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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).



NOVEMBER 2019 DRAFT BASIC ASSESSMENT REPORT & ENVIRONMENTAL MANAGEMENT PROGRAM LIMESTONE QUARRY APPLICATION

NAME OF APPLICANT: AFRICAN LIME (PTY) LTD CONTACT PERSON: MUHAMMED MOOSA

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Ref No SAMRAD: KZN 30/5/1/3/2/10628MP

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.

Objective of the basic assessment process

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

- 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,
- 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:
- the nature, significance, consequence, extent, duration, and probability of the impacts occurring to; and (i)
- (ii) the degree to which these impacts—
- (aa) can be reversed:
- may cause irreplaceable loss of resources: and (bb)
- (cc) can be managed, avoided or mitigated;
- through a ranking of the site sensitivities and possible impacts the activity and technology alternatives (e) 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
- identify residual risks that need to be managed and monitored. (iii)

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1.1. Section 1 (a) Contact Details of

1.1.1. Section 1 (a) (i) the EAP Who Prepared the Report

Table 1: Section 1 (a) (i) EAP Details		
Company EnviroPro		
Name of The Practitioner Josette Oberholzer		
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1.1.2. Section 1 (a) (ii) The Qualifications of The EAP (With Evidence)

Table 2: Section 1 (a) (ii) EAP Qualifications		
Josette Oberholzer	BSc (Hons) (Pmb) MSc (Dbn) & EAPSA certified	
Stephanie Denison	BSc (Hons) MPhil Marine & Environmental Law	
Rowan Buhrmann	BSc (Hons) MSc (Dbn)	

Please see Appendix A for Proof of qualifications.

1.1.3. Section 1 (a) (iii) Summary Of The EAP's Past Experience In Carrying Out The Environmental Impact Assessment Procedure

Please see Appendix A for Curriculum Vitae with summary of experience.

1.2. Section 1 (b) (i) - (iii) Location Of The Overall Activity

Table 3: Section 1 (b) (i) - (iii) Details on Location of Activity		
Property Description / Farm Name	PORTION 9 OF FARM WEST SLOPES 5828	
21 Digit Surveyor General's number	N0ET0000000582800009	
Application Area:	4.9 ha.	
Distance & Direction from Nearest Town	9KM NORTH-WEST OF UMTENTWENI (AS THE CROW FLIES)	
District Municipality	UGU	
Local Municipality	RAY NKONYENI	
Area / Town / Village	UMTENTWENI	
Physical address	NOT AVAILABLE	
Co-ordinates for site		
Corner 1	-30.666140°; 30.382484°	
Corner 2	-30.668323°; 30.383302°	
Corner 3	-30.667837°; 30.384004°	
Corner 4	-30.667762°; 30.385366°	
Corner 5	-30.665348°; 30.384071°	

1.3. Section 1 (c) Locality Map

Show Nearest Town, Scale Not Smaller Than 1:25 000.

Figure 1 illustrates the locality and property boundary of the site.

1.4. Section 1 (d) Description Of The Scope Of The Proposed Overall Activity.

Provide a plan drawn to a scale acceptable to the competent authority but not less than 1: 10 000 that shows the location, and area (hectares) of all the aforesaid main and listed activities, and infrastructure to be placed on site.

Please see figures 2 and 3 on page 8 and 9.

Figure 1: Section 1 (c) 1:50 000 Map showing proposed African Lime Quarry in the Ray Nkonyeni Local Municipality, uGu District Municipality, KwaZulu-Natal; Farm Name: Portion 9 of Farm West Slopes 5828 (farm boundaries in white). Applicant: African Lime (Pty) Ltd. Proposed Mining Area shown in red (4.9ha) source: QGIS v3.8.3, 2019.

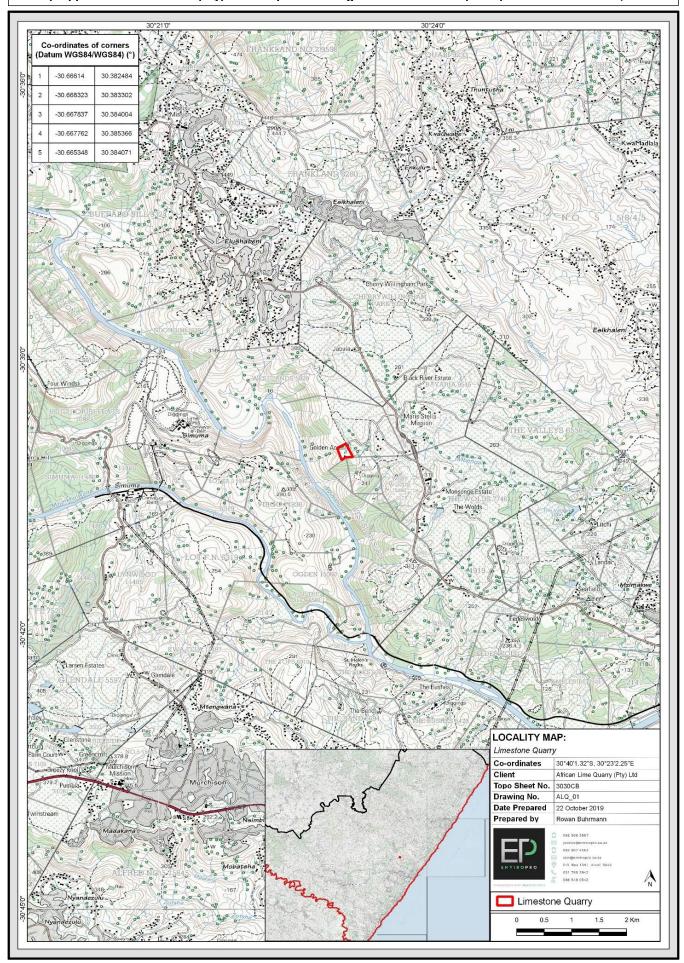


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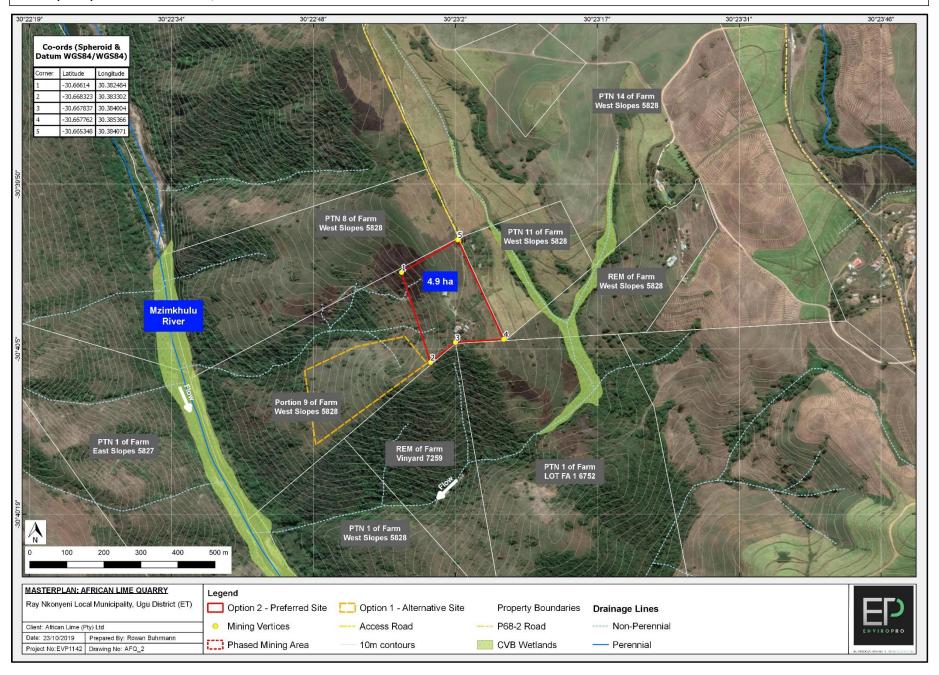


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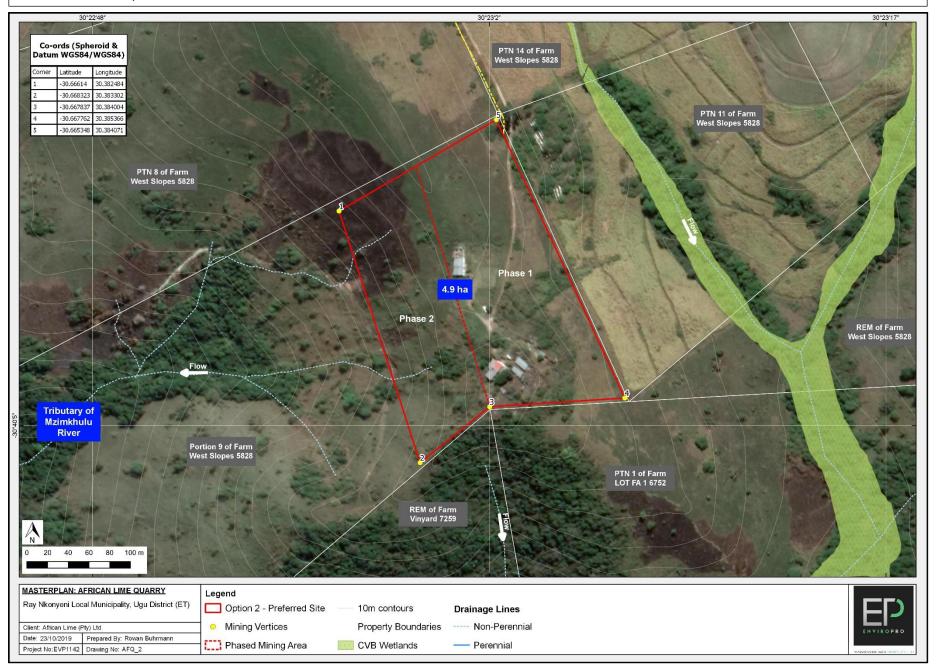
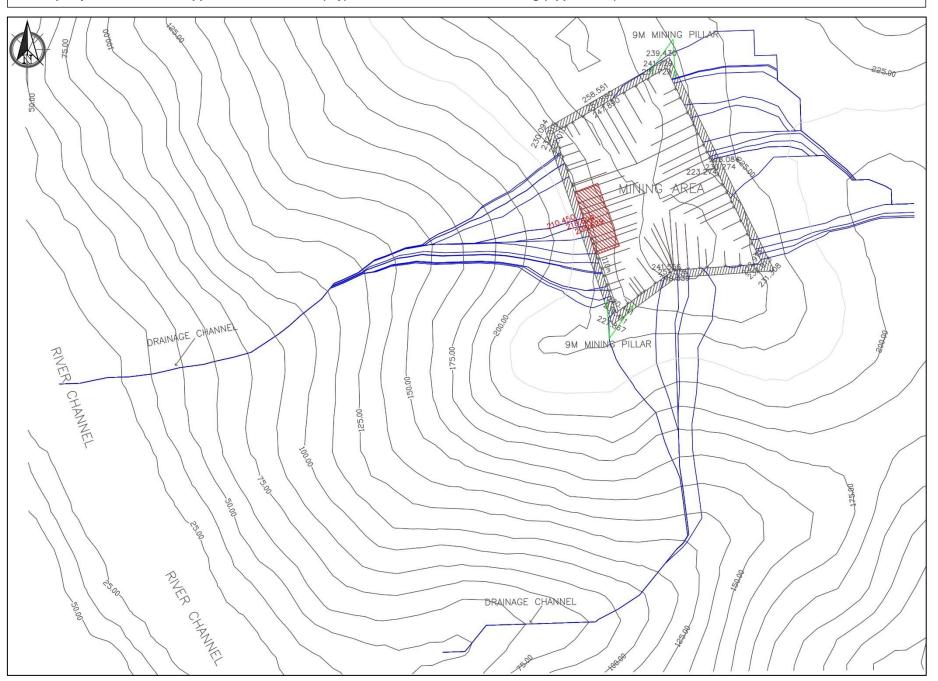


