FINAL BASIC ASSESSMENT REPORT: MINING PERMIT APPLICATION TO MINE AGGREGATES

MBAVUZA MINING (PTY) LTD
JANUARY 2025

DMR REF NO. KZN30/5/1/3/2/ (11066) MP

Project No.	**Mbavuza QF/KZN2024-003P**
Report Status	**FINAL V3.0**

Postnest Suite 435, Private Bag X 4, Wierdapark, 0149 | Telephone: +27 83 295 4315 | Fax: +27 86 666 6399 | Email: info@ankoneconsulting.co.za

mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

BASIC ASSESSMENT REPORT

AND

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

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

PROJECT INFORMATION

Name of applicant: Mbavuza Mining (Pty) Ltd

Registration no: 2013/061773/07

Trading name: Mbavuza Mining (Pty) Ltd

Physical address: 3 Tasselberry Road

Richards Bay, KwaZulu-Natal, 3900

Postal address: PO Box 4966, Mandeni, KwaZulu Natal,4490

Telephone: 063 213 3321

Cell: 063 213 3321

E-mail: cedricxulu@yahoo.com

IMPORTANT NOTICE

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

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

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

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

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

OBJECTIVES OF THE BASIC ASSESSMENT REPORT PROCESS

The objective of the environmental impact assessment process is to, through a consultative process—

(a) determine the policy and legislative context within which the activity is located and document how the proposed activity complies with and responds to the policy and legislative context;

(b) describe the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the preferred location;

(c) identify the location of the development footprint within the preferred site based on an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects of the environment;

(d) determine the—-

(i) nature, significance, consequence, extent, duration and probability of the impacts occurring to inform identified preferred alternatives; and

(ii) degree to which these impacts— (aa) can be reversed;

(bb) may cause irreplaceable loss of resources, and (cc) can be avoided, managed or mitigated;

(e) identify the most ideal location for the activity within the preferred site based on the lowest level of environmental sensitivity identified during the assessment;

(f) identify, assess, and rank the impacts the activity will impose on the preferred location through the life of the activity;

(g) identify suitable measures to manage, avoid or mitigate identified impacts; and

(h) Identify residual risks that need to be managed and monitored.

EXECUTIVE SUMMARY

Mbavuza Mining (Pty) Ltd appointed Ankone Consulting (Pty) Ltd to redraft the Basic Assessment Report (BAR) for the proposed mining permit application for a project area with an extent of 4.7ha using opencast mining. The aggregate mining is proposed to occur within Portion of Farm Qiko 17448 ET; which is situated under the Ugu Magisterial District, KwaZulu- Natal Province.

The proposed mining permit application is undertaken in terms of the requirements of the Minerals and Petroleum Resources Development Act (MPRDA) (Act 28 of 2002), the National Environmental Management Act (NEMA) (Act 107 of 1998), as amended, and the 2014 Environmental Impact Assessment (EIA) Regulations, as amended.

The Mbavuza target quarry and borrow pit encompass total aggregate reserves of about 965 000tons[1] split into Quarry F. Mbavuza will be responsible for mining, primary processing, transporting, loading and stockpiling the aggregate needed for the construction of the Ngwadini Dam operated by uMgeni Water. This project is vital as the supply of water to the communities in the Ngwadini and neighboring areas is a critical issue, thus approval of the quarry will ensure timeous supply of aggregates for the dam project.

This draft report will form the basis for an independent public participation process, conducted in accordance with Regulation 41 of the NEMA Regulations. An advert was placed Rising Sun in the on the 7th of January 2025.

The area under consideration was previously occupied by households 15–20 years ago, and graves have since been identified within 100m – 300m buffer of Quarry F (Mbavuza proposed area). The process of consulting affected families—obtaining their consent for consultation and investigating potential impacts and mitigation measures— commenced. Following the completion of a detailed archaeological study, an application for authorization was submitted to the KwaZulu-Natal Department of Amafa. Consent letters obtained during this process are appended onto the Public Participation Report, that is submitted with this Basic Assessment Report (BAR).

A site visit was conducted, sampling and data analysis performed and monitoring and management plans will be prepared to ensure the project has minimal impact on the environment.

[1] Source: GIBB Geotechnical Report, classified as Quarry F

This proposed operation may have a temporary visual impact on the surrounding environment. Upon the construction and operation phase of the proposed mining area a Visual Impact Assessment Specialist Study will be done.

The proposed project is not expected to affect the river near the site, as all mining activities will remain confined within the boundaries of the permitted site.

PROJECT DESCRIPTION

This proposed mining site is situated in the Ngwadini area, adjacent to the planned Ngwadini Dam, on Portion of Farm Qiko 17448 ET, which is situated within the Umdoni Local Municipality under the Ugu Magisterial District, KwaZulu- Natal Province; covering approximately 4.7 Ha.

The project aims to supply construction materials for the Ngwadini Dam, a strategic infrastructure initiative spearheaded by Umgeni Water. Exploration and technical assessments for the project were conducted by GIBB Engineers on behalf of Umgeni Water, with the resulting Geotechnical Report, annexed on this report. Quarry operations will prioritize the production of aggregates, which will be crushed on-site and transported exclusively for use in concrete manufacturing at the Ngwadini Dam construction site by Afrimat.

The project will employ open-cast mining techniques, executed in the following phases:

1. **Topsoil Removal and Stockpiling:** Topsoil and overburden will be carefully removed and stored for rehabilitation purposes.
2. **Environmental Considerations:** Excavation strategies will incorporate measures to minimize environmental impact.
3. **Material Extraction:** Aggregate extraction will involve large excavators, tractor-loader-backhoes (TLBs), and shovels following controlled blasting activities.
4. **Material Handling:** The mining operation will not include material washing on-site.
5. **Primary Crushing:** Initial crushing and processing will be conducted on-site, with subsequent transport of materials to an external facility for final crushing and screening.
6. **Stockpiling and Transportation:** Aggregates will be temporarily stockpiled before being transported by truck to the dam construction site, located less than one kilometre from the mining area.
7. **Decommissioning and Rehabilitation**

   Upon completion of mining activities under the Mining Permit and if no Mining Right application is pursued for adjacent land, Mbavuza will undertake decommissioning and restoration efforts. The impacted area will be rehabilitated to its best possible condition, ensuring the land is fit for future use. Mbavuza Mining is committed to supporting the construction of critical infrastructure while adhering to sustainable mining practices and ensuring minimal environmental disruption.

INTRODUCTION

Ankone Consulting (Pty) Ltd has been appointed as an independent Environmental Consultant by Mbavuza (Pty) Ltd to conduct a Basic Assessment Report (BAR) for a proposed quarry mining permit within the Ugu Magisterial District, KwaZulu-Natal Province.

The KwaZulu Natal Province occupies the Southern side of South Africa. This province consists of, amongst others, Umlazi, one of the big townships situated approximately 33.24 km north east of Ngwadini dam, the newly proposed dam by Umgeni Water where the proposed quarry is located.

The site is located approximately 0.31 km North of Ngwadini, approximately 3.40 km South-East of eNtsongeni, and approximately 2.78 km Southwest of Echobeni. The N2 road runs approximately 19km northeast of the proposed project area. The nearest houses which were observed are located 845m away from the proposed area.

The uMdoni Local Municipality is a Category B municipality located within the Ugu District in the province of KwaZulu-Natal. It is the smallest of four municipalities in the district, accounting for just under a quarter of its geographical area. It is made up of 10 wards, most of which are rural areas.

The municipality can be divided into three major land uses, commercial agriculture, traditional authority areas and coastal urban nodes. The coastline stretches approximately 40km. The town of Scottburgh is approximately 50km from the city of Durban and 65km from Port Shepstone.

DOCUMENT STRUCTURE

This BAR and EMPr have been compiled in terms of the provisions of Appendix 3 and 4 of the National Environmental Management Act (NEMA); 107 of 1998. These requirements are cross-referenced to the various sections in this report where these requirements are addressed in the tables below.

STRUCTURE OF THE BAR

BAR Regulation Requirement	Section addressed	Page Number
(a) Details of – **(i)** The EAP who prepared the report and; **(ii)** The expertise of the EAP	PART A – Section 1 Appendix A	1-2
(b) Location of the Overall Activity; including **(i)** The 21digit surveyor General code **(ii)** The magisterial district and the farm name **(iii)** Application Area (Ha) **(iv) Distance and direction from the nearest town**	PART A – Section 2	3

(c) **Locality Map showing the nearest town, on a scale not smaller than 1:25 000**	PART A – Section 3	5
(d) Description of the scope of the proposed overall activity, provided on a plan drawn to a scale acceptable to competent authority but not less than 1:10 000, showing location, area (Ha), infrastructure to be placed on site including – **(i)** All listed and specified activities **(ii)** Description of the activities to be undertaken	PART A – Section 4	7-10
(e) A description of the policy and legislative context within which the development is located, and an explanation of how the proposed project complies with and responds to the legislation and policy context;	PART A – Section 5	12

(f) A motivation for the need and desirability for the proposed project including the need and desirability of the activity in the context of the preferred location;	PART A – Section 6	14
(g) A motivation for the overall preferred site, activities and technology alternative	PART A – Section 7	15
(h) Full Description of the process followed to reach the proposed preferred alternatives within site	PART A – Section 7	15
(i) Details of the development footprint alternatives considered	PART A – Section 7.1	15
(ii) Details of the Public Participation Process undertaken	PART A – Section 8.2	16

(iii) A summary of the issues raised by interested and affected parties, and the responses to those issues	PART A – Section 8.2.5	18
(iv) The environmental attributes associated with the alternatives focusing on socio-economic, social, heritage, cultural, geographical, physical and biological aspects, must contained 1. Baseline Environmental (a) Type of environment affected by the proposed activity (b) Description of the current land uses (c) Description of specific environmental features and infrastructure on site (d) Environmental and current land use map	PART A – Section 9	23

(v) The impacts and risks identified including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts – v Can be reversed, v May cause irreplaceable loss of resources. v Can be avoided, managed and mitigated	PART A – Section 9	23
(vi) The methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks;	PART A – Section 10	51
(vii) The positive and negative impacts that the proposed activity (in terms of initial site layout) and alternatives will have on the environment and the community that may be affected	PART A – Section 10.3	57

(viii) The possible mitigation measures that could be applied and the level of risk	PART A – Section 10	57
(ix) The motivation where no alternative sites were considered	PART A – Section 10	58
(x) A concluding statement motivating the preferred alternative development located within the overall site	PART A – Section 10	58
(i) A full description of the process undertaken to identify, assess and rank the impacts and risks the activity will impose on the preferred site (in respect of the final site layout plan) through the life of the activity; including –		58
(i) A description of all environmental issues and risks that were identified during the environmental impact assessment process		58

(ii) An assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures	PART A – Section 11.4	59
(j) **An assessment of each identified potentially significant impact and risk**	PART A – Section 12	59
(k) A summary of the findings and recommendations of any Specialist Reports complying with Appendix 6 of the Regulations	PART A – Section 13 Appendix C	106 107
(l) An environmental impact assessment which contains –	PART A – Section 13	106
(i) A summary of the key findings of the environmental impact assessment;		106

(iii) Summary of positive and negative implications and risks of the proposed activity and identified alternatives;		107
(m) Proposed impact management objectives and the impact management outcome for inclusion in the EMPr;	PART A - Section 14	108
(n) Aspects for inclusion as condition of Authorization;	PART A – Section 15	113
(o) A description of any assumptions, uncertainties and gaps in knowledge that relate to the assessment and mitigation measures proposed	PART A – Section 16	113
(p) A reasoned opinion as to whether the proposed activity should or should not be authorized; if the opnion should not be authorized, any reasons why it should not be	PART A – Section 17	113

authorized and if the opinion is that it should be authorized, any conditions that should be made in respect of that authorization;		
(q) A period for which the environmental authorization is required	PART A – Section 18	114
(r) An undertaking under oath or affirmation by the EAP	PART A – Section 19 and PART B – Section 12	114
(s) Financial Provisions **(i)** Explain how the aforesaid amount was derived **(ii)** Confirm that this amount can be provided from operating expenditure	PART A – Section 20	115 – 116

(t) Any specific or other information that may be required by the competent authority; (i) Compliance with the provisions of Section 24(4)(a) and (b) read with Section 24(3)(a) and (7) of the National Environmental Management Act (Act 107 of 1998); the report to include: 1. Impact on the socio-economic conditions of any directly affected person **2.** Impact on any national estate referred to in Section 3(2) of the National Heritage Resources Act.	PART A – Section 21	120
(v) Any other matters required in terms of Section 24(4)(a) and (b) of the Act	PART A – Section 23	123-126

STRUCTURE OF THE EMPr

EMP Regulation Requirement	Section addressed	Page number
(a) Details of – **(i)** The EAP who prepared the EMPr and; **(ii)** The expertise of the EAP who prepared EMPr, including curriculum vitae	PART B – Section 1	134
(b) A detailed description of aspects of the activity that are covered by the EMPr, as identified by the project description	PART B – Section 2	135 - 137
(d)Description of the impact management objectives including management statements – **(i) determination of closure objectives** **(ii) Volumes and rates of water use required for operation**	PART B – Section 4	130

(ii) Has a Water Use License been applied for?		
(e) A description of impact management outcomes, identifying the standard of impact management required for the aspects contemplated in paragraph (c) and (d);	PART B – Section 5	133-138
(f) A description of impact management actions, identifying the manner in which the impact management objectives and outcomes contemplated in paragraphs (d) and (e)	PART B – Section 6	138
(i) Financial provisions	PART B – Section 7	162 – 165

(i) The mechanisms for monitoring compliance with and performance assessment against the environmental management programme and reporting thereof, including	PART B – Section 8	166 - 178
(j) Indicate the frequency of the submission of the performance assessment report	PART B – Section 9.1	166 – 178
(k) Environmental awareness plan	PART B – Section 10	179
(l) A specific information required by the competent authority	PART B – Section 11	179
(m) **An undertaking under oath or affirmation by the EAP**	PART B – Section 12	180

TABLE OF CONTENT

1. DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER 1
1.2 Details of the EAP who prepared the report 1
1.3 Expertise of the EAP 1
1.4 Expertise of the Author 2
2. DETAILS OF THE PROPONENT & PROPERTY DESCRIPTION 3
3. LOCALITY MAP 5
4. DESCRIPTION OF THE SCOPE OF THE PROPOSED ACTIVITY 7
4.1 Listed Activities 7
4.2 Description of the activities to be undertaken 10
4.2.1 Vegetation Clearing and Topsoil Stripping 10
4.2.2 Access Roads 10
4.2.3 Blasting 11
4.2.4 Material Processing 11
4.2.5 Water Supply 11
5. POLICY AND LEGISLATIVE CONTEXT 12
6. NEED AND DESIRABILITY OF THE PROPOSED PROJECT 14
7. DESCRIPTION OF THE SCOPE OF THE PROPOSED ACTIVITY MOTIVATION FOR THE OVERALL PREFERRED SITE, ACTIVITIES AND TECHNOLOGY ALTERNATIVES 15
7.1 Details of the development footprint considered: 15
8. FULL DESCRIPTION OF THE PROCESS FOLLOWED TO REACH THE PROPOSED PREFERED ALTERNATIVES WITHIN THE SITE 15
8.1 Details of the development footprint alternatives considered 15
8.2 Details of the public participation process followed 16
8.2.1 Database 17

8.2.2 Background Information Document (BID) 17
8.2.3 Regulatory authority's notifications 17
8.2.4 Site notices and advertisements 17
8.2.5 Summary of issues raised by IAPS 18
9. THE ENVIRONMENTAL ATTRIBUTES ASSOCIATED WITH THE PREFERRED SITE 22
9.1 Baseline status of the affected environment and description of existing environmental impacts 22
9.1.1 Geology 22
9.1.2 Climate 23
9.1.3 Topography 24
9.1.4 Soil and land capability 24
9.1.5 Land use 25
9.1.6 Flora and Fauna 26
9.1.7 Surface Water 31
9.1.8 Groundwater 33
9.1.9 Noise 33
9.1.10 Sites of archaeological and cultural interest 33
9.1.11 Sensitive and visual landscape 40
9.1.12 Regional socio-economic structure 40
9.1.13 Environmental and current land use map(s) 41
10. ENVIRONMENTAL IMPACTS AND RISKS ASSESSMENT 43
10.1 Methodology used in determining the significance of environmental impacts 43
10.1.1 Impact assessment methodology 43
10.1.2 Identification and description of impacts 43
10.2 Rating of impacts and mitigation effectiveness 44
10.3 Positive and negative impacts in terms of site layout alternatives 49
10.4 Possible mitigation measures that should be applied and the level of residual risk 49

10.5 The motivation where no alternative sites were considered 50

10.6 A concluding statement motivating the preferred alternative development located within the overall site 50

11. FULL DESCRIPTION OF THE PROCESS UNDERTAKEN TO IDENTIFY, ASSESS AND RANK THE IMPACTS AND RISKS THE ACTIVITY WILL IMPOSE ON THE PREFERRED SITE THROUGH THE LIFE OF THE ACTIVITY 50

11.2 Description of the process undertaken to identify impacts 51

11.3 Description of the process undertaken to assess and rank the impacts and risks 51

11.4 Description of the environmental impacts and risks identified during the environmental assessment process 51

12. ASSESSMENT OF THE SIGNIFICANCE OF EACH IMPACT AND RISK AND AN INDICATION OF THE EXTENT OF TO WHICH THE ISSUE AND RISK CAN BE AVOIDED OR ADDRESSED BY THE ADOPTION OF MITIGATION MEASURES 51

12.2 Environmental Impact Assessment 52

12.3 Summary of specialist report findings 62

13. ENVIRONMENTAL IMPACT STATEMENT 74

13.1 Summary of key findings of the BAR 74

13.2 Final site map 74

13.3 Summary of the positive and negative implications and risks of the proposed activity 74

14. IMPACT MANAGEMENT OBJECTIVES AND OUTCOMES FOR INCLUSION IN THE EMPR 76

15. ASPECTS FOR INCLUSION AS CONDITIONS OF THE AUTHORISATION 81

16. ASSUMPTIONS, UNCERTAINTIES AND GAPS IN KNOWLEDGE 81

17. REASONED OPINION AS TO WHETHER THE PROPOSED ACTIVITY SHOULD OR SHOULD NOT BE AUTHORIZED 81

18. PERIOD FOR WHICH AUTHORISATION IS REQUIRED 82

19. UNDERTAKING 82

20. FINANCIAL PROVISION 83

20.1 Method of financial provision....83
20.2 Confirmation that this amount can be provided from operating expenditure....84
21. SPECIFIC INFORMATION REQUIRED BY THE COMPETENT AUTHORITY....88
21.1 Impact on the socio-economic conditions of any directly affected person....88
21.2 Impact on any national estate referred to in section 3(2) of the national heritage resources act....88
22. OTHER MATTERS ARE REQUIRED IN TERMS OF SECTIONS 24(4) (A) AND (B) OF THE ACT....89
23. DETAILS OF THE EAP....91
23.2 Expertise of the EAP....91
23.3 Expertise of the a co-Author....93
24. DESCRIPTION OF THE ASPECTS OF THE ACTIVITY....94
25. DESCRIPTION OF THE IMPACT MANAGEMENT OBJECTIVES INCLUDING MANAGEMENT STATEMENTS....96
25.1 Determination of closure objectives....96
25.2 Determining the need for a water use license....97
26. IMPACT MANAGEMENT OUTCOMES....98
27. IMPACT MANAGEMENT ACTIONS....104
28. FINANCIAL PROVISION....120
29. MECHANISMS FOR MONITORING COMPLIANCE AND PERFORMANCE AGAINST THE EMPR....124
30. ENVIRONMENTAL AWARENESS PLAN....140
30.1 Manner in which the applicant intends to inform employees of the environmental risks 140
30.2 Procedures in case of environmental emergencies....140
31. SPECIFIC INFORMATION REQUIRED BY THE COMPETENT AUTHORITY....140
32. ENVIRONMENTAL ASSESSMENT PRACTITIONER DECLARATION OF INDEPENDENCE....141

LISTS OF TABLES

Table 1: Details of the EAP 1
Table 2: Details of an EAP 2
Table 3: Details of proponent 3
Table 4: Property Details 3
Table 5: Listed Activities 7
Table 6: Policy and Legislative Context 12
Table 7: The area key statistics based on the 2011 Census 40
Table 8: Status of Impacts 45
Table 9: Spatial Scale of Impacts 45
Table 10: Temporal scale of impacts 46
Table 11: Probability of Impacts 46
Table 12: Magnitude of Impacts 47
Table 13: Significance of Impacts 48
Table 14: Perceived Significance of Impacts 48
Table 15: Summary of report findings 62
Table 16: Proposed management objectives and outcomes for the environmental and socio-economic impacts 76
Table 17: Financial Provisions 87
Table 18: Details of EAP EMPr 91
Table 19: Activities Triggered EMPr 94
Table 20: Impact management outcomes EMPr 98
Table 21: Impact management actions EMPr 104
Table 22: Financial Provisions EMPr 120
Table 23: Mechanisms for monitoring compliance and Performance 124

LISTS OF FIGURES

Figure 2-1: The Locality Map of proposed Mbavuza project area 5
Figure 3-2: Locality Map 5
Figure 3-3: Regulation 2.2 Plan of the Proposed Project.....6
Figure 4-1: Composite Map with Sensitive Layers 9
Figure 9-1: KZN Climate.....24
Figure 9-2: Land Cover associated with the Project area 27
Figure 9-3: Regional Vegetation associated with the proposed Project area.....28
Figure 9-4: The vegetation within project area.....29
Figure 9-5: The Aloe Marlothii individuals identified within project are 29
Figure 9-6: The other identified Plant Species : A) Hypoxis Hermerocallidea B) Sporobolus Africanus C) Digitaria Eriantha D) Euphorbia Ingense E) Crassula Arborescens 30
Figure 9-7: The project area water courses.....32
Figure 9-8: General View of the Study Area from the East 34
Figure 9-9: Highly dense Vegetation that was cleared to ensure clear views of any possible structures 34
Figure 9-10: Mr Kwazi Bele (left) and Mr BP Latha who accompanied the archaeologist and environmental consultants to the graves; as advised by the tribal council and the Chief of KwaQiko 35
Figure 9-11: Example of foundations of the demolished house 36
Figure 9-12: Some of the historical sites could be easily identified with wooden poles that made sort "fence" for a demolished structure 36
Figure 9-13: One building ruin found on site 37
Figure 9-14: Example of one of the “Informal Graves”identified.....37
Figure 9-15: Example of one of the "Formal Graves"identified.....38
Figure 9-16: An example of informal grave with cleared vegetation.....38
Figure 9-17: Graves Sensitivity map 39
Figure 9-18: Sensitivity map.....42

ABBREVIATIONS

Acronyms - Definition

BID	- Background information document
C	- Carbon
CO	- Carbon monoxide
CO2	- Carbon dioxide
DAFF	- Department of Agriculture, Forestry and Fisheries
DENC	- Department of Environment and Nature Conservation
DMRE	- Department of Mineral Resources and Energy (Formerly DMR)
DWS	- Department of Water and Sanitation
DPWRT	- Department of Public Works, Roads and Transport
DWEA	- Department of Water and Environmental Affairs
DWAF	- Department of Water Affairs and Forestry
DWS	- Department of Water and Sanitation
EAP	- Environmental Assessment Practitioner
EIA	- Environmental impact assessment
EIR	- Environmental impact report
EMP	- Environmental Management Programme
EMPr	- Environmental management programme report
IAPs	- Interested and/or affected parties
mamsl	- Meters above mean sea level
MPRDA	- Mineral and Petroleum Resources Development Act
NEMA	- National Environmental Management Act
NEM:WA	- National Environmental Management: Waste Management Act

NFA	- National Forest Act No. 84 of 1998
NWA	- National Water Act, 1998
NO	- Nitrogen oxide
NO2	- Nitrogen dioxide
NOx	- Oxides of nitrogen
PM2.5	- Inhalable particulate matter
PM10	- Thoracic particulate matter
RMM	- Ready Mix materials
ROM	- Run-of-mine
Ppb	- parts per billion
SACNASP	- South African Council for Natural Scientific Professionals
SAHRA	- South African Heritage Resources Agency
SANS	- South African National Standards
TSP	- Total suspended particles
SO2	- Sulphur dioxide

DECLARATION

DECLARATION OF THE EAP I, __Vumile Ribeiro_____ , declare that

- I act as the independent environmental assessment practitioner in this application;
- I have expertise in conducting environmental impact assessments, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I will take into account, to the extent possible, the matters listed in Regulation 13 of the Regulations when preparing the application and any report relating to the application;
- I undertake to disclose to the applicant and the Competent Authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the Competent Authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the Competent Authority unless access to that information is protected by law, in which case it will be indicated that such information exists and will be provided to the Competent Authority;
- I will perform all obligations as expected from an environmental assessment practitioner in terms of the Regulations, and I am aware of what constitutes an offence in terms of Regulation 48 and that a person convicted of an offence in terms of Regulation 48(1) is liable to the penalties as contemplated in Section 49B of the Act.

