



mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

**FINAL BASIC ASSESSMENT REPORT
AND
ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT**

FOR SUBMISSION TO THE DEPARTMENT OF MINERAL RESOURCES

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

NAME OF APPLICANT: Umzumbe Mining Company (Pty) Ltd

TEL NO: 021 876 2417

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PHYSICAL ADDRESS: Portion 1 of Farm the Corner 11328 ET 3.5 km north west of Umzumbe,
Kwa-Zulu Natal.

FILE REFERENCE NUMBER SAMRAD: KZN 30/5/1/3/2/10667 MP

UMZUMBE MINING COMPANY (PTY) LTD

MINING PERMIT

Portion 1 of Farm the Corner 11328 ET

UMZUMBE KWAZULU-NATAL

FINAL BASIC ASSESSMENT REPORT

AND

ENVIRONMENTAL MANAGEMENT PROGRAMME

REPORT

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Report Sign-Off			
Name	Designation	Signature	Date
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Vivienne Vorster	EAP Senior Environmental Scientist	Electronically Signed	15/07/2020

1. **IMPORTANT NOTICE**

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

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

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

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

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

2. OBJECTIVE OF THE BASIC ASSESSMENT PROCESS

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

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

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ACRONYMS AND ABBREVIATIONS

	Definition
BID	Background Information Document
DMR	Department of Mineral Resources
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
GNR	Government Notice Regulation
IAP	Interested and Affected Party
IWWMP	Integrated Water and Waste Management Plan
LOM	Life of Mine
MPRDA	Mineral and Petroleum Resources Development Act
MWP	Mine Works Programme
NEMA	National Environmental Management Act
NEM: BA	National Environmental Management Biodiversity Act
NEM: WA	National Environmental Management Waste Act
NHRA	National Heritage Resources Act
ROM	Run of mine
SACNASP	South African Council for Natural & Scientific Professionals
SAHRA	South African Heritage Resource Agency
SAMRAD	South African Mineral Resources Administration (System)
OB	Overburden Dump
OC	Opencast
UG	Underground

3. EXECUTIVE SUMMARY

Project Background and Description

Umzumbe Mining Company (hereafter referred to as Umzumbe) operated an opencast mining operation located 4.5 kilometres north west of Umzumbe in the KwaZulu-Natal Province until September 2019. The mining operations extracted Lithium, Feldspar, Aggregate, Quartz and Rare earth minerals and operated under a Mining Permit (KZN30/5/1/3/2/10051MP) received on the 12th of September 2014.

The facility had the capacity to produce approximately 1200 tons of product per month. The current Mining Permit expired on the 12th of September 2019 and had already been renewed for 3 years. The mine still has sufficient mineral reserve remaining to enable sustained operation of the facility for an extended period. Therefore, a new mining permit application is being submitted to authorise the continuation of the mining operations.

The mining method to be undertaken is opencast bench mining where the mineral reserve is removed using a series of benches. The mining method that will be used to remove the mineral reserve entails a conventional open pit, truck and shovel, drill and blast operation. The ore and waste rock are drilled and blasted and loaded into haul trucks and transported to an existing processing facility 980m east of the mining operation. Additional infrastructure utilised on site includes front end loaders and dump trucks.

The rock outcrops are broken out from the main faces and the mining is planned to provide a measured quantity of loose rock whilst minimizing ground vibration and noise within the surrounding area, where ever possible. A prior warning system is employed to advise surrounding neighbours that drilling and blasting operations will be undertaken. All extracted material is utilized and there is no need for discard or waste dumps.

Access to the site is controlled by means of a boundary fence and access gate. There are no permanent buildings or infrastructure on site and an existing gravel access road links the pit to the main road. Potable water is obtained from a municipal supply, brought to the site daily and stored in a storage tank while a portable toilet is located on site for use by employees. Water for dust suppression is obtained from a borehole on the landowner's farm and the roads and surrounding areas are sprayed using a water bowser.

Clean and dirty water separation is undertaken with the use of stormwater diversion berms, so that clean water is diverted around the site and does not enter the pit.

Public Participation

The primary issues raised during the public participation process and at the public meeting are listed below:

- Prior notice of blasting operations not being undertaken;
- Disturbance to community graves;
- Loss of indigenous forest;
- Lack of benefits to communities from Umzumbe;
- Lack of consultation with communities;

Summary of Environmental Impacts

The use of the existing disturbed site, although there will be mining related impacts, can be viewed as an advantage to the surrounding natural environment as no new area for mining of the same resources will be sought. No additional site alternatives were assessed.

The proposed mining permit will provide employment opportunities to personnel from the surrounding local communities. Mining operations will have a positive impact on the local economy of the area through the purchasing of local goods and services.

Negative impacts associated with the mining operations include increased levels of dust, noise and vibrations due to drilling, blasting and vehicle movement. There is the potential for impacts on surface water resources and erosion due to the topography of the site and nature of the mining operations. It is likely that the haul trucks will impact on the stability and surface of the access roads.

Mitigation for all identified and potential impacts has been included in the EMPr.

Conclusions and Recommendations

The mining permit area has been previously mined since 2014. There are still sufficient mineral reserves to continue mining the same permit area for another 2 years. The area is therefore already disturbed and although there are typical mining related impacts such as dust, noise and blasting, these can be mitigated to within acceptable levels with the management measures included in the EMPr. The mining permit area is only 1.4 ha in extent and the size of operations and associated impacts is limited.

The mining operations provide some employment opportunities to the surrounding impoverished communities, which will have an impact on economic conditions within these families.

It is therefore the opinion of the EAP that the Environmental Authorisation and mining permit be granted provided all mitigation and managements measures contained within the BAR and EMPr be strictly implemented. This includes the recommendation of the final closure plan.

4. CONTACT PERSON AND CORRESPONDENCE ADDRESS

4.1 Details and expertise of EAP who prepared the report

Name of Practitioner	Divan van der Merwe	Vivienne Vorster
Affiliation	Director	Senior Environmental Scientist
Telephone	073 378 7845	082 449 5356
E-mail address	divan@exm.co.za	vivienne@exm.co.za
Experience	11 years	13 years
Qualifications	MSc Environmental Science	BA Honours Environmental Management
Professional Registration	LaRRSA	EAPASA; Pr Sci Nat 120722

4.2 Location of the overall Activity.

Farm Name:	Portion 1 of Farm the Corner 11328 ET
Application area (Ha)	1.4 ha
Magisterial district:	Umzumbe Local Municipality, part of the Ugu District Municipality in KwaZulu-Natal.
Distance and direction from nearest town	~ 4.5 km Umzumbe (south east) ~ 5.3 km Wood Grange (east)
21 digit Surveyor General Code for each farm portion	N0ET00000011328000001

4.3 Locality map

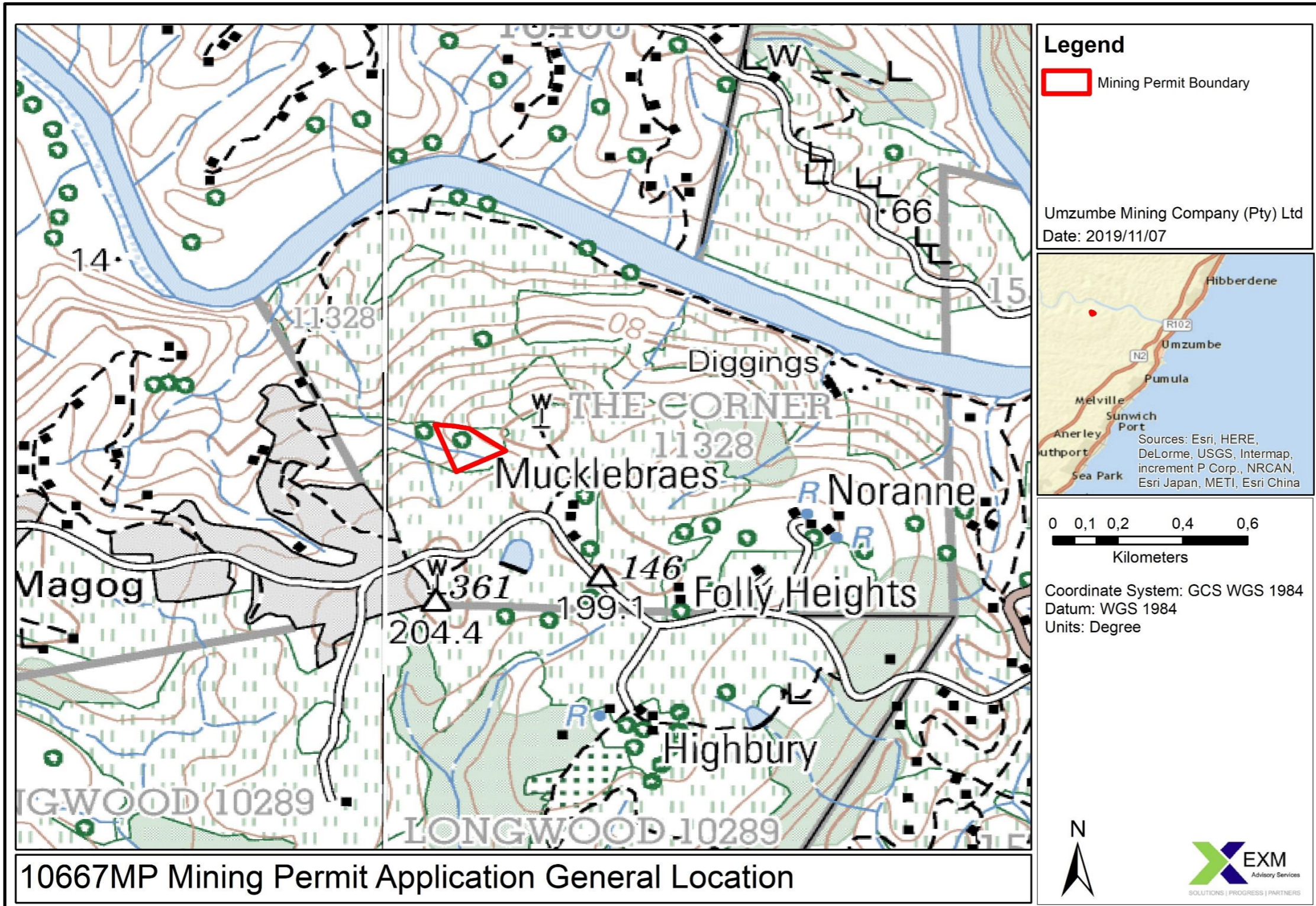
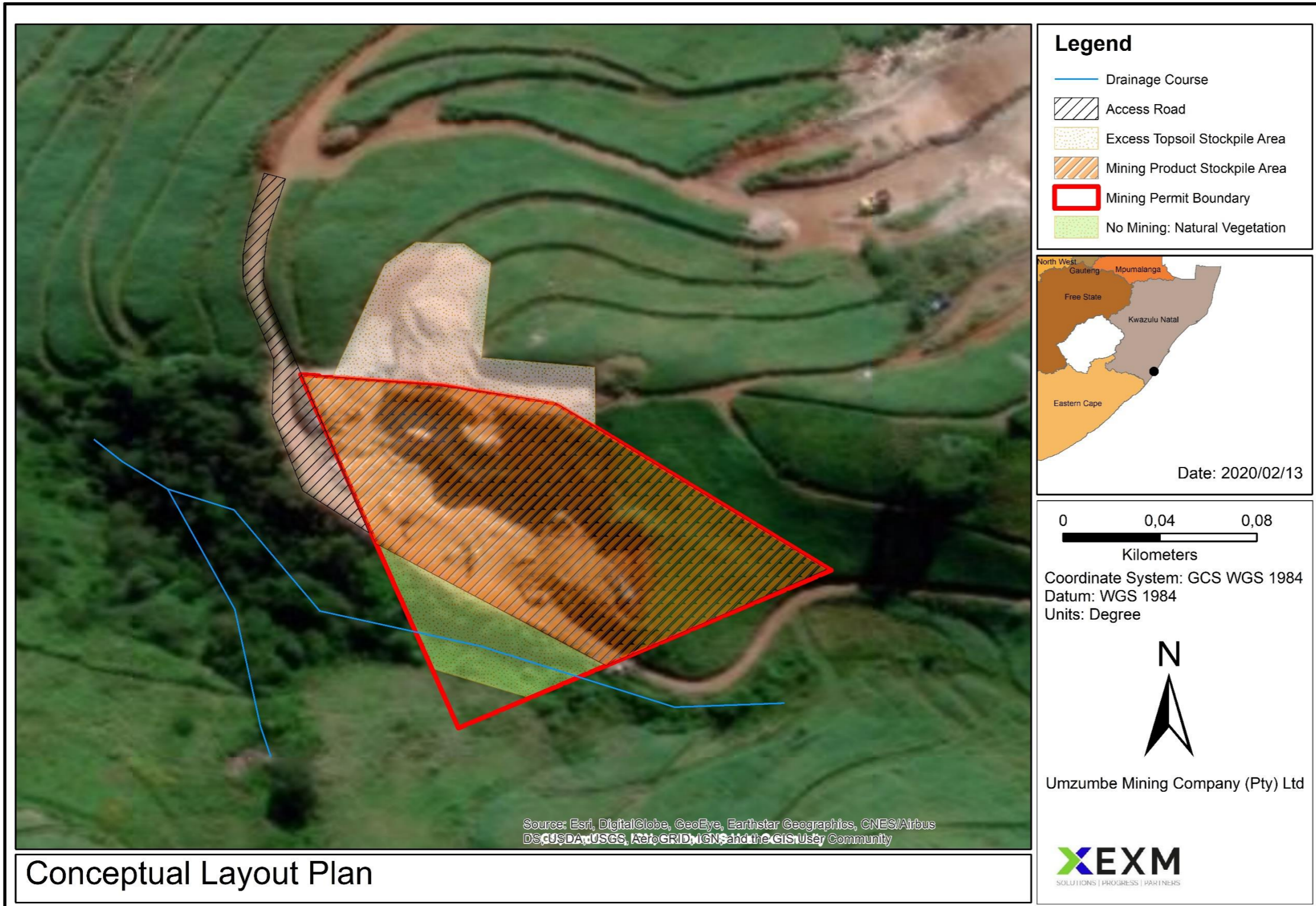