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Section 2: Description of Activity & Legislative Context

2.1. Section 1 (d) (i) Listed and Specified Activities to Be Triggered and Being Applied For

Table 4: Section 1 (d) (i) Listed & Specified Activities				
(E.g. For prospecting - drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route etcetc 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, etcetc.)	AERIAL EXTENT Of The Activity (Ha or m²)	LISTED ACTIVITY	GNR APPLICABLE LISTING NOTICE (GNR 327, GNR 325 or GNR 324)	ACTIVITY NUMBER
The applicant proposes to mine limestone from a hillside. A mining permit is required for this activity.	4.9 ha	"Any activity including the operation of that activity which requires a mining permit in terms of section 27 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), including (a) associated infrastructure, structures and earthworks directly related to the extraction of a mineral resource, and (b) the primary processing of a mineral resource including winning, extraction, classifying, concentrating, crushing, screening or washing."	GNR 327 Listing Notice 1	21.
The activity will result in the clearance of 4.9 hectares of indigenous vegetation.	4.9 ha	"The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation".	GNR 327 Listing Notice 1	27.
This site falls within the Interior South Coast Grasslands ecosystem type (KZN 7) which is critically endangered and listed in GN 1002 NEMBA National list of Ecosystems that are threatened and in need of protection.	4.9 ha	"Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the \National Spatial Biodiversity Assessment 2004".	NEMA, GNR 324 Listing Notice 3	12(b)(iv)

2.2. Section 1 (d) (ii) Description of the Activities to Be Undertaken Including Associated Structures and Infrastructure

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

African Lime (Pty) Ltd have applied for a Mining Permit in terms of section 27 of the Mineral and Petroleum Resources Development Act (No. 28 of 2002, MPRDA), to mine limestone on a privately-owned portion of land in Ward 14 of the Ray Nkonyeni Local Municipality, uGu District Municipality. African Lime (Pty) Ltd own Portion 9 of Farm West Slopes 5828, where the mining will take place (see WinDeed Property Report attached under Appendix B).

A 1:50 000 topographical map is provided in Figure 1 to show the location of the property and surrounding land uses. The entire property is 26.8 hectares in extent. The mining area, including all stockpile areas, offices, parking etc. will ultimately measure a total area of 4.9 hectares (see Figures 2 & 3 above). The different phases of the project are described below. The material will be used in the manufacturing of cement.

2.2.1.Construction

There will be very little activity associated with the construction phase apart from establishing a site office and setting up the screener and crusher in demarcated areas. Initially, the existing infrastructure located on the site will be utilised for the site office. The existing toilets will be utilised on site.

The preferred access road to the quarry will be via an existing dirt road, which runs through the adjacent farms (Portion 8 of Farm West Slopes 5828, Portion 14 of Farm West Slopes 5828, Portion 2 of Farm Westlands 5829, and Portion 1 of Farm Cherrywillingham Park 9323), and onto the P68-2 road. The dirt road is approximately 1.7km in length, and located 9km southeast of the N2 highway (shown in yellow in Figure 2 and 3). Access to the mine area will be restricted and controlled during operation.

2.2.2.Operation

The applicant will commence with clearing and grubbing the site, on approval of this application. Mining will be carried out in two phases (i.e. Phase 1 and Phase 2; See Figure 3) to limit the impact on the watercourses and fauna to the west. Phase 1 will involve the removal of material on the eastern face of the mine, up to the ridgeline. Phase 2 will only commence after Phase 1 is complete and will be dependent on the quantity and quality of material, and whether expansion into Phase 2 is justified. A sump has been created (as per Figure 4). Quarrying in this phased approach further reduces the risk of impacting the watercourse, sensitive vegetation and fauna located to the west (see Section 5 below). Only small portions of the 4.9 hectare site will be cleared at any one time. In the long term, the activity will result in the clearance of more than 1 hectare of indigenous vegetation from the property.

Bulldozers will clear and grub the portion of the site to be mined. Excavators will be used to create the topsoil stockpiles and remove overburden, which will be used to create berms around the mining area. This will divert clean water from the surrounding environment around the mining area during a rainfall event. Controlled blasting will be carried out to loosen material and create benches (Blast Report attached under Appendix C). Excavators will shape the benches to the desired angle. Material will be loaded onto trucks and transported to the crushing and screening plant. Once crushed into the desired size, the lime will be stockpiled in the designated stockpile area and removed offsite once sold.

The mining operation can be summarised as follows:

- Prior to operation, a permit is required from the Ezemvelo KZN Wildlife (EKZNW) for the destruction or removal of provincially protected species. A suitably qualified botanist is to remove these prior to any section of the permitted mine area being cleared (see section 3.4 for more details).
- Only portions of the 4.9 hectare mine area will be cleared and excavated over time to prevent unnecessary disturbance to the slope.
- Bulldozers will be brought to site to do the initial clearing and grubbing. The average depth of the topsoil to be removed will be confirmed (approximately 200-300mm) as well as the area which will be cleared (i.e. phased clearing as the mine operation expands, starting on the eastern bank – Phase 1).
- Topsoil will be cleared from north to south within the Phase 1 area. Vegetation will be removed and retained in the topsoil stockpiles. Topsoil stockpiles to be located in a corner of the mine area and used for rehabilitation purposes.
- The remaining overburden will be cleared and used to create a berm around the area which will be
- Dump trucks and excavators may be required to assist in the clearance of the remainder of site.
- A 9m mining pillar will be retained (Figure 4).
- Controlled blasting will be used to cut benches into the mine area (ongoing).
- Excavators will be used to shape the benches to the required angle.
- Once the material has been blasted, an excavator will be used to load material onto a dump truck, which will transport material to the crushing plant.
- There will be an excavator associated with the crushing plant to load material from the dump trucks into the crushing plant.
- The raw limestone material will be fed into a primary jaw crusher, and then into a secondary impact crusher. The limestone material will then be transferred to a vibrating screen for separation.
- The excavator will be used to create the lime stockpiles after the material has been crushed and screened.
- It is anticipated that 200 000 tons of material will be mined each year, therefore approximately 550 tonnes / day of the lime will be produced (see meeting minutes - Sakela Consulting; Appendix B).
- As the lime material is sold, it will be loaded from the stockpiles into the trucks and removed offsite.
- Infrastructure for the mining operations will include a weigh bridge, offices and ablution facilities.

The existing ablution facilities on site will be used at the beginning of the operation.

2.2.3. Rehabilitation/ Decommissioning

The Mining Permit will be valid for a 2 year period. It can be renewed three times for a year at a time allowing a maximum of 5 years validity of the permit. On expiration of the Mining Permit, the site is to be decommissioned and rehabilitated according to the Rehabilitation Plan, summarised below and outlined in more detail in section 3.0 of the EMPr attached under Appendix J.

On decommissioning, the processing equipment and offices will need to be removed, the access road on the property ripped and rehabilitated. The quarry will need to be rehabilitated by shaping slopes and ensuring that there is no loose material or areas where slippage could occur. Topsoil will be re-laid over exposed areas and indigenous grassland species re-introduced.

Before the quarry is legally abandoned, the DMR requirements of long-term drainage, environmental and public access issues will be adequately considered and controlled. Adequate geotechnical data is normally available at the time of a quarry closure to address all long-term geotechnical concerns regarding the abandonment of the mine. By making geotechnical engineering input to the guarry planning and design process an integral part of the mining operation, improvements can be made to quarry safety, productivity, economic efficiency as well as closing concerns when abandoning the mine.

A number of environmental impacts may remain after a site has been mined as the area may be vulnerable to stormwater runoff and erosion. Stormwater flow must be managed by placing diversion berms and ditches at the top of the slope which will act to divert and slow water flow down the slope. The ditch and berms will be vegetated. Even with rehabilitation, an excavated area will remain on the hillside. The visual aspect of this will be mitigated as far as possible through shaping, re-vegetation and screening with vegetation. The aim of the rehabilitation will be to reduce visual and safety impacts and to control risk of erosion and slippage in the long-term.

The following key points must be followed to ensure appropriate closure.

- Rehabilitation will occur as soon as practically possible on completion of mining, following the cessation of the work in a specific section.
- A suitably qualified vegetation specialist is to provide input during the final rehabilitation to ensure the grassland is suitably rehabilitated in line with the condition of the adjacent grassland.
- No more than one month will pass between cessation of mining and rehabilitation.
- Any infrastructure erected for mining will be demolished and removed.
- All equipment, concrete footings, fencing, etc. will be removed from site.
- All waste will be removed from site and disposed of at an approved landfill.
- Soil contaminated with oil, grease, fuel may not be disposed of in the excavation but will be disposed at a permitted landfill.
- The floor of the quarry will be left level and ripped to allow re growth of vegetation. Topsoil removed at the beginning of the process can be used to cover this area.
- Before placing topsoil, all visible weeds will be removed.
- The topsoil will be spread evenly over the prepared surface to a depth of 75 to 150mm on slopes of 1:3 or steeper.
- Topsoil placement will occur in a phased manner, concurrent with the phased operation of the quarry. Topsoil will be placed in the same area from which it was stripped.
- Where amounts are inadequate to cover the entire area, slopes will receive priority treatment.
- Site access will be blocked to ensure that other operators or opportunists do not re-visit closed areas and continue to remove material.
- Re-vegetated areas will be protected until vegetation has become established. No vehicles or equipment will be allowed access to areas that have been vegetated.
- Any erosion channels that develop after re-vegetation will be backfilled and consolidated and the areas restored to a proper stable condition. The erosion will not be allowed to develop on a large scale before effecting repairs and all erosion damage should be repaired as soon as possible.
- Any large rocks uncovered by the mining activity must be placed in the pit and covered with overburden material and topsoil.
- The site will not be used further once it has been closed. The area will be shaped and re vegetated to ensure that it does not pose a safety or erosion and environmental hazard.

