rehabilitated after construction.
    - The boundaries of the development footprint areas are to be clearly defined and it should be ensured that all activities remain within defined footprint areas.
- Surface water and groundwater
    - The project footprint must fall outside of the 1:100-year flood line of the riparian features or 100m from the edge of the feature.
    - Access into adjacent drainage lines, particularly by vehicles, is to be strictly controlled.
    - All vehicles should remain on designated roads with no indiscriminate driving through adjacent drainage features.
    - Run-off from dirty water areas entering drainage lines must be prevented and clear separation of clean and dirty water in the vicinity of the proposed mining area must take place.
    - Oil must be prevented from entering the clean water system.
    - Ensure that seepage from dirty water systems is prevented as far as possible.
    - It must be ensured that all hazardous storage containers and storage areas comply with the relevant SABS standards to prevent leakage.

- All drilling equipment and vehicles must be regularly inspected for leaks.
- Re-fuelling must take place on a sealed surface area to prevent ingress of hydrocarbons into topsoil.
- All adjacent drainage lines must be monitored for erosion and incision.

- Fires
  - Informal fires should be prohibited during all development phases.
- Dust Control
  - It must be ensured that all roads and construction areas are regularly sprayed with water in order to curb dust generation. This is particularly necessary during the dry season when increased levels of dust generation can be expected. These areas should not be over-sprayed causing water run-off and subsequent sediment loss into waterways and drainage lines in the vicinity of the study area.
- Fauna species
  - It is recommended that a speed limit of at least 20km/h is implemented on internal dirt roads running through the subject property in order to minimise risk to fauna from vehicles. Where necessary, speed humps may be constructed to help slow vehicles and help mitigate collision with faunal species.
  - Education and awareness campaigns on faunal species and their habitat are recommended to help increase awareness, respect and responsibility towards the environment for all staff and contractors.
  - No trapping or hunting of fauna is to take place and access control into sensitive areas must be implemented to ensure that no illegal trapping or poaching takes place.
- Noise Impact Assessment
  - Construction activities to take place during daytime periods only (sunrise to sunset).

21. REASONED OPINION AS TO WHETHER THE PROPOSED ACTIVITY SHOULD OR SHOULD NOT BE AUTHORISED

21.1. Reasons why the activity should be authorized or not.

LEM will undertake the Basic Assessment (BA) for the proposed Lwabantu mining permit and EMPr in accordance with the requirements of the NEMA and MPRDA. This will include the undertaking of the public participation process which has sought to identify stakeholders, provide these parties with an adequate opportunity to participate in the project process and guide technical investigations that have taken place as part of the impact assessment phase of this study.

An EMPr has been developed as part of Environmental Authorisation Process to ensure that these impacts will as far as practicable be mitigated. It is anticipated that it will be possible to mitigate the currently identified environmental impacts to acceptable levels and the implementation thereof will be monitored and audited to determine the effectiveness of the measures implemented.

21.2. Conditions that must be included in the authorisation

Regular monitoring of all the environmental management procedures and mitigation measures shall be carried out by the Company to ensure that the provisions of this EMPr are adhered to. An Environmental Control Officer will need to be appointed to monitor and report the compliance status against the Environmental Authorisation and the EMPr. No mining activities must be undertaken within declared protected areas and within 100m or 1:100-year floodline of the water resources.

22. PERIOD OF WHICH THE PERIOD OF ENVIRONMENTAL AUTHORISATION IS REQUIRED

The validity of the Environmental authorisation in terms of this proposed project should be for Prospecting Right period in line with the MPRDA and as granted by the DMRE.

23. FINANCIAL PROVISION

Refer to **Appendix 7** for the closure costs quantum.

23.1. Explain how the aforesaid amount was derived

The calculated closure provision was calculated based on the areas that will need to be cleared, dismantled, removed and/or disposed of as part of the decommissioning and closure final rehabilitation process. Below are some of the parameters that were considered when calculating this closure provision.