Disclosure of Vested Interest

I do not have and will not have any vested interest (either business, financial, personal or other) in the proposed activity proceeding other than remuneration for work performed in terms of the Regulations;

V.-Ribeiro	Ankone Consulting (PTY) Ltd	02/12/2024
Signature of EAP	Name of Company	Date

PART A: SCOPE OF THE BASIC ASSESSMENT REPORT AND THE IMPACT ASSESSMENT

1. DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

1.2Details of the EAP who prepared the report

Table 1: Details of the EAP

DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP)	
Name of the company	Ankone Consulting (Pty) Ltd
Full names	Vumile Ribeiro (EAPASA; IAIASA) Registration No: 2019/1183
Postal address	Postnet Suite 435, Private Bag X 4, Wierdapark, 0149
Business Telephone	+27 82 767 2786 and /or +27 83 295 4315
E-mail	vumile@niara.co.za
Cell phone	+27 82 767 2786

1.3 Expertise of the EAP

Vumile Ribeiro is the Director of Environmental Management Services at Niara Environmental Consultants (Pty) Ltd. Vumile has 17 years of professional and international experience in Environmental Assessment and Management primarily in the minerals resources and energy sector. Her roles include the operational management responsibilities of Niara Environmental Consultants, project management, report writing, client liaison, as well as business development.

Having worked for multi-disciplinary advisory firms and environmental consultancies, Vumile has a competent understanding of the work effort and cross collaboration required for a successful multidisciplinary organization. Vumile has been involved in a number of Environmental Impact Assessments and has a particular interest in health impacts assessments, water resource management, mining, energy and stakeholder engagement.

Vumile has considerable experience across a range of developmental and environmental sciences and has worked in South Africa, Mozambique, Sierra Leone and Liberia and is familiar with Regulatory Environmental Legislation in other parts of Africa.

Vumile is very well versed in the IFC Environmental and Social Performance Standards (including IFC PS 2012) and the associated Equator Principles, which have informed the approach and standard for a number of ESIA processes that she has been involved in. Vumile is skilled at organizing and driving effective project teams at a scale relevant to the projects' requirements. She has technical experience and is able to quickly identify the most pertinent issues of a particular project whilst focusing on driving project success by rigorously implementing project management tools. Vumile's areas of special interest involve understanding the systemic nature of factors that pose threats and opportunities in terms of establishing healthy, resilient communities, and exploring the use of various data types, approaches and methodologies to enable effective change. Standards of Environmental Management and Sustainable Development, in all undertakings.

Table 2: Details of a co-Author

DETAILS OF THE ENVIRONMENTAL PRACTITIONER	
Name of the company	Ankone Consulting (Pty) Ltd
Full names	Nonkululeko Ngcobo (Candidate SACNASP)
Postal address	Postnet Suite 435, Private Bag X 4, Wierdapark, 0149
Business Telephone	+27 82 767 2786 and /or +27 83 295 4315
E-mail	nonkun@ankoneconsulting.co.za
Cell phone	+27 78 656 3483

1.4Expertise of a co-Author

Nonkululeko holds a BSc (Honors) in Environmental Management from the University of South Africa. She has gained three years of professional experience in the environmental sector, including an environmental internship in the mining industry and a year of research focused on improper waste management. Currently, she serves as an Environmental Practitioner at Ankone Consulting Pty Ltd. Nonkululeko has also completed ISO 14001 Implementation Training and

is in the process of applying for SACNASP Candidate Certification, with approval currently pending.

2. DETAILS OF THE PROPONENT & PROPERTY DESCRIPTION

Table 3: Details of proponent

ITEMS	DETAILS OF THE PROPONENT
Name of the company	Mbavuza (Pty) Ltd
Postal address	56 Bohmer Road Unit 14 Bohmer Views New Germany, KwaZulu-Natal, 3600
Telephone	+27 63 213 3321
E-mail	cedricxulu@yahoo.com
Fax	+27 86 514 4103

Table 4: Property Details

Farm Name(s):	Portion of Farm Qiko 17448 ET
Application area (Ha)	4.7 ha
Magisterial district:	Ugu Magisterial District, KwaZulu-Natal

Local government municipality:	uMdoni Local Municipality
Distance and direction from nearest town:	Approximately 0.31 km North of Ngwadini Approximately 3.40 km South-East of eNtsongeni Approximately 2.78 km Southwest of Echobeni. The N2 road is approximately 19km NorthEast of the proposed project.
21 digit Surveyor General Code for each farm portion	N0ET00000001744800000
Co-ordinates	**Longitude** **Latitude** 30.58897318 -30.15263140 30.58844804 -30.15161384 30.58906920 -30.15088949 30.59163758 -30.15389136 30.59088529 -30.15433739 30.59037280 -30.15406319 30.58925625 -30.15251228
Locality map	See Locality map below at a scale not smaller than 1:250000

3. LOCALITY MAP

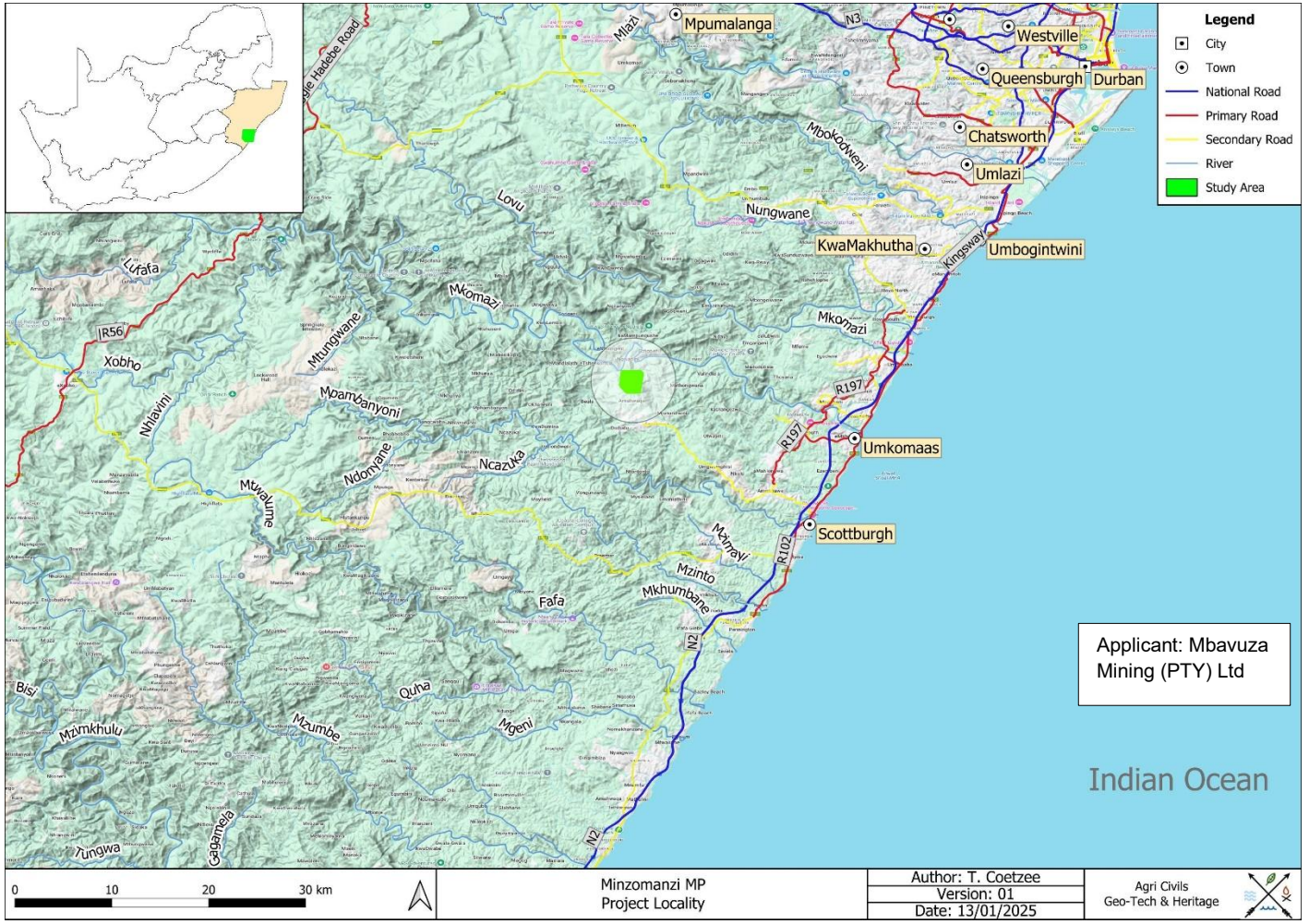


Figure 3-2: Locality Map

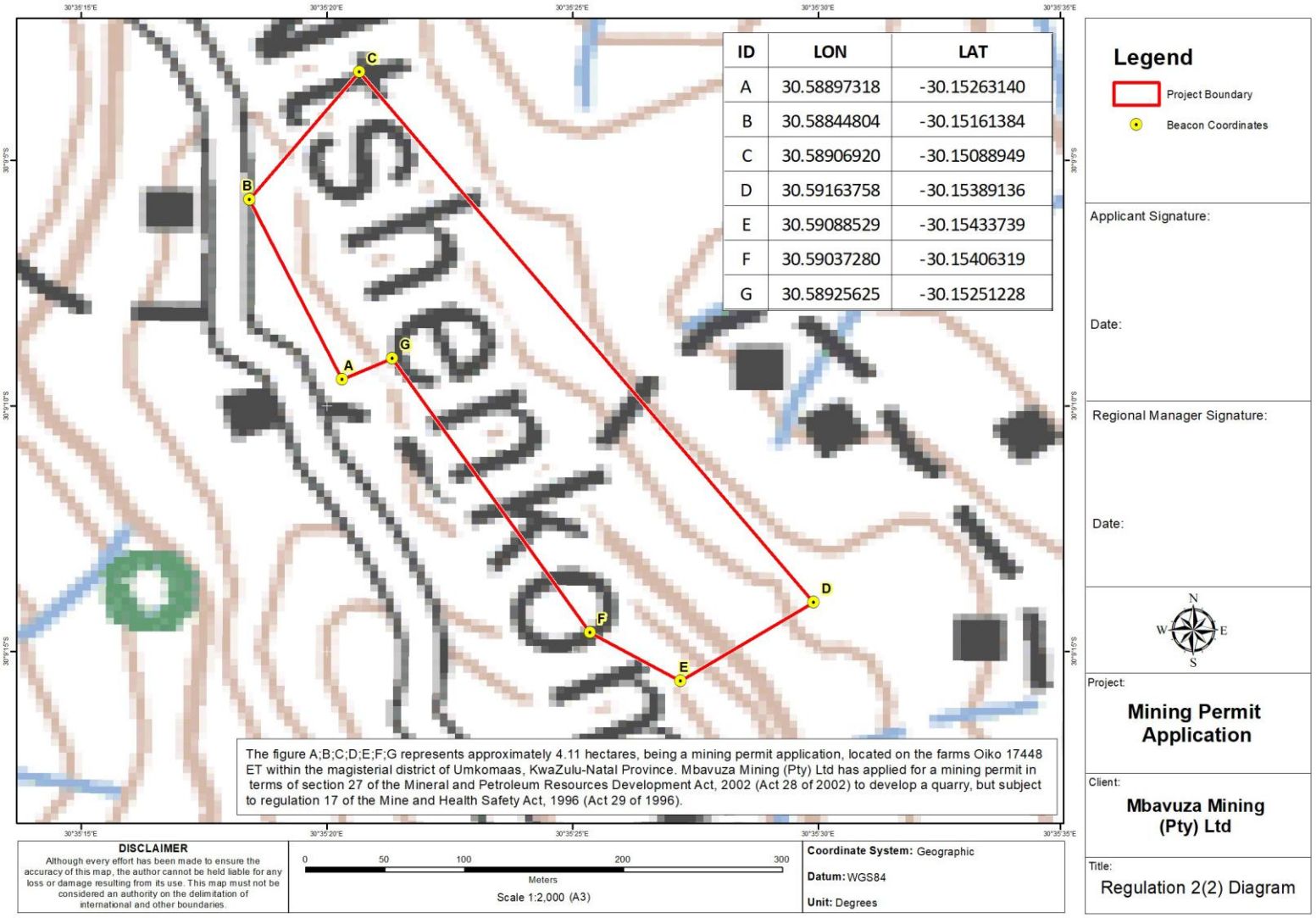


Figure 3-3: Regulation 2.2 Plan of the Proposed Project

4. DESCRIPTION OF THE SCOPE OF THE PROPOSED ACTIVITY

4.1 Listed Activities

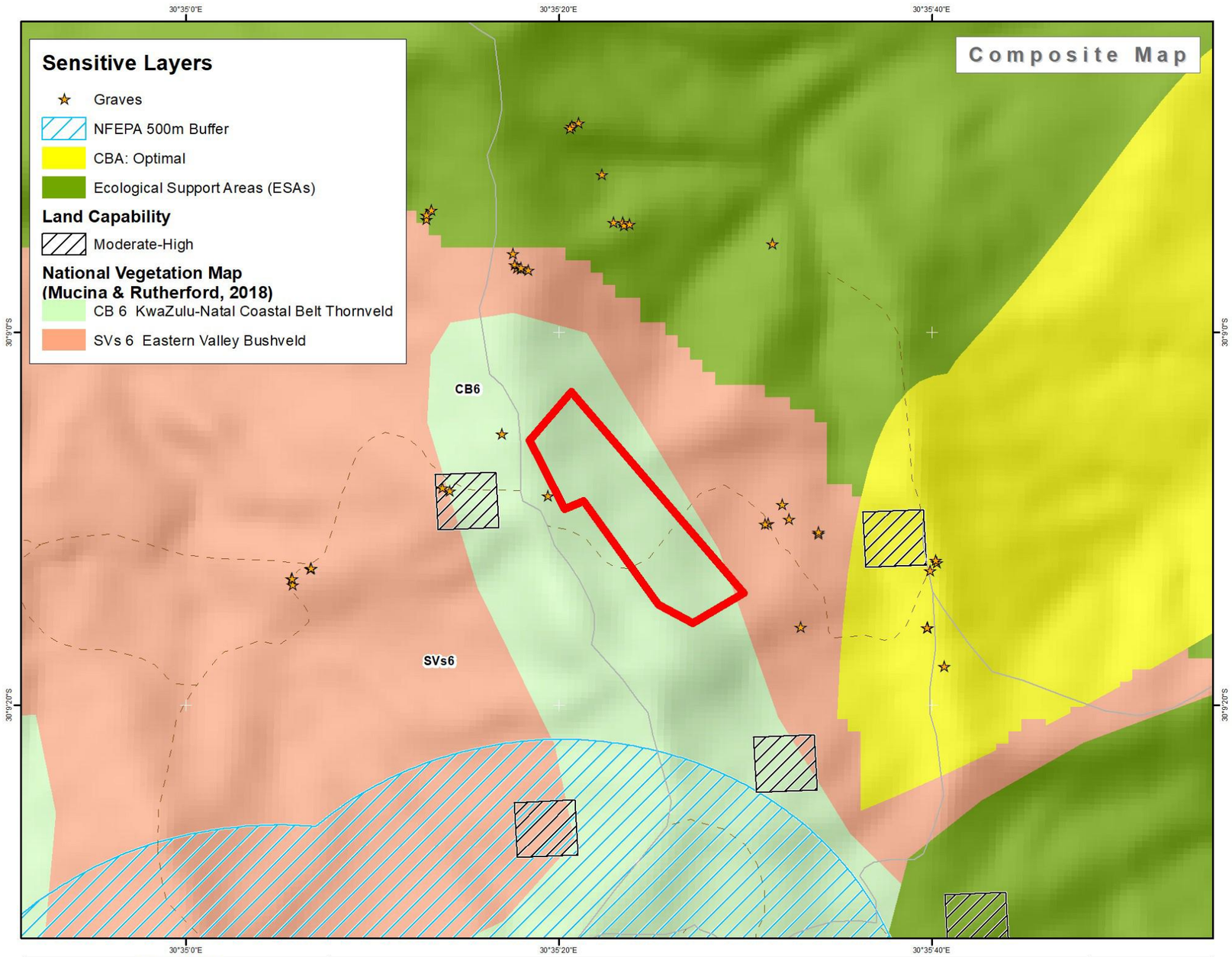
Mbavuza (Pty) Ltd is applying for aggregates quarry mining permit on Portion of Farm Qiko17448 ET, within Ugu Magestrial District, KwaZulu-Natal and environmental authorization for the development and supporting infrastructure is required. This proposed project triggers the following activities in terms of EIA Regulations Listing Notice 1 under EIA Regulations of 2014 (R982) dated 08 Dec 2014 and are listed below.

Table 5: Listed Activities

REGULATION	ACTIVITY NUMBER	DESCRIPTION	RELEVANCE TO THE PROJECT	AERIAL EXTENT OF THE ACTIVITY HA OR M²
Listing Notice 1 (R982) dated 08 Dec 2014	21	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, 2002 (Act No. 28 of 2002), including — (a) associated infrastructure, structures and earthworks, directly related to the extraction of a mineral resource; or (b) the primary processing of a mineral resource including extraction, classifying,	• Mining of aggregates, construction of haul roads, • Drilling and blasting (controlled blasting); • shovels where needed; • Loading and hauling material from the pit to the mobile (primary) using the ADT / tipper trucks; and • Primary Crushing only process.	• 4.7 ha

		concentrating, crushing, screening or washing; But excluding the secondary processing of a mineral resource, including the smelting, beneficiation, reduction, refining, calcining or gasification of the mineral resource in which case activity 6 in Listing Notice 2 applies.		
	27	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;	• Clearance of indigenous vegetation for mine construction and operation	• 4.7 ha
Listing Notice 1 (R 544) dated 08 Dec 2014	47	The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre - (i) where the existing reserve is wider than 13,5 meters; or (ii) where no reserve exists, where the existing road is wider than 8 metres – excluding widening or lengthening occurring inside urban areas.	• Extension of the existing Old District Road from the North Access point to the quarry and connecting to Watershed track at the South Access point to form a continuous route to the dam site. However, it is not noted as an activity in this report, as the total length is below the threshold specified in Listing Notice 1.	• 0.85 km

PLAN 2



DISCLAIMER
Although every effort has been made to ensure the accuracy of this map, the author cannot be held liable for any loss or damage resulting from its use. This map must not be considered an authority on the delimitation of international and other boundaries.

0 200 400 800
Meters

Coordinate System: GCS WGS 1984
Datum: WGS84
Unit: Degree

Date: 2 December 2024

Legend

- Project Boundary
- Arterial Road
- Track

N W E S

Project: Applicant: Mbavuza Mining (PTY) Ltd

Mbavuza Mining

Client:

Figure 4-1: Composite Map with Sensitive Layers

4.2 Description of the activities to be undertaken

The suggested mining process entails extracting aggregates from previously undisturbed terrain where only agricultural operations, notably animal grazing, were carried out.

4.2.1 Vegetation Clearing and Topsoil Stripping

Vegetation clearing will take place over 4.7Ha of the proposed project area. The topsoil stripped from the proposed project area will be stockpiled within the project boundary for use during the rehabilitation and closure phase.

4.2.2 Access Roads

The site is situated approximately 2.2km away from the proposed, already under-construction Umgeni dam where the crushed material from the site will be destined. The proposed area Quarry F is strategically located between two existing routes: the Old District Road (A2724) to the north and a Watershed track to the south, which was historically used by local residents prior to their relocation approximately 20 years ago.

To provide dedicated access to the quarry, a 0.85 km roadway extension will be opened, originating from the northern section of the Old District Road. This extension will connect Quarry F to the Watershed Track at its southern access point, creating a continuous one-way loop system linking the quarry and the dam site.

This loop system is specifically designed to enhance construction logistics by streamlining traffic flow and reducing congestion. Under this arrangement, empty vehicles will travel southbound along the Watershed Track to the quarry, while loaded vehicles will return northbound to the dam site via the Old District Road.

The northern alignment, which follows the Old District Road (A2724), has experienced significant deterioration over time, although some sections remain concreted. The southern alignment follows an informal watershed track that, was previously used by relocated residents.

4.2.3 Blasting

The services of a qualified and experienced blasting contractor will be sourced. All the blasting and safety requirements will be assessed and fulfilled before the appointment. The intent is to ensure that blasting is controlled i.e. limited fly rocks, vibrations will be kept within specific timeframes in accordance with the blasting assessment report. The blasted rock will be excavated using an excavator. ROM will be loaded directly onto the truck using the Front End Loaders (FEL).

There will be no storage of explosive magazines on site.

4.2.4 Material Processing

The material will then be transported to the Umgeni owned site for further processing. There will be no washing nor crushing of products on site.

4.2.5 Water Supply

The portable water supply will be available on-site through a 5000L clean water tank (JOJO) that will be installed on-site and supplied with water through the municipal water supply (delivered by water tankers) at required intervals. No boreholes will be drilled. An independent service provider will be appointed to conduct dust suppression. A contracted, local service provider will service movable ablutions.

5. POLICY AND LEGISLATIVE CONTEXT

This section outlines the key legislative requirements applicable to the project. The table below provides a summary of the applicable legislative context and policy.

Table 6: Policy and Legislative Context

Applicable legislation and guidelines used to compile the report	**Reference where applied**	**How does this development comply with and respond to the legislation and policy context**
Minerals and Petroleum Development Resources Act, Act 28 of 2002 (MPRDA) and the MPRDA Amendment Act, Act 49 of 2008	DMRE	The conditions and requirements attached to the granting of the mining permit will apply to the mining activities.
Constitution of South Africa section 24 (G)	The Republic of South Africa	The mining activities will proceed in a manner that does not infringe on any human right mentioned in the constitution.
BAR and EMP report requirements as per the 2014 NEMA regulations and DMRE BAR and EMPr Template	DMRE	This Report is being undertaken in terms of the NEMA (No. 107 of 1998), as amended, to determine environmental impact and propose sufficient mitigation to prevent environmental damage. The appropriate environmental authorization will be obtained before proceeding with any mining activities. No mining activity will be conducted in a sensitive environment. Measures will be implemented to prevent Pollution during mining activities.