Please refer to section 3.0 of the attached EMPr, which outlines the Annual and Final Rehabilitation measures to be carried out for the African Lime Quarry.

2.3. Section 1 (e) (i) - (ii) Identification of all Legislation, Policies, Plans, Guidelines, Spatial Tools, Municipal Development Planning Frameworks and Instruments as Per Section 3(E)(I) And Compliance of Proposed Activity with Legislation and Policy

Table 5: Section 1 (e) (i) - (ii) 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 COMPLIY 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.		
The National Environmental Management Act (Act 107 of 1998) (NEMA) is South Africa's overarching environmental legislation. It contains a set of principles that govern environmental management and against which all Environmental Management Programmes (EMPs) and actions are measured. These principles include and relate to sustainable development, protection of the natural environment, waste minimisation, public consultation, the right to an environment that is not harmful to one's health or wellbeing, and a general duty of care. The Environmental Impact Assessment (EIA) Regulations, 2014 as amended: GN R.326, R.327, R.325 under R.324 Section 24 of the NEMA define the activities that require Environmental Authorisation and the processes to be followed to assess environmental impacts and obtain Environmental Authorisation.	The BAR & EMPr have been prepared to meet requirements of this act.	Environmental authorisation is required for the proposed mining activity. This application is therefore in line with the requirements of NEMA.		
National Water Act 1998	Section 5.1.1.3 Section 6 Table 8	There are numerous watercourses within 100m of the quarry. Two (2) watercourses to the west, two (2) watercourses to the south, and one (1) watercourse to the east. There is a Channelled Valley Bottom wetland 92m east of the proposed quarry. A section 21(c) & (i) Water Use Authorisation application is required. Water will also be abstracted from the existing borehole on the property, as well as from water that has collected in the mining sump. This water will also be utilised for dust suppression on site. Therefore, a section 21(a) and 21(g) application is also required. Proof of submission of the Water Use Authorisation Application will be attached to the Final BAR to be submitted to DMR.		
The National Waste Management Act 2008 reforms the law regulating waste management to prevent pollution and ecological degradation. Section 19 allows the Minister to publish a list of activities which require a Waste Management License. The most recent list is published in Government Gazette 37083 Notice No. 921 dated 29 November 2013.	Section 5.1.1.3 Section 6 Table 8	It is not expected that any activities carried out by the proposed development will trigger a Waste Management Activity.		

The Environmental Conservation Act 1996 makes provisions for the application of general environmental principles for the protection of ecological processes, promotion of sustainable development and the protection of the environment.	Section 5.1.1.3 Section 6 Table 8	This Act has mostly been repealed by NEMA but this application is prepared in line with the principles of the act.
The National Environmental Management Biodiversity Act 2004 provides the framework, norms, and standards for the conservation, sustainable use and equitable benefit-sharing of South Africa's biological resources. Section 52 allows for the publication of a list of threatened ecosystems in need of protection. The list was published in Government Gazette No. 34809 Notice No. 1002 dated 9 December 2011.	Section 2.1 Table 4	This site is partially located within the KwaZulu-Natal Coastal Belt Grassland (CB 3), a critically endangered ecosystem type and therefore does require environmental authorisation for this aspect.
The National Forest Act No 84 of 1998 (NFA) ensures sustainable management and development in forest as well as protecting certain forests and trees. Chapter 3 provides special measures to protect forests and trees, prohibiting the destruction of indigenous trees in any natural forest without a license (section 7 of the NFA). Offences and Penalties are discussed under Chapter 7 of the Act.	Section 5.1.1.4 Section 6 Table 8	No protected tree species under the NFA were noted within the mining area. Therefore a permit from the Department of Agriculture, Forestry and Fisheries (DAFF) is not required.
Kwa-Zulu Natal Nature Conservation Ordinance No. 15 of 1974 provides special protection to a range of indigenous plant species including trees and herbs within KZN.	Section 5.1.1.4 Section 6 Table 8	Six (6) species protected under this Ordinance occur in the preferred mining area. Namely: Aloe maculate, Boophone disticha, Dierama igneum, Kniphofia coddiana, Merwilla plumbea, and Watsonia cf. densiflora. A permit from Ezemvelo KZN Wildlife is required prior to the plants being disturbed, damaged, destroyed or relocated.
The National Heritage Resources Act 25 of 1999 provides for the protection of South African Heritage to nurture and conserve communities legacy.	Section 5.1.1.2 and 6.12 and 7.1.1	No archaeologically significant artefacts or graves will be disturbed during this project therefore no permits will be required from the provincial heritage authority, AMAFA.
The Mineral & Petroleum Resources Development Act 28 of 2002 provides for the sustainable development of the nation's mineral and petroleum resources which includes activities carried out for the winning of any mineral on, in or under the earth (i.e. the use of quarry).	This BAR & EMPr is prepared to meet requirements of this act.	A mining permit application is being submitted to DMR for this activity.
The Ugu District Municipality Integrated Development Plan (IDP) states that there is potential for lime and cement mining activities within the district.	This application is in line with the 2017/2018 – 2021/2022 Ugu District Municipality IDP.	The intention of the African Lime Quarry is to supply lime material for future developments. Lime from the quarry will be used in the production of cement, and therefore used in the construction of infrastructure within the district.

Section 3: Motivation, Need & Desirability & Alternatives

3.1. Section 1 (f) Need and Desirability Of The Proposed Activities.

Motivate the need and desirability of the proposed development including the need and desirability of the activity in the context of the preferred location

Following the World Summit on Sustainable Development in 2002, the Department of Minerals Resources initiated a programme to guide the mining and minerals sector to achieve "sustainable development". The Sustainable Development through Mining Programme (SDM) was therefore developed by the DMR. This Basic Assessment (BA) process aims to implement this Programme by ensuring that the planning and operational phases of the African Lime Quarry fall in line with sustainable development principles listed in Chapter 1 of NEMA. The BA process guides the applicant in contributing to sustainable development thereby achieving one of the goals of the SDM Programme.

Illegal small-scale mining and quarry operations were raised as a red flag in the Ugu District Municipality's Integrated Development Plan for 2017/2018 - 2021/2022. The IDP highlighted the negative consequences of the illegal mining and quarry operations, which included environmental degradation, where "greater monitoring and regulation of such activities is required to avoid such negative consequences". The new integrated BA process aims to reduce these concerns with the applicant being bound to certain monitoring requirements outlined in the attached EMPr.

Limestone products are widely used in industries in South Africa, such as cement manufacturing, metallurgy (steel refining), agriculture (fertilisers, fungicides, animal feed), aggregate and lime manufacture. With the high market demand for limestone-based products, as well as the ideal placement of the African Lime Quarry close to the N2 Highway, the establishment of a mining operation could be a very profitable, providing numerous jobs within the community.

With the backing and financial support from Trade and Investment KZN (TIKZN), the capital-intensive exercise of establishing a mining operation is reduced, further advancing investment and job creation within the Ugu District Municipality (see Feasibility Study in Appendix B).

The preferred site of the African Lime Quarry has been selected as the one that will have the least environmental impact. Due to the high ecological importance of the area, the proposed mining area has been chosen to limit all impacts to the fauna, flora and water resources within the area (see Section 3.2. below). A phased approach has been recommended with Phase 1 commencing in the least sensitive area. Phase 2 will only proceed if deemed viable, depending on the depth and quality of the limestone within Phase 1.

3.2. Section 1 (g) Motivation for the Overall Preferred Site, Activities and Technology Alternative. **Layout Alternatives**

The applicant, African Lime (Pty) Ltd, purchased the property Portion 9 of Farm West Slopes 5828 after determining that it had limestone mining potential. The property falls within the bounds of the Marble Delta, which currently has the purest source of calcium carbonate in South Africa. Currently, companies such as NPC InterCement, Idwala Carbonates and Rossmin are utilizing these large deposits of calcium carbonate as well as dolomite deposits.

Two sites were considered for mining of Limestone on Portion 9 of Farm West Slopes 5828. However, after receiving input from the Faunal and Vegetation specialists, the steep gradient towards the Mzimkhlulu River, and existing access to the north of the site, the EAP and the applicant agreed that there is only one feasible site location. This preferred layout was created prior to the submission of the proposed guarry site to DMR and the commencement of the BA process (see below).

The property falls within the northern section of the Pondoland Centre of Endemism, within the Ezemvelo KZN Wildlife Irreplaceable Critical Biodiversity Area, the Interior South Coast Grasslands critically endangered ecosystem type, as well as above the Mzimkhulu River, which is listed as a Freshwater Ecosystem Priority Area. Two site alternative mining areas were identified during the initial stages of the BA process. The first option (Option 1 – Site Alternative) is a 4.8 hectare area located centrally on the property, extending from the top of the hillside down towards the Mzimkhulu River (west). This site is predominantly grassy and extremely steep. The second option (Option 2 - Preferred Site) is a 4.9 hectare area comprising the entire north easterly section of the property, the ridge, and a portion of the western hillside. The preferred site is currently being

¹ Sustainable development can be defined as "development that meets the needs of the present generation without compromising the ability of future generations to meet their needs".

utilised for habitation, and includes a farmhouse and numerous sheds. See Figure 5 below for the two site alternatives.

As per the findings in the Vegetation Assessment Report and Faunal Assessment Report, Option 1 is not supported by either specialist. This site is located nearly entirely within the Pondoland-Ugu Sandstone Coastal Sourveld primary grassland, and is in close proximity to habitat that supports a large array of conservation important vertebrates and invertebrates. Although the Pondoland-Ugu Sandstone Coastal Sourveld grassland is only classified as Vulnerable, it was noted to be of good quality, and contained a large number of protected species. The preferred site alternative, Option 2, is predominately surrounded by alien invasive and secondary vegetation, with the western portion of the site fall within the Pondoland-Uqu Sandstone Coastal Sourveld primary grassland. Dry Scarp Forest was noted to the south of Option 2, outside the mining footprint. The majority of the Pondoland-Ugu Sandstone Coastal Sourveld primary grassland will be avoided with the preferred site alternative.