FIGURE 4-1: GENERAL LOCALITY MAP OF THE PERMIT AREA

4.4 Description of the scope of the proposed overall activity.



5. LISTED AND SPECIFIED ACTIVITIES

TABLE 5-1: LISTED ACTIVITIES

<p>NAME OF ACTIVITY (E.g. For prospecting - drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route etc...etc...etc E.g. for mining,- excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.)</p>	<p>Aerial extent of the Activity (Ha or m²)</p>	<p>LISTED ACTIVITY Mark with an X where applicable or affected.</p>	<p>APPLICABLE LISTING NOTICE (GNR 544, GNR 545 or GNR 546)</p>	<p>APPLICABLE LISTING NOTICE (GNR 921 as amended by GN 633))</p>
<p>Activity 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). Activities on site to include drilling and blasting, excavation and hauling to plant.</p>	<p>1.4 ha</p>	<p>X</p>	<p>GNR 983 (as amended by GNR 327 in 2017) Activity 21</p>	<p>N/A</p>
<p>Activity 22 (i) The decommissioning of any activity requiring – (i) a closure certificate in terms of section 43 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).</p>	<p>1.4 ha</p>	<p>X</p>	<p>GNR 983 (as amended by GNR 327 in 2017) Activity 22</p>	<p>N/A</p>

5.1 Description of the activities to be undertaken

5.1.1 **Project Background**

Umzumbe Mining Company (hereafter referred to as Umzumbe) operated an opencast mining operation located 4.5 kilometres north west of Umzumbe in the KwaZulu-Natal Province until September 2019. The mining operations extracted Lithium, Feldspar, Aggregate, Quartz and Rare earth minerals and operated under a Mining Permit (KZN30/5/1/3/2/10051MP) received on the 12th of September 2014.

The facility had the capacity to produce approximately 1200 tons of product per month. The current Mining Permit expired on the 12th of September 2019 and had already been renewed for 3 years. The mine still has sufficient mineral reserve remaining to enable sustained operation of the facility for an extended period. Therefore, a new mining permit application is being submitted to authorise the continuation of the mining operations.

5.1.2 **Overview of the operations on site**

The mine is an existing operation, having obtained authorisation in September 2014 in terms of an approved Environmental Management Programme (EMPr). Operations will be undertaken within the previously approved mining permit area and within an existing disturbed footprint.

The mining method to be undertaken is opencast bench mining where the mineral reserve is removed using a series of benches. The mining method that will be used to remove the mineral reserve entails a conventional open pit, truck and shovel, drill and blast operation. The ore and waste rock are drilled and blasted and loaded into haul trucks and transported to an existing processing facility 980m east of the mining operation. Additional infrastructure utilised on site includes front end loaders and dump trucks.

The rock outcrops are broken out from the main faces and the mining is planned to provide a measured quantity of loose rock whilst minimizing ground vibration and noise within the surrounding area, where ever possible. A prior warning system is employed to advise surrounding neighbours that drilling and blasting operations will be undertaken. All extracted material is utilized and there is no need for discard or waste dumps.

Access to the site is controlled by means of a boundary fence and access gate. There are no permanent buildings or infrastructure on site and an existing gravel access road links the pit to the main road. Potable water is obtained from a municipal supply, brought to the site daily and stored in a storage tank while a portable toilet is located on site for use by employees. Water for dust suppression is obtained from a borehole on the landowner's farm and the roads and surrounding areas are sprayed using a water bowser.

Clean and dirty water separation is undertaken with the use of stormwater diversion berms, so that clean water is diverted around the site and does not enter the pit. This stormwater berm/topsoil berm is located just outside the northern boundary of the permit footprint.

General waste from site is collected by the municipality as part of the municipal refuse collection system.

6. POLICY AND LEGISLATIVE CONTEXT

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT (a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process)	REFERENCE WHERE APPLIED	HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT (E.g. In terms of the National Water Act a Water Use License has/ has not been applied for)
National Environmental Management Act (No. 107 of 1998 (as amended) and EIA Regulations 2014 (as amended in 2017).	Mining activities. An application for a mining permit was submitted to the DMR and accepted on 29 October 2019.	The mining activities associated with the project trigger Listing Notice 1 activities and require an Environmental Authorisation (EA). A Basic Impact Assessment is being undertaken.
Mineral and Petroleum Resources Development Act (No. 28 of 2002) (as amended).	Mining and closure activities	Application for a mining permit in terms of Section 27 of the Act and for a closure certificate and financial provision when mining activities cease.
National Water Act (No. 36 of 1998)	Potential application required.	A small drainage line falls within the mining permit area, which has been impacted by previous mining activities. The operations potentially trigger Section 21 c and i water uses and the applicant is advised that a meeting with the Department of Water and Sanitation (DWS) should be undertaken. Potable water used during operations is obtained from the municipality.

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT (a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process)	REFERENCE WHERE APPLIED	HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT (E.g. In terms of the National Water Act a Water Use License has/ has not been applied for)
		Water for dust suppression is obtained from the landowner's private borehole. It is unknown whether this borehole has a water use authorisation.
National Environmental Management: Waste Act (No. 59 of 2008).	No application required.	Waste from the mining activities will not trigger a listed activity in terms of GN 921, Category A, B or C. A Waste Management Licence (WML) will not be applied for.
National Heritage Resources Act (No. 25 of 1999).	No application required.	The application is for the continuation of existing mining operations and the mine permit boundary will not be expanded. No permits are required in terms of the National Heritage Resources Act.
National Environmental Management: Air Quality Act (No. 39 of 2004) and National Dust Control Regulations (2013).	No application required.	<ul style="list-style-type: none"> • No activities undertaken at the mine will trigger the need for licences in terms of the National Environmental Management: Air Quality Act. • Mitigation measures relating to dust impacts are included in the EMPr.
National Environmental Management: Biodiversity Act (No. 10 of 2004) and Regulations.	No application required.	The area has been largely disturbed by the existing mining operations at the site.

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT (a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process)	REFERENCE WHERE APPLIED	HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT (E.g. In terms of the National Water Act a Water Use License has/ has not been applied for)
National Forests Act (No. 84 of 1998) and Regulations.	No application required.	The area has been largely disturbed by the existing mining operations at the site. No protected trees will be removed, cut or destroyed without the required permits from the Department of Agriculture Forestry and Fisheries (DAFF)
SANS 10103 (Noise Regulations).	Noise applications.	Mitigation measures relating to noise impacts are included in the EMPr.
Occupational Health and Safety Act (No. 85 of 1993)		Mitigation measures to ensure the health and safety of employees are included in the EMPr.

6.1 Need and desirability of the proposed activities.

Umzumbe has been mining the site since 2014 under a Mining Permit (KZN 30/5/1/3/2/10051 MP) which expired on the 12th of September 2019. A new mining permit is therefore required in order to continue with the operations as there are still sufficient mineral reserves to mine for another 2 years.

The minerals extracted at the facility are used in various industries, as described below, and contribute to the sustained operation of the manufacturing and construction industry. The mining of the minerals prevents the import of material which has a direct impact on the country's GDP.

The minerals mined at the facility, including silica sand, are primarily used in the construction industry. Feldspar is the name given to a group of minerals distinguished by the presence of alumina and silica in their chemistry. Feldspar is a common raw material used in glassmaking, ceramics, and to some extent as a filler and extender in paint, plastics, and rubber. In glassmaking, alumina from feldspar improves product hardness, durability, and resistance to chemical corrosion.

In terms of Lithium Ore, more than one-half of the lithium compounds consumed are used in the manufacture of glass, ceramics, and aluminium. Lithium is also used in making synthetic rubber, greases and other lubricants. Lithium is used in the manufacture of lithium-ion rechargeable batteries, which are continuing to grow in popularity batteries. Lithium, in the form of lithium carbonate or lithium citrate, is used as medicine to treat gout and to treat mental illnesses as it stabilises the mood.

The mine has an existing agreement with the processing plant, located ~980 m away, and the continuation of operations at this site will therefore enable Umzumbe to meet the demand for resources and supply to the processing plant, without the need for development of a new mine. This will therefore reduce potential negative environmental impacts associated with any new mining operations.

The continuation of the mine will also allow for the continued employment of the existing personnel, many of whom originate from the impoverished communities surrounding the operations.

The mine also contributes to the local economy within the surrounding area through the purchasing of local goods and the use of local services.

7. MOTIVATION FOR THE OVERALL PREFERRED SITE, ACTIVITIES AND TECHNOLOGY ALTERNATIVE

7.1 Full description of the process followed to reach the proposed preferred alternatives within the site.

As per GNR 982 (as amended by GNR 326), Appendix 1(2)(b), alternatives for the proposed development are to be identified and considered, including the activity, location, and technology alternatives

Chapter 1 of the EIA Regulations (2014, as amended) provides an interpretation of the word "alternatives", which is to mean "in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to the -

a) Property on which or location where the activity is proposed to be undertaken;

- b) Type of activity to be undertaken;
- c) Design or layout of the activity;
- d) Technology to be in the activity; or
- e) Operational aspects of the activity;
- f) And includes the option of not implementing the activity.”

7.2 Details of the development footprint alternatives considered.

Provide details of the alternatives considered with respect to:

7.2.1 The property on which or location where it is proposed to undertake the activity

The site selection was initially done based on the location of the mineral reserves to be mined and ability of these reserves to be optimally mined. This permit application seeks to continue mining at the existing site and therefore no additional site alternatives were considered. The site has already been disturbed by existing mining activities and a new site will result in potential degradation of undeveloped or sensitive areas.

7.2.2 The type of activity to be undertaken

The activity to be undertaken is the extraction of lithium, feldspar, aggregate, quartz, rare earth minerals and silica sand. The mining of these minerals has been undertaken at the site since 2014. The minerals to be mined exist at the site and is already disturbed due to the mining. The site has existing infrastructure, such as access roads, required for mining operations. Therefore, no alternatives to the type of activity were assessed = as part of this Basic Assessment Report.

7.2.3 The design or layout of the activity

The site layout is primarily determined by the location of the mineral reserves located on site. The permit area is only 1.4 ha in extent and no changes to the existing layout are envisaged. No additional infrastructure will be required for this mining permit application.

7.2.4 The technology to be used in the activity

Two mining methods were assessed, the first being drilling and blasting and the second being a non - explosive demolition chemical agent consisting of calcined oxides of calcium, silicon and aluminium to fracture the rock. Due to the nature of the rock, being primarily hard rock, drilling and blasting was found to be the preferred mining method for adequate and cost effective removal of the resource.

7.2.5 The operational aspects of the activity

The operational aspects of the mine will remain as was previously undertaken. There is an existing pit, benches and access road to the mining site. Operational aspects are already in place for the mining operations to continue as they have been undertaken since 2014. No changes are anticipated.

7.2.6 **The option of not implementing the activity.**

The no-go alternative means that the project is not implemented and will have the following negative and positive impacts:

- The existing mineral resources at the site will not be further mined, which will have cost implications for the applicant and the personnel who are employed at the mine who will lose their employment.
- Other socio-economic contributions such as the purchasing of local goods and services will also be negated.
- The existing processing plant will need to source materials from alternative sources for processing.
- The proposed permit application area is already disturbed due to mining operations and the environmental impacts identified are of a low to very low significance.
- Should the project not be undertaken, potential negative impacts on the surrounding communities such as blasting, noise and dust will not be realised.

8. DETAILS OF THE PUBLIC PARTICIPATION PROCESS FOLLOWED

The Public Participation Process (PPP) took into consideration the requirements of Section 39 of GNR 982 of the EIA Regulations 2014 (as amended).

8.1 Identification of Interested and Affected Parties

An existing database for Interested and Affected Parties (IAPs) exists and was updated throughout the process to include all potential IAPs.

Potential Interested and Affected Parties (IAPs) were identified based on the definition of IAPs in the EIA regulations. This includes:

- Landowners or tenants adjacent to or within 100 m from the proposed study area.
- Identified Traditional Authority in the area
- Any organisation of ratepayers that represent the community.
- Representatives of the local municipality/ward councillor with jurisdiction in the area.
- Authority or organs of state having jurisdiction in respect of any aspect of the activity, including. The following organs of state have been notified:
 - Ezemvelo KZN Wildlife
 - Department of Economic Development, Tourism and Environmental Affairs
 - Ugu District Municipality
 - Ray Nkonyeni Local Municipality
 - Department of Water and Sanitation
 - Department of Agriculture, Forestry and Fisheries
 - Department of Transport

- WESSA/CoastWatch:
- Land Claims Commissioner: KwaZulu Natal
- Ward Councillor
- Amafa aKwaZulu Natali
- KZN Department of Human Settlements

The IAP database will also be updated with any person who requests to be registered, responds to or comments on the Background Information Document (BID), press advertisements, site posters and persons who attended the public meeting which was undertaken to inform the public about the project. A list of all parties that have been identified thus far is included as **Appendix B1**.

8.1.1 **Notifications**

Notice of the proposed project and the environmental process was done by the following methods:

- Electronic delivery of Background Information Documents (BID) to all existing IAPS and hand delivery of the BID at the public meeting held.
- Site Notices; and
- Press Notification.

Proof of this is provided in **Appendix B2**.