		Once mining is complete, the area will be rehabilitated as close as reasonably possible to its pre-mining state
National Water Act, 1998 (Act 36 of 1998). Best Practice Guidelines: Series A, G, & H	(Section 21) Water use & mine water management	Best practice guidelines will be followed for water management, water characterization, water resource protection, water treatment, and the development of the mine water management model
National Environmental Management: Waste Act, Act 59 of 2008 (NEMWA) NEM: WA	Management measures Environmental awareness plan	Waste on site will be handled, stored and transported in a effective and environmental friendly manner. During the closure phase waste material of any description, including receptacles, scrap, rubble and tires, will be removed entirely from the mining area and disposed of at a recognized landfill facility.
National Heritage Resources Act, 25 of 1999 (NHRA)	Management measures	No mining activities will take place within 500 m of any identified heritage resource, such as a grave. No heritage resources have been identified on the site in question.
Mine Health and Safety Act (MHSA), 1996 (Act No 29 of 1996)	The mitigation measures proposed for the site includes Specifications of the MHSA	The operational phase of the mine will trigger the MHSA
Conservation of Agricultural Resources Act (CARA), 1983 (No. 43 of 1983)	Biophysical environment	All alien invader plants on site must be controlled in terms of CARA

6. NEED AND DESIRABILITY OF THE PROPOSED PROJECT

South Africa's mining industry continues to be a cornerstone of the country's economic output, contributing significantly to GDP and employment. In 2021, the industry accounted for 8.2% of South Africa's GDP and employed over 451,000 people, as reported by the Minerals Council South Africa. Mining not only provides jobs but also supplies raw materials essential for modern living, innovation, and infrastructure development.

The Ngwadini Dam construction is a critical component of the **Lower Mkomaas Bulk Water Supply Scheme**, a strategic infrastructure project aimed at addressing water demand challenges in the region. This dam will provide a sustainable water supply to the Ngwadini community while also serving as a key resource for the greater eThekwini Metro, supporting urban development, industrial growth, and community needs in one of South Africa's most economically significant regions.

To ensure the success of this vital project, the proposed quarry will serve as a dedicated and reliable source of high-quality aggregates required for the dam's construction. The aggregates possess a chemically inert composition, with low rates of disintegration and water absorption, minimizing risks of water quality pollution. Importantly, the material is free of harmful minerals like quartz, feldspars, and pyrite, eliminating the risk of acid mine drainage. This ensures that environmental impacts are kept to a minimum while maintaining the integrity of the surrounding ecosystems.

Beyond environmental considerations, the quarry project will generate substantial socioeconomic benefits. It will create job opportunities for skilled, semi-skilled, and unskilled workers, contributing to economic activity and improving livelihoods in the local community.

Some advantages of the proposed project include:

- The area has probable aggregate reserve of about 965 000 tons according to the Geotechnical Report produced by GIBB Engineering, Summary annexed here.
- The quarrying have low environmental impacts compared to other minerals
- The aggregate produced from this quarry will mainly supply the construction of the Ngwadini dam.

7. DESCRIPTION OF THE SCOPE OF THE PROPOSED ACTIVITY MOTIVATION FOR THE OVERALL PREFERRED SITE, ACTIVITIES AND TECHNOLOGY ALTERNATIVES

7.1 Details of the development footprint considered:

The site is a greenfield that is currently covered in natural vegetation and has no large infrastructure. The location was chosen based on a small-scale geological examination of Aggregates deposits in the region, which suggested that the target mineral is plentiful, according to the outcrop rock examined during the site evaluation.

- The area will be mined using blasting and excavation;
- The mining effect can be restricted to one region on the land that has not previously been exploited for mining reasons; the planned mining area's rehabilitation aims would consequently include the restoration of the affected region.
- A 0.5 km roadway extension will be constructed from Quarry F originating from the northern section of the existing Old District Road, to connect with the existing Watershed track at the southern access point, forming a continuous route toward the dam site.
- Pit mining of the quarry has been identified as the most effective method to produce the desired aggregate. Due to the remote location of the quarry the potential impacts on the surrounding environment, associated with mining, is deemed to be of low significance.

8. FULL DESCRIPTION OF THE PROCESS FOLLOWED TO REACH THE PROPOSED PREFERED ALTERNATIVES WITHIN THE SITE

8.1 Details of the development footprint alternatives considered.

A geotechnical investigation conducted by GIBB Engineering confirmed that the required aggregate material is present within the selected project area. Consequently, alternative sites were not considered, as they do not contain the necessary materials. Additionally, access to the mining area will be facilitated by extending the existing northern section of the road to

connect with the existing Watershed track. This extension will complete a gravel road loop, enabling efficient access and circulation to and from the quarry site.

8.2 Details of the public participation process followed

The consultation process that was followed included, personnel representing relevant government departments and non-governmental organizations, They were engaged through the distribution of the Background Information Document (BID) and consultation letters sent via email. Where necessary, follow-ups were conducted telephonically and supplemented with emails summarizing the discussions. The following departments and organizations were consulted amongst others;

- Department of Agriculture, Forestry and Fisheries (DAFF)
- Department of Rural Development and Land Reform (DRDLR)
- Department of Water and Sanitation (DWS)
- KZN Provincial: Economic Development Tourism and Environmental Affairs (EDTEA)
- uMdoni Local Municipality
- Ezemvelo KZN Wildlife
- Ugu District Municipality

On-site notices were placed along key locations, including the gravel road traversing the Qiko farm area and the farm boundaries. Notices were extended to public spaces such as the local shops, offices of the tribal council, ensuring broader reach and accessibility for the public.

The project was advertised in a regional newspaper, such as the Rising Sun newspaper inviting Interested and Affected Parties (I&APs) to contribute their knowledge and perspectives on the proposed project. Stakeholders and I&APs were also notified of the availability of the Draft Basic Assessment Report (BAR) for their review.

A 30-day commenting period was provided to allow stakeholders sufficient time to review and provide feedback on the Draft BAR. All comments received were addressed and incorporated

into the Final Basic Assessment Report, which will then be submitted to the Department of Mineral Resources and Energy (DMRE) for approval.

8.2.1 Database

All the available I&APs database were updated

8.2.2 Background Information Document (BID)

BID was compiled and distributed to I& AP's for notification

8.2.3 Regulatory authority's notifications

All regulatory authorities were notified and sent the DRAFT BAR.

8.2.4 Site notices and advertisements

Local Newspapers the Rising Sun advertised the notice.

8.2.5 Summary of issues raised by IAPS

Issues raised and comments during all the stages of consultation were submitted as part of the updated and final BAR.

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)		DATE COMMENTS RECEIVED	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.
AFFECTED PARTIES					
Landowner/s					
Chief Phikubuxoki Bele (PR) : Tribal Authority Qiko Royal Court	☒	October 2024 – January 2025	The tribal authority raised the issue of how the hosting community will benefit from the proposed project. The concern about the graves where the quarry mine will be and how will the mine owners compensate for disturbing the dead?	Another meeting had been previously *(Minzomanzi era)* scheduled with the Community Committee and chaired by Inkosi (Chief Bele) _ where it was highlighted that the community will have its own trust where the Licence holder will contribute an annual 20% of the quarry profits in form of Dividends. The EAP also responded with the request to have all those who have graves within proximity of the proposed site to register their names separately. A different engagement was held for those groups at the Royal Court in November 2024. The details and consents pertaining to the proceedings of that meeting _ is detailed on the attached Public Participation Process (PPP) Report.	Public Participation Report – Section 4 Report Appendix B- Public Participation Report _ Section 5 Appendix D is an Attendance register of participants of the November

				Considering that this project is meant to amend the previously approved Minzomanzi _ the list of committed Community projects that were implemented per Minzomanzi ; an agreement between Minzomanzi and Mbavuza highlights the projects that Mbavuza will be taking over and continue as per initial agreement. Some of the projects where money is spent already is included on the PPP Report attached.	2024 Consent Forms pertaining to the Graves _ Appendix E Public Participation Report _ Section 4, Appendix C highlights the projects that have been delivered for the Community (amongst other contributions)
Municipality (if more than one, attach list as an Annexure)					
Cnr Bram Fischer & Williamson Streets, Scottburgh, 4180.	☒	6th January 2025 (Email)	The Municipality was contacted to be advised of the changes and updates of the Mining permit Application _ A new Draft BAR was shared with them, and an email was also sent to : Manager Planning : Rayn@umdoni.gov.za Manager LED: Siyah@umdoni.gov.za Manager Environment: Andreasb@umdoni.gov.za	No issues have been raised yet	
Organs of state (Responsible for infrastructure that may be affected DWS, etc					

water & sanitation Department: Water and Sanitation REPUBLIC OF SOUTH AFRICA **Mr Ashley Starkey** **Chief Director: KwaZulu-Natal Email:** **StarkeyA@dws.gov.za**	☒	6th January 2025 (Email)	An email was sent to Ashley Starkey, an automated response was received to forward enquiries to below: Mrs Angela Masefield MasefieldA@dws.gov.za and / or Mr Bhabha Mkhungo. MkhungoB@dws.gov.za	No response has been received yet. *(It is important to note that on the previous Minzomanzi application _ a pre – consultation was lodged with DWS on eWulaas, DWS Ref number WU24722)*	
EZEMVELO KZN WILDLIFE Conservation, Partnerships & Ecotourism **Nerissa Pillay Email:** **nerissa.pillay@kznwildlife.com Mrs Dinesree Thambu-Moodley Tel: 033 845 1425** **Fax: 033 845 1499** **e-mail: dinesree.thambu@kznwildlife.com**		6th January 2025 (Email)	An email was initially sent to Nerissa Pillay. No response was received. A call was made, got advised to contact Mr Dominic Weiners. An email was sent to Dominic Weiners. Dominic.Weiners@kznwildlife.com Leonie.Berjak@kznwildlife.com	No response received on email but had advised (telephonically) that he will present the project to the committee and revert. An updated Biodiversity Report was forwarded to Mr Weiners as part of Consultation. No emails have been received in response by KZN Wildlife. The application for permit to remove and/relocate the protected species (*Aloe marlothii)* known as "Mountain Aloe" has also been submitted to Ezemvelo. No response has been received also on the matter.	
Amafa	☒	6th January 2025 (Email)	Email was sent to Amafa Philani.ndabezitha@amafainstitute.org.za – response was received that the enquiry must be lodged onto SAHRIS, including process to follow.	Lodgement has been done with the SAHRA / SAHRIS Portal _ included the Archaeology study report as detailed. The same has been emailed to Mr Ndabezitha. Considering the presence of the graves, the email did indicate time sensitivity towards their response.	The Draft BAR, Public Participation Report and The HIA report was uploaded onto SAHRIS Reference no: **24547.** The development authorization is with HOC Committee for review.

Mrs Lindiwe Msomi Tel: +27 33 394 6543 **Email: lindim@amafapmb.co.za**					
Department of Rural Development and Land Reform (DRDLR) Lynn Boucher Email: Lynn.boucher@drdlr.gov.za	☒	24/08/2020 (Email)	No claims for restitution in terms of the provisions of the Restitution of Land Rights Act, 22 of 1994. Regional Land Claims Commission will not be held responsible for any damage or loss suffered as a result of information furnished. In this regard as there are claims lodged with the Commission which are not yet captured in our database as they are not yet published in the relevant government gazette.	It must be noted that the initial consultation deemed suffice as the area of application has not changed. The enquiry was specific for Farm Qiko 17448ET. No further enquiry was made when Mbavuza application was lodged.	There are no claims on the proposed area. The Chiefs have given consent.
	☒	6th January 2025 (Email)	Email sent to : Directorate : Environmental Management Natasha.Brijlal@kznedtea.gov.za And Melissa.Packree@kznedtea.gov.za	A hard copy was requested, hard copy posted to: 46 Bissett Street, Port Shepstone, 4240	.
	☒	30th June 2025 (Email)	Email sent to Bright.Khumalo@ugu.gov.za mswawenkosi.dladla@ugu.gov.za Thembeka.shusha@ugu.gov.za And simangele.gumbi@ugu.gov.za	On 01 July 2025 a virtual meeting was conducted with the municipality environmental services team, they requested the BAR be updated with their details as an official I & AP and be sent through with the supporting Archaeologist and Biodiversity Reports for their review process. In response to this request, the reports were submitted and awaiting their comments.	

9. THE ENVIRONMENTAL ATTRIBUTES ASSOCIATED WITH THE PREFERRED SITE

9.1 Baseline status of the affected environment and description of existing environmental impacts

9.1.1 Geology

Two formations (the Quha and Mpambanyoni Formations) of banded para gneisses and migmatites, and a fine-grained, leucocratic pink acid gneiss sequence were initially recognized within the Mapumulo Group by Thomas (1989a). However, subsequent work by (Thomas et al. (I99I) found that the original subdivision was not justified, and the Quha Formation now includes the Mpambanyoni Formation. The pink gneisses are typical of the Mzumbe Terrane but have not been given formation status yet as they are thought to be representative of diverse protoliths (Thomas, I989a). However, Thomas et aI., (l99Id) differentiated some of the pink gneisses of the Mapurnulo Group in the southern part of the Mzumbe Terrane into the Ndonyane Formation based on field evidence. Similar lithologies to the Quha and Ndonyane Formations have been reported from undifferentiated rocks of the Mapumulo Group in the northern part of the Mzumbe Terrane in the Lilani Area, though no formal correlation has been made (Thomas, 1992a).

Much evidence regarding the origin of these rock types is lacking, as primary textures have largely been destroyed by polyphase deformation, and metamorphism. Thomas (1989a) regarded some of the highly siliceous rocks (up to 80% quartz + accessory magnetite) to represent metamorphosed quarzitic sediments, while less siliceous gneisses with flattened mafic inclusions were considered to be deformed Aggregates. Fine-grained sillimanite and tourmaline-bearing pink gneisses were thought to have originated from volcanic/volcaniclastic rocks. The predominant lithologies are outlined and detailed petrographic descriptions and localities are given in Thomas (1988b). Mapumulo Group is surrounded by the Mkomazi Gneiss belt. Pre-Tectonic intrusive gneisses in the Mkomazi Gneiss Layered, biotite-garnet (± sillimanite and cordierite) granitic augen intrusive (Thomas, 1991c) gneiss. Typically, coarse-grained with large K-feldspar megacrysts. Forms irregular sheet-like bodies and a tabular batholith. Contains layers and elongate xenoliths of Mpambanyoni Gneisses and/or the pink

gneisses. Thus, they show characteristics of being crustal, S-type, peraluminous Aggregates. Intrudes the Quha and Ndonyane Formations and is intruded by the Mzimlilo Aggregates and garnet leuco Aggregates veins and sheets.

9.1.2 Climate

KwaZulu-Natal, is bordered by the Indian Ocean to the east and the Drakensberg Mountain escarpment to the west producing a warm, subtropical climate. The climate of KwaZulu Natal is tourist-friendly all-year-round. Situated in the Southern Hemisphere the seasons are reversed, this means traveling from a Northern Hemisphere winter to KZN you will arrive in summer and experience warm weather, lush vegetation and a multitude of birds and animals. Summer (November – February) are hot and humid averaging 28°C and experiencing the majority of the annual rainfall. Although summer is an excellent time to observe wildlife in prime condition, the game is often obscured by tall grass and the thick bush which flourishes in the rainy season. Heavy rains and electrical thunderstorms are common.

Autumn (March-May) in KZN is mild as temperatures begin to cool. Winter (June – August) with average temperatures of 23°C, are warm, dry and clear. There is occasional frost in the interior and snow often falls in the higher reaches during the winter. Winter sunshine averages almost seven hours a day, some of the highest in the country. Winters are dry and this is conducive to grass fires. Spring (September – October) is the beginning of the rainy season and temperatures begin to warm. This is also the perfect time for viewing flowers as everything is blooming. Migrating birds begin to arrive back during spring and into summer. The precipitation varies 95 mm | 4 inches between the driest month and the wettest month. During the year, the average temperatures vary by 7.7 °C | 45.9 °F.

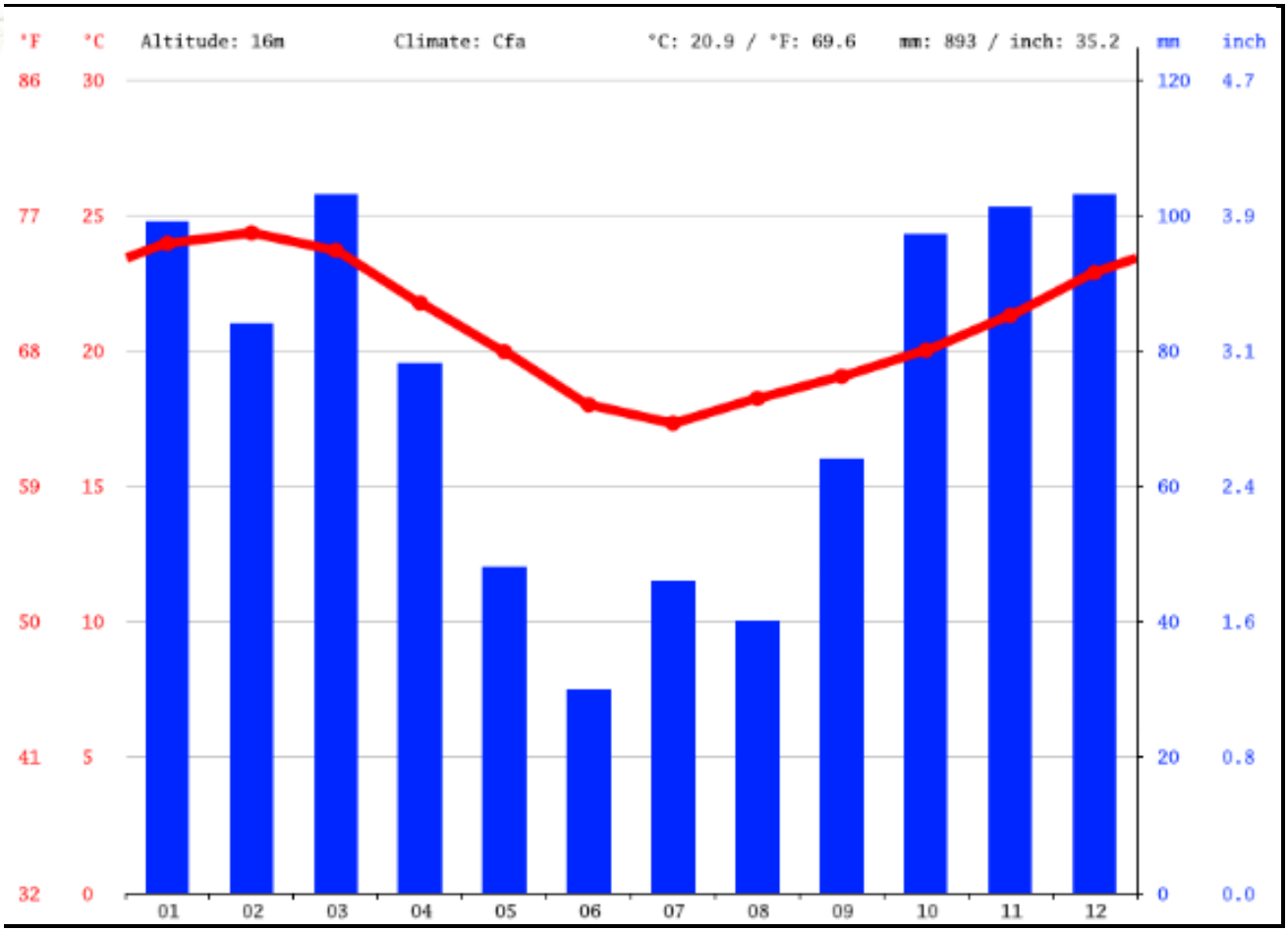


Figure 9-1: KZN Climate

9.1.3 Topography

The proposed mining area is situated within the gently undulating hills of the Mkomazi floodplain at an average elevation of 120m above mean sea level (amsl). The elevation interval in the entire property is 20m. The proposed permit is located between 100m to 160m above sea level (amsl). The surface topography is scattered with the occasional river, hard rock and natural vegetation.

9.1.4 Soil and land capability

The immediate layer of rock is Natal Sandstone, and this is evident in the natural rock exposed on the property by excavations and from scattered rock, and in the soil derived from it. The soil is loose, sandy, medium-brown loam soil. The soil is classified as Glenrosa soil, as it is naturally sandy. It is known as Mispah soil where the shallow layer of soil is bedded on hard rock. The Natal cluster sandstones are often envisaged as lying in two parallel belts within the coast belt and coast backcountry (Geological Survey, 1984). Within the stratigraphic column,

the Natal Group rests on the basement Aggregates, and below the tillites of the Dwyka Formation. Extensive faulting and downwarp of the coast (Maud, 1968) has taken place giving rise to the sharp, but usually irregular boundaries with these geologic strata. Sandstones of the Natal cluster are usually exposed as flat to undulating tablelands, delimited by steep escarpments.

As confirmed by GIS specialists the area falls under soil classification freely drained, structure less soil. This type of soil is characterized by sand, red soil which is less productive due to dominating sand soils have severe limitations that reduce the choice of plants or that require special conservation practices, soils and miscellaneous areas have limitations that preclude commercial plant production and restrict their use to recreational purposes, wildlife habitat, or esthetic purposes.

The status of the area or land is still natural with few activities practiced within the proposed land. Grazing is the one that is confirmed during site assessment as cattle were seen around the area. It is also confirmed by GIS specialists that the area is used for grazing purposes. This activity might lead to the serious disturbance of the natural state of the area.

9.1.5 Land use

The surrounding land use is predominantly natural habitat for local fauna species. Mkomazi River is flowing adjacent to the proposed land. This activity might lead to disturbance of the natural state of the area. The area is still natural with no severe damage caused by current land use grazing and other human activities.

The site has not been formally developed. However, there is a gravel trail that passes adjacent to the proposed area. The trail passes on the farm used by the nearest community to fetch water as they use river water for domestic purposes if they do not receive water from the water tank distributed to the community by the municipality. The impact of the proposed mining area on the infrastructural features of the surrounding area is considered of low significance, as the impact of the mining activities will be concentrated within the 5-ha footprint area of mine

9.1.6 Flora and Fauna

The proposed project falls within a vegetation type that falls within the Savannah Biome. The transformation has significantly impacted the extent of the remaining natural habitat, particularly along the coast and in higher-lying inland regions. The field trips were conducted in autumn when the tree leaves are changing color. Observations were backed up by a photographic record, particularly of the IAPs. The vegetation of the study site is described in terms of major biogeographic assessments with emphasis on the most recent. These are presented at a large scale followed by smaller-scale evaluations.

In the northern KwaZulu-Natal Interior Basin the vegetation is dominated by Natal Central Bushveld with Natal Lowveld Bushveld in the east of these interior basins (Low and Rebelo, 1996). The Tugela Valley has Valley Thicket, while Short Mistbelt Grassland covers the southern zones. The vegetation over the greater part of the zones where tillite is exposed is described by Low and Rebelo (1996) as Coast Hinterland Bushveld. Natal Central Bushveld is present in the northern KwaZulu-Natal Interior, while Short Mistbelt Grassland occurs in the Mistbelt.

The natural vegetation of the positioning has been mostly preserved in its state during a range of areas as a natural parcel. Its typical Ngongoni veldt (SVs4) (Mucina and Rutherford, 2006: 510). This on an area scale is brought up as Dry coastal backcountry Ngongoni veldt (Camp, 1999) and a lot of specifically Bioresource Unit Vb fifteen Cato Ridge (Camp, 1995). The dense, wooded vegetation on the escarpment slope is understood as Jap vale Bushveld (SVs6). The excellence between the two vegetation sorts is kind of distinct. Ngongoni veldt may be a parcel with varied forbs in amongst the grasses with plait and shrubs occurring in scattered bush clumps. A vale bush on the other hand may be a tangled mass of a particular choice of trees, scramblers, shrubs and forbs. It is usually related to an undulated piece of ground in deep valleys wherever it gets hot.