Technology Alternatives

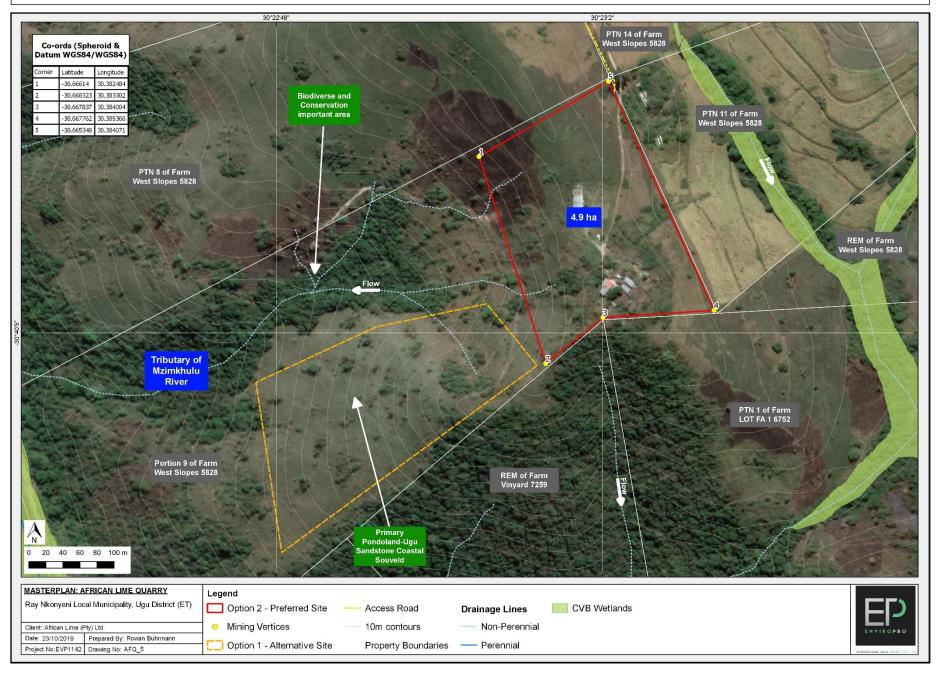
In terms of the mining method proposed, overburden will be cleared using an excavator and soft material will be cut back. The overburden will be used to create berms. Work benches will be blasted and cut into the hillside. The loosened material will be removed using excavators and transported to the crushing and screening plant area. Processed limestone will be stored in various stockpiles until collected by truck and used offsite. This is the standard methodology used to mine material and is therefore the only feasible technology alternative considered throughout the EIA process.

An alternative method would be to crush and screen the material at an offsite location. The applicant would need to provide and retain proof at the Africa Lime Quarry that the site processing the material further is permitted to do so. It therefore does not make logistical sense to transport truckloads of material to be screened and then crushed at an alternative site. The Works Manager will have more control over the processing process, which will be located near the entrance to the quarry. There is therefore an opportunity to ensure that best practice measures are carried out during the processing (as per the Environmental Management Programme).

The No Go Alternative

No mine will be established on the property and the land will remain as it is. No impacts associated with mining will occur. There will, however, be no positive economic benefits associated with employment or the establishment of a locally available source of material for construction and development.

Figure 5: Section 1 (d) Aerial Map showing proposed African Lime Quarry in the Ray Nkonyeni Local Municipality, uGu District Municipality, KwaZulu-Natal; Farm Name: Portion 9 of Farm West Slopes 5828 (farm boundaries in white). Applicant: African Lime (Pty) Ltd. Proposed Mining Area shown in red (4.9ha) source: QGIS v3.8.3, 2019.



3.3. Section 1 (h) Full Description of the Process Followed To Reach The Proposed Preferred Alternatives Within The Site

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

3.3.1. Section 1 (h) (i) Details Of The Development Footprint Alternatives Considered.

Table 6: Section 1 (h) (i) Details Of Development Footprint Alternatives					
	With reference to the site plan and the location of the individual activities on site, provide details of the alternatives considered with respect to:				
(a)	the property on which or location where it is proposed to undertake the activity;	African Lime, the applicant, purchased the property with the intention of mining it (Portion 9 of Farm West Slopes 5828), there are no alternatives properties. Two site alternatives within the property boundary were considered for this application. The first site alternative, Option 1, is not feasible due to the large environmental impact that would be created if mined. This area has been avoided and will not be disturbed during the mining process. The preferred site alternative, Option 2, is to mine the top of the ridge, towards the east of the property. This area has been previously disturbed, and is dominated by alien invasive vegetation.			
(b)	the type of activity to be undertaken;	The site has been selected as suitable for mining based on the available limestone material.			
(c)	the design or layout of the activity;				
(d)	the technology to be used in the activity;	The quarry material will be blasted and then removed using excavators			
(e)	the operational aspects of the activity; and	Bulldozers will clear and grub the portion of the site to be mined. Controlled blasting will be carried out to loosen material and create benches. Excavators will shape the benches to the desired angle. Material will be loaded onto trucks and transported to the crushing and screening plant. Once crushed into the desired size, the material will be stockpiled in the designated stockpile area and removed offsite once sold. Mining will be phased, with activities occurring on the eastern bank (Phase 1), before progressing towards the western bank (Phase 2).			
(f)	the option of not implementing the activity (the No Go Option)	No mining will occur on the property, and the land will remain as is, with no rehabilitation of the degraded areas occurring. There will be no positive economic benefits such as local employment.			

Section 4: Public Participation

4.1. Section 1 (h) (ii) Details Of The Public Participation Process Followed

Describe the process undertaken to consult interested and affected parties including public meetings and one on one consultation. NB the affected parties must be specifically consulted regardless of whether or not they attended public meetings. Information to be provided to affected parties must include sufficient detail of the intended operation to enable them to assess what impact the activities will have on them or on the use of their land.

As per Regulations 41, 42, 43 and 44 of the NEMA EIA Regulations, 7 April 2017:

41. (2) The person conducting a public participation process must take into account any relevant guideline's applicable to public participation as contemplated in section 24J of the Act and must give notice to all potential interested and affected parties of an application or proposed application which is subjected to public participation by -

4.1.1.Section 41 (2) (a) Notice Board

- (a) fixing a notice board at a place conspicuous to and accessible by the public at the boundary, on the fence or along the corridor of -
- (i) the site where the activity to which the application or proposed application relates is or is to be undertaken; and
- (ii) any alternative site:

Notice boards were placed at the entrance to the farm, and on the access road off the P68-2 Road on the 11th October 2019. See Appendix C – Proof of Placement of Notice Board.

4.1.2. Section 41 (2) (b) Written Notice

(b) giving written notice, in any of the manners provided for in section 47D of the Act, to-

(i) the occupiers of the site and, if the proponent or applicant is not the owner or person in control of the site on which the activity is to be undertaken, the owner or person in control of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;

The following public participation measures have been undertaken for this process:

- The applicant has purchased the property, as per the WinDeed Property Report (Appendix D), and is therefore the land owner.
- A meeting was held on the 19th March 2019 with the local Ward Councillor (Cllr Gugu Madlala) and the previous land owner, Lukas Scheepers, who now resides on the property. A notification letter was signed by the ward councillor and meeting minutes were taken (Appendix D).
- A map showing the adjacent properties as well as a table listing the adjacent landowners is provided under Appendix D. Adjacent landowners, and the current land occupiers, have therefore been identified and have received either hand notifications or emails. A notification register was signed when the pamphlets were hand delivered on the 11th October 2019 (see Appendix D).
- Adverts were placed in local newspapers, the local South Coast Fever newspaper on the 17th October 2019, and the uGu Eyethu on the 25th October 2019, detailing the proposed project, Basic Assessment process and providing contact details of EnviroPro should anyone wish to register as an I & AP (Appendix E).
- Two signboards were placed on site detailing the application, on the 11th October 2019 (Appendix C).
- An email was sent to the commenting authorities informing them about the BAR and permitting process on the 25th November 2019.
- The Draft BAR will be sent to all commenting authorities for a 30-day comment period, including the Ray Nkonyeni Local Municipality and Ugu District Municipality for input into the BA process.

See Appendix D – Proof of Notification.

(ii) owners, persons in control of, and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;

The following public participation measures have been undertaken for this BA and mining permit application:

- The Ward Councillor representative, Gugu Madlala, and Mr Scheepers, the previous farm owner now residing on the property. The councillor's representative was provided with pamphlets to notify the community.
- On a second site visit, EnviroPro notified the adjacent landowners and land occupiers, who were given pamphlets and signed the register (Appendix D). A map of the adjacent landowners is provided in Appendix D.

- As suggested by Gugu Madlala, the Lushaba Traditional Authority was contacted telephonically on the 4th November 2019, and will be provided with a Draft Basic Assessment Report and provided with the 30-day comment period; and
- Signboards were posted at the entrance to the farm and along the access road.

Email notifications to all I&APs were sent out on the 25th November 2019. See Appendix D - Proof of Notification.

- (iii) the municipal councillor of the ward in which the site or alternative site is situated and any organisation of ratepayers that represent the community in the area;
- (iv) the municipality which has jurisdiction in the area;
- (v) any organ of state having jurisdiction in respect of any aspect of the activity; and
- (vi) any other party as required by the competent authority;

See Appendix D – Proof of Notification.

4.1.3. Section 41 (2) (c) Advert

- (c) placing an advertisement in-
- (i) one local newspaper; or
- (ii) any official Gazette that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations;
- (d) placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or district municipality in which it is or will be undertaken: Provided that this paragraph need not be complied with if an advertisement has been placed in an official Gazette referred to in paragraph (c)(ii);and

Adverts were placed in the local newspapers, the South Coast Fever newspaper on the 17th October 2019, and the uGu Eyethu on the 25th October 2019 detailing the proposed project, Basic Assessment process and providing contact details of EnviroPro should anyone wish to register as an I & AP.

See Appendix E – Proof of Advert Placement.

4.1.4. Section 42 and 43 Registered Interested and Affected Parties

- 42. A proponent or applicant must ensure the opening and maintenance of a register of interested and affected parties and submit such a register to the competent authority, which register must contain the names, contact details and addresses of-
- (a) all persons who, as a consequence of the public participation process conducted in respect of that application, have submitted written comments or attended meetings with the proponent, applicant or EAP;
- (b) all persons who have requested the proponent or applicant, in writing, for their names to be placed on the
- (c) all organs of state which have jurisdiction in respect of the activity to which the application relates.