8.1.2 **Media advertisements and Site Notices**

Press advertisements were placed in the South Coast Herald in English and in the Ugu Eyethu in isiZulu on the 15th of November 2019.

Site notices in English and isiZulu were placed at the entrance to the mining operation and along various access roads within the surrounding communities.

Proof of placement of advertisements and site notices is included in **Appendix B3**.

8.1.3 **Public meetings**

A public information-sharing meeting was held on the 24th of November 2019. All registered I&APs were sent electronic invitations, while the meeting was also advertised in the two newspaper advertisements placed in the South Coast Herald and Ugu Eyethu.

Minutes of the meeting are attached as **Appendix B4**.

8.1.4 **Public and authority Review of other Project Information**

IAPs were notified about the project via BIDs, which were handed out at the public meetings and emailed to stakeholders on the database. The draft BAR, , was circulated for a 30-day comment period.

All comments received to date are included in **Table 8-1** below.

8.1.5 **Public and Authority Review of Draft Basic Assessment Report**

The draft BAR was circulated for a 30-day review period in accordance with Section 40 (3) of the 2014 EIA regulations 2014 (as amended). The executive summary was translated into isiZulu to accommodate the language preference of community members.

8.1.6 **Final Basic Assessment Report**

Comments received during the 30-day review period of the draft BAR have been included in the Summary of issues table below. The final BAR, this document, is submitted to the DMR for decision making. Registered IAPS will be informed that the report has been submitted to the DMR and that they can obtain a copy of the documentation on request.

8.2 Summary of issues raised by IAPs

TABLE 8-1: SUMMARY OF ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

DATE	NAME	CORRESPONDENCE RECEIVED	EAPs RESPONSE TO ISSUES AS MANDATED BY THE APPLICANT	CONSULTATION STATUS (consensus, dispute, not finalised, etc.)
AFFECTED PARTIES				
Landowners/Lawful Occupiers of Adjacent Properties (refer to minutes of meeting in Appendix B4)				
21 November 2019	Mr G Reddy - landowner	<p>A letter of objection from the landowner, Mr G Reddy was received. The primary issues in the letter of objection relate to:</p> <ul style="list-style-type: none"> • Prior notice of blasting operations not being undertaken; • Disturbance to community graves; • Loss of indigenous forest; • Mining outside of the permit area being undertaken; • The length of time that Umzumbe has been on the property for; and • No closure planning being undertaken. 	<p>EXM Advisory Services (EXM) has been appointed to undertake an application for a mining permit and Basic Assessment Report (BAR). EXM is not able to accurately comment on objections relating to the previous mining activities, as we were not involved with any previous permit applications.</p> <p>The issues and objections raised have however been noted and measures have been included in the EMPr to mitigate potential impacts associated with the proposed mining operations.</p> <p>Measures relating specifically to the issues raised include the following:</p> <p>Blasting:</p> <ul style="list-style-type: none"> • Notification of blasting must be conveyed to the surrounding community at least 24 hours prior to blasting being undertaken. • The preferred communication strategy must be discussed and agreed with the community prior to blasting being initiated. <p>Heritage Resources:</p>	Consultation completed.

DATE	NAME	CORRESPONDENCE RECEIVED	EAPs RESPONSE TO ISSUES AS MANDATED BY THE APPLICANT	CONSULTATION STATUS (consensus, dispute, not finalised, etc.)
			<ul style="list-style-type: none"> • If any artefact and/or grave is uncovered on site, work in the immediate vicinity must be stopped. • A registered heritage specialist / archaeologist must be called to determine the way forward. <p>Loss of indigenous forest:</p> <ul style="list-style-type: none"> • No indigenous and/or protected trees may be removed or destroyed without the required permits from the DAFF. • Daily monitoring must be undertaken ensure that edge effects from the operations do not affect the surrounding forest habitat. <p>Mining outside of the permit area:</p> <ul style="list-style-type: none"> • A topsoil stockpile is located outside of the permit boundary. No mining has been undertaken outside of the permit footprint. <p>The permit application is for a period of two years and surface agreements will need to be in place between Umzumbe and the landowner.</p> <p>Closure planning in accordance with the relevant legislation and in consultation with the DMR is being undertaken by Umzumbe.</p>	
Local Authorities				

DATE	NAME	CORRESPONDENCE RECEIVED	EAPs RESPONSE TO ISSUES AS MANDATED BY THE APPLICANT	CONSULTATION STATUS (consensus, dispute, not finalised, etc.)
13 November 2019	Melissa Packree – KZN EDTEA	Melissa Packree indicated that the Department would like to conduct a site visit in the future.	A site visit will be scheduled with the Department following completion of the draft Basic Assessment Report.	
15 November 2019	Liziswa Jiba – Ray Nkonyeni Municipality	Ms Jibe acknowledged receipt of the BID and requested updates on the application in the future.	The representative has been added to the I&AP database.	Consultation completed.
18 November 2019	Department of Agriculture Forestry and Fisheries	Acknowledged receipt of the BID	Noted.	Consultation completed.
20 November 2019	Department of Water and Sanitation	<p>DWS requested that the following be addressed in the Basic Assessment Report:</p> <ul style="list-style-type: none"> • Waste Management; • Stormwater Management; • Wastewater and sewage treatment; • Erosion control; • EMPr for construction phase; • Geotechnical study; • Wetland delineation study; and • Indicate who is responsible for rehabilitation. 	<p>Waste Management, Stormwater management, wastewater, erosion control and rehabilitation have been addressed and mitigation measures included in the EMPr.</p> <p>There will not be a construction phase and therefore no construction phase EMPr, as the permit area has previously been mined and there is existing infrastructure such as access roads to the site.</p> <p>A geotechnical study has not been included in the BAR, as previous mining activity has been undertaken within the permit area since 2014 and the area is already disturbed.</p> <p>DWS's request for a wetland delineation study has been sent to the Applicant, Umzumbe for their attention.</p>	Consultation completed.

DATE	NAME	CORRESPONDENCE RECEIVED	EAPs RESPONSE TO ISSUES AS MANDATED BY THE APPLICANT	CONSULTATION STATUS (consensus, dispute, not finalised, etc.)
21 November 2019	Bernadet Pawandiwa - AMAFA	Requested that Form J for developments be completed and submitted to AMAFA with supporting documentation.	This will be done.	Consultation completed.
Organs of state (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWA etc.)				
None		No comments to date		
Traditional Leaders				
None		No comments to date		
Competent Authorities affected				
None		No comments to date		
INTERESTED PARTIES				
13 November 2019	Sarah Allan	<p>Sarah Allan raised the following issues:</p> <ul style="list-style-type: none"> • Closure application and what is being done to make the area safe; • Loss of indigenous forest; • Disturbance of graves; • Requested more information about the processing facility and approvals as well as whether the processing facility is owned and operated by Umzumbe 	<ul style="list-style-type: none"> • Closure planning in accordance with the relevant legislation and in consultation with the DMR is being undertaken by Umzumbe. A rock engineer was been to the site in order to make recommendations to ensure that the site is stable. 	Consultation completed.

DATE	NAME	CORRESPONDENCE RECEIVED	EAPs RESPONSE TO ISSUES AS MANDATED BY THE APPLICANT	CONSULTATION STATUS (consensus, dispute, not finalised, etc.)
			<ul style="list-style-type: none"> • As indicated in the response to Mr Reddy, EXM is not able to accurately comment on objections relating to the previous mining activities, as we were not involved with any previous permit applications. • Measures have however been included in the EMPr relating to the issues raised such as the loss of indigenous forest and disturbance of graves. The conditions and measures within the EMPr are binding on the applicant and must be adhered to by Umzumbe. • EXM has only been appointed to undertake the permit application for the mining site. The request for information relating to the processing facility does not specifically relate to environmental and/or social issues for the permit application. • The request for information on the processing facility has been submitted to Umzumbe for consideration and feedback. 	

DATE	NAME	CORRESPONDENCE RECEIVED	EAPs RESPONSE TO ISSUES AS MANDATED BY THE APPLICANT	CONSULTATION STATUS (consensus, dispute, not finalised, etc.)
21 November 2019	Karen Chetty – Environmental Manager for Salene Technologies	Karen Chetty requested to be included in the circulation list for the new permit applications. She requested clarity on the relationship between Umzumbe and Dantoprox and requested the acceptance of application letters from the DMR.	<ul style="list-style-type: none"> Ms Chetty has been included in the stakeholders' database and will be included in all future correspondence. This request has been submitted to Umzumbe for consideration and feedback. 	
24 November 2019	Various – issues raised at the public meeting	<p>The primary issues raised at the public meeting were:</p> <ul style="list-style-type: none"> Lack of benefits to communities from Umzumbe; Graves which were dug up; Lack of consultation with communities; Community is unhappy with the lack of benefits and distrust Umzumbe 	<ul style="list-style-type: none"> The primary issues raised at the public meeting relate to the previous mining activities, which EXM cannot accurately respond to as we were not involved with previous applications. Measures have been included within the EMPr relating to cultural heritage artefacts and community consultation. Benefits to communities from mining activities are legislated for larger Mining Right applications and within the requirement for Social and Labour plans. 	Public meeting undertaken.

DATE	NAME	CORRESPONDENCE RECEIVED	EAPs RESPONSE TO ISSUES AS MANDATED BY THE APPLICANT	CONSULTATION STATUS (consensus, dispute, not finalised, etc.)
			<ul style="list-style-type: none"> Mining permits do not have the same requirements, and as such, it is recommended that Umzumbe, representatives from the community and the DMR meet to discuss community benefits and implementation thereof. 	
26 March 2020	Karen Chetty – Environmental Manager for Salene Technologies	<p>Comments on the draft Basic Assessment report</p> <ol style="list-style-type: none"> It is stated in the DBAR Executive Summary and Section 5.1.1 to UMC "...currently operates an opencast mining..." which is misleading/disingenuous as UMC previous mining permit on the said property expired in September 2019 and therefore there is no current operation that is occurring. Reference is made in the DBAR to a "topsoil stockpile" outside the proposed Mining Permit (MP) area on the adjacent property (which falls under different land ownership). Please can proof of the permission or approval for this activity be provided. This stockpile is directly associated with the mining operations and as such should be controlled by the DMR Mine, Health and Safety (MHS) standards for human and environmental safety. 	<ol style="list-style-type: none"> This has been amended to indicate that the mining was undertaken until September 2019. Surface right use needs to be agreed upon with the landowner. The EAP considered the impact of the stockpile. The applicant has been made aware of the Mine, Health and Safety Regulations, although it falls outside of the scope of the EIA Regulations. 	Comments have been responded to.

DATE	NAME	CORRESPONDENCE RECEIVED	EAPs RESPONSE TO ISSUES AS MANDATED BY THE APPLICANT	CONSULTATION STATUS (consensus, dispute, not finalised, etc.)
		<p>3. "A prior warning system is employed to advise surrounding neighbours that drilling and blasting operations will be undertaken." Please provide proof that a prior warning system was implemented as part of the previous operations as well as evidence of blasting notifications previously sent out to communities. As far as Salene is aware, a prior warning system was not implemented previously, as there have been numerous complaints lodged by the communities on cracks and damages to homes as a result of the previous blasting operations.</p> <p>It is recommended that at least 1 week (7 full days) notice of blasting be sent to the community and other stakeholders, a reminder 24 hours before, another on the morning of the blast, a siren at least 10 minutes prior to the actual blast and then finally 5 minutes after blast as per best practise in the industry.</p> <p>4. No substantive information is provided on the fate of the blasted material after its removal from the mining area. The crushed ore is regarded as hazardous materials in terms of the Transportation of Dangerous Goods and the applicable South African National Standards (SANS) apply to the management thereof.</p>	<p>3. Please note the EAP cannot undertake an enforcement function on historical commitments not undertaken. The EAP's scope is bound by assessing the proposed activity and proposing management measures to mitigate environmental impacts. EXM has considered the impact of noise and blasting. Management measures relating to blasting have been included in the EMPr, which, should the permit be approved, are legally binding on the applicant.</p> <p>The timeframes included in the comment for blasting notification have been noted and included in the EMPr. (please see Table 3.1; page 15 of the EMPr).</p> <p>4. The point of sale of the ore is from the Run of Mine stockpile. The purchaser of the ore will be required to comply with any relevant legislation regarding transportation of such ore, where applicable.</p>	

DATE	NAME	CORRESPONDENCE RECEIVED	EAPs RESPONSE TO ISSUES AS MANDATED BY THE APPLICANT	CONSULTATION STATUS (consensus, dispute, not finalised, etc.)
		<p>5. It is stated that “Water for dust suppression is obtained from a borehole on the landowner’s farm...” please provide confirmation of registration of this borehole water for mining use and proof of agreement from the landowner for use of such water.</p> <p>6. The statement that “no new area for mining of the same resources will be sought...” is disingenuous and untruthful as UMC has submitted the following applications for the same resources in the adjacent areas:</p> <ul style="list-style-type: none"> a. Mining Permit application submitted in or around October 2018 for a 3rd mining area1 on the Remainder portion of the farm The Corner b. Mining Permit application submitted in November 2019 on the Remainder portion of the farm The Corner; c. Prospecting Right (PR) application submitted in 2018 on portions 2, 5, 6, 10 and 11 of the farm Longwood; and 	<p>5. The registration of a borehole does not fall within the ambit of the National Environmental Management Act (No. 107 of 1998) and associated Listed Activities. The applicant has been made aware in section 6; page 8 and section 9.1.5; page 36 of this report of the requirement to authorise any water uses associated with this operation.</p> <p>6. Please note the statement relates to this application and its scope. The wording has been amended to clarify that it is related to this permit application, where it is preferable to mine the existing disturbed site for the existing resource.</p>	

DATE	NAME	CORRESPONDENCE RECEIVED	EAPs RESPONSE TO ISSUES AS MANDATED BY THE APPLICANT	CONSULTATION STATUS (consensus, dispute, not finalised, etc.)
		<p>d. Mining Right application in October 2016 on Remainder and Portion 1 of the farm The Corner.</p> <p>7. No indication is given of the number of people to be employed and the type of employment opportunities that will be available to the local community.</p>	<p>7. The following employment personnel will be required:</p> <ul style="list-style-type: none"> - 4 people from the local community for general labourers; and for quarry and health safety work; - 4 people from the local community for management and supervisors; - 2 people from the local community for security; - 8 contractors for drilling and blasting to come in every 2 months for 3 weeks; - 3 contractors for machine operators every second month. 	