The diversity of grass species is quite limited although the diversity of forbs is still good. It would appear that there was some historic disturbance on the land causing sheet erosion across the entire plateau since the area is very steep, where natural erosion occurred in a high percentage during the rainy season. At the start of the slope from the Mkomazi River the land becomes quite steep and rocky. At the rocky area seen during site assessment, the diversity of

the vegetation is significantly more diverse. The grasses located on the flood plain still appeared green and in a good state as far as the diversity of grasses and forbs are concerned. Scattered alien plants create microhabitats promoting further alien invaders to become established.

The land uses within the local area is predominantly low density rural housing and gravel road networks

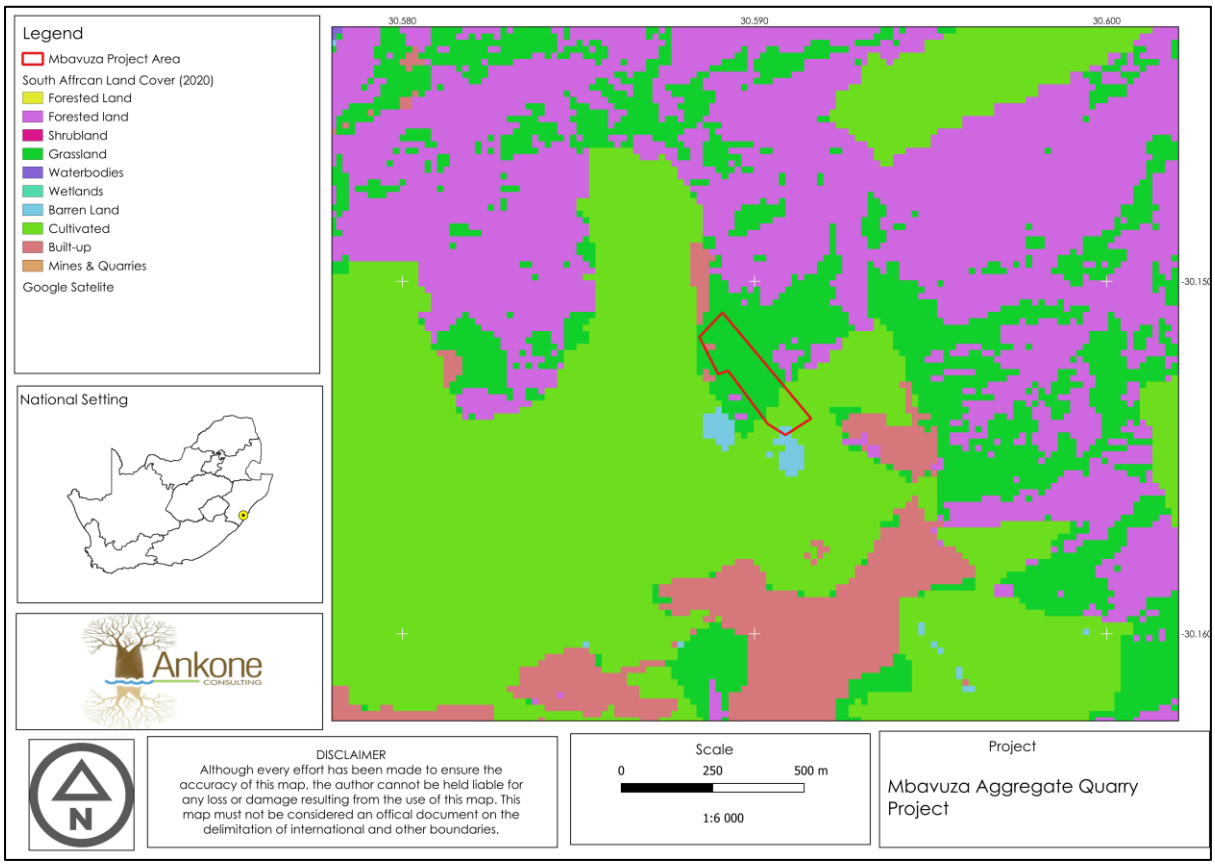


Figure 9-2: Land Cover associated with the Project area

The proposed land is still natural except for small areas where erosion occurred, the status of the area is still in good condition where most of the fauna is dependent on the area for living. Small mammals, reptiles and insects are using the proposed land for habitat and living needs. Example of fauna species that might found in the proposed land are Reptilia-Dendroaspis angusticeps, Mammalia-Philantomba monticola, Myosorex cafer and Cercopithecus albogularis labiatus and Insecta-Durbania amakosa flavida, Durbania amakosa albescens. All the mentioned species in this paragraph are classified as medium sensitivity as confirmed by the screening report.

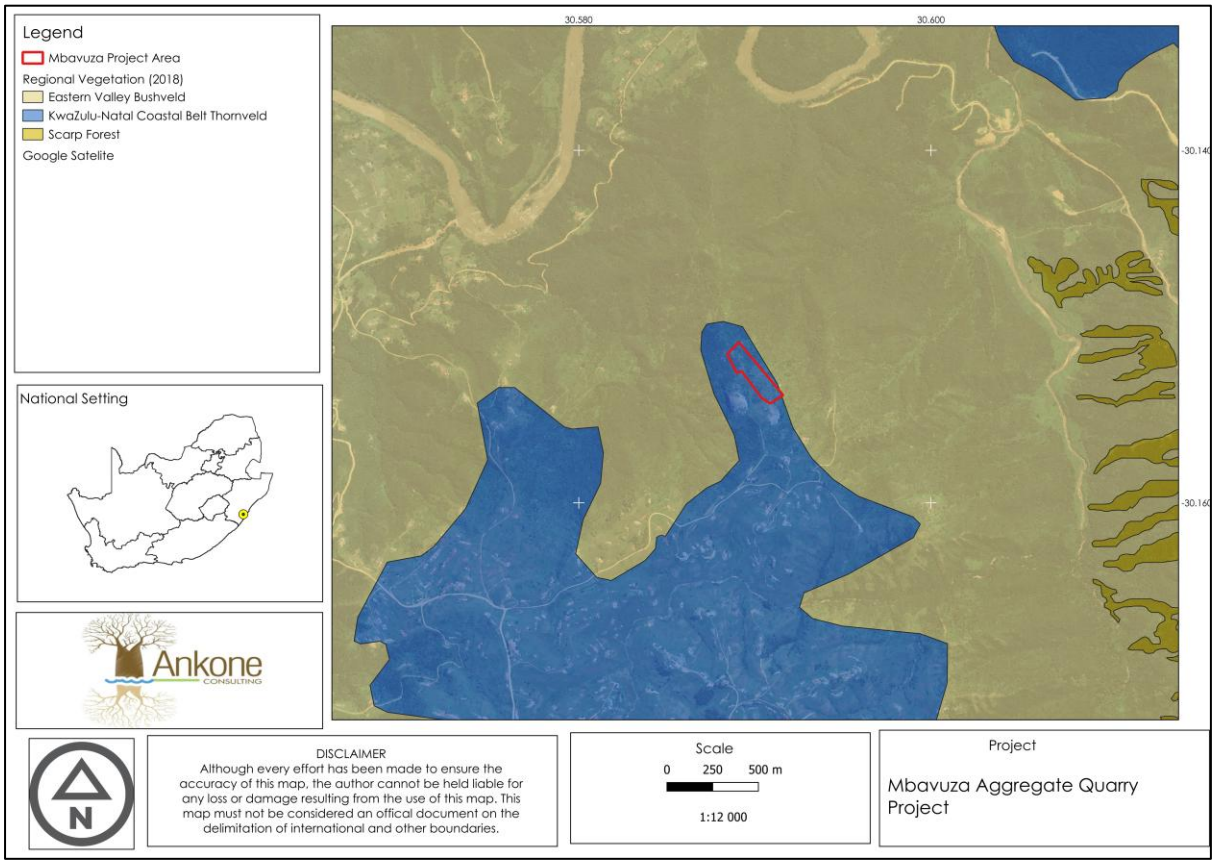


Figure 9-3: Regional Vegetation associated with the proposed Project area.

Figure 9-4: The vegetation within project area

Figure 9-5: The Aloe Marlothii individuals identified within project are

Figure 9-6: The other identified Plant Species : A) Hypoxis Hermerocallidea B) Sporobolus Africanus C) Digitaria Eriantha D) Euphorbia Ingense E) Crassula Arborescens

9.1.7 Surface Water

The proposed project site is located next to the Mkomazi River. The study area is located within quaternary catchment U10M within the Pongola-Mtamvuna Water Management Area (WMA 4). It is noted that the Mvoti-Umzimkhulu WMA was reclassified into the larger Pongola-Mtamvuna Water Management Area (WMA 4) (NWA, 2016). The total catchment area of U10M is 280 square meters, with a net MAR of 37.43 million cubic meters (mcm) and a MAP of 858 millimeter (mm). The following are rivers in the WMA: the Mvoti River, Tongaat River, Mdloti River, Ohlanga River, Umgeni River, Sterkspruit River, Lovu River, Umkomazi River, Mzimayi River, Umzimkulu River and Mtamvuna River. The WR2012 study, presents hydrological parameters for each quaternary catchment including area, mean annual precipitation (MAP) and mean annual runoff (MAR).

The Perennial River (Mkomazi) is located approximately 1.69km Northwest of the proposed project and Non-perennial River flowing towards Mkomazi River. Therefore, the proposed project will not have an impact on the surrounding streams. Aggregates rocks to be quarried have a more inert composition and show much lower rates of deterioration, they have lower water absorption, and are harder than marbles, limestones, and sandstones, therefore the chances of water quality contamination by this quarry are negligible. Also note that the chemical composition of Aggregates (quarts and feldspars) does not contain pyrite mineral that causes acid mine drainage, therefore there will be no acid mine drainage in the river. The Department would like to bring to your attention that any activity within a 500m radius from the boundary of a wetland requires a Water Use Authorization in terms of Section 21 (c) and (i) National Water Act, 1998 (Act No. 36 of 1998) (NWA). Access road upgrade that passes through water resources requires a water use in terms of Section 21 (c) and (i) of the NWA and must be authorized.

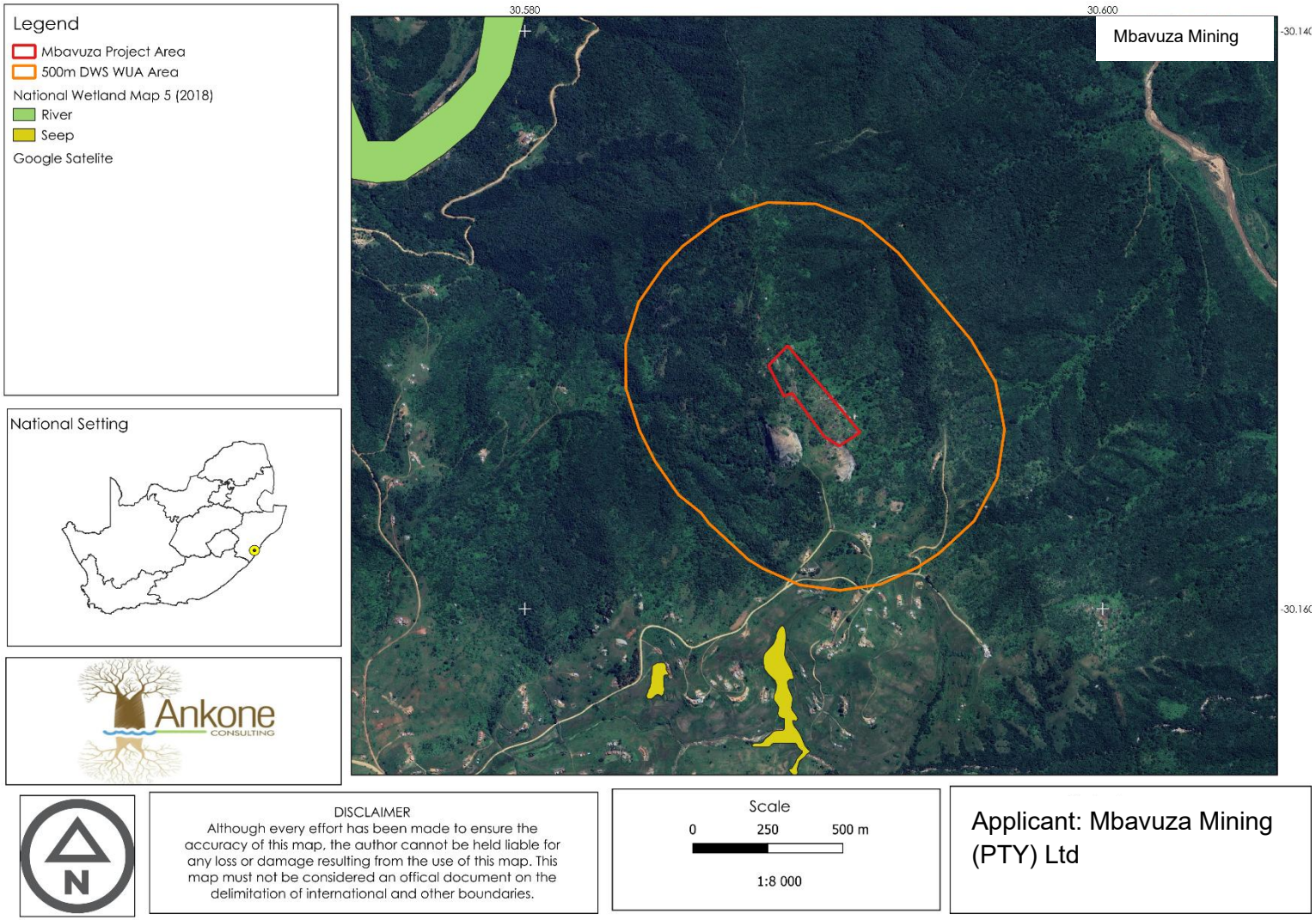


Figure 9-7: The project area water courses

9.1.8 Groundwater

The fractured aquifer in this area consists of Aggregates. The pores of the geological units are generally well cemented, and the principal flow mechanism is fractured flow along secondary structures, e.g. faults, bedding plane fractures, etc. The intrusion of the fractured aquifer by dolerite dykes and sills has led to the formation of preferential flow paths along the contacts of these lithologies due to the formation of cooling joints. The dykes may act as permeable or semi-permeable features to impede flow across the dykes. The flow mechanism is fracture flow, as can be expected from the crystalline nature of the shale rocks. The water quality is generally characterized by high fluoride levels, which limits the exploitation of this aquifer in combination with the general low yields, deep (expensive) drilling and low recharge (Grobbelaar et al, 2004).

9.1.9 Noise

The surrounding land use is predominantly a natural habitat for local fauna species. There are no major activities that might cause noise around the proposed area. Noise status will be changed due to mining machinery. A comprehensive noise assessment will be conducted at the commencement of operations. Following this, ongoing noise monitoring will be carried out throughout the construction, operational, and decommissioning phases of the project to ensure compliance with applicable noise regulations and minimize any potential impacts.

9.1.10 Sites of archaeological and cultural interest

The proposed project is targeted to take place around the big boulder commonly known as Ntshenkomo. According to the local community elders, during the first site visit, Ntshenkomo as a boulder carries cultural significance for the communities of KwaQiko and eZembeni. Subsequent to informal discussions during the brief site walkabout, the local members found relief in understanding that the boulder will not be disturbed in the quarry process as the developers themselves do believe, acknowledge and respect any people's culture.

The site visit was conducted by our appointed archaeologist (Mr Tobias Coetzee of AgriCivils & Heritage). General site conditions were recorded via photographic record. The historical topographical datasets dating to 1968, 1978, 1993, and 2004, as well as the historical aerial images dating to 1937, 1967, 1976, 1978, and 2005, proved useful in terms of providing an indication of potential heritage sites and past land uses associated with the study area.

Sixty-three (63) sites associated with demolished houses, wooden poles, a building ruin and graves were identified using a combination of historical aerial imagery, topographical maps, and consultation with the local community.

Figure 9-8: General View of the Study Area from the East

Figure 9-9: Highly dense Vegetation that was cleared to ensure clear views of any possible structures

Another site visit was conducted in November after vegetation clearing was conducted by the community under the authority and observation of the Chief (PR Bele) and the Tribal Council members.

Figure 9-10: Mr Kwazi Bele (left) and Mr BP Latha who accompanied the archaeologist and environmental consultants to the graves; as advised by the tribal council and the Chief of KwaQiko

The study identified two potentially historical sites (demolished houses), during the pedestrian survey. Members of the local community confirmed that both sites consist of demolished houses and that several additional demolished houses are associated with the greater area. The general area, however, is severely overgrown that prevented visibility and free movement. No material culture were noted at the sites and both sites are located outside of the proposed development footprint. According to members of the local community, they stayed further downslope in the vicinity of the house foundations but moved further uphill to the east in recent years. The exact date of the initial settlement could not be determined. The detail of the findings is outlined in the archaeology report.

Figure 9-11: Example of foundations of the demolished house

Figure 9-12: Some of the historical sites could be easily identified with wooden poles that made sort "fence" for a demolished structure

Figure 9-13: One building ruin found on site

With the assistance of the local community and members of the deceased, fifty-nine graves were identified in the vicinity of the demarcated study area. Identifying sites would not have been possible without the assistance of the local community. The details of these graves and associated families are detailed on the archaeological report submitted with this BAR. It should be noted that according to the local community, 17 graves exist in the greater area of which the location is unknown. Since the proposed project boundary was communicated with the local community, it is likely that these graves do not intersect the project area.

Figure 9-14: Example of one of the "Informal Graves"identified

This grave is located 13 m west of the western boundary of the study area, and consists of a slightly elongated soil mound oriented in a roughly east-west direction No additional surface remains were noted and according to the family the grave dates to roughly 1997.

Figure 9-15: Example of one of the "Formal Graves"identified.

This grave is located 132 m east of the study area. The grave consists of a brick-lined grave dressing oriented in a roughly east-west direction. No additional surface remains were noted and according to the family the grave dates to the 1970's or 1980's.

Figure 9-16: An example of informal grave with cleared vegetation

A process was followed during the initial site visit and through the Chief of the area – this process was diligently conducted by the local people, communities, families through the tribal authority office; whereby all the people who have graves and know of their families graves must clear out areas so the graves can be easily identifiable. This intended to ensure that no family after the completion of the process may claim that they were no contacted. The consultants did advise the chief and its council members that full announcements must be made and people be given timeframes enough to attend to this important matter. The detail is captured on the Archaeology Impact Assessment (Phase1) study.

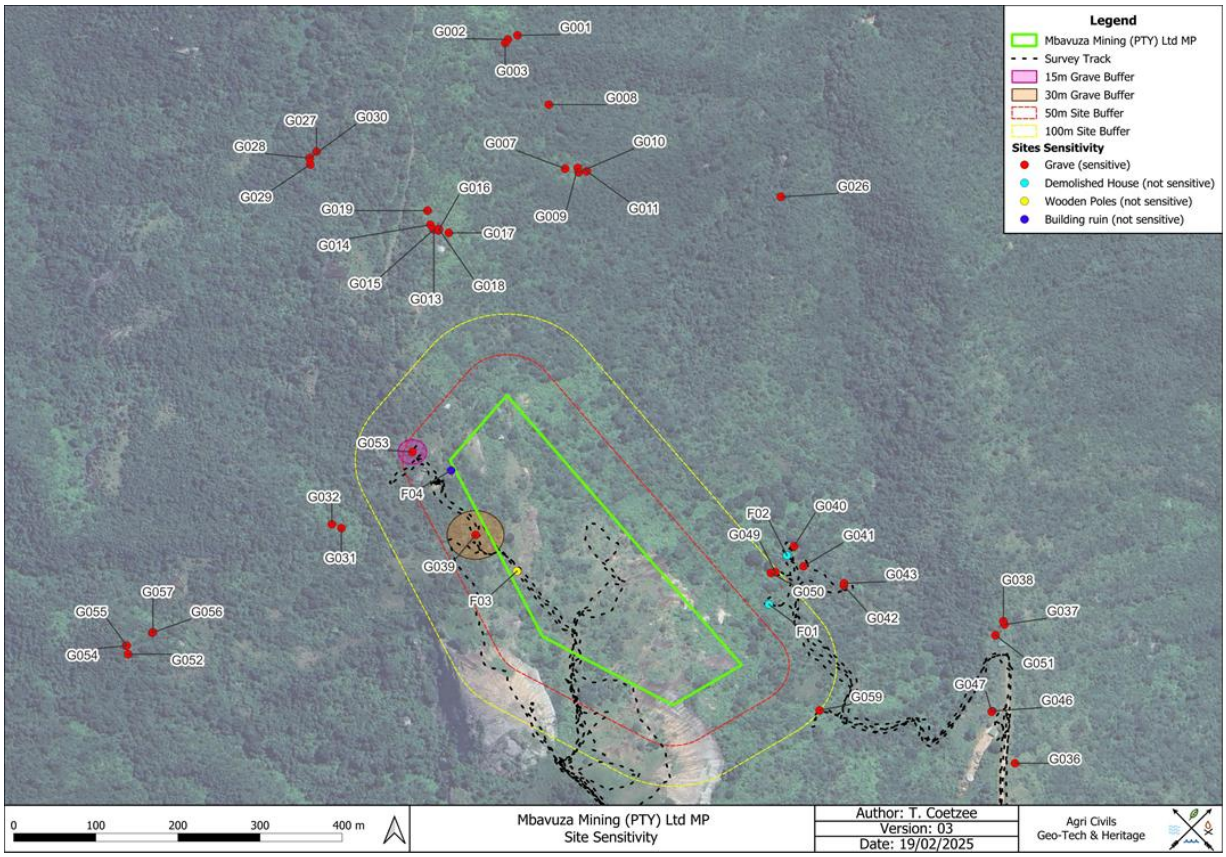


Figure 9-17**: **Graves Sensitivity map

Although there were no sites found to have exceeded 60 years of age, and therefore not protected by the KwaZulu-Natal Amafa and Research Institute Act (Act No. 05 of 2018), but the graves should be conserved, alternatively, a grave relocation process may be considered.

However, for grave site G039 and G053, these consists of a single informal contemporary grave located approximately 13 m and 41m (respectively) from the proposed development footprint.

9.1.11 Sensitive and visual landscape

The study area is located on Portion of Farm Qiko 17448 ET, which is situated under the Magisterial District of Ugu, KwaZulu-Natal Province. The study area fits into the context of the surrounding region in that the area is predominantly characterized by natural vegetation. Mkomazi River is flowing adjacent to the proposed site. The study area is not near any declared protected area.

9.1.12 Regional socio-economic structure

Umdoni Municipality, with its base in Scottsburg, covers an area of 236 square kilometers. The Municipality is located in KwaZulu-Natal, about 50 km from Durban and 65 km from Port Shepstone. The urban areas of the municipality comprise the coastal towns of Scottsburg, Park Rynie, Pennington, Sezela, Bazely, Ifafa, Elysium and Mtwalume, and the inland towns of Umzinto / Umzinto North, including Shayamoya and Esperanza. The rural areas contain farms and Traditional Authority land, on which a number of rural settlements are to be found.

Table 7: The area key statistics based on the 2011 Census

Total population	78,875
Young (0-14)	26,8%
Working Age (15-64)	65,5%
Elderly (65+)	7,7%
Dependency ratio	52,7
Sex ratio	94,4
Growth rate	2,35% (2001-2011)
Population density	314 persons/km2
Unemployment rate	33,3%

Youth unemployment rate	43,3%
No schooling aged 20+	8,7%
Higher education aged 20+	8,3%
Matric aged 20+	30,8%
Number of households	22,869
Number of Agricultural households	4,632
Average household size	3,2
Female-headed households	42,4%
Formal dwellings	74,3%
Housing owned/paying off	57,3%
Flush toilet connected to sewerage	34,2%
Weekly refuse removal	52,5%
Piped water inside dwelling	40,6%
Electricity for lighting	76.3%

9.1.13 Environmental and current land use map(s)

Show all environmental, and current land use features. Provide a list of the potential impacts identified of the activities described in the initial site layout that will be undertaken, as informed by both the typical known impacts of such activities, and as informed by the consultations with affected parties together with the significance, probability, and duration of the impacts. Please indicate the extent to which they can be reversed, the extent to which they may cause irreplaceable loss of resources, and can be avoided, managed or mitigated.