All registered I&APs have been included in a stakeholder list. The progression of the BA and mining permit process are communicated with each I & AP in the BA notification phase. The DBAR stage is when all I & APs are asked to comment on the DBAR report. The FBAR stage is the 'Environmental Authorisation stage' in which the authorities (DMR) either decline or grant environmental authorisation for the project and after a decision has been made all I & APs are provided opportunity to appeal the EA decision.

See Appendix F – Register of Interested and Affected Parties

4.2. Section 44 Comments

Comments of interested and affected parties to be recorded in reports and plans 44.

- (1) The applicant must ensure that the comments of interested and affected parties are recorded in reports and plans and that such written comments, including responses to such comments and records of meetings, are attached to the reports and plans that are submitted to the competent authority in terms of these Regulations.
- (2) Where a person desires but is unable to access written comments as contemplated in subregulation (1) due to-
- (i) a lack of skills to read or write;
- (ii) disability; or
- (iii) any other disadvantage;

reasonable alternative methods of recording comments must be provided for.

See Appendix G for the Comments and Responses table as well as a copy of comments as they were received.

4.3. Section 1 (h) (iii) Summary Of Issues Raised By I & Aps (See Appendix G)

Complete the table summarising comments and issues raised, and reaction to those responses. Please see Appendix G.

Section 5: Site Description and Surrounding Land Use

5.1. Section 1 (h) (iv) The Environmental Attributes Associated With The Alternatives

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

See Figures 6 to 16 below for maps and photographs of the site and surrounding area.

5.1.1.Type of Environment Affected by the Proposed Activity / Baseline Environment: 5.1.1.1. Socio Economic & Social Characteristics of the Site, Current Land Uses and Infrastructure

- The African Lime Quarry is located on a farm, owned by the applicant, which is currently used as offices and habitation. There is an existing dirt road running from the P68-2 Road towards the proposed quarry (Figures 2 above).
- The properties surrounding the site are all privately owned farms which are mainly vacant. The properties to the west are currently utilised for sugarcane farming. The Mzimkhulu River is located to the west of the quarry.
- During the site inspection, it was noted that the buildings on site are supplied with electricity. The previous owner has stated that there are three boreholes on site, but only one (1) is functional at
- The Option 2 Preferred Site, is located at the top of a ridgeline, where Option 1 Alternative Site is located on the west-facing hillside, towards the Mzimkhulu River. These sites are approximately 9km north-west of Umtentweni, within the Ray Nkonyeni Local Municipality.
- The next nearest residential household to Option 2 Preferred Site is 480m east of the proposed quarry site, across a large valley. Option 1 – Alternative Site is located over a hill side, approximately 700m from the nearest household.
- There are buildings within the proposed mining footprints, with all buildings constructed by the previous owner and have no heritage value (not older than 60 years).

Heritage And Cultural Aspects

No archaeologically/ cultural significant resources were identified within or near the site footprint by the Heritage specialist (Appendix B). According to the SAHRIS PalaeoSensitivity Map, the site is located within the 'Grey/ Insignificant' zone, and the 'White/ Unknown' zone. Although no palaeontological studies are required for the 'Insignificant" zone, a desktop assessment is required where a portion of the site falls within the 'Unknown' zone.

5.1.1.3. Geographical and Physical Characteristics of Site

- The guarry is located within the T52M guaternary drainage region.
- The wetland specialist delineated one wetland within 500m of the quarry; a Channelled Valley Bottom wetland (see Wetland Assessment attached under Appendix B).
- The Present Ecological State was determined to be Moderately Modified (C), predominantly due to the encroachment of agricultural land and the informal access routes traversing the system.
- A buffer zone of 33m between the wetland and the mining operations was recommended by the specialist (see section 7.1.5 of the Wetland Assessment). This buffer zone has been maintained with the wetland being located 95m west from the eastern boundary of the quarry. The wetland specialist therefore concluded that there will be a moderate level of risk posed by the quarry on the associated wetland system (DWS risk impact matrix included under Table 14 of the attached Wetland Assessment).
- According to the land type database (Land Type Survey Staff, 1972 2006) the project falls within the Fa600 and Fb469 land types. The geology associated with the FA600 land type is generally mainly granite with small areas of alluvium, amphibolite and marble. The geology associated with the FB469 land type is mainly marble, with small areas of granite and alluvium.
- This region is generally characterised by summer rainfall, even though rainfall in the winter months are not uncommon. This region is frost-free and has high humidity. The mean maximum temperatures for this region is 32.6°C, whereas the mean minimum temperatures for this region is 5.7 °C in January and July respectively.
- The mean annual precipitation for the area is 989mm. Option 2 - Preferred Site

- The guarry site is located along the ridge of a steep hillside (Figures 6 and 7).
- The Mzimkhulu River is 615m west of the guarry (indicated in blue in Figure 2).
- There are two drainage lines within the quarry footprint. These are located on the western side of the quarry, and will remain undisturbed until phase two begins.
- The historical aerial imagery from Google Earth Pro shows the buildings within the mining area were built prior to 2010 (Figure 10).
- Due to the gradient and topography of the site (located on a ridge line, visible from Figures 6 and 7 showing the elevation profile of the site), natural drainage off the site is in a westerly direction towards the Mzimkhulu River, as well as an easterly direction towards the channelled valley bottom wetland (Figure 4).
- All clean surface water runoff from surrounding slopes will be diverted away from the mining area using berms. This "clean" stormwater will naturally flow into the existing drainage lines, as per the pre-mining drainage pattern (Figures 4 and 5).
- Potentially contaminated runoff from the mine area itself will be diverted into the onsite sumps and will not be permitted to discharge to the surrounding environment or any drainage lines. Water collected in the sumps will be treated as potentially contaminated and will only be used for dust suppression within the mine area. This document as well as a site specific Stormwater Management Plan will also be submitted to the Department of Water & Sanitation (DWS) as part of the Water Use Authorisation application.
- Mitigation measures to prevent and manage erosion has been included in the impacts table (Table 8) and the attached EMPr (Appendix J).

Option 1 – Alternative Site

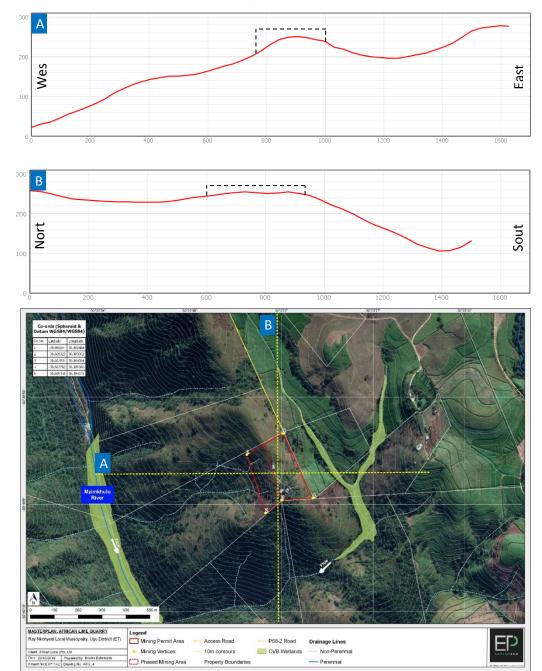
- The quarry site is located on a west facing hillside, above the Mzimkhulu River.
- The Mzimkhulu River is 240m west of the quarry (indicated in blue in Figure 2).
- There is one drainage line within the quarry footprint, located near the top of the mining footprint.
- Due to the gradient and topography of the site (located on a ridge line, visible from Figures 6 and 7 The natural drainage off the site is in a northerly direction into the area of high conservation importance, and then down towards the Mzimkhulu River (Figure 5).
- Stormwater runoff and mitigation measures are the same as per Option 2 Preferred Site.

Figure 6: Maps showing the elevation profiles associated with the Option 2 - Preferred Site of the African Lime Quarry, outlined in red; (A) - View towards the east; (B) - View towards the west. (source: Google Earth Pro, 2019)





Figure 7: Elevation profiles associated with Option 2 - Preferred Site of the African Lime Quarry; (A) - west to east profile; (B) - north to south profile. Location of quarry outlined in black. (Generated by QGIS v3.8.3, 2019)



Biological (Vegetation) Characteristics of the Site

- A Vegetation Impact Assessment was carried out to identify, map and assess the impact of the mining activities on the vegetation on the property (attached under Appendix B). The vegetation across the two proposed quarry sites has been identified below.
- The proposed mining sites falls within the Irreplaceable Critical Biodiversity Areas, as per Ezemvelo KZN Wildlife' Systematic Conservation Plan.
- The ground survey conducted by the vegetation specialists revealed that the KwaZulu-Natal Coastal Belt Grassland appeared to represent the following vegetation types: Pondoland-Ugu Coastal Sourveld (Vulnerable); Dry Scarp Forest (Least Threatened), grading into Eastern Valley Bushveld (Least Threatened); detached or semi-detached bush clumps or more diffuse woody growth, similar to that of the KwaZulu-Natal Coastal Belt Thornveld.
- The vegetation specialist mapped the vegetation components and communities on the property. The vegetation components associated with the proposed quarry sites are shown in Figures 8 and 9 below and their sensitivities have been allocated as follows:

- 1. (High) Pondoland-Ugu Coastal Sourveld in good condition, including Scarp Forest. This vegetation should be avoided.
- 2. (Intermediate) All other vegetation that is not transformed, secondary or heavily alien invaded.
- 3. (Lowest) Secondary and invaded vegetation which is transformed, secondary or heavily alien invaded. This is most suitable for mining.