23.2. Determination of the Closure Cost Assessment

The liability for closure of the aspects associated with the proposed prospecting right area has been determined using the approach advocated in the Department, the Guideline Document for the Evaluation of the Quantum of Closure-Related Financial Provisions Provided by a Mine (2005) and also in compliant to the Government Notice Regulation 1147 of 20 November 2015, regulations pertaining to the Financial Provision for Prospecting, Exploration, Mining or Production Operations.

As required in terms of regulation 4, Lwabantu as the applicant to hold the prospecting right must determine and make financial provision to guarantee the availability of sufficient funds to undertake rehabilitation and remediation of the adverse environmental impacts of the prospecting operations, as contemplated in the Act and to the satisfaction of the Minister responsible for mineral resources.

The approach to calculating the closure quantum as specified in the DMRE Guideline which was utilised in this assessment is as summarised as follows and is reported under **Appendix 7**:

Step 1: Determine the Mineral Mined

- In the first step the mineral mined has been identified in the tables provided in the DMRE guideline (Table B.12) as “diamond (in kimberlite), dalusite, dimension stone (general), glass sand, heavy minerals (general), lithium ore, mercury, niobium (columbium) ore, pyrite, silicon ore, tantalum / niobium ore, tin ore, tungsten ore, aluminium ore, uranium ore, vermiculite, zinc ore and zirconium ore”

Step 2A: Determine Primary Risk Class

- The “Primary Risk Class” has been determined from Table B.12 of the DMRE Guideline as “A (**Medium Risk**)”.

Step 2B: Revision of Primary Risk Class

- The Primary Risk Class can be revised on the basis of saleable by-products if required. However, this is not applicable at the proposed Mining Area.

Step 3: Determine Environmental Sensitivity

- The “Environmental Sensitivity” has been determined by reference to Table B.4 of the DMRE Guideline as “**High**”.

Step 4.4 determination of weighting factors:

- **Weighting Factor 1**: The nature of the terrain where the operation is located is **undulating**.
- **Weighting Factor 2**: The proximity of the operation to an urban centre. In this instance the proposed Mining area is considered **urban**.

23.3. Unit rates

The unscheduled closure cost estimates have been determined according to the DMRE Master rates as per the Guideline Document for the Evaluation of the Quantum of Closure Related Financial Provision Provided by a Mine (January 2005), Government Notice Regulation 1147 of 20 November 2015, regulations pertaining to the Financial Provision for Prospecting, Exploration, Mining or Production Operations and escalated using the SA Statistics CPI values.

23.4. Closure Cost Assessment

The closure cost estimate for this report is included under **Appendix 7** with closure measures stated in **Table 18**. The subsections that follow are aligned to these spreadsheets.
The estimated unscheduled closure costs at the end of July 2023 amount to approximately **R1 187 740, 93** including VAT for the Lwabantu Mining Permit activities, as summarised below.

Table 18: Closure measures

Item	Aspect	Unscheduled (DMR unit rates)	Applicable for this Prospecting Activities
1.	**Infrastructural areas**		
1.1	Steel structures, reinforced concrete structures, offices, workshops, pump stations, residential buildings and related structures and infrastructure.	Steel and reinforced concrete structures Demolish all structures to 1 m below ground level; Bury demolition waste adjacent to the site, provided this adheres to the National Environmental Management Waste Act and applicable regulations or dispose of at the licenced landfill site; Shape disturbed area and vegetate.	Currently not applicable, no structures have been constructed that will need to be demolished.
1.2	Roads (No construction of roads will ne undertaken)	Provision made to rip, plough and rehabilitated any	Currently no such disturbance has taken