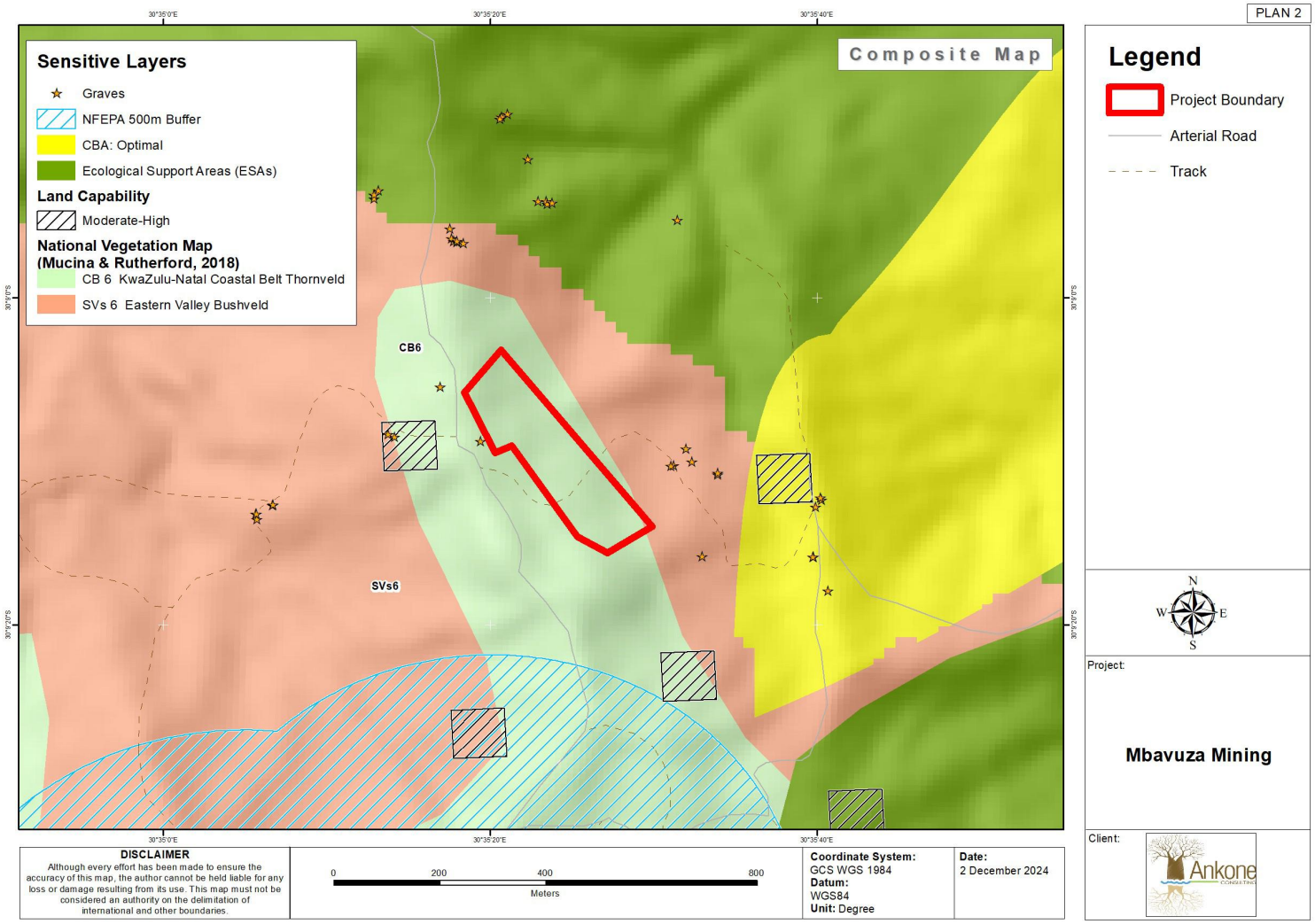


Figure 9-18: Sensitivity map

10. ENVIRONMENTAL IMPACTS AND RISKS ASSESSMENT

10.2 Methodology used in determining the significance of environmental impacts

4.2.6 Impact assessment methodology

The methodology used for assessing impacts associated with the project follows the philosophy of environmental impact assessments, as described in the booklet Impact Significance, Integrated Environmental Management Information Series 5 (DEAT, 2002b). The philosophy is summarized by the following extracts:

The impact magnitude [or intensity] and significance should as far as possible be determined by reference to legal requirements, accepted scientific standards or social acceptability. If no legislation or scientific standards are available, the EIA practitioner can evaluate impact magnitude based on clearly described criteria. Except for the exceeding standards set by law or scientific knowledge, the description of significance is largely judgmental, subjective and variable. However, generic criteria can be used systematically to identify, predict, evaluate and determine the significance of impacts (DEAT, 2002b).

Determining significance [of impacts] is ultimately a judgment call. Judgmental factors can be applied rigorously and consistently by displaying information related to an issue in a standard worksheet format (Haug et al., 1984 taken from DEAT, 2002b).

The criteria and systematic approach to identify, describe and assess impacts are outlined below.

10.2.1 Identification and description of impacts

For each environmental component, impacts were identified and described in terms of the nature of the impact, compliance with legislation and accepted standards and the significance of the environmental change. The perceived sensitivity of receptors (people and/or receiving environment) was professionally judged based on available scientific data (fact) and feedback from ongoing public participation undertaken at the quarry.

10.1 Rating of impacts and mitigation effectiveness

Direct, indirect and cumulative impacts of the issues that will be identified and assessed in terms of these standard rating scales to determine their significance. The rating system used for assessing impacts (or when specific impacts cannot be identified, the broader term issue should apply) is based on five criteria, namely:

1. Status of impacts (Table 11) – determines whether the potential impact is positive (positive gain to the environment), negative (negative impact on the environment), or neutral (i.e. no perceived cost or benefit to the environment);
2. Spatial scale of impacts (Table 12) – determines the extent of the impact on a scale of localized to global effect. Potential impact is expressed numerically on a scale of 1 (site-specific) to 5 (global);
3. Temporal scale of impacts (Table0 13) – determines the extent of the impact in terms of timescale and longevity. The potential impact is expressed numerically on a scale of 1 (project duration) to 5 (permanent);
4. Probability of impacts (Table 14) –quantifies the impact in terms of the likelihood of the impact occurring on a percentage scale of <5% (improbable) to >95% (definite); and
5. Magnitude of impacts (Table 15) – quantifies the impact in terms of the magnitude of effect on the environment (receptor) and is derived by consideration of points 1, 2 and 3 above. For this project, a conservative approach is adopted for magnitude (e.g. where the spatial impact was 2 and the temporal impact was considered to be 3, a value of 3 would be adopted as a conservative estimate for the magnitude of impact).

Table 8: Status of Impacts

Rating	Description	Quantitative Rating
Positive	A benefit to the receiving environment (positive impact)	**P**
Neutral	No determined cost or benefit to the receiving environment	-
Negative	At cost to the receiving environment (negative impact)	**N**

Table 9: Spatial Scale of Impacts

Rating	Description	Quantitative Rating
Low	**Site or Local** – impacts extend to within 5 km of the project site boundary	**1**
Medium	**Regional** – impacts extend beyond the site boundary and have a widespread effect - i.e. > 5 km from project site boundary	**2**
High	**National/International**– impacts extend beyond the site boundary and have a national or global effect	**3**

Table 10: Temporal scale of impacts

Rating	Description	Quantitative Rating
Low	**Short term** – impacts expected on a duration timescale of up to 18 months	**1**
Medium	**Medium-term** – impacts expected on a duration timescale between 18 months and 5 years	**2**
High	**Long-term** – impacts expected on a duration timescale of more than 5 years	**3**

Table 11: Probability of Impacts

Rating	Description	Quantitative Rating
Unlikely	Likelihood of the impact arising is estimated to be negligible ;< 5%.	**1**
Probable	Likelihood of the impact arising is estimated to be 5-65%.	**2**
Definite	Likelihood of the impact arising is estimated to be 65-95%	**3**

Table 12: Magnitude of Impacts

Rating	Description	Quantitative Rating
Minor-	Negligible – zero or very low impact	**1**
Minor+	Site-specific and short-term impacts	**2**
Moderate-	Local-scale and/or short-term impacts	**3**
Moderate+	Local-scale and/or long-term impacts	**4**
Major-	Regional scale and/or permanent environmental change	**5**
Major+	Global scale and/or permanent environmental change	**6**

These five criteria are combined to describe the overall significance rating (Table 13 - Table 14). Calculated significance of impact – determines the overall impact on (or risk to) a - specified receptor and is calculated as: the product of the probability **(P)** of the impact occurring and the magnitude **(M)** of the impact if it were to occur **(Impact = P × M)**. This is a widely accepted methodology for calculating risk and results in an overall impact rating of Low **(L)**, Medium **(M)** or High **(H)**. The significance of an impact is depicted in Table 16 and assigned a particular color code in relation to its magnitude (Table 17).

Table 13: Significance of Impacts

Rating	Significance of impact	Description	Quantitative rating
Low	P × M = 1-3	(low impact significance)	**L**
Medium	P × M = 6-9	(medium impact significance)	**M**
High	P × M = 13-25	(High impact significance)	**H**

Table 14: Perceived Significance of Impacts

Probability (P)	Magnitude (M)				
	1	2	3	4	5
1	L	L	L	LM	LM
2	L	LM	M	M	MH
3	L	M	M	MH	H
4	LM	M	MH	H	H
`5	LM	MH	H	H	H

The impact significance rating should be considered by authorities in their decision-making process based on the implications of ratings recognized below:

- **Insignificant**: the potential impact is negligible and will not influence the decision regarding the proposed development;
- **Low**: the potential impact is very small and should not have any meaningful influence on the decision regarding the proposed development;
- **Low/Medium**: the potential impact may not have any meaningful influence on the decision regarding the proposed activity/development;

- **Medium**: the potential impact should influence the decision regarding the proposed activity/development;
- **Medium/High**: the potential impact will affect the decision regarding the proposed activity/development; and
- **High**: the proposed activity should only be approved under special circumstances.

Practicable mitigation and optimization measures are recommended, and impacts are rated in the prescribed way both without and with the assumed effective implementation of the recommended mitigation (and/or optimization) measures. Mitigation and optimization measures are either:

- **Essential:** measures that must be implemented and are non-negotiable; or
- **Best Practice**: recommended to comply with best practice, with adoption dependent on the proponent's risk profile and commitment to adhere to best practice, and which must be shown to have been considered and sound reasons provided by the proponent if not implemented.

10.2 Positive and negative impacts in terms of site layout alternatives

Due to the location of the site and its close proximity to water bodies; the potential drainage and water flows were considered in the determining the current site layout where alternatives could result in added environmental degradation.

10.3 Possible mitigation measures that should be applied and the level of residual risk

This section outlines possible mitigation measures or alternatives that are available to accommodate or address issues and concerns raised by IAPs where relevant.

The issues that were raised pertaining to potential impacts were addressed, and some are in progress as parallel processes. The issue of graves protection and/removal is currently being dealt with together with the communities affected, and through the office of the Tribal Chief. The consents have been signed and received. The detail is attached on the Comments and Response section of the Public Participation Report.

10.4 The motivation where no alternative sites were considered

A geotechnical investigation conducted by GIBB Engineering (refer to Appendix H) confirmed the presence of suitable aggregate material within the designated project area. As a result, alternative locations were not considered, as they did not contain the required materials. To support the construction activities, a 0.5 km road extension will be developed from Quarry F, originating in the northern section of the existing Old District Road. This extension will connect to the existing Watershed Track at its southern access point, thereby establishing a continuous route to the dam site. This new segment will form part of a one-way loop system specifically designed to ensure the safe, efficient, and controlled movement of construction traffic. Under this system, empty vehicles will travel southbound to the quarry, while loaded vehicles will return northbound toward the dam site.

10.5 A concluding statement motivating the preferred alternative development located within the overall site

The purpose of the quarry is to supply aggregate for the construction of a much-needed Ngwadini DAM for the Lower Umkomaas Bulk Water Supply Scheme project to supply the water pressured eThekwini Metro and surrounding, thus the identified and potential impacts on the surrounding environment associated with mining, may deemed to be of low significance.

11. FULL DESCRIPTION OF THE PROCESS UNDERTAKEN TO IDENTIFY, ASSESS AND RANK THE IMPACTS AND RISKS THE ACTIVITY WILL IMPOSE ON THE PREFERRED SITE THROUGH THE LIFE OF THE ACTIVITY

Environmental and socio-economic impacts associated with the project were identified through site visits undertaken, consideration the project description and site layout and monitoring data for the site. Potential environmental and socio-economic impacts identified have been outlined in the background information document that was distributed to IAPs and regulatory authorities.

11.2 Description of the process undertaken to identify impacts

The assessment methodology used to assess the severity of identified impacts, including the nature of impacts and the degree to which impacts may cause irreplaceable loss of resources. In addition to this, the assessment methodology also assesses the extent of the impacts, the duration and reversibility of impacts, the probability of the impact occurring, and the degree to which the impacts can be mitigated.

11.3 Description of the process undertaken to assess and rank the impacts and risks

Table 11-15 describes the impact assessment process used to produce Table 17.

11.4 Description of the environmental impacts and risks identified during the environmental assessment process

The assessment of the significance of the impacts identified for the project area are included in Table 16 The extent to which the identified impacts can be avoided or addressed by the adoption of mitigation measures is also included.

12. ASSESSMENT OF THE SIGNIFICANCE OF EACH IMPACT AND RISK AND AN INDICATION OF THE EXTENT OF TO WHICH THE ISSUE AND RISK CAN BE AVOIDED OR ADDRESSED BY THE ADOPTION OF MITIGATION MEASURES

12.2 Environmental Impact Assessment

Affected Environment	Activity	Impact Description	BEFORE MITIGATION						Cumulative Impact	Mitigation measures / Recommendations	AFTER MITIGATION					
			Magnitude	Duration	Spatial Scale	Consequence	Probability	SIGNIFICANCE			Magnitude	Duration	Spatial Scale	Consequence	Probability	SIGNIFICANCE
Construction																
Biodiversity	Clearing of vegetation	Destruction of vegetation	Major -	Short Term < 18 Months	Site or Local	Medium	Definite	Medium	Yes	Avoid sensitive areas and implement buffer Zones	Major -	Short Term < 18 months	Site or Local	Medium	Possible	Medium
Biodiversity	Loss of plant SSC	Removal of vegetation	Major -	Short Term < 18 Months	Site or Local	Medium	Definite	Medium	Yes	Limit the footprint area to the pit and infrastructure Avoid areas of remaining indigenous vegetation	Major -	Short Term < 18 months	Site or Local	Medium	Possible	Medium
Biodiversity	Displacement of fauna species	Habitat disturbance	Moderate -	Short Term < 18 Months	Site or Local	Low	Definite	Medium	Yes	Avoid high biodiversity sensitivity areas (natural vegetation, watercourses & wetlands) and comply to prescribed buffer zones.	Moderate -	Short Term < 18 Months	Site or Local	Low	Possible	Low
Biodiversity	Loss of faunal SSC	Habitat Destruction	Moderate -	Short Term < 18 Months	Site or Local	Low	Definite	Medium	Yes	Avoid areas in which plant species of conservation concern may occur; If some areas cannot be avoided implement a rescue plan for the concerned plant species.	Moderate -	Short Term < 18 Months	Site or Local	Low	Possible	Low
Soil	Land clearance and earthworks of the new mine	Loss of soil through erosion	Major -	Short Term < 18 months	Site or Local	Medium	Definite	Medium	Yes	1. The topsoil is to be stripped according to the stripping guideline and there must be a management plan in place 2.The soil must be stockpiled in a fertile and erosion free state. 3. The handling of the stripped topsoil must be minimized to ensure the soil's structure does not deteriorate. 4. Berms must be placed around stockpiled soil to prevent soil loss due to erosion. 5. In order to reduce the risk of erosion there must weed control measures in place. 6. The stockpiles must be revegetated with endemic vegetation when they put it back as part of the	Major -	Short Term < 18 months	Site or Local	Medium	Possible	Medium

										rehabilitation plan (details contained in rehabilitation plan)						
Soil	Land clearance and earthworks of the new mine	Dust from the exposure of the soil	Major -	Short Term < 18 months	Site or Local	Medium	Definite	Medium	Yes	Dust suppression methods must be used to ensure minimal dust in the area.	Moderate -	Short Term < 18 months	Site or Local	Low	Possible	Low
Soil	Hydrocarbon spills due to the movement /usage of heavy machinery	Soil pollution due to the spillage of diesel on the soil	Major -	Short Term < 18 months	Site or Local	Medium	Definite	Medium	Yes	1. Ensure that all machinery used is in good condition to prevent any spills from occurring. 2. If a spill occurs, it is to be cleaned up immediately and reported to the appropriate authorities. 3. Hydrocarbon management procedure to contain details of emergency clean-up procedures and Leaking vehicles must have drip trays placed under them when there is leak occurring. 4. Water runoff traps must be constructed at the vehicle service sites to prevent polluted water runoff into areas that are not impacted upon. .	Moderate -	Short Term < 18 months	Site or Local	Low	Possible	Low
Hydrology	Hydrocarbon spills due to the movement /usage of heavy machinery	Surface water contamination	Major -	Short Term < 18 months	Site or Local	Medium	Definite	Medium	Yes	All oils and fuels must be stored in banded areas and any spillages must be managed immediately in accordance with the Emergency Response plan. The emergency response plan must be provided to contractors.	Major -	Short Term < 18 months	Site or Local	Medium	Possible	Medium
Hydrology	Creation of rills and gullies due to exposed soil	Siltation of surface water	Major -	Short Term < 18 months	Site or Local	Medium	Definite	Medium	Yes	Footprint clearance will expose soil. Prior to construction, clean and dirty separation infrastructure must be in place to manage runoff velocity preventing erosion gullies.	Moderate -	Short Term < 18 months	Site or Local	Low	Possible	Low
Land capability and Land Use	Removal of soil layers will impact on	Vegetation cannot be supported	Major -	Short Term < 18 months	Site or Local	Medium	Definite	Medium	Yes	No land capability mitigation is possible during this phase because the land use is changed to mining.	Major -	Short Term < 18 months	Site or Local	Medium	Definite	Medium

	the land capability															
Health and safety	Movement of trucks and construction vehicles will cause noise	Noise pollution due to the movement of trucks and machinery in the area	Major -	Short Term < 18 months	Site or Local	Medium	Definite	Medium	Yes	Trucks must move at legal prescribed speed to avoid making additional noise due to movement. The trucks and machinery must operate with the required noise level that is not harmful to human health. If the machinery or trucks produce noise levels above the recommended limit people working in the construction area must wear ear protective gear.	Moderate -	Short Term < 18 months	Site or Local	Low	Possible	Low
Heritage Resources	Removal of soil, construction activities	Demolished potentially historical houses F01 & F02 - No impact foreseen	-	-	-	Medium	Unlikely	Medium	No	None	-	-	-	Low	Unlikely	Low
	Removal of soil, construction activities	Impact to Site F03 (wooden poles) - not protected by heritage legislation	-	-	-	Medium	Definite	Medium	No	None	-	-	-	Low	Definite	Low
	Removal of soil, construc	Impact to Site F04 (Building ruin) - not	-	-	-	Medium	Possible	Medium	No	None	-	-	-	Medium	Possible	Medium

	tion activities	protected by heritage legislation													
	Removal of soil, construction activities	Potential impact to grave G039	Moderate +	Long Term > 5 years	Site or Local	Medium	Possible	Medium	No	30m Fenced-off conservation buffer, ECO monitoring. Alternatively, grave relocation	Minor +	Medium Term > 18 months < 5 years	Site or Local	Low	Unlikely	Low
	Removal of soil, construction activities	Potential impact to grave G053	Moderate +	Long Term > 5 years	Site or Local	Medium	Possible	Medium	No	15m Fenced-off conservation buffer, ECO monitoring. Alternatively, grave relocation	Minor +	Medium Term > 18 months < 5 years	Site or Local	Medium	Unlikely	Medium
	Removal of soil, construction activities	Graves G001 - G038, G040 - G052, G054 - G058) - No impact foreseen	-	-	-	-	Unlikely	-	No	None	-	-	-	-	Unlikely	-
	Removal of soil, construction activities	Potential impact to undetected & subsurface heritage resources	Moderate +	Long Term > 5 years	Site or Local	Medium	Possible	Medium	No	Chance finds procedure	Minor -	Short Term < 18 months	Site or Local	Low	Possible	Low
Operation																
Biodiversity	Alien plant establishment	Degradation of vegetation	Moderate -	Long Term > 5 years	Site or Local	Medium	Definite	Medium	Yes	Implementation of alien invasive plant management plan needs to be continued during operation to prevent the growth of invasive on cleared areas.	Moderate -	Long Term > 5 years	Site or Local	Medium	Possible	Medium
Biodiversity	Disturbance/Displacement of Faunal species	Biodiversity loss	Moderate -	Long Term > 5 years	Regional	High	Definite	High	Yes	Minimise footprint area Work only in clearly demarcated areas	Moderate -	Long Term > 5 years	Site or Local	Medium	Possible	Medium
Biodiversity	Disturbance of vegetation communities	Habitat destruction	Moderate -	Long Term > 5 years	Site or Local	Medium	Definite	Medium	Yes	Minimise footprint area Work only in clearly demarcated areas	Moderate -	Long Term > 5 years	Site or Local	Medium	Possible	Low

Biodiversity	Habitat fragmentation	Habitat degrdadtion and loss	Moderate -	Long Term > 5 years	Regional	High	Definite	High	Yes	Minimise footprint area Work only in clearly demarcated areas	Moderate -	Long Term > 5 years	Site or Local	Medium	Possible	Medium
Biodiversity	Killing of faunal species	Biodiversity loss	Moderate -	Long Term > 5 years	Site or Local	Medium	Possible	Medium	Yes	Minimise footprint area Work only in clearly demarcated areas	Moderate -	Long Term > 5 years	Site or Local	Medium	Possible	Low
Biodiversity	Continuous rehabilitation	Altered habitat	Moderate -	Long Term > 5 years	Site or Local	Medium	Definite	Medium	Yes	Implement rehabilitation strategy and rehabilitation interventions	Moderate -	Long Term > 5 years	Site or Local	Medium	Possible	Medium
Soil	Hydrocarbon spills due to the movement /usage of heavy machinery	Hydrocarbon pollution or the spillage of diesel on the soil	Moderate -	Medium Term > 18 months < 5 years	Site or Local	Medium	Definite	Medium	Yes	1. Ensure that all machinery used is in good condition to prevent any spills from occurring. 2. If a spill occurs, it is to be cleaned up immediately and reported to the appropriate authorities. 3. Hydrocarbon management procedure to contain details of emergency cleanup procedures and Leaking vehicles will have drip trays placed under them where the leak is occurring. 4. Water runoff traps must be constructed at the vehicle service sites to prevent polluted water runoff into areas that are not impacted upon. 5. All vehicles are to be serviced in banded area. 6. All heavy machinery operators and truck drivers must be instructed to stay in designated areas, such as construction sites and roads.	Moderate -	Medium Term > 18 months < 5 years	Site or Local	Medium	Possible	Medium
Health and safety	Air blast and Vibrations	Blasting operations: Increased noise and dust levels.	Major -	Medium Term > 18 months < 5 years	Site or Local	Medium	Definite	Medium	Yes	Noise can be decreased by applying engineering modifications and by using protective equipment. Dust suppression methods must be used to ensure minimal dust in the area.	Moderate -	Medium Term > 18 months < 5 years	Site or Local	Medium	Possible	Medium