DATE	NAME	CORRESPONDENCE RECEIVED	EAPs RESPONSE TO ISSUES AS MANDATED BY THE APPLICANT	CONSULTATION STATUS (consensus, dispute, not finalised, etc.)
		<p>8. No information is provided about the mining plan: How is UMC going to safely mine the remaining resources within the MP area noting the DMR MHS requirements for height and width of benches (cf Operational aspects 7.2.5)</p> <p>9. No evidence of approvals is provided in the DBAR for the processing plant which is within the Umzumbe River floodplain and which is a National Freshwater Ecosystem Priority Area and an area of known palaeontological sensitivity. As the processing facility exists to process material from the UMC operations, there needs to be verification of the approvals for associated infrastructure.</p>	<p>8. The operational aspects such as the height and width of benches do not impact on the environmental impacts assessed within this Basic Assessment Report. As correctly mentioned in the comment, these aspects fall within the jurisdiction of the MHS Requirements, which are enforced by the DMR. EXM did however consider the impact of human and animal safety and included mitigation measures in the EMPr.</p> <p>9. The point of sale of the ore is from the Run of Mine stockpile. The applicant sells it to the processing plant, it therefore does not form part of the associated infrastructure for the mining permit application. Any processing facility must operate within the legal confines of the relevant South African Legislation.</p>	

DATE	NAME	CORRESPONDENCE RECEIVED	EAPs RESPONSE TO ISSUES AS MANDATED BY THE APPLICANT	CONSULTATION STATUS (consensus, dispute, not finalised, etc.)
		<p>10. There is no specialist assessment of the wetland – stream indigenous forest areas adjacent to and partly contained within the proposed mining permit area.</p>	<p>10. It is the opinion of the EAP that a specialist assessment was not required, due to the fact that mining will be undertaken in a disturbed area where mining was already undertaken. An EAP in itself has the ability to undertake the hierarchy of impacts. The area indicated has been avoided. Mitigation measures have been included in the EMPr to manage potential impacts which may impact on areas outside of the permit area such as stormwater management and erosion. The small area of natural forest within the permit footprint has been excluded from any future mining and will remain intact further indicating avoidance of the impact.</p>	

DATE	NAME	CORRESPONDENCE RECEIVED	EAPs RESPONSE TO ISSUES AS MANDATED BY THE APPLICANT	CONSULTATION STATUS (consensus, dispute, not finalised, etc.)
		<p>11. Despite being assured that Salene (represented by Dr Josephat Zimba and myself) was included on the stakeholder database, no notification of the availability of the DBAR or consultation meeting was received by the aforementioned parties. There have been no overtures from UMC to Salene for UMC to meet regarding UMC application yet Salene has approached UMC for a meeting about Salene applications and has met on 27 February 2020. This meeting focused on Salene's applications, no discussions were held on UMC applications.</p> <p>12. The reason for the omission cited by EXM Advisory Services that they were not involved with UMC previous applications and activities is pitiful and unacceptable. Their appointed public participation consultant was engaged by UMC previously for their respective MP, PR and MR applications. Both UMC and iSambulo should have provided guidance and information to their newly appointed EAP regarding previous applications and activities.</p>	<p>11. The nature of a public participation process is to constantly identify IAPs and not just during the initial phases. The EAP has responded to the request from Salene and provided an extension on the review period of the draft BAR.</p> <p>12. Please note the EAP cannot undertake an enforcement function on historical commitments not undertaken. The EAP's scope is bound by assessing the proposed activity and proposing management measures to mitigate environmental impacts.</p>	

DATE	NAME	CORRESPONDENCE RECEIVED	EAPs RESPONSE TO ISSUES AS MANDATED BY THE APPLICANT	CONSULTATION STATUS (consensus, dispute, not finalised, etc.)
		<p>13. In the Flora and Fauna Section 9.14 it is stated “very few if any faunal species...” Does EXM not recognise birds, lizards, butterflies and dragonflies as “fauna”? No date of site visit by EXM has been provided in the DBAR. There is no mention of the wetland & indigenous riparian forest along the south-western boundary that has been impacted by the UMC previous activities and how these may be further impacted if UMC continues mining in the area.</p>	<p>13. The reference to faunal species was an indication to species living within the footprint of the mining permit. It was apparent to the EAP during site visits undertaken (28 August 2019 and 08 November 2019) that due to the mining and disturbance undertaken since 2014 that faunal species have relocated. Fauna such as birds, lizards, butterflies and dragonflies may pass through the area. Please refer to sections 9.1.4 and 9.1.5 which discuss the forested area as well as the drainage line within the western corner of the site. The BAR as well as the EMPr indicate that no mining may be undertaken within these areas and mitigation measures are included within the EMPr to manage these potential impacts. EXM cannot assess previous disturbance, only potential future impacts based on the current baseline environment at the site.</p>	

DATE	NAME	CORRESPONDENCE RECEIVED	EAPs RESPONSE TO ISSUES AS MANDATED BY THE APPLICANT	CONSULTATION STATUS (consensus, dispute, not finalised, etc.)
		<p>14. With regards to the Financial Provision:</p> <p>a. No concurrent rehabilitation has been done previously and it is highly unlikely that any would be done in future.</p> <p>b. The unit area and rate/area has not been included, therefore it is impossible to verify the calculation.</p> <p>c. No subsoil allocation is included in the provision calculation:</p> <p>d. The Final Land Use Plan indicates the whole MP area as sugar cane end use but no information is provided about how that will be achieved.</p>	<p>14. a. The implementation of commitments in this report is legally binding and it is an offence to not comply with it</p> <p>b. Please refer to Appendix A of the final rehabilitation plan. This includes a detailed bill of quantities (eg. areas) and also rates sheet</p> <p>c. No subsoil separation was identified. Soil was removed to hard rock. Subsoil and topsoil have been allocated as a single unit. Subsoil requirements from undersized material at life of mine will need to be utilised to provide a drainage soil of ~800mm for sugar cane. This cost is allocated within quantum to shape the area through dozing.</p>	

DATE	NAME	CORRESPONDENCE RECEIVED	EAPs RESPONSE TO ISSUES AS MANDATED BY THE APPLICANT	CONSULTATION STATUS (consensus, dispute, not finalised, etc.)
			<p>d. The establishment of sugar cane as the final land use is a function of the cooperation between the permit holder and the person or farmer that will benefit from the land use. The final land use objective is for the historically disturbed area to have a viable social, environmental or economic value. The permit holder is responsible to ensure the area designated for sugar cane conforms to the growth requirements related to topography, soil depth (incl subsoil), soil structure, soil fertility and drainage. The recipient of the land will need to establish the sugar cane based on their specific farming practice including the required soil fertility. This can however be done in conjunction with the permit holder as any omission of the land use not achieving the objectives will jeopardise an application for a closure certificate in the future. An agreement with the end land use recipient needs to be negotiated and agreed upon.</p>	

DATE	NAME	CORRESPONDENCE RECEIVED	EAPs RESPONSE TO ISSUES AS MANDATED BY THE APPLICANT	CONSULTATION STATUS (consensus, dispute, not finalised, etc.)
		<p>15. With regards to the Closure Plan (Annexure C):</p> <p>a. Please advise on the municipal collection of refuse for the area? (page 9)</p> <p>b. It is stated that there will be progressive reinstatement, however this is regarded as impossible given the state of the previous MP area (page 23, #7.3 Closure Vision, Objectives and Targets).</p> <p>c. Objectives of the Closure Plan (Section 7.3.1): The Stability objectives given appear to be in conflict with the Final Land Use Plan given in the EMPr.</p>	<p>15. a. Waste receptacles need to be available at laydown areas or areas where breaks are taken. These receptacles can then be consolidated and removed from site once a week either by the municipality (if they operate in that area) or by the applicant. Disposal must be at a licenced general waste site</p> <p>b. Progressive reinstatement should remain an objective although it will likely not have a significant contribution during LoM due to the mining method. Majority of rehabilitation will take place at closure</p> <p>c. The site needs to be stable in order to achieve a post mining land use. Stability includes topsoil stability (erosion), landforms stability (slope faces, subduction), and chemical stability (presence of reactives or contaminants). The stability objectives in the closure plan is aligned to the site. The EMPr has been aligned.</p>	

DATE	NAME	CORRESPONDENCE RECEIVED	EAPs RESPONSE TO ISSUES AS MANDATED BY THE APPLICANT	CONSULTATION STATUS (consensus, dispute, not finalised, etc.)
		<p>d. Table 9-1 mentions topsoil but nothing about the quantity/depth of subsoil: the previous MP area has been stripped to bare rock. If sugarcane is to be grown as shown in the final land use plan then the quantities of subsoil will be required before the topsoil is spread (which is also not reflected in calculation of financial provision): there appears to be an intrinsic conflict with achieving the stability objectives of section 7.3.1.</p>	<p>d. The site was stripped of topsoil prior to this application. Topsoil is stockpiled on berms used for safety limits. The final land use will require between 80cm-150cm of well drained soils. A growth medium needs to be developed for the site considering the drainage of the soils and compaction. A topsoil layer will be 150mm with a subsoil of 130cm.</p>	

9. THE ENVIRONMENTAL ATTRIBUTES ASSOCIATED WITH THE ALTERNATIVES.

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

9.1 Baseline Environment

The existing environment for the mining permit area is provided below:

9.1.1 Climate and rainfall

uMzumbe experiences a warm sub-tropical climate and is predominantly a summer rainfall area, with the typical rainfall season being during the spring and summer months (October to March). The highest rainfall months generally occurs in December and January. uMzumbe normally receives about 748mm of rain per year, with the majority of the rainfall experienced during summer. Climatic conditions vary between coastal and inland environments, with conditions ranging from more extreme inland temperatures to the milder temperatures and higher rainfall of the coastal areas, moderated by the effects of the warm Indian Ocean. High rainfall areas create potential for agricultural development. Great variability in the features that influence the region's climate frequently produce extreme weather conditions. The monthly distribution of average daily maximum temperatures shows that the average midday temperatures for uMzumbe, range from 22.3°C in July to 27.3°C in February. The region is the coldest during July when the mercury drops to 9.3°C on average during the night.

9.1.2 Geology and Soils

The geology of the KwaZulu-Natal coastal belt is dominated by Ordovician Natal Group sandstone, Dwyka tillite, Ecca shale and Mapumulo gneiss (Mokolian). Weathering of old dunes produced Berea Red Sand in places. The soils supported by the above-mentioned rocks are shallow over hard sandstones and deeper over younger, softer rocks. Soil depths of between 450mm and 750mm are found, although very little soil is located at the mining site, initially due to rock intrusions and currently due to the mining operations which have been undertaken.

The underlying geology influences the drainage trends and patterns in the landscape and these patterns shape the character of the landscape.

9.1.3 Topography

There is a great variance in topography from the coast to the inland plateau, with the topography rising sharply. The area is characterised by numerous hills and incised valleys. The mining operation is situated on the eastern extent of one of the many hills which drops off into a valley to the north-west.

9.1.4 **Flora and Fauna**

The high rainfall in the area and the diversity in landscape features have created different moisture environments, which in turn gave rise to different plant habitats. The most common veld types in uMzumbe falls within the Grassland Biome, which is represented in this area by Moist Coast Hinterland Grassland, KwaZulu-Natal Coastal Belt Grassland and Dry Coast Hinterland Grassland. The KwaZulu-Natal Highland Thornveld is unique to the uMzumbe area. Almost half of the Eastern Scarp Forests: Southern Coastal Scarp Forests occurring in KwaZulu-Natal can be found in uMzumbe. The Pondoland Scarp Forests only occur in the Ugu district and 20% of these can be found in uMzumbe. The diversity in ecosystems supports an equal diversity in species of plants, mammals, avifauna, amphibians, reptiles, and invertebrates. A number of animal species can be found within uMzumbe area (i.e. mammals, birds, reptiles) primarily within indigenous forest areas.

The mining permit area has been significantly disturbed by the previous mining activities undertaken. A small section towards the eastern boundary consists of sugarcane plantations and a small forested area is located towards the south-western boundary. It is anticipated that there are very few faunal species remaining within the disturbed area and directly adjacent area due to the high levels of disturbance and increased levels of noise and blasting associated with the previous mining activities. Many faunal species within the surrounding area will have migrated away from mining activities when they commenced in 2014.

The area directly surrounding the proposed permit area consists of sugarcane plantations and a small forested area along the western boundary. The proposed mining activities will be undertaken within the existing disturbed area and no mining may be undertaken within the natural forested area.