Option 2 - Preferred Site

- According to the National vegetation mapping (SANBI 2019), this site falls within both the KwaZulu-Natal Coastal Belt Thornveld (CB 6) and the KwaZulu-Natal Coastal Belt Grassland (CB 3; Critically Endangered).
- The proposed mining areas fall within a threatened ecosystem, namely Interior South Coast Grasslands (KZN 7), which is considered Critically Endangered.
- Two Red List species (Kniphofia coddiana near threatened), Merwilla plumbea near threatened), as well as six species protected under the KZN Provincial Conservation Ordinance were identified on quarry site, with their location indicated in Figure 9 (Appendix 2.1 and 2.2 of the Vegetation Impact Assessment). Approximately 360 individuals were identified within the preferred quarry site (section 10 & 11 of the Vegetation Impact Assessment).
- All plant species protected under the KZN Provincial Conservation Ordinance require a permit from Ezemvelo KZN Wildlife prior to their clearing / relocation. These species identified are: Aloe maculate. Boophone disticha, Dierama igneum, Kniphofia coddiana, Merwilla plumbea, and Watsonia cf. densiflora. During Phase 1, where only the north eastern portion of the quarry will be mined (see section 2.2.2. Operation), very few protected species will be removed (Figure 9).
- The preferred quarry site is predominately located within transformed and alien vegetation (low sensitivity), with the eastern portion of the site consisting of secondary grassland (low sensitivity). The northern and western portion of the site contains the primary grassland as well as degraded grassland within the Pondoland-Ugu Coastal Sourveld (high sensitivity). Approximately 1.17 ha of Primary Grassland (Pondoland-Ugu Coastal Sourveld) falls within Option 2 - Preferred Site.
- Phase 1 of the quarry will fall within this transformed and alien vegetation.
- The Scarp Forest is located towards the south and outside of the mining area (section 9.3 of the Vegetation Impact Assessment), and will be buffered by the 9m mining pillar.

Option 1 - Alternative Site

- According to the National vegetation mapping (SANBI 2019), this site falls within the KwaZulu-Natal Coastal Belt Thornveld (CB 6).
- Three Red List species (Helichrysum pannosum endangered, Kniphofia coddiana near threatened, Merwilla plumbea - near threatened), as well as seven species protected under the KZN Provincial Conservation Ordinance were identified on guarry site, with their location indicated in Figure 9 (Appendix 2.1 and 2.2 of the Vegetation Impact Assessment). Larger numbers (2300+ individuals) of protected species occur within the alternative site (section 10 & 11 of the Vegetation Impact Assessment).
- The alternative site is predominantly located within the highly sensitive Pondoland-Ugu Coastal Sourveld. Approximately 4.62 ha of Primary Grassland (Pondoland-Ugu Coastal Sourveld) falls within Option 1 – Alternative Site.

Summarv

- As per section 14 of the Vegetation Impact Assessment, the propose quarry will cause direct destruction or degradation of vegetation. Indirect results may also be expected with the proposed quarry, these are as follows: isolation of the grassland below the preferred quarry site, physical disturbance from vehicles and pedestrians if not confined to access routes and the quarry footprint, increase of dust covering roadside vegetation, increase in waste and refuse, and an increased risk of alien plant invasion. All impacts have been included in the impacts table in Table 8 and mitigation measures provided.
- The destruction of vegetation allocated with a high sensitivity (Pondoland-Ugu Coastal Sourveld and Scarp Forest) is not supported by the vegetation specialist (section 14 of the Vegetation Impact Assessment). Furthermore, a buffer of 30m between the mining operations and the Primary Grassland was recommended by the specialist (section 13 of the Vegetation Impact Assessment).
- Based on the findings of the Vegetation Impact Assessment, the Option 1 Alternative Site has been deemed not feasible due to the high sensitivity of the site. The Option 2 - Preferred Site avoids a large portion of the sensitive vegetation surrounding the site, falls predominantly within transformed and alien vegetation, and will not result in the removal of any of the Dry Scarp Forest vegetation.

Figure 8: Vegetation components associated with the proposed African Lime Quarry (source: Styles, 2019).

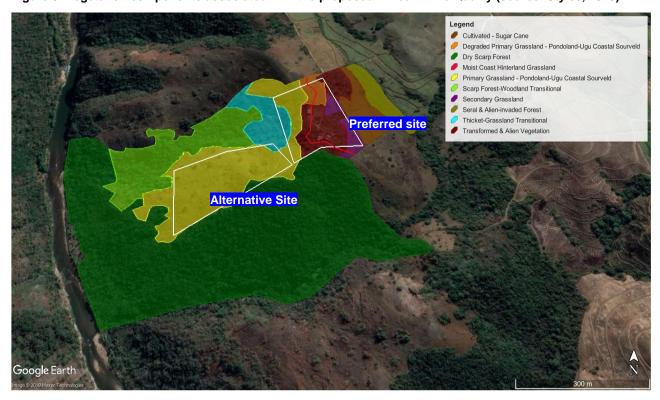


Figure 9: Protected species identifies during the Vegetation assessment associated with the proposed African Lime Quarry (source: Styles, 2019).

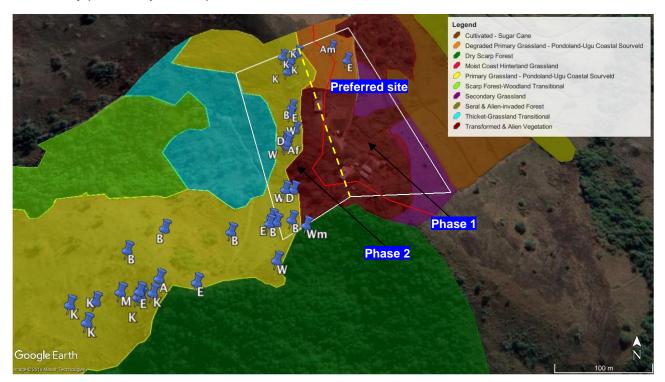


Figure 10: Maps showing the historical imagery of the proposed limestone guarry. African Lime Quarry, outlined in red. (A) 2010, (B) 2019 (source: Google Earth Pro, 2019).



Fauna Characteristics of the Site

A Faunal Impact Assessment was conducted on the entire property, including the proposed quarry footprint. The full Faunal Assessment is attached under Appendix B and summarised below:

- Portion 9 of West Slopes 5828 is located within the northern section of the Pondoland Centre of Endemism.
- The site falls within the EKZNW Irreplaceable Critical Biodiversity Area.
- The Mzimkhulu River is listed as a Freshwater Ecosystem Priority Area.
- Due to the presence of domestic dogs and the uncontrolled hunting, there will be few larger mammals occurring on the property, with no larger mammals occurring around the homestead.
- The highly species diversity grassland component located within the region translates into habitat for a large number of vertebrate and invertebrate species. Of particular importance being the rocky streams, that provide a critical habitat for the endangered Kloof Frog (Natalobatrachus bonebergi).
- The presence of rocky streams and clear rocky pools were identified on the southern and eastern portions of the property during the site assessment. These streams were supporting a healthy population of Kloof Frogs (N. bonebergi), which were actively breeding during the time of the site visit (March and April 2019).
- The lime-rich environment found within the Marble Delta, and thus Portion 9 of West Slopes 5828, shows a high abundance of land snails. Nine (7) mollusc species (snails) were identified on the site. One (1) snail, Gulella salpinx, is of particular importance. Although G. salpinx was not identified on Portion 9 of West Slopes 5828, it has been identified on the adjacent farm, and is believed to only be found within an area covering 1000m². This species of snail is Critically Endangered.
- Three (3) species of millipede were identified on the property, out of ten (10) species known to the occur within the area. Of the three identified, one (1) was classified as endangered, one (1) as Near threatened, and one (1) as Vulnerable.
- One (1) species of earthworm is of conservation concern (Proandricus herbertii), as it is only known to occur within the Marble Delta and the Mzimkhulwana and Mzimkhulu River vallevs. It is likely to occur within the property; however, no individuals were noted by the faunal specialist during the site inspections.
- The faunal mitigation measures have been included in the impacts table in Table 8. The faunal specialists recommended a 30m buffer on the streams, with a 100m buffer on the Mzimkhulu River.
- As stated above (Section 3.2), the preferred layout and site of the guarry was chosen to avoid as much of the better-quality grassland vegetation, and protected species, as possible. Option 1 - Site Alternative
- The faunal specialist concluded that the mining the lower alternative site, Option 1, is fatally flawed from an ecological perspective. The presence of the rocky streams and vegetation yield a high vertebrate and invertebrate diversity, with numerous species of conservation concern.

Option 2 - Preferred Site

Option 2, the preferred quarry site, was deemed feasible if sufficient safeguards are put in place to ensure the quantity and quality of the stream water is kept consistent and managed. The faunal specialists recommended that a water quality assessment be conducted prior to commencement of mining, as well as at regular intervals during the operational lifespan of the mine. In addition to this, the breeding status of the Kloof Frog should be assessed annually.

The following photographs of the African Lime Quarry site were taken on the 07th June 2017 and 11th October 2019.

Access Route



Figure 11: (a) Road off the P68-2 road. Road passes the entrance to the Rossmin Quarry.; (b) Access road on the boundary between Portion 14 of Farm West Slopes 5828 and Portion 8 of West Slopes 5828; (c) Existing access road within the preferred mining area.

Option 2 - Preferred Site



Figure 12: (a) Vegetation has been cut and is predominantly disturbed within the preferred mining area; (b) Existing household offices and outhouses within the mining footprint. (c) Numerous trees noted around the existing infrastructure.



Figure 13: (a) Limestone was identified on the surface during the site visit; (b) Limestone noted a previously cut road, on the western bank of the proposed quarry; (c) Photographer facing east towards the adjacent properties and households (circled in red, 480m away). Secondary grassland vegetation noted within the quarry footprint.



Figure 14: (a) Photographer facing north towards the western portion, phase 2, of proposed quarry (circled in red); (b) Photographer facing east, overlooking the good quality vegetation, and location of the drainage lines that support the conservation important fauna (quarry footprint circled in red); (c) Photographer facing east, standing within the Phase 1 mining area, looking towards the channelled valley bottom wetland.

Option 1 - Alternative Site



Figure 15: (a) Photographer facing south west, overlooking the alternative quarry area and primary grassland; (b) Photographer facing south onto the alternative quarry area (circled in yellow), overlooking the forest and drainage lines; (c) Photographer facing south west, overlooking the alternative quarry site (circled in yellow).



Figure 16: (a) View over the primary grassland and location of the drainage lines with high faunal conservation importance; (b) Additional image of the primary grassland and drainage lines; (c) Closeup view of the Idwala Carbonates Limestone Quarry.

Section 6: Impact Assessment

6.1. Section 1 (h) (v) Impacts and Risks Identified Including the Nature, Significance, Consequence, **Extent, Duration and Probability of the Impacts**

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

Please see Impact Table 8 below which lists all potential impacts identified, including those informed by public participation. The Table provides significance ratings for each aspect with the full ratings which looked at probability, duration of impact etc. provided in the Impacts Scoring Matrix in Appendix H.

6.2. Section 1 (h) (vi) Methodology Used In Determining And Ranking The Nature, Significance, Consequences, Extent, Duration And Probability Of Potential Environmental Impacts And Risks

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

Impacts are assessed qualitatively and quantitatively, looking at the duration / frequency of the activity and likely impacts associated with that activity during both operation and closure. If the activity happens frequently, the risk of the associated impact occurring is much higher than if the activity happens less frequently. The geographical extent of the impact is assessed i.e. will the impact be restricted to the point of occurrence or will have it have a local or regional effect. Impacts are also reviewed looking at severity levels and consequences should the impact occur i.e. will the severity be low, medium or high and then probability of the impact occurring is taken into account.