Health and safety	Air blast and Vibrations	Blasting operations: Safety aspects to acceptable levels associated with blasting activities.	Moderate -	Medium Term > 18 months < 5 years	Site or Local	Medium	Definite	Medium	Yes	1Noise can be decreased by applying engineering modifications and by using protective equipment. Dust suppression methods must be used to ensure minimal dust in the area.	Moderate -	Medium Term > 18 months < 5 years	Site or Local	Medium	Possible	Medium
Land Use and Land Capability	Mining	Land capability at the quarry is low and prior to mining the land was vacant. Extraction of geological resource will permanently alter land use and land capability.	Moderate -	Medium Term > 18 months < 5 years	Site or Local	Medium	Definite	Medium	Yes	Plant endemic vegetation when the mining operations are over.	Moderate -	Medium Term > 18 months < 5 years	Site or Local	Medium	Possible	Medium
Air quality	Mine operations and movement of trucks realising exhaust fumes and causing dust	Potential health impacts and nuisance dust for employees. No impact beyond mine boundary.	Moderate -	Medium Term > 18 months < 5 years	Site or Local	Medium	Definite	Medium	Yes	Dust suppression methods must be used to ensure minimal dust in the area.	Moderate -	Medium Term > 18 months < 5 years	Site or Local	Medium	Possible	Medium
Air quality	Mine operations and movement of trucks realising exhaust fumes and causing dust	No odorous gasses produced except for very small quantities of vehicle emissions produced by haul trucks.	Moderate -	Medium Term > 18 months < 5 years	Site or Local	Medium	Definite	Medium	Yes	Workers to stay in open spaces to avoid breathing in contaminated air.	Moderate -	Medium Term > 18 months < 5 years	Site or Local	Medium	Possible	Medium
Hydrology	Haul roads and service roads	Decrease in water quality attributable to increased sediment load	Moderate -	Medium Term > 18 months < 5 years	Site or Local	Medium	Definite	Medium	Yes	The water quality of the rivers and the planned canals will be controlled as outlined in the operational management plan . Dust control must be carried out every day using a water	Minor -	Medium Term > 18 months < 5 years	Site or Local	Low	Possible	Low

										bowser . To track the efficacy of erosion control initiatives, a soil erosion evaluation must be performed biannually . To prevent and manage sediment transport, a maintenance schedule must be drawn up for road maintenance. Among other aspects, the plan must include the maintenance of berms, and the dissipation and channelling of mechanisms such as wind rows. .						
Hydrology	changes in the hydrological regime	Subsidence due to undermining	Moderate -	Medium Term > 18 months < 5 years	Site or Local	Medium	Definite	Medium	Yes	Use mining techniques that can control the damage to subsidence; post-mining stabilisation; architectural and structural design; and comprehensive planning. But none of these measures totally prevents subsidence . Using buffer zones to avoid impacts on aquifers or watersheds where underground mining is being proposed. Seal designs must be site-specific, performance-based and address geotechnical and hydrogeological requirements	Moderate -	Medium Term > 18 months < 5 years	Site or Local	Medium	Possible	Medium
Hydrology	Aquifer reduction outcomes from pit dewatering	Water contamination	Moderate -	Medium Term > 18 months < 5 years	Site or Local	Medium	Definite	Medium	Yes	An area of impact will be caused by pit dewatering. In the case of the proposed mining area, the zone of influence will not extend beyond the estimated 300 m, thus the yields of any supply boreholes or springs around the mining area	Moderate -	Medium Term > 18 months < 5 years	Site or Local	Medium	Possible	Medium

										are not anticipated to affect. Temporary water supply by the mine is a possible mitigation against such an effect.						
Hydrology	Open cast mining will result in pit inflows below the water table.	Pit inflows	Major -	Medium Term > 18 months < 5 years	Site or Local	Medium	Definite	Medium	Yes	Provision must be produced f or the treatment of pit inflows within the mine water balance. It will also need to be treated before discharge.	Minor -	Medium Term > 18 months < 5 years	Site or Local	Low	Possible	Low
Hydrology	Rebound water concentrations can cause decant within backfill material.	Rebound water	Major -	Medium Term > 18 months < 5 years	Site or Local	Medium	Definite	Medium	Yes	Under the topsoil cover, an impermeable layer can be implemented which will need to be compacted to avoid water from entering, resulting in rebounding and decanting water concentrations. To monitor the water level and water quality, boreholes must be mounted nearer to the decant points.	Moderate -	Medium Term > 18 months < 5 years	Site or Local	Medium	Possible	Medium
Heritage Resources	Mining & Blasting	Demolished potentially historical houses F01 & F02 - No impact foreseen	-	-	-	Medium	Unlikely	Medium	No	None	-	-	-	Low	Unlikely	Low
	Mining & Blasting	Impact to Site F03 (wooden poles) - not protected by heritage legislation	-	-	-	Medium	Definite	Medium	No	None	-	-	-	Medium	Definite	Medium
	Mining & Blasting	Impact to Site F04 (Building ruin) - not protected by heritage legislation	-	-	-	Medium	Possible	Medium	No	None	-	-	-	Medium	Possible	Medium

Mining & Blasting	Potential impact to grave G039	Moderate +	Long Term > 5 years	Site or Local	Medium	Possible	Medium	No	30m Fenced-off conservation buffer, ECO monitoring. Alternatively, grave relocation	Minor +	Medium Term > 18 months < 5 years	Site or Local	Medium	Unlikely	Medium
Mining & Blasting	Potential impact to grave G053	Moderate +	Long Term > 5 years	Site or Local	-	Possible	-	No	15m Fenced-off conservation buffer, ECO monitoring. Alternatively, grave relocation	Minor +	Medium Term > 18 months < 5 years	Site or Local	-	Unlikely	-
Mining & Blasting	Graves G001 - G038, G040 - G052, G054 - G058) - No impact foreseen	-	-	-	-	Unlikely	-	No	None	-	-	-	-	Unlikely	-
Mining & Blasting	Potential impact to undetected & subsurface heritage resources	Moderate +	Long Term > 5 years	Site or Local	Medium	Possible	Medium	No	Chance finds procedure	Minor -	Short Term < 18 months	Site or Local	Low	Possible	Low
Decommissioning and Closure															
Biodiversity	Encroachment of alien invasive plant species	Degradation of vegetation	Moderate -	Medium Term > 18 months < 5 years	Site or Local	Medium	Definite	Medium	Yes	Implementation of alien invasive plant management plan needs to be continued during decommissioning to prevent the growth of invasive plants on rehabilitated areas; Rehabilitation of site with indigenous vegetation that occurs in the vicinity of project area.	Moderate -	Medium Term > 18 months < 5 years	Site or Local	Medium	Possible	Low
Biodiversity	Loss of species of conservation concern	Biodiversity loss	Moderate -	Medium Term > 18 months < 5 years	Site or Local	Medium	Definite	Medium	Yes	All infrastructure that could have a negative impact on faunal species (powerlines etc) needs to be decommissioned and removed.	Moderate -	Medium Term > 18 months < 5 years	Site or Local	Medium	Unlikely	Low
Biodiversity	Impact on the growth and health of both fauna and flora	Altered habitat	Moderate -	Medium Term > 18 months < 5 years	Site or Local	Medium	Definite	Medium	No	Implement rehabilitation strategy and rehabilitation interventions	Moderate -	Medium Term > 18 months < 5 years	Site or Local	Medium	Possible	Low

Land Use and Land Capability	Landscape shaping and rehabilitation	Shape final void and revegetate	Moderate -	Medium Term > 18 months < 5 years	Site or Local	Medium	Definite	Medium	Yes	1. Final shaping must allow for natural flow of water through the landscape 2. Create water diversion channels to ensure connectivity 3.Create water diversion channels to ensure connectivity	Moderate -	Medium Term > 18 months < 5 years	Site or Local	Medium	Possible	Medium
Heritage Resources	Rehabilitation	Demolished potentially historical houses F01 & F02 - No impact foreseen	-	-	-	-	Unlikely	-	No	None	-	-	-	-	Unlikely	-
	Rehabilitation	Impact to Site F03 (wooden poles) - not protected by heritage legislation	-	-	-	-	Definite	-	No	None	-	-	-	-	Definite	-
	Rehabilitation	Impact to Site F04 (Building ruin) - not protected by heritage legislation	-	-	-	-	Possible	-	No	None	-	-	-	-	Possible	-
	Rehabilitation	Potential impact to grave G039	Moderate +	Long Term > 5 years	Site or Local	Medium	Possible	Medium	No	30m Fenced-off conservation buffer, ECO monitoring. Alternatively, grave relocation	Minor +	Medium Term > 18 months < 5 years	Site or Local	Low	Unlikely	Low
	Rehabilitation	Potential impact to grave G053	Moderate +	Long Term > 5 years	Site or Local	Medium	Possible	Medium	No	15m Fenced-off conservation buffer, ECO monitoring. Alternatively, grave relocation	Minor +	Medium Term > 18 months < 5 years	Site or Local	Low	Unlikely	Low
	Rehabilitation	Graves G001 - G038, G040 - G052, G054 - G058) - No impact foreseen	-	-	-	-	Unlikely	-	No	None	-	-	-	-	Unlikely	-
	Rehabilitation	Potential impact to undetected & subsurface heritage resources	Moderate +	Long Term > 5 years	Site or Local	Medium	Unlikely	Low	No	Chance finds procedure	Minor -	Short Term < 18 months	Site or Local	Low	Unlikely	Low

12.3 Summary of specialist report findings

Table 15: Summary of report findings

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with an X where applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED.
Hydrological study	• Monitoring of the surface water quality shall be carried out weekly during the project's construction and operating phases. • An independent ECO is to be appointed during construction. The mine's internal Environmental officers will be conversant with best practices in accordance with rehabilitation during decommissioning and an audit is to be performed before and after rehabilitation.	☒	EMPR

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with an X where applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED.
	• Prevention of pollution of surface water resources and impacts on other surface water users by training of workers to prevent pollution, equipment and vehicle maintenance, fast and effective clean-up of spills, effective waste management, manage clean and dirty water in accordance.		
Soil and Land Capability study	• The proposed mining land must be returned to its origin as before mining activities and the	☒	EMPR

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with an X where applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED.
	rehabilitation performance assessment in the proposed land must be done concurrently during the operational phase by a soil specialist. • Final surface rehabilitation of all disturbed areas during mine activities and Rehabilitation of unnecessary water management facilities once appropriate to do so. • A post-mining soil depth and land capability evaluation must be done by a soil specialist registered at the		

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with an X where applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED.
	Council for Natural Scientific Professions (SACNASP). A post mining land capability map must be compiled and submitted for closure purposes. • Limit impacts to the footprints to keep physical impacts as small as possible. Areas for road, site lay-out must be minimized, dust generation. • No striping or redistribution of top or subsoil if too wet must occur. A stick test must be used to determine if soil is too wet to redistribute. A		

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with an X where applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED.
	sharpened broom sized stick must be pushed into and removed from the soil surface. • Soil monitoring must be implemented during the life of the mine.		
Rehabilitation plan	• It is recommended that the financial provision for closure and rehabilitation be annually updated as per the requirements of the MPRDA.	☒	EMPR

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with an X where applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED.
	• Soil audits must be undertaken by a soil scientist during the soil stripping process. This will guarantee that soil is stripped and stockpiled correctly. • Yearly audits must be undertaken to monitor the progress of areas that have been rehabilitated. • An independent Environmental Assessment Practitioner must be appointed to ensure compliance with requirements of the Final		

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with an X where applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED.
	Rehabilitation, decommissioning and Closure Plan.		
Biodiversity Assessment	•Permit to remove/relocate protected species (Mountain Aloe), must be obtained from Ezemvelo KZN Wildlife. • Alien plants must be removed and managed, preferably mechanically and not chemically so as to have minimal ecological and biological impacts.	☒	EMPR

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with an X where applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED.
	• Special attention must be given to protecting and enhancing the existing natural vegetation.		
Heritage Impact Assessment	An independent Environmental control Officer must be appointed in the construction phase A buffer of 30m must be implemented around the graves within 13m and 41m away from the proposed project. The graves must be fenced		EMPR

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with an X where applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED.
	The ECO must monitor that graves are maintained through cutting of grass in and around the fence of the graves. ECO must ensure the 30m buffer is adhered to by all contractors onsite The ECO must monitor graves before, during and after the blasting process to ensure graves are not impacted. The ECO must monitor graves, if there is evidence of detrimental impact at this stage, the ECO must consult with the families on potential relocation of the		

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with an X where applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED.
	graves or else graves would be monitored as per recommended terms on the archaeology report.		
Emergency Response Plan	• Emergency response plans only work when they are well known through the operation. • All employees must be trained in the plan and provided with an opportunity to provide input into improvements.	☒	EMPR

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with an X where applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED.
	• The personnel who participate as emergency responders require the full support of management if they are to perform their roles efficiently. • In the case of environmental emergencies and all other emergencies, the remedial measures and actions as listed in the Emergency Response Plan must be followed, in addition the relevant authorities must be contacted.		

13. ENVIRONMENTAL IMPACT STATEMENT

13.1 Summary of key findings of the BAR

The key findings of the BAR are as follows:

- The project entails the establishment of aggregates opencast pit on virgin area, the target area has innumerable outcrops, with minimal vegetation cover. Therefore, very little natural vegetation will be disturbed by mining activities.
- Mbavuza Mining Pty Ltd will elongate a current informal road for about 0.5km to gain access from the Quarry F opencast pit to the Ngwadini dam construction project.
- Due to the remote setting of the aggregates pit, the majority of potential impacts can be contained within the boundaries, provided that mitigation measures proposed in this document are implemented on-site.
- During the operational phase a visual impact assessment must be conducted throughout the duration of the project.
- The rehabilitation plan must be adhered to rigorously from construction until the decommissioning phase.
- The proposed project is not expected to have an impact on the river passing the site to the south-east as mining activities will be contained within the boundaries of the permitted site.

13.2 Final site map

The final site map has been attached, Appendix B.

13.3 Summary of the positive and negative implications and risks of the proposed activity

The positive impacts associated with the project include:

- Job creation, although a fixed number of jobs to be created cannot be stated at this stage, will include multiple job opportunities for skilled, semi-skilled and unskilled personnel

will be created by this project. This will contribute to the socio-economic status of the area.

- The aggregates to be mined will be supplied to client, hence it will enhance contractor's aggregates resources security to complete dam construction for UMgeni Water without any hinderances.

The negative impacts associated with the project includes:

- Visual intrusion associated with the operation of this proposed Quarry.
- Dust nuisance caused from blasting activities and vehicle movements.
- Noise generated from blasting activities and vehicle movements.
- Degradation of access roads

14. IMPACT MANAGEMENT OBJECTIVES AND OUTCOMES FOR INCLUSION IN THE EMPR

Table 16: Proposed management objectives and outcomes for the environmental and socio-economic impacts

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT OUTCOMES
Dust handling	Site Manager to ensure compliance with EMP guidelines. Compliance to be monitored by the Environmental Control Officer.	• Control dust liberation into the surrounding environment by using water spraying and/or other dust-allaying agents. • Limit speed on the access roads to 40km/h to prevent the generation of excess dust. • Spray roads with water or an environmentally friendly dust allaying agent, if dust is generated above acceptable limits. • Assess effectiveness of dust suppression equipment.
Noise handling	Site Manager to ensure compliance with EMP guidelines. Compliance to be monitored by the Environmental Control Officer.	• Ensure that employees and staff conduct themselves in an acceptable manner while on site. • No loud music may be permitted at the mining area. • Ensure that all mining vehicles are equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT OUTCOMES
		• Plan the type, duration and timing of the blasting procedures with due cognizance of other land users and structures in the vicinity. • Notify surrounding land owners in writing prior to blasting.
Management of weed / invader plants	Site Manager to ensure compliance with EMP guidelines. Compliance to be monitored by the Environmental Control Officer.	• Implement a weed and invader plant control management plan. • Control declared invader or exotic species on the rehabilitated areas. • Keep the temporary topsoil stockpiles free of weeds.
Surface and storm water handling	Site Manager to ensure compliance with EMP guidelines. Compliance to be monitored by the Environmental Control Officer.	• Divert storm water around topsoil heaps, stockpile areas and access roads to prevent erosion and material loss. • Conduct mining in accordance with the Best Practice Guideline for small scale mining that relates to storm water management, erosion and sediment control and waste
Management of health and safety risks	Site Manager to ensure compliance with EMP guidelines. Compliance to be monitored by the	• Plan the type, duration and timing of the blasting procedures with due cognizance of other land users and structures in the vicinity. • Inform the surrounding communities of any blasting event. • Use noise mufflers and/or soft explosives during blasting, limit fly rock.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT OUTCOMES
	Environmental Control Officer. Blasting contractor to comply with national blasting requirements.	• Give audible warning of a pending blast at least 3 minutes in advance of the blast. • Remove all fly rock (of diameter 150 mm and larger) which falls beyond the working area, with the rock spill. • Ensure that workers have access to the correct PPE as required by law. • Ensure all operations comply with the Occupational Health and Safety Act.
Graves and historical structures handling	Site manager and Environmental Control Officer	• Plan to implement recommendations as specified in the archaeologist report such as creating the 30m buffer and fencing of graves within 13m and 41m of the proposed project and maintenance of graves • ECO and site management must monitor graves prior and post blasting processes • In instances where graves are impacted the management must plan for graves relocation permit.
Waste management	Site Manager to ensure compliance with EMP guidelines. Compliance to be	• Ensure no waste pile is established within 100 m of the edge of any water bodies. • Ensure monthly vehicle maintenance take place off-site. If emergency repairs are needed on site, ensure drip trays is present. Ensure all waste

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT OUTCOMES
	monitored by the Environmental Control Officer.	products are disposed of in a an authorized 200l closed container/bin inside the bunded emergency service area. • Collect containers of oil, grease or other industrial substances in a suitable receptacle and remove from site, for resale or appropriate disposal at an authorized facility. • In the event of spills, polluted soil will be removed off the site and disposed in an authorized facility. Proof will be filed at the mining offices by the ECO. • Ensure availability of suitable covered, conveniently placed receptacles at all times for waste disposal. • Store non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., in a labelled container with a closable lid at a collecting point. Collection must take place on a weekly basis and disposed of at an authorized landfill site. Prevent refuse from being dumped on or in the vicinity of the mine area. • Biodegradable refuse to be handled as indicated above.
Management of access roads	Site Manager to ensure compliance with EMP	• Divert storm water around access roads to prevent erosion.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT OUTCOMES
	guidelines. Compliance to be monitored by the Environmental Control Officer.	• Erosion of access road: Restrict vehicular movement to existing access routes to prevent crisscrossing of tracks through undisturbed areas. • Implementation dust suppression during the operation.
Topsoil handling	Site Manager to ensure compliance with EMP guidelines. Compliance to be monitored by the Environmental Control Officer.	• Keep the temporary topsoil stockpiles free of weeds. • Place topsoil stockpiles on a levelled area and implement measures to safeguard the piles from being washed away in the event of heavy rains/storm water. • Topsoil heaps must not exceed 1.5 m in order to preserve for vegetation re-establishment during rehabilitation phase. • Micro-organisms within the topsoil, which can be lost due to compaction and lack of oxygen.
Groundwater handling	Site Manager to ensure compliance with EMP guidelines. Compliance to be monitored by the Environmental Control Officer.	• Ensure the area is levelled to eliminate formation of water accumulation. • ECO must ensure any spillages oil/diesel are promptly cleaned up as soon as they occur.

15. ASPECTS FOR INCLUSION AS CONDITIONS OF THE AUTHORISATION

The management objectives listed in Table 19 of this report must be considered for inclusion in the environmental authorization. The operation must always have the Environmental Control Officer on site. The management and monitoring conditions of the EMPr must be adhered to.

16. ASSUMPTIONS, UNCERTAINTIES AND GAPS IN KNOWLEDGE

The assumptions made in this document, which relate to the assessment and mitigation measures proposed, stem from site-specific information gathered from the community, as well as site inspections and background information gathering.

17. REASONED OPINION AS TO WHETHER THE PROPOSED ACTIVITY SHOULD OR SHOULD NOT BE AUTHORIZED

No fatal flaws were noted to prevent the activity from continuing, should the mitigation measures and monitoring programmes proposed in this document be implemented on site. The management objectives listed in this report must be considered for inclusion in the Environmental Authorization.

It is the opinion of the EAP that the activity be authorized. The proposed area is targeted as the area is known for Aggregates, the site is therefore regarded as the preferred site and alternative sites are not considered.

The option of not approving this project will result in a failure to contributing in achieving the SDG 6 and SDG 8 which target access to clean water for all and decent work and economic growth respectively, thus contributing to alleviating unemployment. The proposed project will contribute to the construction of Ngwadini Dam by supplying an important component, aggregates.

18. PERIOD FOR WHICH AUTHORISATION IS REQUIRED

The applicant requests the Environmental Authorization to be valid for two years.

19. UNDERTAKING

The EAP herewith confirms

a) the correctness of the information provided in the reports; ☒

b) the inclusion of comments and inputs from stakeholders and I&APs; ☒

c) the inclusion of inputs and recommendations from the specialist reports where relevant; ☒and

d) that the information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties are correctly reflected herein ☒.

Vumile Ribeiro

Digitally signed by Vumile Ribeiro
DN: cn=Vumile Ribeiro, o=Niara Environmental Consultants (Pty) Ltd, ou=Environmental Management Services, email=vumile@niara.co.za, c=ZA
Date: 2025.02.25 14:09:46 +02'00'

Signature of the environmental assessment practitioner:

ANKONE CONSULTING (PTY) LTD

Name of company:

25 February 2025

Date:

20. FINANCIAL PROVISION

20.1 Method of financial provision

The DMRE Guidelines to determine the Quantum of Financial Provisions, 2005; were repealed to make way for GNR1147, 2015 Financial Provisions Regulations, adapted in terms of NEMA Regulations. The GNR 1147 was meant to be implemented and become effective in February 2024. During this process, the methodology to determine financial provision under GN1147 had been in discussion but no quantum made available.

In August 2021, Minister of Forestry, Fisheries and Environment published the intent to repeal 2015 Financial Regulations to make way for new Regulations for Financial Provisioning for the Mitigation and Rehabilitation of Environmental Damage caused by reconnaissance, prospecting, exploration, mining or production operations.

Thus far the draft has not yet been implemented. The best standard practice adopted by Ankone Consulting, refers to DMRE guideline to determine the quantum of financial provisions, 2015.

Quantity Estimation: For the purpose of this assessment, ANKONE CONSULTING can confirm that the method adopted to obtain and compile the schedule of quantities is sound, correct, and provides detail that is required by the DMRE.

Determination of Rates: The method of determining the applicable rehabilitation rates is based on practical experience and information by third party contractors. Where the third-party rates were not available, the master rates (escalated to date) were used.