Item	Aspect	Unscheduled (DMR unit rates)	Applicable for this Prospecting Activities
		disturbance on the existing farmer's roads.	place, but AEMFC has made a provision.
1.3	Fences	Specific measures and unit rate have been applied for the fencing of the areas where the physical drilling activities will take place to ensure the safety of the local community and livestock.	Provision for the erection of fencing after the rehabilitated activities have been completed has been made.
2.	**Prospecting Right Boreholes**		
2.1	Rehabilitation of boreholes.	Sealing and casting of the boreholes with cement mixture, 0.5 m from collar until to the floor of the borehole.	Applicable and provision has been made to rehabilitate the planned prospecting boreholes.
3.	**Rehabilitation of the drilled/ disturbed Areas**		
3.1	Rehabilitated and reshaped areas	Applied for the rehabilitation of the drilled area, that is, shaping, levelling, topsoil placement and vegetation of disturbed areas to facilitate free draining of surface runoff.	Applicable provision has been made to rehabilitate the disturbed areas.
3	**General surface rehabilitation**		
3.1	Rehabilitated and reshaped areas	Applied for the general rehabilitation, that is, shaping and landscaping of disturbed areas to facilitate free draining of surface runoff. These areas will be allowed to vegetate naturally to ensure that there is sufficient cover. Associated with the rehabilitation of the drilling sites	Applicable and provision has been made to rehabilitate the planned prospecting boreholes.

Item	Aspect	Unscheduled (DMR unit rates)	Applicable for this Prospecting Activities
		(sumps, trenches and other applicable disturbed areas).	
4.	**Water management**		
4.1	Re-instatement of drainage lines.	Route runoff arising from the rehabilitated disturbed areas into the surrounding surface water drainage regime in a manner that would limit the creation of secondary erosion in the receiving surface water environment and/or possible damage to downstream surface infrastructure.	No such disturbance has taken place.
5.	**Post closure measures**		
5.1	Surface water and groundwater monitoring.	Continue with surface and groundwater monitoring of the site to ensure that no further contamination of the water resources is taking place.	AEMFC will be using water from the municipality which will be monitored.
5.2	Care and maintenance	Undertake maintenance and aftercare for 2 – 3 years after prospecting activities have ceased, by: Applying fertilizer annually over rehabilitated areas where required; Undertaking monitoring of surface and subsurface water quality; Controlling alien plants (Only on the drilling sites rehabilitated areas); and	Provision has been made to conduct maintenance and aftercare for 2 – 3 years after prospecting activities have ceased. This is planned based on the identified disturbed areas.

Item	Aspect	Unscheduled (DMR unit rates)	Applicable for this Prospecting Activities
		Undertaking general maintenance, including rehabilitation of disturbed areas and where water ponds.	
6	**Additional allowances**		
6.1	Preliminary and general	Additional allowance of 12% percent was applied as per the DMRE guideline.	Provision has been made.

23.5. Confirm that this amount can be provided for from operating expenditure

Lwabantu has confirmed that this amount will be provided as part of the annual financial provision that the mine conducts and submits to the Department.

24. SPECIFIC INFORMATION REQUIRED BY THE COMPETED AUTHORITY

24.1. Compliance with the provision of section 24(a) and (b) read with section 24 (3) (a) and (7) of the National Environmental Management Act (107 of 1998) the EIA must include the following: -

a. Impact on the socio-economic condition of any directly affected person.

From an economic perspective, this project is highly desirable, with significant benefits to the local area, region, and the country. It is expected that the project will not create short term jobs during the exploration phase, however should mineral reserve (Lithium) be identified the possibility of mining is highly and potential job creation during mining can be expected.

Direct and indirect contribution to the regional economy due to capital investment associated with the project. This project will ensure that the supply of minerals to local and international markets.

b. Impacts on any estate referred to in section 3(2) of the National Heritage Resource Act

None

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

Not applicable as alternatives have been considered in terms of this proposed project.

25. UNDERTAKING

The EAP herein confirms

a) The correctness of information provided in this report [X]

b) The inclusion of comments and inputs from stakeholders and I&APs [X]

c) The inputs and recommendation from specialist reports where relevant [X]

d) That the information provided by the EAP to the I&APs and any response by the EAP to the comments and input made by the I&APs are correctly reflected herein [X]

Signature of the Environmental Assessment practitioner

LICEBO ENVIRONMENTAL AND MINING (PTY) LTD

Company Name

04 August 2023

Date

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