Whether or not the impact can be mitigated and the extent to which it can be avoided, managed, mitigated or reversed is assessed i.e. the probability of occurrence after mitigation has been applied. This also takes into account likelihood of human error based on operational auditing experience i.e. even though spills can be completely mitigated against and prevented, there is always a small chance that spills will still occur (residual risk). Based on all of these factors, the impact is then rated to determine its significance. For example an impact can have a regional affect with severe environmental implications, however the probability of it occurring is very low and the implementation of the proposed mitigation measures means that the ultimate rating is medium or low.

Please see below a description of the scoring. The full impact scoring tables detailing how the significance rating was calculated can be found in Appendix H.

Table 7: Section 1 (h) (vi) Scoring of Impacts			
Duration / Frequency of activity likely to cause impact	0 = No impact 1 = short term / once off 2 = medium term / during operation 3 = long term / permanent		
Geographical Extent	0 = No impact 1 = point of impact / restricted to site 2 = local / surrounding area 3 = regional		
Severity (level of damage caused) if impact were to occur	0 = No impact 1 = minor 3 = medium 5 = major		
Probability of impact without mitigation	1 - 5 = low. 6 - 10 = medium. 11 -14 = high.		
Significance before application of Mitigation Measures	A score of between 1 and 5 is rated as low. A score of between 6 and 10 is rated as medium. A score of between 11 and 14 is rated as high.		
Will activity cause irreplaceable loss of resources?	10 = Yes 0 = No		
Mitigation measures	0 = No impact - 5 = can be fully mitigated - 3 = can be partially mitigated		

	-1 = unable to be mitigated
Probability of impact after mitigation	0 = No impact
	1 = Low
	2 = Medium
	3 = High
Significance after application of Mitigation Measures	A score of between 1and 5 is rated as low.
	A score of between 6 and 10 is rated as medium.
	A score of between 11 and 14 is rated as high.

6.3. Section 1 (h) (vii) The Positive And Negative Impacts That The Proposed Activity (In Terms Of The Initial Site Layout) And Alternatives Will Have On The Environment And The Community That May Be Affected

Provide a discussion in terms of advantages and disadvantages of the initial site layout compared to alternative layout options to accommodate concerns raised by affected parties.

Table 8 below includes discussion on the positive and negative impacts of the activity. No concerns pertaining to the location or layout of the site have been raised, however in siting the guarry, the EAP has taken into account the location and distance from watercourses, quality and type of vegetation, existing infrastructure (Eskom powerlines), as well as the location and proximity to adjacent communities while factoring in the nature of the mining that will take place.

6.4. Section 1 (h) (viii) as the Possible Mitigation Measures That Could Be Applied and the Level of

With regard to the issues and concerns raised by affected parties provide a list of the issues raised and an assessment / discussion of the mitigations or site layout alternatives available to accommodate or address their concerns, together with an assessment of the impacts or risks associated with the mitigation or alternatives considered.

Please see the comments & Responses Table in Appendix G for the summary of issues raised by I & APs and Table 8 below. No major concerns pertaining to the location or layout of the site have been raised, however in siting the quarry the EAP has taken into account the location and distance from watercourses, quality and type of vegetation, Eskom powerlines, as well as location and proximity to adjacent communities while factoring in the nature of the mining that will take place.

The supporting impact assessment conducted by the EAP is attached under Appendix H (Impacts Scoring Matrix).

Table 8: Section 1(h) (v) (vii) (viii) and 1 (h) (i) (j) Assessment of Impacts & Risks Identified (both Positive & Negative) and Mitigations to be Applied

NAME OF ACTIVITY E.g. For mining,- excavations, stockpiles, discard dumps or dams, loading, hauling and transport, water supply, accommodation, offices, ablution, stores, workshops, stormwater control, berms, roads, pipelines, power lines, conveyors, etc.	POTENTIAL IMPACT Including the potential impacts for cumulative impacts e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc.	SIGNIFICANCE ² if not mitigated	MITIGATION TYPE Proposed mitigation and Extent to which impact can be reversed / avoided, managed or mitigated Through e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. Modify through alternative method. Control through noise control; Control through management and monitoring through rehabilitation.	SIGNIFICANCE ³ if mitigated:
OPTION 2 – PREFERRED SITE PHASE: In which impact is anticipated (e.g. Construction, commissioning, operational decommissioning, closure, post-closure)				
Upgrading of the existing access road.	Excessive clearing of vegetation along the edge of the existing road.		 Approximately 900m of the dirt access track may require grading to allow tip trucks to easily access the mining area. The following must be adhered to should the road require upgrading: Only the existing road is to be graded. Should sections of the track be widened to allow trucks to pass each other, this should be done in the formally cultivated / degraded vegetation areas (indicated in Figure 17). No excessive clearing of vegetation to take place. Only the cultivated vegetation on the edge of the road is to be removed if permission has been granted by the land owner. Should there be a need to remove vegetation not directly in the footprint of the proposed road upgrade, the ECO must be consulted. 	5 (low)

² See Appendix F for more details.

³ See Appendix F for more details.

NAME OF ACTIVITY	POTENTIAL IMPACT	SIGNIFICANCE if not mitigated	MITIGATION TYPE	SIGNIFICANCE if mitigated:
2. Site camp establishment.	Fuel, lubricants and chemicals brought onto site as well as the setting up of ablution facilities for staff. This could lead to spills and contamination of soil / groundwater.	7 (Med)	All mining equipment is to be retained in the site camp, which is to be located within the mining footprint area. The Existing buildings on site will be retained and used as offices until the mining area expands. It is unlikely that there will be any hazardous materials brought to site however these are to be stored in a designated area which is hard surfaced, bunded and covered. Adequate spill kits and containers for spilled and contaminated material to be on standby on site. If a spill occurs, stop the source, contain it, clean up in accordance with MSDSs and notify relevant authorities. The stormwater management system is to be established prior to any excavation taking place to ensure the separation of clean and "dirty" water. A berm is to be established around the mine area and the location of the sumps determined. The berm will divert water away from the mine area, as well as contain water inside the quarry. This impact can be managed.	3 (low)

Figure 17: Red dash/ dotted line indicating the section of existing access road where widening is recommended (in the formally cultivated and degraded vegetation types).



PHASE: OPERATION

NAME OF ACTIVITY	POTENTIAL IMPACT	SIGNIFICANCE if not mitigated	MITIGATION TYPE	SIGNIFICANCE if mitigated:
3. Removal of material and creation of a mining face.	Risk of collapse of the mining face if the angle of removal is not correctly planned and managed. This could lead to slippage and collapse of the slope causing damage to the surrounding environment and on-site workers.	9 (Med)	If the appropriate mining technique is not used and slippage occurs, it could potentially have a significant impact in terms of risk to the workers on site, ongoing instability issues and on-going erosion. The risk of this impact occurring is relatively low, provided proper mining techniques are used and the angle of removal is appropriately planned, implemented and monitored. The following mitigation measures apply: • The mine works operator is to determine the width of the working bench widths, which will only be reduced under special conditions. This will allow machines to work safely providing ample turning space. • A suitably qualified mine operator is to ensure the vertical height of the bench benches is suitable as well as the angle. • A safety berm should be erected around the working area. • The slope face must not be heavily undercut as this could lead to collapse of the slope. • Undercutting of the slope and creation of over-steep slopes must not be permitted. • No loose material must be left on the face after blasting. • Mining activity needs to take into account the final shape of the excavated area so as to reduce the risk of potential collapse and shifting. • The slope angle and stability must be regularly evaluated by the resident engineer and adjustments made to the area and angle of excavation as needed. • The maintenance of proper drainage away from the working area. This impact can be prevented and managed.	5 (Low)

NAME OF ACTIVITY	POTENTIAL IMPACT	SIGNIFICANCE if not mitigated	MITIGATION TYPE	SIGNIFICANCE if mitigated:
4. Clearance of indigenous vegetation from within the mining footprint.	Physical disturbance of vegetation (Vegetation Impact Assessment). There will be clearing of up to 4.9ha of vegetation as the mining area is expanded.	10 (Med)	 The quarry footprint consists of five vegetation components: Transformed and Alien (2.13 ha), Secondary Grassland (0.67 ha), Degraded Primary Grassland – Pondoland-Ugu Coastal Sourveld (0.58 ha), Thicket-Grassland Transitional (0.28 ha), and good quality Primary Grassland – Pondoland-Ugu Coastal Sourveld (1.17 ha). To avoid the better-quality vegetation, but remain with a quarry of an adequate size, the Primary Grassland – Pondoland-Ugu Coastal Sourveld cannot be entirely avoided and therefore this impact cannot be fully mitigated. This impact cannot be fully mitigated as it will result in the loss of 1.05ha of KwaZulu-Natal Coastal Belt Thornveld (CB 6), and 3.85ha of KwaZulu-Natal Coastal Belt Grassland (CB 3). Partial mitigation will only occur when the site is closed and rehabilitated and parts of the site are re-vegetated. Some areas such as the slopes may not be suitable for re-vegetating. Vegetation clearing must only take place within the quarry footprint area. Vehicles must remain within the mining footprint and access road. Vegetation may only be cleared when the current mining footprint requires expansion (i.e. at intervals and not all at once). 	9 (Med)
	Disturbance stimulating a greater amount of alien plant invasion in the mining area and adjacent vegetation (Vegetation Impact Assessment).	9 (Med)	 There was a large quantity of alien vegetation noted in the preferred quarry footprint. The further establishment of alien vegetation during mining therefore needs to be monitored and managed. Vehicles and pedestrians must remain within the mining footprint and access road, reducing the area of disturbance. The surrounding natural area is to be treated as a No-Go area. Restrictions associated with the surrounding natural area are to be included in the environmental induction training, which is to take place when mining commences. A register is to be retained in the site environment file as proof of training and attendance. An alien plant control programme must be implemented once vegetation clearing commences. This includes: Alien plant identification training, which is to take place during the environmental induction training; Clearing of aliens within at least 100m of the quarry, which must take place more frequently during the months of September – November (Spring). Use of chemical pesticides must be avoided and mechanical removal by hand is preferred. The independent Environmental Control Officer (ECO) auditing the site, is to comment on the level of alien plant invasion and ensure the alien plant control programme is being implemented. 	5 (Low)

NAME OF ACTIVITY	POTENTIAL IMPACT	SIGNIFICANCE if not mitigated	MITIGATION TYPE	SIGNIFICANCE if mitigated:
	Clearance of plant species protected under the National Forest Act (No. 84 of 1998) and the KZN Nature Conservation Ordinance (No. 15 of 1974).	10 (Med)	 No tree species protected under the NFA were located within the proposed mining area. However, one Sideroxylon inerme (White Milkwood) was identified on the boundary of the preferred quarry site. Six plant species protected under the KZN Provincial Conservation Ordinance are located in the preferred mining area (Aloe maculata, Boophone disticha, diorama igneum, Kniphofia coddiana, Merwilla plumbea, and Watsonia cf. densiflora; Figures 9, 18 and 19). A permit from Ezemvelo KZN Wildlife is required prior to the clearing / relocation of these plants. The protected species that are at risk should be relocated outside of the mining footprint. The plants are easily relocated and the following procedure should be followed: The development areas (and any adjacent area at risk of disturbance) should be searched for protected and Red Listed plants during the summer months, as some are inconspicuous or invisible during the winter. Plants should also only be relocated in the summer months, and be carried out by suitably qualified persons (such as a horticulturist), with due care and incurring minimal disturbance to roots or bulbs. Depending on the species involved, watering and maintenance will need to be carried out (Aloe species and bulbs do not need much more than initial watering but species that are not succulent or lack bulbs require extended watering). Plants must be planted into similar habitat. For example, plants occurring in rocky places should be planted in a similar location. 	6 (Med)

⁴ Images can be accessed on <u>www.sanbi.org</u>.