20.2 Confirmation that this amount can be provided from operating expenditure.

CALCULATION OF FINANCIAL PROVISIONS FOR MBAVUZA MINING (PTY) LTD									
		2024 Rates							
Component	Closure Component	Class	A	Unit	B	C	D	E = AxBxCxD	Notes
			Quantity		Rate	Multiplication Factor	Weighing Factor	Amount	Notes
1	Dismantling of processing plant and related structures (including overland conveyors and powerlines)		**0**	**m2**		**1,00**	**1,00**	**-**	
2 (A)	Demolition of steel buildings and structures					**1,00**	**1,00**	**5 806,90**	
	Remove the mobile offices at decommissioning phase	119	0	m^2	96,78	1,00	1,00	-	no office on this site
	dismantle the steel carport with IBR roofing	105	0	m^2	117,22	1,00	1,00	-	no carport structures on site
	remove the mobile refurb security / guardhouse	119	60	m^2	96,78	1,00	1,00	5 806,90	the removal of leased mobile offices and transport (day green room)
2 (B)	Demolition of reinforced concrete buildings and structures							**49 473,29**	
	demolish the concrete slab (office area, weighbridge)	108	60	m^3	549,70	1,00	1,00	32 982,20	concrete will be crushed and used for infilling during final rehab (dependent on radioactive test results)

	demolish and crush concrete walkway (thickness 500 -750mm)	109	18	m^3	916,17	1,00	1,00	16 491,10	
	demolish the concrete bund wall (diesel bay)	109	0	m^2	916,17	1,00	1,00	-	
3	**Rehabilitation of access roads**						**1,20**	**54 566,86**	
	road stripping	134	4500	m^2	9,11	1,00	1,20	49 192,61	this road will not be used after, to be stripped and closed
	removal and disposal of contaminated material	122	165	m^3	27,14	1,00	1,20	5 374,25	
4 (A)	**Demolishing and Rehabilitation of electrified railway lines**		**0**	**m**		**1,00**	**1,00**	-	
4 (A)	**Demolishing and Rehabilitation of non-electrified railway lines**		**0**	**m**		**1,00**	**1,00**	-	
5	**Demolition of housing and/or administration facilities**		**0**	**m**		**1,00**	**1,00**	-	
6	**Opencast Rehabilitation including final voids and ramps**		**0**	**m^3**		**1,00**	**1,00**	-	
7	**Sealing of shafts adits and inclines**		**0**	**m^3**		**1,00**	**1,00**	-	
8 (A)	**Rehabilitation of Overburden and Spoils**		**0**	**ha**		**1,00**	**1,00**	-	
8 (B)	**Rehabilitation of Processing waste deposits and evaporation ponds (non-polluting potential)**		**0**	**ha**		**1,00**	**1,00**	-	

	Flatten the earth walls of the evaporation dam	111	0	m^3	20,10	1,00	1,00	-	no infrastructure builds on site
	Levelling and shaping the dam area	132	0	Ha	8 500,00	1,00	1,00	-	
8 (C)	**Rehabilitation of Processing waste deposits and evaporation ponds (polluting potential)**		**0**	**Ha**		**1,00**		-	
9	**Rehabilitation of Subsided areas**		**0**	**Ha**		**1,00**		-	
10	**General Surface rehabilitation**		**0**	**Ha**				**260 029,81**	
	Ripping area	132	4,11	Ha	11 238,06	1,00	1,20	55 426,12	
	Load and Haul of hards and softs		60	M	32,25	1,00	1,20	2 321,94	0-1km hauling distance from stockpile area
	Levelling and Shaping at topsoil replacement (300mm depth)	132	4,11	Ha	3 241,77	1,00	1,20	15 988,40	
	Revegetation establishment	123	4,11	Ha	37 772,37	1,00	1,20	186 293,35	
11	**River Diversion**		**0**	**Ha**		**1,00**	**1,00**	-	
12	**Fencing**		**0**	**Ha**		**1,00**	**1,00**	13 144,38	
	Remove wire fence all around the activity area	147	650	M	20,22	1,00	1,00	13 144,38	
13	**Water Management**		**0**	**Ha**		-	-	-	
								-	
14	**2 to 3 years of maintenance and aftercare**		**4,11**	**Ha**	**37 772,37**	**1,00**	**1,20**	**186 293,35**	
								-	

15 (A)	**Specialist Study**		**0**	**ha**	**-**	**1,00**	**1,00**	-	
15 (B)	**Specialist Study**		**0**	**ha**	**-**	**1,00**	**1,00**	-	
SUBTOTAL 1								569 314,58	
Preliminary & General (12%)		12%				1,10	2,00	150 299,05	
Contingency (10%)		10%						56 931,46	
SUBTOTAL 2								**776 545,09**	
VAT (15%)		**15%**						**116 481,76**	
	GRAND TOTAL ENVIRONMENTAL LIABILITY							**893 026,85**	

Table 17: Financial Provisions

21. SPECIFIC INFORMATION REQUIRED BY THE COMPETENT AUTHORITY

21.1 Impact on the socio-economic conditions of any directly affected person

The proposed operation will be established on virgin ground with no activity and vegetation cover has been recorded during the site assessment. Upon closure, the land will be rehabilitated to the best possible original state that it will be fit for grazing and agricultural purposes. Due to the remote location of the operation, there will be little to no negative impacts on the host community. The dust and noise impacts that may emanate from the mining area during the operational phase may have a negative impact on the surrounding community, if the mitigation measures proposed in this document are not implemented and managed on-site. However, due to the proximity of the community from the mining area, these impacts are considered to be of low significance. The operation of the mine will have a number of positive impacts, such as job creation for skilled, semi-skilled and unskilled permanent workers. The positive outcome of this application with have a positive impact towards the implementation of the Lower uMkomaas Bulk Water Supply Scheme project as a national strategic project operated by uMgeni-uThukela Water Board.

21.2 Impact on any national estate referred to in section 3(2) of the national heritage resources act

Due to the isolated location of the project area, there are no residentials or, any occurrence of a large-scale mining within the vicinity of the propose project area. However, there has been identification of graves; as a result, an archaeology study was conducted which provided procedures to be followed throughout the duration of the project to mitigate impact. The operations will adhere to the archaeologist report recommendations, and environmental management programme that must be implemented from construction, operation and decommissioning.

22. OTHER MATTERS ARE REQUIRED IN TERMS OF SECTIONS 24(4) (A) AND (B) OF THE ACT

The site and project alternatives investigated during the impact assessment process were done based on the information obtained during the site investigation, public participation process; and ground-truthing studies that were conducted for the proposed project area.

PART B: ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

23. DETAILS OF THE EAP

Table 18: Details of EAP EMPr

ITEMS	DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP)
Name of the company	Ankone Consulting (Pty) Ltd
Full names	Vumile Ribeiro (EAPASA; IAIASA) Registration No: 2019/1183
Postal address	Postnet Suite 435, Private Bag X 4, Wierdapark, 0149
Telephone	+27 82 767 2786 and/or +27 83 295 4315
E-mail	vumile@niara.co.za thembilen@ankoneconsulting.co.za
Cell phone	+27 82 767 2786 and/or +27 83 295 4315

23.2 Expertise of the EAP

Vumile Ribeiro is the Director of Environmental Management Services at Niara Environmental Consultants (Pty) Ltd. Vumile has 17 years of professional and international experience in Environmental Assessment and Management primarily in the minerals resources and energy sector. Her roles include the operational management responsibilities of Niara Environmental Consultants, project management, report writing, client liaison, as well as business development.

Having worked for a multi-disciplinary advisory firms and environmental consultancies, Vumile has a competent understanding of the work effort and cross collaboration required for a successful multidisciplinary organization. Vumile has been involved in a number of Environmental Impact Assessments and has a particular interest in health impacts assessments, water resource management, mining, energy and stakeholder engagement.

Vumile has considerable experience across a range of developmental and environmental sciences and has worked in South Africa, Mozambique, Sierra Leone and Liberia and is familiar with Regulatory Environmental Legislation in other parts of Africa.

Vumile is very well versed in the IFC Environmental and Social Performance Standards (including IFC PS 2012) and the associated Equator Principles, which have informed the approach and standard for a number of ESIA processes that she has been involved in. Vumile is skilled at organizing and driving effective project teams at a scale relevant to the projects' requirements. She has technical experience and is able to quickly identify the most pertinent issues of a particular project whilst focusing on driving project success by rigorously implementing project management tools. Vumile's areas of special interest involve understanding the systemic nature of factors that pose threats and opportunities in terms of establishing healthy, resilient communities, and exploring the use of various data types, approaches and methodologies to enable effective change. Standards of Environmental Management and Sustainable Development, in all undertakings.

DETAILS OF THE ENVIRONMENTAL PRACTITIONER	
Name of the company	Ankone Consulting (Pty) Ltd
Full names	Nonkululeko Ngcobo (Candidate SACNASP)
Postal address	Postnet Suite 435, Private Bag X 4, Wierdapark, 0149
Business Telephone	+27 82 767 2786 and /or +27 83 295 4315
E-mail	nonkun@ankoneconsulting.co.za
Cell phone	+27 78 656 3483

23.3 Expertise of a co-Author

Nonkululeko holds a BSc (Honors) in Environmental Management from the University of South Africa. She has gained nearly three years of professional experience in the environmental sector, including a year-long environmental internship in the mining industry and a year of research focused on improper waste management. Currently, she serves as an Environmental Assessment Practitioner at Ankone Consulting Pty Ltd. Nonkululeko has also completed ISO 14001 Implementation Training and is in the process of applying for SACNASP Candidate Certification, with approval currently pending.

24. DESCRIPTION OF THE ASPECTS OF THE ACTIVITY

Table 19: Activities Triggered EMPr

REGULATION	ACTIVITY NUMBER	DESCRIPTION	RELEVANCE TO THE PROJECT	AERIAL EXTENT OF THE ACTIVITY HA OR M²
Listing Notice 1 (R982) dated 08 Dec 2014	21	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, 2002 (Act No. 28 of 2002), including — (a) earthworks, directly related to the extraction of a mineral resource; or (b) the primary processing of a mineral resource including winning, extraction, classifying, concentrating, crushing, screening or washing; But excluding the secondary processing of a mineral resource, including the smelting, beneficiation, reduction, refining, calcining or gasification of the mineral resource in which case activity 6 in Listing Notice 2 applies.	• Mining Permit Application; • Drilling and blasting (controlled blasting); • Excavation of the blasted material using excavators; and/or shovels where needed; • Loading and hauling material from the pit to the tipper trucks; and	• 4.7Ha

	27	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.	• Clearance of indigenous vegetation for mine construction and operation	• 4.7Ha
Listing Notice 1 (R 544) dated 08 Dec 2014	47	The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre - (i) where the existing reserve is wider than 13,5 meters; or (ii) where no reserve exists, where the existing road is wider than 8 metres – excluding widening or lengthening occurring inside urban areas.	• Extension of the existing Old District Road from the North Access point to the quarry and connecting to Watershed track at the South Access point to form a continuous route to the dam site. However, it is not noted as an activity in this report, as the total length is below the threshold specified in Listing Notice 1.	• 0.85 km

25. DESCRIPTION OF THE IMPACT MANAGEMENT OBJECTIVES INCLUDING MANAGEMENT STATEMENTS

25.1 Determination of closure objectives

The decommissioning phase will entail the rehabilitation of the mining site. Once mining activities cease, the area will be fully rehabilitated. The perimeter walls of the pit will either be sloped at 1:3 to the pit floor to prevent soil erosion or stepped by creating benches of not more than 3 m high. The applicant will comply with the minimum closure objectives as prescribed by DMRE and detailed below. A detailed rehabilitation and closure plan is attached as an Appendix.

Rehabilitation of the excavated area:

- Rocks and coarse material removed from the excavation will properly be classified and engineered such material will be used for backfilling process during the rehabilitation stage.
- Any pit waste will be disposed at an authorized hazardous landfill site.
- The pits will be backfilled and reshaped with overburden accordingly, to best align with the approved Final Landform Use Design.
- Vegetation re-establishment plan will be implemented in accordance to the committed and approved EMPr mine closure objectives. This process will entail revised post mining land-use and the relevant soil analyses to determine the validity, the initially approved closure objective.

Final rehabilitation:

- Rehabilitation of the surface area will entail landscaping, leveling, top dressing, land preparation, seeding (if required), maintenance and weed/alien clearing.
    - All equipment, and other items used during the mining period will be removed from the site (section 44 of the MPRDA).
    - Waste material of any description, including receptacles, scrap, rubble and tires, will be removed entirely from the mining area and disposed of at an authorized landfill facility.

- Weed/alien clearing will be done sporadically during the life of the mining activities.
- Species regarded as Category 1 weeds according to CARA (Conservation of Agricultural Resources Act, 1983 – Act 43; Regulations 15 & 16 (as amended in March 2001) need to be eradicated from the site.
- Final rehabilitation will be completed within a period specified by the mine works programs.

25.2 Determining the need for a water use license

The mine activities do not trigger water use activities thus the need for water use license authorization cannot be determined at the moment. However, a pre-consultation with the Department of Water and Sanitation will be conducted to determine the need to proceed with any relevant authorization. Moreover, the Environmental Control Officer will monitor the mine activities and assess any water use triggers during the course of the project.

26. IMPACT MANAGEMENT OUTCOMES

Table 20: Impact management outcomes EMPr

MANAGEMENT OBJECTIVES	RESPONSIBLE OFFICER	MANAGEMENT OUTCOMES
Dust handling	Site Manager and Environmental Control Officer.	• Limit speed on the access roads to 40km/h to prevent the generation of excess dust. • Spray roads with water or an environmentally friendly dust allaying agent, if dust is generated above acceptable limits. • Assess effectiveness of dust suppression equipment.
Noise handling	Site Manager to ensure compliance with EMP guidelines. Compliance to be monitored by the Environmental Control Officer.	• Ensure that employees and staff conduct themselves in an acceptable manner while on site. • No loud music may be permitted at the mining area. • Ensure that all mining vehicles are equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act.

MANAGEMENT OBJECTIVES	RESPONSIBLE OFFICER	MANAGEMENT OUTCOMES
		• Plan the type, duration and timing of the blasting procedures with due cognizance of other land users and structures in the vicinity. • Notify surrounding land owners in writing prior to blasting.
Management of weed / invader plants	Site Manager to ensure compliance with EMP guidelines. Compliance to be monitored by the Environmental Control Officer.	• Implement a weed and invader plant control management plan. • Control declared invader or exotic species on the rehabilitated areas. • Keep the temporary topsoil stockpiles free of weeds.
Protected species handling	Site manager and Environmental Control Officer to ensure compliance with • the National Environmental; Biodiversity Management Act (Act 10 of 2004) (NEMBA)	• Obtain a Permit to relocate/remove protected species from Ezemvelo KZN Wildlife. • Implement a species relocation strategy as per recommendation of the report • Implement protection measures of the protected species identified whilst relocation procedure is pending. (creating a buffer, or demarcating the species)
Surface and storm water handling	Site Manager to ensure compliance with EMP guidelines. Compliance to be	• Divert storm water around topsoil heaps, stockpile areas and access roads to prevent erosion and material loss.

MANAGEMENT OBJECTIVES	RESPONSIBLE OFFICER	MANAGEMENT OUTCOMES
	monitored by the Environmental Control Officer.	• Conduct mining in accordance with the Best Practice Guideline for small scale mining that relates to storm water management, erosion and sediment control and waste management, developed by the Department of Water and Sanitation (DWS), and any other conditions which that Department may impose.
Graves and historical structures handling	Site Manager and Environmental Control Officer	Implement recommendations as specified in the archaeologist report such as creating the 30m buffer and fencing of graves within 13m and 41m of the proposed project. Provide accessibility of graves for the families. Plan for the maintenance of the graves such as grass cutting, Monitor the graves prior and post blasting and monitor the fence to ensure it is always intact.
• Management of health and safety risks	Site Manager to ensure compliance with EMP guidelines. Compliance to be monitored by the Environmental Control	• Plan the type, duration and timing of the blasting procedures with due cognizance of other land users and structures in the vicinity. • Inform the surrounding communities of any blasting event.

MANAGEMENT OBJECTIVES	RESPONSIBLE OFFICER	MANAGEMENT OUTCOMES
	Officer. Blasting contractor to comply with national blasting requirements.	• Use noise mufflers and/or soft explosives during blasting, limit fly rock. • Give audible warning of a pending blast at least 3 minutes in advance of the blast. • Remove all fly rock (of diameter 150 mm and larger) which falls beyond the working area, with the rock spill. • Ensure that workers have access to the correct PPE as required by law. • Ensure all operations comply with the Occupational Health and Safety Act.
Waste management	Site Manager to ensure compliance with EMP guidelines. Compliance to be monitored by the Environmental Control Officer.	• Ensure no waste pile is established within 100 m of the edge of any river channel or other water bodies. • Ensure monthly vehicle maintenance off-site. Create a concreted bunded area for servicing of vehicles onsite, ensure that vehicles are always serviced at the designed bunded area. Ensure drip trays are always present onsite to contain unanticipated oil/diesel spillages.

MANAGEMENT OBJECTIVES	RESPONSIBLE OFFICER	MANAGEMENT OUTCOMES
		Ensure universal spill kits are always available onsite and filled with sawdust material at all times. Ensure all waste products are disposed of in a regulatory specified closed container/bin inside the emergency service area. • Collect containers of oil, grease or other industrial substances in a suitable receptacle and remove from site, for resale or disposal at a recognized facility. • In the event of spills, polluted soil will be removed off the site and disposed in a recognized facility. Proof will be filed at the mining offices. • Ensure availability of suitable covered, conveniently placed receptacles at all times for waste disposal. • Store non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., in a container with a closable lid at a collecting point. Collection must take place on a weekly basis and disposed of at the recognized landfill site. Prevent refuse from being dumped on or in the vicinity of the mine area. • Biodegradable refuse to be handled as indicated above.

MANAGEMENT OBJECTIVES	RESPONSIBLE OFFICER	MANAGEMENT OUTCOMES
Management of access roads	Site Manager to ensure compliance with EMP guidelines. Compliance to be monitored by the Environmental Control Officer.	• Divert storm water around access roads to prevent erosion. • Erosion of access road: Restrict vehicular movement to existing access routes to prevent crisscrossing of tracks through undisturbed areas.
Topsoil handling	Site Manager to ensure compliance with EMP guidelines. Compliance to be monitored by the Environmental Control Officer.	• Keep the temporary topsoil stockpiles free of weeds. • Place topsoil stockpiles on a levelled area and implement measures to safeguard the piles from being washed away in the event of heavy rains/storm water. • Topsoil heaps must not exceed 1.5 m in order to preserve micro-organisms within the topsoil, which can be lost due to compaction and lack of oxygen.
Groundwater handling	Site Manager to ensure compliance with EMP guidelines. Compliance to be monitored by the Environmental Control Officer.	• Ensure the area is levelled to eliminate formation of water accumulation. • ECO must ensure any spillages oil/diesel are promptly cleaned up as soon as they occur.

27. IMPACT MANAGEMENT ACTIONS

Table 21: Impact management actions EMPr

ACTIVITY	POTENTIAL IMPACT	MITGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
Site Establishment	Visual intrusion associated with the establishment of the mining area.	Control: Implementation of proper housekeeping	To be implemented daily throughout the site establishment / construction phase: •Daily compliance monitoring by site management. •Quarterly compliance monitoring of site by an Environmental Control Officer.	Impact on the surrounding environment must be mitigated until rehabilitation standards can be implemented in terms of the MPRDA.
	Dust nuisance caused by the machineries	Control: Dust suppression	To be implemented daily throughout the site establishment /construction phase: •Daily compliance monitoring by site management.	• Fallout dust levels has to comply with the acceptable dust fall rate published for non-residential areas in the National Dust Control Regulations 2013 – 600 < Dust Fall < 1 200 mg/m²/day.

			• Quarterly compliance monitoring of site by an Environmental Control Officer.	• Gravimetric dust levels have to comply with the standard published in the NIOSH guidelines – Particulates >1/10th of the occupational exposure limit NEMAQA, 2004 Regulation 6(1)
	Graves disturbance	Control measure: 30m buffer and fencing	To be implemented daily throughout the site establishment /construction phase: Implement the 30m buffer for graves within 13m and 41m of project area Install a fence around the graves Allow access of graves for the families through cutting of grass and ensure they always visible.	Archaeology report recommendations must be adhered to mitigate impact on cultural sites
	Protected species disturbance	Control measure: Relocation of protected species	To be implemented daily throughout the site establishment /construction phase:	•Adhere to species protection regulations as per the National Environmental Biodiversity Management Act (Act 10 of 2004) (NEMBA)

			After the permit of relocating the protected species (Aloe marlothii) known as "Mountain Aloe) is obtained. Implementation of species relocation strategy recommended must be conducted.	
	Noise nuisance caused by machinery site establishment.	Control: Noise control measures	To be implemented daily throughout the site establishment /construction phase: •Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.	• Noise levels on the site has to be managed and need to comply with the standards stipulated in NEM:AQA, 2004 Regulation 6(1) as well as the noise standards of SANS 10103:2008. • Employees working in areas with noise levels of more than 82dBA need to be issue with hearing protection.
	Infestation of the topsoil heaps by weeds and invader plants	Control and remedy: Implementation of weed control	To be implemented daily throughout the site establishment /construction phase:	• The impact must be avoided through the eradication of Category 1 weeds/invader plants in terms of CARA, 1993 as well as the

			•Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.	implementation of the mitigation measures in this document.
	Loss of topsoil due to incorrect storm water management.	Control: Storm water management	To be implemented daily throughout the site establishment /construction phase: •Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.	• The impact must be avoided through the implementation of storm water management.
	Contamination of area with hydrocarbons or hazardous waste materials	Control and remedy: Implementation of waste management	To be implemented daily throughout the site establishment /construction phase: •Daily compliance monitoring by site management.	• The impact must be avoided through the implementation of the mitigation measures stipulated in this document. • Should spillage however occur the area needs to be cleaned in accordance with the standards of the NEM: WA, 2008.

			• Quarterly compliance monitoring of site by an Environmental Control Officer.	
Blasting	Health and safety risk posed by blasting activities	Control: Health and safety monitoring and management	To be implemented, when necessary, throughout the operational phase: • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.	• The impact must be avoided through compliance with the standards of the MHSA, 1996, OHSA, 1993 and OHSAS 18001
	Graves disturbance	Control measure: 30m buffer and fencing	To be implemented daily throughout the site establishment /construction phase: Ensure adherence to the implemented 30m buffer Monitored Daily prior and post blasting stages by site management and ECO	Archaeology report recommendations must be adhered to mitigate impact on cultural sites

	Dust nuisance caused by blasting activities	Control: Dust suppression	To be implemented daily throughout the operational phase: • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.	• Fallout dust levels have to comply with the acceptable dust fall rate published for non-residential areas in the National Dust Control Regulations 2013 – 600 < Dust Fall < 1200 mg/m²/day. • Gravimetric dust levels have to comply with the standard published in the NIOSH guidelines – Particulates >1/10th of the occupational exposure limit. • NEMAQA, 2004 Regulation 6(1)
	Noise nuisance caused by blasting activities	Control: Noise control measures	To be implemented daily throughout the operational phase: • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.	Noise levels on the site has to be managed and need to comply with the standards stipulated in NEM:AQA, 2004 Regulation 6(1) as well as the noise standards of SANS 10103:2008. • Employees working in areas with noise levels of more than 82dBA 10103:2008.

				• Employees working in areas with noise levels of more than 82dBA need to be issue with hearing protection.
	Unsafe working conditions for employees.	Control: Health and safety monitoring and management	To be implemented daily throughout the operational phase: • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.	• The impact must be avoided through compliance with the standards of the MHSA, 1996, OHSA, 1993 and OHSAS 18001
	Negative impact on the fauna and flora of the area.	Control: Protection of fauna and flora through operational phase	To be implemented daily throughout the operational phase: • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.	• The impact must be avoided through the implementation of the mitigation measures stipulated in this document. • NEM:BA, 2004.