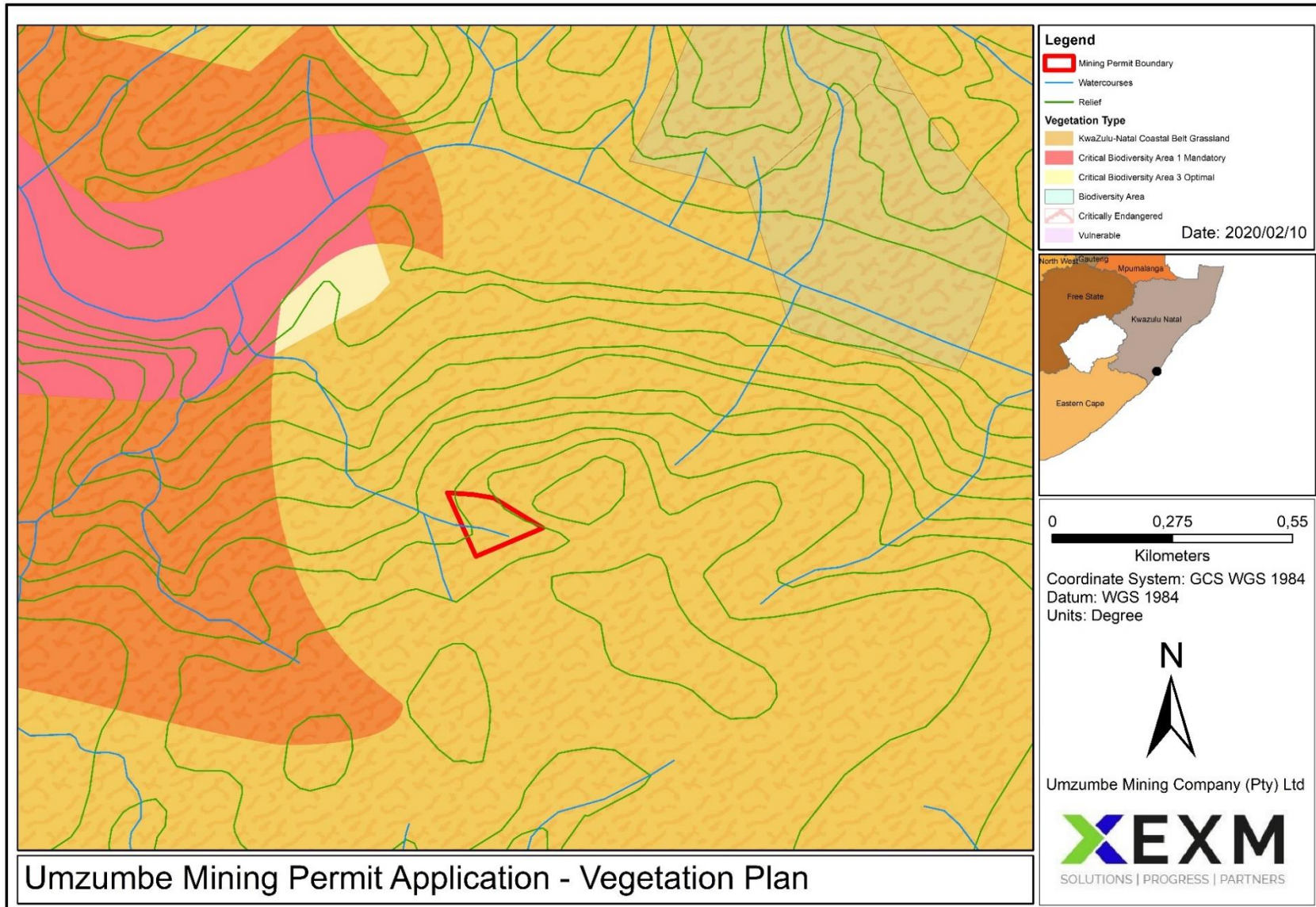


FIGURE 9-1: UMZUMBE VEGETATION MAP

9.1.4.1. Provincial Vegetation Classification

The area falls within the 'Critically Endangered' KZN Coastal Belt Grassland vegetation type. This vegetation type is found in places associated with the broad coastal strip along the KwaZulu-Natal coast, from near Mtunzini in the north, via Durban to Margate and just short of Port Edward in the south. Altitude ranges from about 20–450 masl.

It is listed as 'Endangered' on a national scale, but as 'Critically Endangered' on a provincial scale, with a conservation target of 25%. Only very small parts are statutorily conserved in Ngoye, Mbumbazi and the Vernon Crookes Nature Reserves. Approximately 50% has been transformed for cultivation, by urban sprawl and for road-building. Aliens include *Chromolaena odorata*, *Lantana camara*, *Melia azedarach* and *Solanum mauritianum*.

Although this was the original vegetation type of the larger area, the study area has been impacted upon by anthropogenic factors and communities, sugarcane plantations and for the permit area, by the previous mining activities that have been undertaken at the site.



FIGURE 9-2: LOCALITY MAP SHOWING EXISTING VEGETATION AND DISTURBANCE

9.1.5 **Surface Water**

The Umzumbe River is located approximately 625 m in a northerly direction from the site. There is also a compounded dam, which is located approximately 330 m to the south west of the site.

Desktop maps indicate the presence of a drainage line which was located within the south western portion of the mining permit area. Previous mining operations and sugarcane plantations have impacted on the drainage line and its functioning within the surrounding biophysical environment. The surface water resources are shown in the Figure below.

As discussed in the Section 6, Policy and Legislation, a meeting with the DWS should be undertaken to identify whether mining activities will trigger any requirements in terms of the National Water Act (No. 36 of 1998).

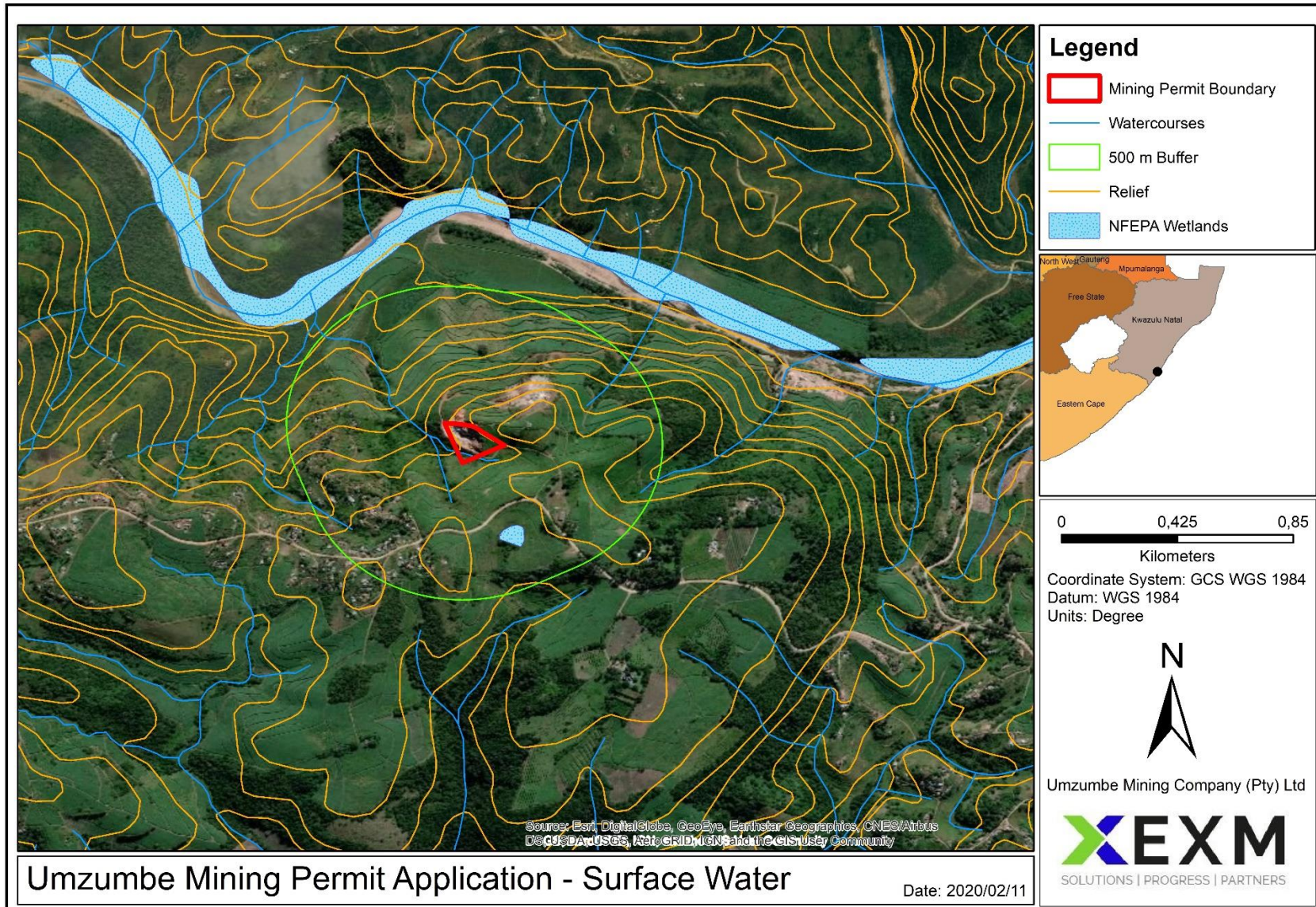


FIGURE 9-3: UMZUMBE WATERCOURSES AND WETLANDS MAP

9.1.6 **Air quality & Noise:**

The site is in a rural location and air quality in the area should be of good quality, due to the lack of industrial features and low traffic volumes. Dust from agricultural activities, mining operations, dirt roads and fires in winter are the greatest impacts on air quality. Noise in the area is generated by vehicles, general activities by the surrounding communities and previously by mining operations undertaken by Umzumbe at their mining permit areas.

9.1.7 **Heritage Resources**

The proposed permit area has been mined since 2014. It was however indicated during the public meeting that there were graves within the mining area which have been disturbed by Umzumbe.

Mitigation measures are included in the EMP, should there be any artefacts of cultural heritage or palaeontological value unearthed during continued mining operations.

9.1.8 **Socio-Economic**

The Ray Nkonyeni Municipality has a population of approximately 348 553. The percentages per age group are shown below:

- Population 15 to 64: 61.0%
- Population under 15: 34.4%
- Population over 65: 4.7%

The population within the municipality has been growing rapidly throughout the years. There is also a consistent racial pattern, with Africans being dominant by a large margin (82%) and followed by Whites (11%). The African population is distributed throughout the municipal 36 wards, while wards along the coastal belt are densely populated due to economic reasons.

Ray Nkonyeni Municipality is the most developed municipality when compared to the other three local municipalities within the Ugu District and thus functions as a regional centre. The primary local economic activities are Tourism; Services; Mining; Agriculture and limited manufacturing.

Ray Nkonyeni Municipality provides an attractive destination with a wide range of amenities and facilities of good quality, as well as public infrastructure making it attractive and conducive for its residents and tourists alike. However, like many areas in the country, the municipality is faced with a challenge of two-worlds in one community divided along the rural/urban split. The urban part is where the majority of the amenities, well managed facilities, and functioning infrastructure and services are located. The rural areas tend to have far fewer facilities and only limited infrastructure. The municipality is committed to reducing backlogs by prioritizing basic needs to improve the quality of life of the citizens.

The mining permit study area falls within ward 15 and the land is privately owned by Mr G Reddy, through his company Triple K Investments. It is however primarily rural in nature with sugarcane farming and a number of small impoverished communities located in the surrounding area. The study area is currently the subject of two land claims by the Madlala Community Trust and the Mathulini Claimant Community.

9.1.9 **Type of environment affected by the proposed activity.**

The detailed description of the affected environment is given in the Sections above. The proposed development will occur within a primarily disturbed area. Although the national and provincial databases describe the general locality of the proposed project as sensitive, the environment within which the project will be located has been largely degraded by sugarcane plantations and previous mining activities. The area applied for is the same footprint area as the previous permit.

9.1.10 **Description of the current land uses.**

The mining permit area has been mined since 2014 and the current land use will remain as mining if the permit application is authorised.

Land uses directly surrounding the mining site include sugarcane plantations, unsurfaced roads, a small indigenous forested area directly to the west, a small area previously mined by Umzumbe ~200 m north-east, the community of Magog ~ 270 m to the west and a mineral processing facility ~980 m to the east.

See **Figure 9.4** where the GIS land use map indicates that the yellow in the permit area is commercial sugarcane cultivation and the green is thicket / dense bush. The brown to the west of the permit area is described as urban village.

9.1.11 **Description of specific environmental features and infrastructure on the site.**

Specific environmental features identified during the site assessments include:

1. Close proximity of small indigenous forested area;
2. Local communities in relatively close proximity; and
3. A drainage line identified on GIS maps which is located within the mining permit area appears to have been impacted by mining operations and sugarcane plantations.

No floral or faunal species of conservation concern, heritage, paleontological or geohydrological aspects were observed on site.

9.1.12 Environmental and current land use map.

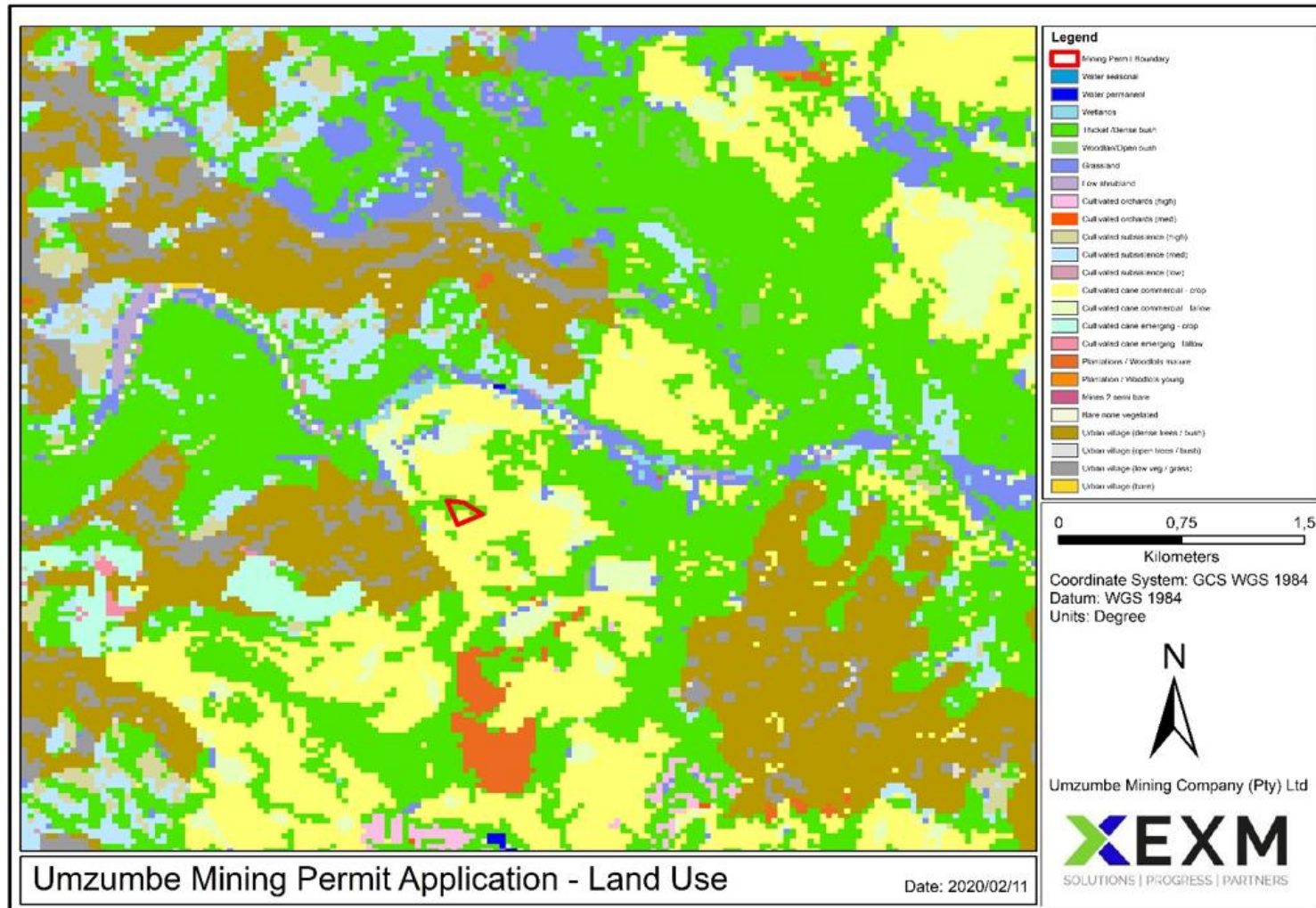


FIGURE 9-4: UMZUMBE LAND USE MAP

10. IMPACT ASSESSMENT

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

This list of impacts provided in this section has been informed by both known impacts of mining activities and consultation with interested and affected parties.

No impacts have been included for the construction phase as this phase was undertaken in 2014 when mining activities commenced.

TABLE 10-1: ASSESSMENT OF IMPACTS ASSOCIATED WITH THE OPERATION PHASE

ASPECT	POTENTIAL IMPACT	PHASE	INTENSITY	DURATION	CONSEQUENCE	EXTENT	SEVERITY	PROBABILITY	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION	MITIGATION CONFIDENCE	SIGNIFICANCE WITH MITIGATION
Groundwater	Groundwater pollution due to hazardous spills from vehicles and equipment	0	1	2	1,5	1	1,25	0,4	0,5	Any hazardous substances are to be stored in bunded areas and handled on impervious surfaces. Equipment which has the potential to leak oil or other chemicals are to be stored on impervious surfaces within bunded areas. Drip trays are to be provided where mobile equipment or vehicles have the potential to drip oil. Implement a spill prevention and emergency response procedure.	0,4	0,2
Surface Water Resources	Impact on down-gradient freshwater resources	0	3	3	3	2	2,5	0,8	2	Ensure that all spills are immediately cleaned up. Ensure erosion protection measures are installed where there is a potential for erosion and siltation. Mining operations only to take place within approved permit boundary.	0,6	1,2
Biodiversity - Flora	Loss of Floral species	0	2	4	3	2	2,5	0,6	1,5	Mitigation measures as detailed EMP must be implemented. A rehabilitation plan should be developed for mine closure. Mining operations only to take place within approved permit boundary. The footprint and daily operation of all mining surface infrastructure areas must be monitored to ensure that edge effects from the operational facilities do not affect the surrounding forest habitat.	0,5	0,75
Biodiversity - Fauna	Impact on Faunal species and Habitat	0	2	2	2	2	2	0,5	1	No indigenous tree may be removed or destroyed without the required permits from the DAFF. No trapping, hunting or injuring of any faunal species within the surrounding area is allowed.	0,5	0,5
Biodiversity - Flora	Proliferation of alien invasive plant species	0	2	2	2	2	2	0,8	1,6	An Alien Invasive Plant (AIP) Management Plan should be compiled for implementation. Care must be taken to avoid the introduction of alien plant species to the site and surrounding areas. Invader species and weeds must be removed and disposed of in accordance with existing legislation on a regular basis.	0,5	0,80
Air Quality	Increase in dust-fallout due to mining operations and vehicles transporting mineral ore on access roads	0	3	4	3,5	2	2,75	1	2,75	Dust suppression on the unpaved access routes and any bare soils within the mining area. Dust suppression to be undertaken in areas where dust emissions are problematic. Control the number of trucks on the road, weight of trucks and the travelling speed. Implement strict vehicle speed limits (e.g. 20-30 km/h).	0,5	1,375
Noise	Increase in noise levels due to mining operations and blasting	0	3	4	3,5	2	2,75	1	2,75	Noise levels must be kept within acceptable limits. All noise and sounds generated must adhere to SANS 10103 specifications for maximum allowable noise levels for central business districts. No pure tone sirens or hooters may be utilised except where required in terms of SANS standards or in emergencies. Neighbours are to be given at least three (3) days warning prior to any blasting activities being undertaken. Monitoring.	0,75	2,06

ASPECT	POTENTIAL IMPACT	PHASE	INTENSITY	DURATION	CONSEQUENCE	EXTENT	SEVERITY	PROBABILITY	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION	MITIGATION CONFIDENCE	SIGNIFICANCE WITH MITIGATION
Topography	Change in landform due to mining operations	0	2	4	3	1	2	1	2	Financial provision to provide for decommissioning and closure activities. Rehabilitation to be as close to pre-mining landform as practicably possible.	0,6	1,2
Soils and Land capability	Movement of construction vehicles and earth moving activities leading to erosion, compaction of soils and down slope siltation of terrestrial habitat	0	2	4	3	1	2	0,8	1,6	The footprint of the mining operations should be clearly demarcated. Erosion control measures (eg: berms) to be put in place where there is a high risk of erosion. Monitor erosion control measures particularly after rainfall events.	0,8	1,28
Soils and Land capability	Soil contamination due to mining activities	0	2	3	2,5	1	1,75	0,8	1,4	A spill prevention and emergency spill response plan should be compiled to guide the personnel in the event of a spill or leak. Spill kits to be available on site. An emergency response contingency plan should be put in place to address clean-up measures. Storm water designs should limit any uncontrolled runoff through the disturbed areas on site. Only clean stormwater is allowed to enter the natural environment.	0,4	0,56
Soils and Land capability	Loss of agricultural land capability	0	3	4	3,5	1	2,25	1	2,25	During the decommissioning phase the footprint should be thoroughly cleaned and ripped to alleviate compaction. Stored topsoil should be replaced (if any) and the footprint graded to a smooth surface. The landscape should be reprofiled to mimic the natural topography. Slopes of the backfilled surface should change gradually since abrupt changes in slope gradient increase the susceptibility for erosion initiation. Topsoil to be evenly spread over rehabilitated areas. The soil fertility status should be determined by soil chemical analysis after levelling (before seeding/re-vegetation). The footprint should be re-vegetated with a grass seed mixture as soon as possible.	0,6	1,35
Blasting	Impacts due to ground vibration and air blast	0	4	2	3	2	2,5	1	2,5	Only apply electronic initiation systems to facilitate single hole firing. Do design for smaller diameter blast holes that will use fewer explosives per blasthole. Blasting should not be undertaken during inclement weather conditions. The surrounding community should be notified prior to blasting being undertaken.	0,8	2,00

ASPECT	POTENTIAL IMPACT	PHASE	INTENSITY	DURATION	CONSEQUENCE	EXTENT	SEVERITY	PROBABILITY	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION	MITIGATION CONFIDENCE	SIGNIFICANCE WITH MITIGATION
Cultural Heritage	Unearthing sites of heritage and/or palaeontological importance	0	3	2	2,5	1	1,75	0,4	0,7	If an artefact on-site is uncovered, work in the immediate vicinity must be stopped immediately and a registered archaeologist/heritage practitioner must be contacted.	0,5	0,35
Waste	Generation of waste during operations	0	2	4	3	1	2	0,6	1,2	General waste produced on-site is to be collected for disposal at a registered landfill site. Hazardous waste must not be mixed or combined with general waste. Waste must not be burned or buried on site. Waste bins must be regularly cleaned out. Hazardous waste bins must be clearly marked, stored in a contained area or have a drip tray and covered. Hazardous waste is to be disposed of at a hazardous waste site.		0
Traffic	Impact on access routes due to haul trucks	0	3	4	3,5	2	2,75	1	2,75	Applicant to ensure that any damage to roads due to mining operations should be rectified as soon as they develop. Access roads to be maintained in good condition for use by trucks and non-mining vehicles.	0,7	1,9
Job creation	Employment opportunities for people from the surrounding communities	0	4	4	4	3	3,5	0,8	2,8	Not Applicable	1	2,8
Cumulative impact of noise and dust due to mining operations in proximity.	Increased noise and dust levels	0	2	5	3,5	2	2,75	0,8	2,2	All noise and sounds generated must adhere to SANS 10103 specifications for maximum allowable noise levels for central business districts. No pure tone sirens or hooters may be utilised except where required in terms of SANS standards or in emergencies. Monitoring Management as per air quality and blasting impacts	0,6	1,32

TABLE 10-2: ASSESSMENT OF IMPACTS ASSOCIATED WITH THE CLOSURE PHASE

ASPECT	POTENTIAL IMPACT	PHASE	INTENSITY	DURATION	CONSEQUENCE	EXTENT	SEVERITY	PROBABILITY	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION	MITIGATION CONFIDENCE	SIGNIFICANCE WITH MITIGATION
Rehabilitation	Poor management and monitoring of rehabilitation measures.	R&PC	2	2	2	2	2	0,6	1,2	ECO to be appointed to oversee rehabilitation activities. ECO to audit rehabilitation activities on a bi-monthly (every two weeks) basis.	0,5	0,6
Rehabilitation	Inadequate ripping of compacted soil areas which can impact on vegetation regrowth .	R&PC	3	3	3	2	2,5	0,6	1,5	Footprint should be thoroughly cleaned and ripped as soon as possible after mining has been completed, in order to alleviate compaction.	0,8	1,2
Rehabilitation	Soil erosion and contamination	R&PC	2	2	2	3	2,5	0,6	1,5	Control through stormwater management measures – ensure that the site is free draining. Manage and monitor through rehabilitation plan	0,5	0,75
Rehabilitation	Establishment and spread of alien invasive plant species	R&PC	2	3	2,5	2	2,25	0,8	1,8	Implement Alien Invasive Plant (AIP) Management Plan during rehabilitation activities also. Monitor the site every 2 weeks.	0,6	1,08
Rehabilitation	Topography and landform alteration	R&PC	2	5	3,5	2	2,75	0,8	2,2	Concurrent rehabilitation to be undertaken in areas where mining is no longer undertaken. Rock face to be adequately fenced to ensure the safety of humans and animals. Mined area to blend in with the surrounding area. Stored topsoil should be replaced (if any) and the footprint graded to a smooth surface. The landscape should be reprofiled to mimic the natural topography where ever possible. The area will be revegetated with sugarcane where this activity was previously undertaken.	0,5	1,1
Cumulative impact of noise and dust due to mining operations in proximity.	Increased noise and dust levels	R&PC	2	5	3,5	2	2,75	0,8	2,2	All noise and sounds generated must adhere to SANS 10103 specifications for maximum allowable noise levels for central business districts. No pure tone sirens or hooters may be utilised except where required in terms of SANS standards or in emergencies.	0,6	1,32
Rehabilitation	Topography and landform alteration	R&PC	2	5	3,5	2	2,75	0,8	2,2	Concurrent rehabilitation to be undertaken in areas where mining is no longer undertaken. No steep slopes to remain, slopes of 1:3 are recommended. Mined area to blend in with the surrounding area. Stored topsoil should be replaced and the footprint graded to a smooth surface. The landscape should be backfilled and reprofiled to mimic the natural topography. The footprint should be re-vegetated with a grass seed mixture as soon as possible.	0,8	1,76

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

10.2.1 Methodology used in determining the significance of environmental impacts

10.2.1.1. Impact Ranking Criteria

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

$$\text{impact significance} = (\text{consequence} \times \text{probability})$$

Where:

$$\text{consequence} = (\text{severity} + \text{extent})/2$$

and

$$\text{severity} = [\text{intensity} + \text{duration}]/2$$

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

Where the consequence of an event is not known or cannot be determined, the “precautionary principle” has been applied and the worst-case scenario assumed. Where possible, mitigation measures to reduce the significance of negative impacts and enhance positive impacts will be recommended. The significance of the impact in light of the mitigation measures has also been rated based on a confidence rating of the mitigation measures.