	Contamination of area with hydrocarbons or hazardous waste materials.	Control: Implementation of waste management	To be implemented daily throughout the operational phase: • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.	• The impact must be avoided through the implementation the mitigation measures stipulated in this document. • Should spillage however occur the area needs to be cleaned in accordance with the standards of the NEM: WA, 2008.
	Weed and invader plant infestation of the area.	Control: implementation of weed control	To be implemented daily throughout the operational phase: • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.	• The impact must be avoided through the eradication of Category 1 weeds/invader plants in terms of CARA, 1993 as well as the implementation of the mitigation measures in this document.
	Noise nuisance generated by the crushing activities.	Control: Noise control measures	To be implemented daily throughout the operational phase: • Daily compliance monitoring by site management.	• Noise levels on the site has to be managed and need to comply with the standards stipulated in NEM:AQA, 2004 Regulation 6(1) as well as

			• Quarterly compliance monitoring of site by an Environmental Control Officer.	the noise standards of SANS10103:2008. • Employees working in areas with noise levels of more than 82dBA need to be issue with hearing protection.
Stockpiling and transporting	Visual intrusion associated with the stockpiled material and vehicles transporting the material.	Control: Implementation of proper housekeeping		• Impact on the surrounding environment mitigated until rehabilitation standards can be implemented.
	Loss of material due to ineffective storm water handling.	Control: Storm water control measures	To be implemented daily throughout the operational phase: • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.	• The impact must be avoided through the implementation of storm water management
	Weed and invader plant infestation of the area due	Control and remedy: Implementation of weed control	To be implemented daily throughout the operational phase:	• The impact must be avoided through the eradication of Category 1 weeds/invader plants in terms of CARA, 1993 as well as the

	to the disturbance of the soil		• Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.	implementation of the mitigation measures in this document.
	Dust nuisance from stockpiled material and vehicles transporting the material.	Control: Dust suppression	To be implemented daily throughout the operational phase: • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.	• Fallout dust levels have to comply with the acceptable dust fall rate published for non-residential areas in the National Dust Control Regulations 2013 – 600 < Dust Fall < 1200 mg/m²/day. • Gravimetric dust levels have to comply with the standard published in the NIOSH guidelines – Particulates >1/10th of the occupational exposure limit. • NEM: AQA, 2004 Regulation 6(1).
	Degradation of access roads	Control and remedy: Road management	To be implemented daily throughout the operational phase: • Daily compliance monitoring by site management.	• The impact must be avoided through the implementation of the mitigation measures proposed in this document.

			• Quarterly compliance monitoring of site by an Environmental Control Officer.	
	Noise nuisance caused by vehicles.	Control: Noise management monitoring and management	To be implemented daily throughout the operational phase: • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.	• Noise levels on the site has to be managed and need to comply with the standards stipulated in NEM:AQA, 2004 Regulation 6(1) as well as the noise standards of SANS 10103:2008. • Employees working in areas with noise levels of more than 82dBA need to be issue with hearing protection.
	Contamination of area with hydrocarbons or hazardous waste materials.	Control: Implementation of waste management	To be implemented daily throughout the operational phase: • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.	• The impact must be avoided through the implementation the mitigation measures stipulated in this document. • Should spillage however occur the area needs to be cleaned in accordance with the standards of the NEMWA, 2008.

	Groundwater contamination from hydrocarbon spillages and formation of water accumulation from stockpiling	Control: Implementation of proper waste management and practice proper landscaping	To be implemented daily throughout the operational phase: • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.	• Should spillage however occur the area needs to be cleaned in accordance with the standards of the NEMWA, 2008 • Conduct proper landscaping that will eliminate formation of water accumulation. • The mine must appoint a qualified hydrological specialist to conduct an assessment and, if necessary, recommend borehole placements. Thereafter, the Environmental Control Officer (ECO) must oversee quarterly groundwater monitoring in accordance with SANS compliance standards
Sloping and landscaping during rehabilitation	Soil erosion	Control: Soil management	To be implemented daily throughout the closure phase: • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.	• The impact must be avoided through the implementation the mitigation measures stipulated in this document. • CARA, 1993

	Health and safety risk posed by un-sloped areas	Control: Health and safety monitoring and management.	To be implemented daily throughout the closure phase: • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.	• The impact must be avoided through compliance with the standards of the MHSA, 1996, OHSA, 1993 and OHSAS 18001
	Dust nuisance caused during sloping and landscaping activities.	Control: Dust suppression	To be implemented daily throughout the closure phase: • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.	• Fallout dust levels have to comply with the acceptable dust fall rate published for non-residential areas in the National Dust Control Regulations 2013 – 600 < Dust Fall < 1200 mg/m²/day. • Gravimetric dust levels have to comply with the standard published in the NIOSH guidelines – Particulates >1/10th of the occupational exposure limit. • NEM: AQA, 2004 Regulation 6(1).
	Noise nuisance caused by machinery.	Control: Noise monitoring	To be implemented daily throughout the closure phase:	• Noise levels on the site has to be managed and need to comply with the standards

			• Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.	stipulated in NEM:AQA, 2004 Regulation 6(1) as well as the noise standards of SANS 10103:2008. • Employees working in areas with noise levels of more than 82dBA need to be issue with hearing protection.
	Groundwater contamination from unlevelled landscape	Control: Conduct Proper landscaping	To be implemented daily throughout the closure phase: • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.	• Conduct proper landscaping that will eliminate formation of water accumulation.

	Contamination of area with hydrocarbons or hazardous waste materials.	Controls: Waste management	To be implemented daily throughout the closure phase: • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.	• The impact must be avoided through implementation of mitigation measures stipulated in this document. • Should spillage however occur the area needs to be cleaned in accordance with the standards of the NEMWA, 2008.
Replacing of topsoil and rehabilitation of disturbed area	Loss of reinstated topsoil due to the absence of vegetation	Control: Soil management	To be implemented daily throughout the closure phase: • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.	• The impact must be avoided through the implementation the mitigation measures stipulated in this document. • CARA, 1993
	Infestation of the area by weed and invader plants.	Control and remedy: Implementation of weed control	To be implemented daily throughout the closure phase: • Daily compliance monitoring by site management.	• The impact must be avoided through the eradication of Category 1 weeds/invader plants in terms of CARA, 1993 as well as the implementation of the mitigation measures in this document.

			• Quarterly compliance monitoring of site by an Environmental Control Officer.	

28. FINANCIAL PROVISION

Table 22: Financial Provisions EMPr

CALCULATION OF FINANCIAL PROVISIONS FOR MBAVUZA MINING (PTY) LTD									
		2024 Rates							
Component	Closure Component	Class	A	Unit	B	C	D	E = AxBxCxD	Notes
			Quantity		Rate	Multiplication Factor	Weighing Factor	Amount	Notes
1	Dismantling of processing plant and related structures (including overland conveyors and powerlines)		**0**	**m2**		**1,00**	**1,00**	**-**	
2 (A)	Demolition of steel buildings and structures					**1,00**	**1,00**	**5 806,90**	
	Remove the mobile offices at decommissioning phase	119	0	m^2	96,78	1,00	1,00	-	no office on this site
	dismantle the steel carport with IBR roofing	105	0	m^2	117,22	1,00	1,00	-	no carport structures on site
	remove the mobile refurb security / guardhouse	119	60	m^2	96,78	1,00	1,00	5 806,90	the removal of leased mobile offices and transport (day green room)
2 (B)	Demolition of reinforced concrete buildings and structures							**49 473,29**	
	demolish the concrete slab (office area, weighbridge)	108	60	m^3	549,70	1,00	1,00	32 982,20	concrete will be crushed and used for infilling during final rehab

	demolish and crush concrete walkway (thickness 500 -750mm)	109	18	m^3	916,17	1,00	1,00	16 491,10	(dependent on radioactive test results)
	demolish the concrete bund wall (diesel bay)	109	0	m^2	916,17	1,00	1,00	-	
3	**Rehabilitation of access roads**						**1,20**	**54 566,86**	
	road stripping	134	4500	m^2	9,11	1,00	1,20	49 192,61	this road will not be used after, to be stripped and closed
	removal and disposal of contaminated material	122	165	m^3	27,14	1,00	1,20	5 374,25	
4 (A)	**Demolishing and Rehabilitation of electrified railway lines**		**0**	**m**		**1,00**	**1,00**	-	
4 (A)	**Demolishing and Rehabilitation of non-electrified railway lines**		**0**	**m**		**1,00**	**1,00**	-	
5	**Demolition of housing and/or administration facilities**		**0**	**m**		**1,00**	**1,00**	-	
6	**Opencast Rehabilitation including final voids and ramps**		**0**	**m^3**		**1,00**	**1,00**	-	
7	**Sealing of shafts audits and inclines**		**0**	**m^3**		**1,00**	**1,00**	-	
8 (A)	**Rehabilitation of Overburden and Spoils**		**0**	**ha**		**1,00**	**1,00**	-	
8 (B)	**Rehabilitation of Processing waste deposits and evaporation ponds (non polluting potential)**		**0**	**ha**		**1,00**	**1,00**	-	

	Flatten the earth walls of the evaporation dam	111	0	m^3	20,10	1,00	1,00	-	no infrastructure builds on site
	Levelling and shaping the dam area	132	0	ha	8 500,00	1,00	1,00	-	
8 (C)	**Rehabilitation of Processing waste deposits and evaporation ponds (polluting potential)**		**0**	**ha**		**1,00**		-	
9	**Rehabilitation of Subsided areas**		**0**	**ha**		**1,00**		-	
10	**General Surface rehabilitation**		**0**	**ha**				**260 029,81**	
	Ripping area	132	4,11	ha	11 238,06	1,00	1,20	55 426,12	
	Load and Haul of hards and softs		60	m	32,25	1,00	1,20	2 321,94	0-1km hauling distance from stockpile area
	Levelling and shaping at topsoil replacement (300mm depth)	132	4,11	ha	3 241,77	1,00	1,20	15 988,40	
	Revegetation establishment	123	4,11	ha	37 772,37	1,00	1,20	186 293,35	
11	**River Diversion**		**0**	**ha**		**1,00**	**1,00**	-	
12	**Fencing**		**0**	**ha**		**1,00**	**1,00**	13 144,38	
	Remove wire fence all around the activity area	147	650	m	20,22	1,00	1,00	13 144,38	
13	**Water Management**		**0**	**ha**		**-**	**-**	-	
								-	
14	**2 to 3 years of maintenance and aftercare**		**4,11**	**ha**	**37 772,37**	**1,00**	**1,20**	**186 293,35**	
								-	

15 (A)	**Specialist Study**		**0**	**ha**	**-**	**1,00**	**1,00**	-	
15 (B)	**Specialist Study**		**0**	**ha**	**-**	**1,00**	**1,00**	-	
SUBTOTAL 1								569 314,58	
Preliminary & General (12%)		12%				1,10	2,00	150 299,05	
Contingency (10%)		10%						56 931,46	
SUBTOTAL 2								**776 545,09**	
VAT (15%)		**15%**						**116 481,76**	
	GRAND TOTAL ENVIRONMENTAL LIABILITY							**893 026,85**	

29. MECHANISMS FOR MONITORING COMPLIANCE AND PERFORMANCE AGAINST THE EMPR

Table 23: Mechanisms for monitoring compliance and Performance

SOURCE ACTIVITY	IMPACTS REQUIRED MONITORING PROGRAMME	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES FOR THE EXECUTION OF MONITORING PROGRAMMES	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
• Blasting •Stockpiling and transporting	Dust monitoring • The dust generated by the mining activities	Dust handling and monitoring	Role • Site Manager to ensure compliance with EMPr guidelines. Environmental Control Officer	Throughout construction, operational and decommissioning phase

SOURCE ACTIVITY	IMPACTS REQUIRED MONITORING PROGRAMME	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES FOR THE EXECUTION OF MONITORING PROGRAMMES	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
•Sloping and landscaping during rehabilitation	Graves monitoring Blasting may disturb graves through ground movement must be monitored and addressed by the implementation of dust suppression methods on a daily basis.	Monitor graves prior and post blasting • Dust suppression equipment, like a water car and water dispenser. The applicant already has this equipment available.	Environmental Control Officer and Site management must ensure adherence with the archaeologist recommendation • Compliance to be monitored by the Environmental Control Officer. Responsibility	As per blasting occurrence throughout the construction, operation and decommissioning • Daily compliance monitoring by site management.

SOURCE ACTIVITY	IMPACTS REQUIRED MONITORING PROGRAMME	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES FOR THE EXECUTION OF MONITORING PROGRAMMES	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			• Control dust liberation into surrounding environment by using, e.g., water spraying and/or other dust-allaying agents. • Limit speed on access roads to 40km/h to prevent excess dust generation. • Spray roads with water/environmentally-friendly dust allaying agent that contains no PCBs (e.g. DAS products) if dust is generated above acceptable limits. • Assess effectiveness of dust suppression equipment. • Re-vegetate all disturbed/exposed areas as soon as possible to prevent any dust source from being created.	• Quarterly compliance monitoring of site by an Environmental Control Officer.

SOURCE ACTIVITY	IMPACTS REQUIRED MONITORING PROGRAMME	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES FOR THE EXECUTION OF MONITORING PROGRAMMES	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
• Blasting • Sloping and landscaping during rehabilitation	Noise monitoring • The noise generated by the mining activities must be monitored, and any excessive noise must be addressed.	Noise handling and monitoring • Site manager to ensure that the vehicles are equipped with silencers and kept roadworthy. • Compliance with the appropriate legislation with respect to noise will be mandatory.	Role • Site Manager to ensure compliance with EMPr guidelines. • Compliance to be monitored by the Environmental Control Officer. Responsibility • Ensure that staff conduct themselves in an acceptable manner while on site. • No loud music permitted at mining area. • Ensure that all mining vehicles are equipped with silencers and kept roadworthy in terms of the Road Transport Act.	Throughout construction, •Daily compliance operational and decommissioning phase monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.

SOURCE ACTIVITY	IMPACTS REQUIRED MONITORING PROGRAMME	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES FOR THE EXECUTION OF MONITORING PROGRAMMES	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			• Plan the type, duration and timing of the blasting procedures with due cognizance of other land users and structures in the vicinity. • Notify surrounding land owners in writing prior blasting occasions. • Use noise mufflers and/or soft explosives during blasting.	
• Stockpiling and transporting	Management of weed or invader plants • The presence of weed and/or invader plants	Management of weed or invader plants • Removal of weeds must be manually	Role • Site Manager to ensure compliance with EMPr guidelines. Environmental Control Officer	Throughout operational and decommissioning phase • Daily compliance monitoring by site management.

SOURCE ACTIVITY	IMPACTS REQUIRED MONITORING PROGRAMME	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES FOR THE EXECUTION OF MONITORING PROGRAMMES	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
	must be monitored, and any unwanted plants must be removed.	or by the use of an approved herbicide	• Compliance to be monitored by the Environmental Control Officer. Responsibility • Implement a weed and invader plant control management plan. • Control declared invader or exotic species on the rehabilitated areas. • Keep the temporary topsoil stockpiles free of weeds.	• Quarterly compliance monitoring of site by an Environmental Control Officer.

SOURCE ACTIVITY	IMPACTS REQUIRED MONITORING PROGRAMME	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES FOR THE EXECUTION OF MONITORING PROGRAMMES	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
• Sloping and Landscaping during rehabilitation	Surface and storm water monitoring • The effectiveness of the storm water infrastructure needs to be continuously monitored.	Surface and storm water handling • Trenches and contours to be made to direct storm- and runoff water around the stockpile areas.	Role • Site Manager to ensure compliance with EMPr guidelines. Compliance to be monitored by the Environmental Control Officer. Responsibility • Divert storm water around topsoil heaps, stockpile areas and access roads to prevent erosion and material loss. • Divert runoff water around the stockpile areas with trenches and contour structures to prevent erosion of the work areas.	

SOURCE ACTIVITY	IMPACTS REQUIRED MONITORING PROGRAMME	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES FOR THE EXECUTION OF MONITORING PROGRAMMES	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			• Conduct mining in accordance with the Best Practice Guideline for small scale mining that relates to storm water management, erosion and sediment control and waste management, developed by the DWS, and any other conditions the DWS may impose.	
• Blasting • Sloping and Landscaping during rehabilitation	Management of health and safety • All health and safety aspects need to be monitored on a daily basis.	Management of health and safety risks • Site manager to ensure that workers are equipped with required PPE while operating on site.	Role • Site Manager to ensure compliance with EMPr guidelines. • Compliance to be monitored by the Environmental Control Officer. Responsibility	Throughout construction, operational and decommissioning phase • Daily compliance monitoring by site management.

SOURCE ACTIVITY	IMPACTS REQUIRED MONITORING PROGRAMME	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES FOR THE EXECUTION OF MONITORING PROGRAMMES	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
		• The necessary warning signs must be present at the site to inform the public and workers of mining activities.	• Submit an application for approval of access onto the R555 to the Department of Roads and Public Works prior to the commencement of work. • Inform the Traffic Department of each blast. If necessary, arrange for temporary road closure during a blast. • Plan the type, duration and timing of the blasting procedures with due cognizance of other land users and structures in the vicinity. • Inform the surrounding landowners and communities of any blasting event. • Use noise mufflers and/or soft explosives during blasting.	• Quarterly compliance monitoring of site by an Environmental Control Officer

SOURCE ACTIVITY	IMPACTS REQUIRED MONITORING PROGRAMME	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES FOR THE EXECUTION OF MONITORING PROGRAMMES	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			• Limit fly rock. • Give audible warning of a pending blast at least 3 minutes before the blast. • Remove all fly rock (diameter 1500mm and larger) which falls beyond working area, together with the rock spill. • Ensure that workers have access to the correct PPE as required by law.	
• stockpiling and transporting	Waste management	Waste management	Role • Site Manager to ensure compliance with EMPr guidelines.	Throughout construction, operational and decommissioning phase

SOURCE ACTIVITY	IMPACTS REQUIRED MONITORING PROGRAMME	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES FOR THE EXECUTION OF MONITORING PROGRAMMES	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
• Sloping and landscaping during rehabilitation	• Management of waste must be a daily monitoring activity. • Hydrocarbon spills need to be cleaned immediately and the site manager must compliance daily.	• Closed containers for the storage of general/hazardous waste until waste is removed to the suitable landfill site. • Hydrocarbon spill kits to enable sufficient clean-up of contaminated areas. • Drip trays must be available to place underneath haul vehicles	Compliance to be monitored by the Environmental Control Officer. Responsibility • Ensure that vehicle repairs only take place in the service bay area and all waste products are disposed of in a 200l closed container/bin inside the emergency service area. • Collect any effluents containing oil, grease or other industrial substances in a suitable receptacle and remove from site, for resale or appropriate disposal at a recognized facility. • Clean spills immediately to the satisfaction of the Mine	• Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.

SOURCE ACTIVITY	IMPACTS REQUIRED MONITORING PROGRAMME	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES FOR THE EXECUTION OF MONITORING PROGRAMMES	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
		while the vehicles are parked at night. • Should a vehicle have a break down, it must be serviced immediately.	Manager by removing the spillage and polluted soil and by disposing of them at a recognized facility. • Ensure availability of suitable covered, conveniently placed receptacles at all times for waste disposal. • Place all used oils, grease or hydraulic fluids therein and remove receptacles from site daily for disposal at a registered/licensed hazardous disposal facility. • Store non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., in a container with a closable lid at a collecting point. Collection must take place weekly and	

SOURCE ACTIVITY	IMPACTS REQUIRED MONITORING PROGRAMME	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES FOR THE EXECUTION OF MONITORING PROGRAMMES	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			disposed of at the recognized landfill site. Prevent refuse from being dumped on or in the vicinity of the mine area. • Biodegradable refuse to be handled as indicated above.	
Stockpiling and transporting	Management of access roads • Access road conditions must be continuously monitored. • Vehicles carrying materials has to be	Management of access roads • Dust suppression equipment such as a water car and dispenser. • Trenches and contours to be made to direct	Role • Site Manager to ensure compliance with EMPr guidelines. • Compliance to be monitored by the Environmental Control Officer. Responsibility	Throughout construction, operational and decommissioning phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.

SOURCE ACTIVITY	IMPACTS REQUIRED MONITORING PROGRAMME	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES FOR THE EXECUTION OF MONITORING PROGRAMMES	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
	equipped with adequate tarpaulin type covers to ensure that material being transported will not leave the vehicle during transportation.	storm- and runoff water around the access roads.	• Maintain newly constructed access roads (if applicable) to minimize dust, erosion or undue surface damage. • Divert storm water around access roads to prevent erosion. • Erosion of access road: Restrict vehicular movement to existing access routes to prevent crisscrossing of tracks through undisturbed areas. • Cover vehicles carrying materials with adequate tarpaulin type covers to ensure that material being transported does leave the vehicle during transportation. • Ensure vehicles entering and using the public road system from the site does not exceed the permissible legal limits on	

SOURCE ACTIVITY	IMPACTS REQUIRED MONITORING PROGRAMME	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES FOR THE EXECUTION OF MONITORING PROGRAMMES	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			gross vehicle mass and individual axle loads as prescribed in terms of the National Road Traffic Act (Act No 93 of 1996).	
• Blasting • Sloping and Landscaping during rehabilitation	Management of groundwater contamination. Hydrocarbon spillages must be monitored. The landscaping and sloping must be	Management of groundwater contamination. Hydrocarbon spillages must clean immediately and treated as hazardous waste.	Role • Site Manager to ensure compliance with EMPr guidelines. • Compliance to be monitored by the Environmental Control Officer. Responsibility	Throughout construction, operational and decommissioning phase • Daily compliance monitoring by site management. • Environmental Control Officer (ECO) must oversee quarterly groundwater

SOURCE ACTIVITY	IMPACTS REQUIRED MONITORING PROGRAMME	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES FOR THE EXECUTION OF MONITORING PROGRAMMES	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
	monitored to ensure the area is always levelled.	The area must be levelled at all times to eliminate water accumulation that can lead to groundwater contamination.	• Divert runoff water around the stockpile areas and contour structures to prevent water accumulation. • Conduct mining in accordance with the Best Practice Guideline for small scale mining that relates to storm water management, erosion and sediment control and waste management, developed by the DWS, and any other conditions the DWS may impose. • Level the areas by grading to prevent water accumulation • Clean spills immediately to the satisfaction of the Mine	monitoring in accordance with SANS compliance standards

30. ENVIRONMENTAL AWARENESS PLAN

30.2 Manner in which the applicant intends to inform employees of the environmental risks

Training, will address the specific measures and actions required for specific emergency events. In this way, each employee will be provided with the knowledge required for their job to, firstly, prevent impact and secondly identify if an impact is likely to occur and then to report the possibility of risk or impact immediately so as to ensure an immediate response. The most likely potential environmental emergencies in this proposed mining operation are fires and explosions, chemical spills/leaks, and flooding.

30.1 Procedures in case of environmental emergencies

In the case of environmental emergencies, the remedial measures and actions as listed in the Emergency Response Plan must be followed, in addition, the relevant authorities must be contacted.

31. SPECIFIC INFORMATION REQUIRED BY THE COMPETENT AUTHORITY

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

32. ENVIRONMENTAL ASSESSMENT PRACTITIONER DECLARATION OF INDEPENDENCE

Ankone Consulting (Pty) Ltd is an independent environmental consulting firm with qualified and experienced EAPs, it is registered with EAPASA.

The undersigned staff members herewith declare the BAR and EMPr report represents an objective and complete assessment of the environmental impacts associated with the proposed Mbavuza.

Action	Name and Surname	Position	Signature
Report Writer	Nonkululeko Ngcobo	Candidate SACNASP	
Senior Assessor and Technical Review	Vumile Ribeiro	Project EAP	V.-Ribeiro
Quality and Approval	Thembile Nzuza	Project Manager	