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

10.2.1.2. Severity Criteria for Assessing the Impact Significance

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

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

EXTENT = SPATIAL SCOPE OF IMPACT/ FOOTPRINT AREA / NUMBER OF	RATING
Limited: impact affects the mine site	1
Small: impact extends to the whole farm portion	2
Medium: impact extends to neighbouring properties	3
Large: impact affects the surrounding community	4
Very Large: The impact affects an area larger the municipal area	5

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

10.2.1.3. Impact Significance

NEGATIVE IMPACTS

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

>4≤5	Very High	Impact is of the highest order possible. Mitigation is required to lower impacts to acceptable levels. Potential Fatal Flaw.
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POSITIVE IMPACTS

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

DEVELOPMENT PHASE

C	Impact is applicable to the CONSTRUCTION PHASE ONLY
O	Impact is applicable to the OPERATIONAL PHASE ONLY
C&O	Impact is applicable to the CONSTRUCTION AND OPERATIONAL PHASE
R&PC	Impact is applicable to the REHABILITATION AND POST CLOSURE PHASE

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

The use of the existing disturbed site, although there will be mining related impacts, can be viewed as an advantage to the surrounding natural environment as no new area for mining of the same resources will be sought under this mining permit application. The proposed mining permit will provide employment opportunities to personnel from the surrounding local communities. Mining operations will have a positive impact on the local economy of the area through the purchasing of local goods and services.

Negative impacts associated with mining operations include increased levels of dust, noise and vibrations due to drilling, blasting and vehicle movement. There is the potential for impacts on surface water resources and erosion due to the topography and nature of the mining operations.

Mitigation for all identified and potential impacts has been included in the EMPr.

10.4 The possible mitigation measures that could be applied and the level of risk.

Please refer to the **Impact Assessment spreadsheet in Section 10.1** above

Mitigation measures for each of the identified impacts are included in **Table 10.1** and **10.2**. Mitigation of key impacts and risks are also discussed in detail in Part B: Environmental Management Programme.

The significance of the impact with mitigation has been weighted by multiplying the significance rating without significance by the following, depending on the confidence placed in the successful implementation of the mitigation measures or the effectiveness of those measures in reducing the impact.

1	Very low	Measures are very difficult or expensive to implement or are not expected to be effective in reducing the impact (No Confidence)
0.8	Low	Measures are difficult or expensive to implement or are expected to have limited effectiveness in reducing the impact (20% Confidence)
0.5	Moderate	Measures can be implemented with some effort and cost and/or the measures can be effective in mitigating the impact if implemented (50% Confidence)
0.2	High	There is high confidence that mitigation measures can be implemented and can be effective in mitigating the impact (80% Confidence)

10.5 Motivation where no alternative sites were considered.

The project involves a permit application on a 1.4 ha area of land. The area has been previously mined by the applicant. The supporting infrastructure and access roads are already in existence.

No site alternatives were considered for the project, as the location of the mining area is where the minerals are located and the area has already been disturbed due to the previous mining operations that were

undertaken at the site.

10.6 Statement motivating the alternative development location within the overall site. (Provide a statement motivating the final site layout that is proposed)

No alternatives were considered for the site layout, this due to the fact that the mining area was previously mined by the applicant and the footprint has been developed in terms of the reserve location. The mining permit area is therefore already disturbed, access roads exist and the processing plant, where the mineral ore is transported to for processing, is located approximately 980 m from the site.

10.7 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.

The Basic Assessment study for the proposed project had the following key objectives:

- Undertake an assessment of the social and biophysical environments of the affected area by the proposed project;
- Undertake a detailed assessment of the site and alternatives in terms of environmental criteria including the rating of significant impacts as well as cumulative impacts;
- Identify and recommend appropriate mitigation measures (included in EMPr) for potentially significant environmental impacts; and
- Undertake a fully inclusive public participation process to ensure that Interested and Affected Party (I&AP) issues and concerns were recorded and commented on and addressed in the EIA process.

The methodology used in determining the significance of environmental impacts is detailed in **Section 10.2.1.**

10.8 Assessment of each identified potentially significant impact and risk

ASPECT	POTENTIAL IMPACT	PHASE	INTENSITY	DURATION	CONSEQUENCE	EXTENT	SEVERITY	PROBABILITY	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION	MITIGATION CONFIDENCE	SIGNIFICANCE WITH MITIGATION
Groundwater	Groundwater pollution due to hazardous spills from vehicles and equipment	O	1	2	1,5	1	1,25	0,4	0,5	Any hazardous substances are to be stored in bunded areas and handled on impervious surfaces. Equipment which has the potential to leak oil or other chemicals are to be stored on impervious surfaces within bunded areas. Drip trays are to be provided where mobile equipment or vehicles have the potential to drip oil. Implement a spill prevention and emergency response procedure.	0,4	0,2
Surface Water Resources	Impact on down-gradient freshwater resources	O	3	3	3	2	2,5	0,8	2	Ensure that all spills are immediately cleaned up. Ensure erosion protection measures are installed where there is a potential for erosion and siltation. Mining operations only to take place within approved permit boundary.	0,6	1,2
Biodiversity - Flora	Loss of Floral species	O	2	4	3	2	2,5	0,6	1,5	Mitigation measures as detailed EMP must be implemented. A rehabilitation plan should be developed for mine closure. Mining operations only to take place within approved permit boundary.	0,5	0,75
Biodiversity - Fauna	Impact on Faunal species and Habitat	O	2	2	2	2	2	0,5	1	The footprint and daily operation of all mining surface infrastructure areas must be monitored to ensure that edge effects from the operational facilities do not affect the surrounding forest habitat. No indigenous tree may be removed or destroyed without the required permits from the DAFF. No trapping, hunting or injuring of any faunal species within the surrounding area is allowed.	0,5	0,5
Biodiversity - Flora	Proliferation of alien invasive plant species	O	2	2	2	2	2	0,8	1,6	An Alien Invasive Plant (AIP) Management Plan should be compiled for implementation. Care must be taken to avoid the introduction of alien plant species to the site and surrounding areas. Invader species and weeds must be removed and disposed of in accordance with existing legislation on a regular basis.	0,5	0,80
Air Quality	Increase in dust-fallout due to mining operations and vehicles transporting mineral ore on access roads	O	3	4	3,5	2	2,75	1	2,75	Dust suppression on the unpaved access routes and any bare soils within the mining area. Dust suppression to be undertaken in areas where dust emissions are problematic. Control the number of trucks on the road, weight of trucks and the travelling speed. Implement strict vehicle speed limits (e.g. 20-30 km/h).	0,5	1,375
Noise	Increase in noise levels due to mining operations and blasting	O	3	4	3,5	2	2,75	1	2,75	Noise levels must be kept within acceptable limits. All noise and sounds generated must adhere to SANS 10103 specifications for maximum allowable noise levels for central business districts. No pure tone sirens or hooters may be utilised except where required in terms of SANS standards or in emergencies. Neighbours are to be given at least 24 hours warning prior to any blasting activities being undertaken. Monitoring.	0,75	2,06

ASPECT	POTENTIAL IMPACT	PHASE	INTENSITY	DURATION	CONSEQUENCE	EXTENT	SEVERITY	PROBABILITY	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION	MITIGATION CONFIDENCE	SIGNIFICANCE WITH MITIGATION
Topography	Change in landform due to mining operations	0	2	4	3	1	2	1	2	Financial provision to provide for decommissioning and closure activities. Rehabilitation to be as close to pre-mining landform as practicably possible.	0,6	1,2
Soils and Land capability	Movement of construction vehicles and earth moving activities leading to erosion, compaction of soils and down slope siltation of terrestrial habitat	0	2	4	3	1	2	0,8	1,6	The footprint of the mining operations should be clearly demarcated. Erosion control measures (eg: berms) to be put in place where there is a high risk of erosion. Monitor erosion control measures particularly after rainfall events.	0,8	1,28
Soils and Land capability	Soil contamination due to mining activities	0	2	3	2,5	1	1,75	0,8	1,4	A spill prevention and emergency spill response plan should be compiled to guide the personnel in the event of a spill or leak. Spill kits to be available on site. An emergency response contingency plan should be put in place to address clean-up measures. Storm water designs should limit any uncontrolled runoff through the disturbed areas on site Only clean stormwater is allowed to enter the natural environment.	0,4	0,56
Soils and Land capability	Loss of agricultural land capability	0	3	4	3,5	1	2,25	1	2,25	During the decommissioning phase the footprint should be thoroughly cleaned and ripped to alleviate compaction Stored topsoil should be replaced (if any) and the footprint graded to a smooth surface. The landscape should be reprofiled to mimic the natural topography. Slopes of the backfilled surface should change gradually since abrupt changes in slope gradient increase the susceptibility for erosion initiation. Topsoil to be evenly spread over rehabilitated areas. The soil fertility status should be determined by soil chemical analysis after levelling (before seeding/re-vegetation). The footprint should be re-vegetated with a grass seed mixture as soon as possible.	0,6	1,35
Blasting	Impacts due to ground vibration and air blast	0	4	2	3	2	2,5	1	2,5	Only apply electronic initiation systems to facilitate single hole firing. Do design for smaller diameter blast holes that will use fewer explosives per blasthole. Blasting should not be undertaken during inclement weather conditions. The surrounding community should be notified prior to blasting being undertaken.	0,8	2,00
Cultural Heritage	Unearthing sites of heritage and/or palaeontological importance	0	3	2	2,5	1	1,75	0,4	0,7	If an artefact on-site is uncovered, work in the immediate vicinity must be stopped immediately and a registered archaeologist/heritage practitioner must be contacted.	0,5	0,35
Waste	Generation of waste during operations	0	2	4	3	1	2	0,6	1,2	General waste produced on-site is to be collected for disposal at a registered landfill site. Hazardous waste must not be mixed or combined with general waste. Waste must not be burned or buried on site. Waste bins must be regularly cleaned out. Hazardous waste bins must be clearly marked, stored in a contained area or have a drip tray and covered. Hazardous waste is to be disposed of at a hazardous waste site.		0
Traffic	Impact on access routes due to haul trucks	0	3	4	3,5	2	2,75	1	2,75	Applicant to ensure that any damage to roads due to mining operations should be rectified as soon as they develop. Access roads to be maintained in good condition for use by trucks and non-mining vehicles.	0,7	1,9

ASPECT	POTENTIAL IMPACT	PHASE	INTENSITY	DURATION	CONSEQUENCE	EXTENT	SEVERITY	PROBABILITY	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION	MITIGATION CONFIDENCE	SIGNIFICANCE WITH MITIGATION
Job creation	Employment opportunities for people from the surrounding communities	O	4	4	4	3	3,5	0,8	2,8	Not Applicable	1	2,8
Rehabilitation	Poor management and monitoring of rehabilitation measures.	R&PC	2	2	2	2	2	0,6	1,2	ECO to be appointed to oversee rehabilitation activities. ECO to audit rehabilitation activities on a bi-monthly (every two weeks) basis.	0,5	0,6
Rehabilitation	Inadequate ripping of compacted soil areas which can impact on vegetation regrowth. .	R&PC	3	3	3	2	2,5	0,6	1,5	Footprint should be thoroughly cleaned and ripped as soon as possible after mining has been completed, in order to alleviate compaction.	0,8	1,2
Rehabilitation	Soil erosion and contamination	R&PC	2	2	2	3	2,5	0,6	1,5	Control through stormwater management measures – ensure that the site is free draining. Manage and monitor through rehabilitation plan	0,5	0,75
Rehabilitation	Establishment and spread of alien invasive plant species	R&PC	2	3	2,5	2	2,25	0,8	1,8	Implement Alien Invasive Plant (AIP) Management Plan during rehabilitation activities also. Monitor the site every 2 weeks.	0,6	1,08
Rehabilitation	Topography and landform alteration	R&PC	2	5	3,5	2	2,75	0,8	2,2	Concurrent rehabilitation to be undertaken in areas where mining is no longer undertaken. Rock face to be adequately fenced to ensure the safety of humans and animals. Mined area to blend in with the surrounding area. Stored topsoil should be replaced (if any) and the footprint graded to a smooth surface. The landscape should be reprofiled to mimic the natural topography where ever possible. The area will be revegetated with sugarcane where this activity was previously undertaken.	0,5	1,1
Cumulative impact of noise and dust due to mining operations in proximity.	Increased noise and dust levels	R&PC	2	5	3,5	2	2,75	0,8	2,2	All noise and sounds generated must adhere to SANS 10103 specifications for maximum allowable noise levels for central business districts. No pure tone sirens or hooters may be utilised except where required in terms of SANS standards or in emergencies.	0,6	1,32
Rehabilitation	Topography and landform alteration	R&PC	2	5	3,5	2	2,75	0,8	2,2	Concurrent rehabilitation to be undertaken in areas where mining is no longer undertaken. No steep slopes to remain, slopes of 1:3 are recommended. Mined area to blend in with the surrounding area. Stored topsoil should be replaced and the footprint graded to a smooth surface. The landscape should be backfilled and reprofiled to mimic the natural topography. The footprint should be re-vegetated with a grass seed mixture as soon as possible.	0,8	1,76

10.9 Summary of specialist reports.

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

List of Studies Undertaken	Recommendations of Specialist Reports	Specialist Recommendations That Have Been Included in The EIA Report	Reference to Applicable Section of Report Where Specialist
	No specialist assessments were undertaken due to the existing disturbed nature of the mining site.		

11. ENVIRONMENTAL IMPACT STATEMENT

11.1 Summary of the key findings of the environmental impact assessment

The environmental impacts associated with the proposed project are largely low to moderate before mitigation with no high impacts anticipated. The site has been previously mined and therefore no construction activities are required.

The most significant impacts identified relate to dust, noise and blasting during mining operations as well as the impact on access roads due to the movement of haul trucks. Noise generation as a result of machinery and vehicles operating on site, as well as blasting is likely to impact on the surrounding receptors in close proximity to the site. Vehicles transporting mineral ore to the plant, blasting and mining operations will generate dust which is likely to impact on directly surrounding receptors. It is considered highly likely that the haul trucks travelling on the access roads will impact on the surface and stability of these roads due to the weight of the trucks. There is a drainage line located within the mining permit area and there is the potential for impacts such as erosion, sedimentation and contamination if strict mitigation measures are not implemented and adhered to.

Mining activities result in exposed soils, which could result in soil erosion, if proper management measures are not implemented on site. Erosion can lead to impacts on natural habitats and sedimentation of downstream watercourses if not carefully managed. This impact will have a low impact and mitigation measures detailed in the EMPr must be adhered to.

There is a small indigenous forested area located directly to the west of the mining area. A small strip of this forest remains within the permit footprint and no indigenous and/or protected tree within this area may be disturbed or destroyed without the relevant permits. The mining footprint must not encroach into this forested area which lies outside of the permit footprint and all mitigation measures contained within the EMPr must be strictly implemented.

During the public participation process, it was indicated that there has been disturbance to graves during the previous mining operations. Graves are of great importance and cultural significance to families and no disturbance or destruction of graves is allowed unless the correct protocols have been followed and permits have been obtained from the South African Heritage Resources Agency (SAHRA).

The potential impacts detailed above can be mitigated to within acceptable limits with the implementation of measures detailed in the EMPr.

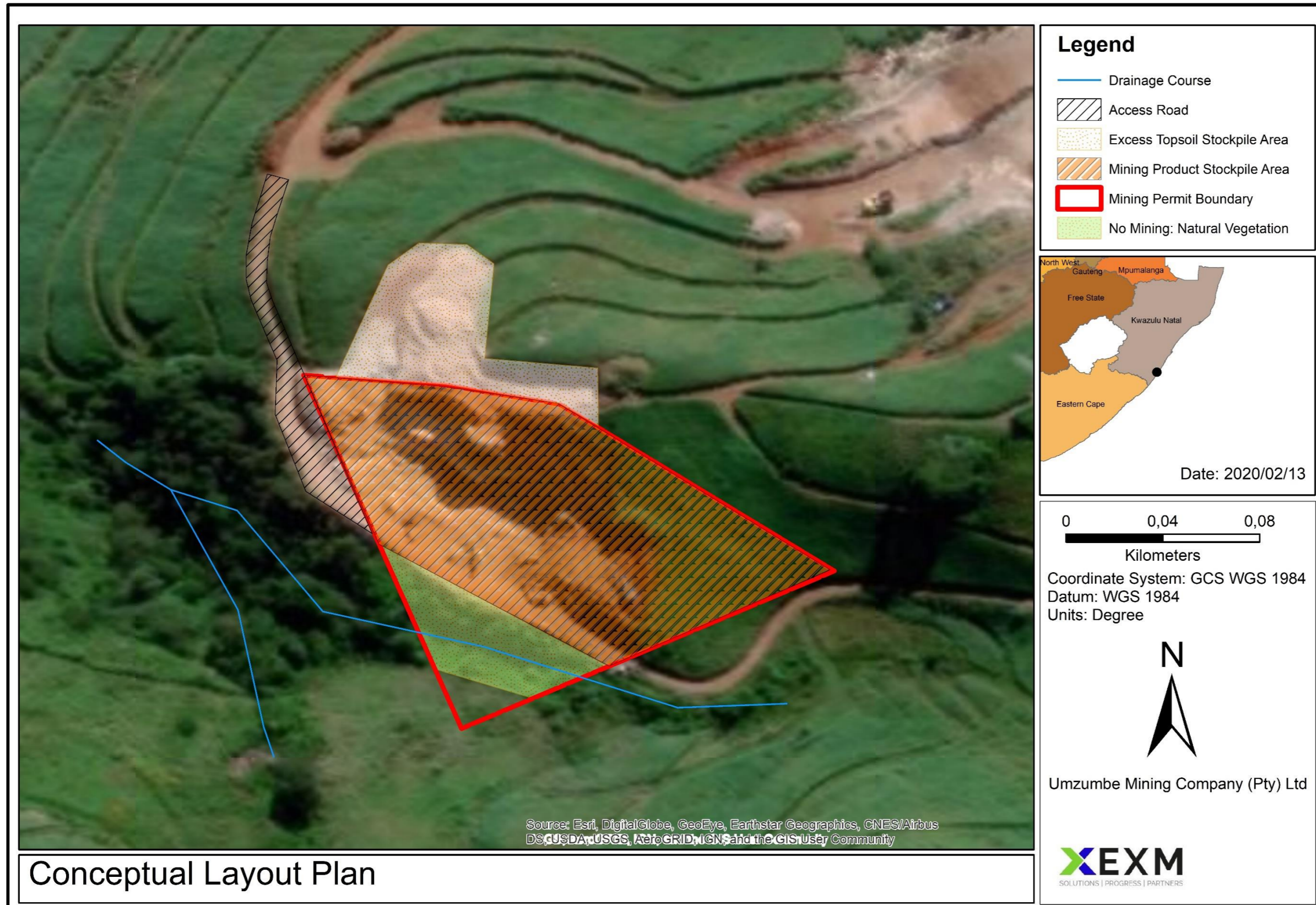


FIGURE 11-1: THE FINAL CONCEPTUAL SITE LAYOUT PLAN BASED ON PREVIOUS MINING ACTIVITIES UNDERTAKEN

11.3 Summary of the positive and negative impacts and risks of the proposed activity and identified alternatives:

The use of the existing disturbed site, although there will be mining related impacts, can be viewed as an advantage to the surrounding natural environment as no new area for mining of the same resources will be sought. No additional site alternatives were assessed.

The proposed mining permit will provide employment opportunities to personnel from the surrounding local communities. Mining operations will have a positive impact on the local economy of the area through the purchasing of local goods and services.

Negative impacts associated with the mining operations include increased levels of dust, noise and vibrations due to drilling, blasting and vehicle movement. There is the potential for impacts on surface water resources and erosion due to the topography of the site and nature of the mining operations. It is likely that the haul trucks will impact on the stability and surface of the access roads.

Mitigation for all identified and potential impacts has been included in the EMPr.

11.4 Proposed impact management objectives and the impact management outcomes for inclusion in the EMPr;

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

The purpose of the EMPr is to provide management measures which will enable the applicant to undertake activities through due care and diligence, as well as avoid / limit the potential adverse impacts of the proposed project. The EMPr has been compiled to help control impacts that may occur to meet acceptable standards, both as a legal and social responsibility to the environment within which the activity takes place.

The impact management objectives and outcomes are derived from the mitigation hierarchy which aims to first avoid disturbance and impacts on ecosystems and loss of biodiversity, and where this cannot be avoided, to minimise, rehabilitate, and then finally offset any remaining significant residual impacts.

The following environmental management objectives are recommended for the proposed mining Operations:

- Alien invasive species monitoring should take place throughout operations, as well as post closure of the mine;
- Development planning must restrict the area of impact to a minimum and operations to be undertaken within designated areas only;
- Minimise noise and dust impacts on receptors;
- Avoid impacts on artefacts of heritage and/or cultural significance;

- Promote health and safety of workers; and
- Manage soils to prevent erosion.

11.5 Aspects for inclusion as conditions of Authorisation.

Any aspects which must be made conditions of the Environmental Authorisation

Please see **Section 11.7.2.**

11.6 Description of any assumptions, uncertainties and gaps in knowledge.

Uncertainties form part of any proposed development with regard to the significance that the development will have on the surrounding biophysical and social environment. Certain impacts may be more or less significant at different times of the year based on weather patterns, seasonality, and human movement.

The following assumptions and uncertainties exist:

- The mining permit application is for the same area and size (1.4 ha) as has been previously approved and has been mined since 2014, and it has therefore been assumed that due to the level of disturbance at the site, no specialist studies were required;
- Desktop mapping has indicated the presence of a drainage line which has been impacted by the previous mining activities undertaken. A meeting with the DWS is recommended to establish the requirements for any water use authorisation; and
- Information obtained from the applicant was correct and valid at the time.

11.7 Reasoned opinion as to whether the proposed activity should or should not be authorised

11.7.1 Reasons why the activity should be authorised or not

The mining permit area has been previously mined since 2014. There are still sufficient mineral reserves to continue mining the same permit area for another 2 years. The area is therefore already disturbed and although there are typical mining related impacts such as dust, noise and blasting, these can be mitigated to within acceptable levels with the management measures included in the EMPr. The mining permit area is only 1.4 ha in extent and the size of operations and associated impacts is limited.

The mining operations provide some employment opportunities to the surrounding impoverished communities, which will have an impact on economic conditions within these families.

It is therefore the opinion of the EAP that the Environmental Authorisation and mining permit be granted provided all mitigation and managements measures contained within the BAR and EMPr be strictly implemented. This includes the recommendation of the final closure plan.

11.7.2 **Conditions that must be included in the authorisation**

The following conditions should be included in the Authorisation:

- The management measures as contained within the EMPr should be binding on the applicant from the date of environmental authorisation.
- The applicant must adhere to the conditions of the EA and EMPr.
- Mining operations are to be undertaken within the approved permit boundaries only.
- A consultation forum must be established for communicating with the surrounding community.
- The proponent is not negated from complying with any other statutory requirements applicable to the undertaking of the activity. All necessary permits, licences and approvals must be obtained prior to the commencement of operations.

12. **PERIOD FOR WHICH THE ENVIRONMENTAL AUTHORISATION IS REQUIRED.**

The Environmental Authorisation is requested for a period of 2 years.

13. **UNDERTAKING**

The undertaking signed in Section B - the Environmental Management Programme (EMPr) is applicable to both the Basic Assessment Report and the EMPr.

14. **FINANCIAL PROVISION**

The total quantum amounts to R 297 280,44 incl VAT at closure and R261 768,26 incl VAT at premature closure. Premature closure is based on the extent of current disturbance.

14.1 **Explain How the Aforesaid Amount Was Derived**

The basis of the methodology complies with the requirements detailed in the MPRDA Regulations, specifically 53 and 54, as well regulation 6 of the financial provision for prospecting, exploration, mining or production operations regulations (GNR 1147, November 2015) prescribed under NEMA. These regulations prescribe the required minimum content as follows: *“a detailed itemisation of all activities and costs, calculated based on the actual costs of implementation of the measures required.”* The regulation further outlines that closure cost estimation must include the following:

1. An explanation of the closure cost methodology;
2. Auditable calculations of costs per activity or infrastructure;
3. Cost assumptions.

Cognisance has also been given to the Guidelines for Evaluation of the Quantum for Closure Related Financial Provision for a Mine issued by DMR (January 2005). The aim is however to align with the financial provision regulation in terms of NEMA to ensure future compliance and also to incorporate the latest requirements of legislation.

Development of a Quantum

The quantum is a function of the quantity of a specific structure and cost associated with the demolition and rehabilitation thereof. The quantum has been developed using Microsoft Excel as a database and equation tool. The quantum does not provide an estimation of the current liability due to the project not being implemented at the time of this report, it does however provide for a final closure cost. Costing calculations referred to the specific rehabilitation actions and type of disturbance that requires rehabilitation.

The bill of quantities (BoQ) has been developed using a geographic information system to quantify area related to specific infrastructure. In addition, the volume estimations are either based on details acquired from the applicant as all final closure liabilities relate to earthworks. The method employed is deemed acceptable for the level of accuracy required for a mine with a life of 2 – 3 years.

A rate sheet has been developed and aligned to the specific infrastructure in the BoQ. The rates sheet has been developed using the following datasets:

1. DMR guidelines (2005)
2. Tender and pay rates from contractors that are available
3. Rates from operations recently evaluated by EXM
4. Associations and industry oversight entities average rate sheets

EXM revises its rates sheets annually using the above data sets. In addition, it considers actual rates where concurrent rehabilitation has taken place at a specific operation. Where rates are carried over from a previous year, 12 months, and where no current rate can be acquired the previous rate is inflated by the annual average of the preceding years consumer price index inflation (CPI) rate. The inflation rate is calculated using data from Statistics South Africa. CPI does however not consider competitiveness of tenders or industry role players. It is therefore imperative to also consider the building confidence index and civic confidence index to either adjust CPI up, down or keep it level.

14.2 Confirm that this Amount can be provided for from Operating Expenditure

A guarantee will be provided by the Applicant to accommodate the financial provision at closure and premature closure.

15. SPECIFIC INFORMATION REQUIRED BY THE COMPETENT AUTHORITY

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

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

The proposed permit area has been previously used for mining operations since 2014. The area is therefore disturbed, and infrastructure required for operations such as access roads already exist at the site.

There are no sensitive receptors located within the area directly surrounding the mine, with the closest community house located approximately 200 m west of the site. It is likely that some impacts relating to mining will be felt by the closest receptors although mitigation measures have been included in the EMPr to limit these as far as practicably possible.

The landowner has submitted an objection letter for the proposed permit application, stating various objections to the proposed operations. Consent was however previously obtained from the landowner in question for the mining operations in 2014.

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

The disturbed nature of the site indicates that there will be no impact on any heritage resources and artefacts. Management measures are however included in the EMPr to manage any chance findings, where work will be stopped and a qualified person appointed to investigate.

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

Please refer to Section 7.2 for information relating to alternatives and reasoned opinions where alternatives were not investigated.

APPENDIX A: PART B ENVIRONMENTAL MANAGEMENT PROGRAMME

APPENDIX B: PUBLIC PARTICIPATION

APPENDIX C: CLOSURE AND REHABILITATION PLAN