⁵ Images can be accessed on http://www.africanplants.senckenberg.de

NAME OF ACTIVITY	POTENTIAL IMPACT	SIGNIFICANCE if not mitigated	MITIGATION TYPE	SIGNIFICANCE if mitigated:
5. Cumulative impact: Clearance of vegetation from within the mining footprint.	Cumulative impact on biodiversity due to further loss of this vegetation type and limestone habitat in this area and on the property.	7 (Med)	 Although the study area falls within an area of moderate importance for faunal and vegetation diversity, the faunal specialist (Appendix B) concluded that the preferred mining area (Option 2) is of lower importance, and the priority area lies on the western banks, within the drainage lines. No conservation important fauna were located within the mining footprint. Furthermore, most part of the eastern portion of the proposed mining area has been previously disturbed due to previous habitation and clearing. Any snails and frog species that are encountered during the clearing process must be carefully removed and placed outside of the quarry footprint area. Vehicles and pedestrians must remain within the mining footprint and access road, reducing the area of disturbance. A 30m buffer must be maintained between the streams located on the western bank and the mining operations. A berm is to be constructed along the ridge line, separating Phase 1 (mining of the eastern bank), and Phase 2 (mining of the western bank). Phase 2 will only commence after Phase 1 is complete and will be dependent on the quantity and quality of material, and whether expansion into Phase 2 is justified. Additional berms must be created along the northern and southern side of the quarry, reducing the surface runoff entering the quarry. No waste or materials of any kind must be allowed to enter the surrounding natural environment and old quarry sump. 	5 (Low)
Blasting of material within the quarry footprint.	Generation of flyrock as a result of blasting causing damage or injuries to neighbouring property and people.	7 (med)	Mitigation is generally applied when mining comes to within 100m of any structure and whenever the ground vibration is likely to cause damage to the structure. Blasting generates short duration events that are noticeable only by communities and individuals living in the immediate environment. The blasting is to be carried out by a suitably qualified Contractor. The following mitigation measures are provided in the blasting plan and section 2.4 of the EMPr: • No unauthorised persons shall enter blast area. • A siren will sound 5 min prior to blast and then again 3 minutes before blast. • All persons shall be vacated from blast area • The blasting is to be carried out by a suitably qualified Contractor. • An assessment of ground conditions and desired fragmentation is to be done on each blast and blasting strategies and techniques are tailored to deliver the desired outcomes. This impact can be prevented and mitigated.	5 (low)

NAME OF ACTIVITY	POTENTIAL IMPACT	SIGNIFICANCE if not mitigated	MITIGATION TYPE	SIGNIFICANCE if mitigated:
7. Noise generation during operation of plant equipment (crushing, screening and blasting) and trucks.	Noise nuisance may impact on mining workers and nearby residents.	7 (Med)	The noise from machinery, trucks and loading of limestone will be on-going during operation and can't be completely mitigated against but can be minimised. The nearest household is located approximately 480m east of the quarry (Figure 20). Due to the distance from the site, and the topography (household on the opposite side of the hill), the noise from machinery (front end loaders, excavators, screener and crusher) and trucks will be significantly reduced before it reaches the adjacent farm houses. The noise from the quarry cannot be completely mitigated during its operating hours however the following mitigation is provided in section 2.5 of the EMPr (attached under Appendix J): All vehicles will be fitted with standard silencers and will be maintained regularly to prevent undue noise. The noise from machinery, trucks and loading of stone will be on-going during operation and can't be completely mitigated against. This noise will occur during the quarry operating hours. Typically, blasting is intermittent and at maximum capacity will only occur once a week or less. The smaller scale once off blasts will likely register in the vicinity of 140 dBA at source. As a point of comparison, traffic noise generates about 80-90dBA, the sound of breaking glass is 151dBA. The volume of noise will dissipate as one moves away from the blast area. In terms of topography, the site is cut into a hill and the work face will continue into the hill so sound will tend to be directed into the hillside. Blasting will only occur during daylight hours. The primary type of sounds expected will be fairly sharp, percussive sounds during operation of crusher and loading into trucks etc. which are more likely to travel longer distances. The surrounding vegetated hillsides will partially absorb this sound as it will be less likely to ricochet off these softened surfaces. As previously mentioned, the mining activity will be into the side of the hill such that some of the noise will be absorbed into the hillside, though some will also ricoch	4 (Low)

⁶ Workers Compensation Board of BC, Engineering Section Report; Stuart Eaton, February 2000

NAME OF ACTIVITY	POTENTIAL IMPACT	SIGNIFICAN not mitigate	_	МІТІС	GATION TYPE		SIGNIFICANCE mitigated:
	1	Table 9: Noise levels,	L _{eq} , exp	erience	d in construction jobs i	n the UK ⁷ .	
		Diametra musimum and	Operator	, L _{EX} , dBA			
		Plant/equipment	Ave.	Range	Trades/Tools	L _{eq} dBA	
		Dozers, Dumpers	96	89-103	Plumber	90	
		Front end loaders	88	85-91	Elevator installer	96	
		Excavators	87	86-90	Rebar worker	95	
		Backhoes	86.5	79-89	Carpenter	90	
		Scrapers	96	84-102	Concrete form finisher	93	
		Mobile Cranes	100	97-102	Dry wall installer	90	
		Compressors	79	62-92	Steel stud installer	96	
		Pavers	101	100-102	Labourer – road construction	86	
		Rollers (compactors)	90	79-93	Labourers – formwork	88	
		Bar Benders	95	94-96	Labourers – shovel hardcore	94	
		Pneumatic breakers	106	94-111	Labourers – concrete pour	97	
		Hydraulic breakers	95.5	90-100	Hoist operator	100	
		Graders, trucks, concrete pumps & mixers, generators	< 85		Labourers drains & roughing concrete	100	
		Concrete batch plant operator	< 85		Tile setter	92	
		Poker vibrators	94.5	87-98	Pneumatic chipper/chisel	109	
		Saws	88.5	78-95	Compactor	108	
		Piledrivers (diesel & pneum.)	98	82-105	Electric drill	102	
		Pile drivers (gravity, bored)	82.5	62-91	Air track drill	113	

⁷ (http://hearingconservation.healthandsafetycentre.org/pdfs/hearing/ConstructionNoise.pdf)

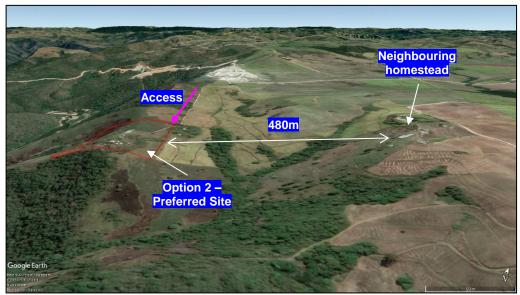
NAME OF ACTIVITY

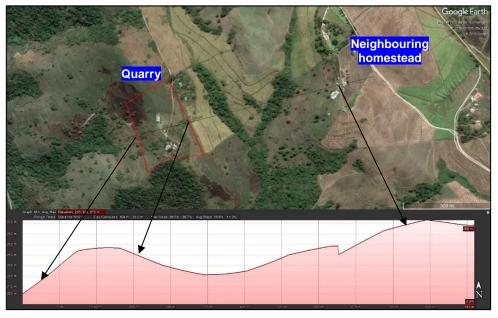
POTENTIAL IMPACT

SIGNIFICANCE if not mitigated if not mitigated if not mitigated if mitigated:

SIGNIFICANCE if mitigated:

Figure 20: Aerial image and elevation profile showing the location of the proposed quarry, the nearest neighbouring property and the associated topography of the site.





 Dust generation during excavation of the hill and from vehicles travelling on the dirt access road. Dust may impact air quality in the immediate area and create a nuisance and potential health risk for nearby residents.

Dust coats and contributes to deterioration of adjacent vegetation (Vegetation Impact Assessment).

8 (Med)

The area of impact is expected to be relatively low. Dust suppression is however to take place along the dirt access track as well as inside the quarry area itself.

- Dust will require management and the applicant must comply with the National Dust Regulations (Government Notice R827, 2013) with regards to dust levels produced on site.
- Mining benches are only to be cleared of vegetation as and when required for mining. This will reduce the amount of soil exposed to high winds creating dust.
- Perimeter monitoring of dust will be conducted to monitor dust levels to ensure they remain within legislated limits.
- Vehicle speeds must be reduced to 40kms within the quarry area and a water cart and water truck must be in operation to ensure dust is controlled.

5 (Low)

NAME OF ACTIVITY	POTENTIAL IMPACT	SIGNIFICANCE if not mitigated	MITIGATION TYPE	SIGNIFICANCE if mitigated:
			 Machines to be fitted with dust suppression equipment and localised water spraying with the addition of wetting agents will also reduce dust from specific activities and equipment. If legislated dust levels are exceeded, shielding of this equipment (use of hoods or enclosing within shade cloth barriers) as well as placement of equipment so that it is sheltered from prevailing winds will be implemented to assist in managing dust. The material being transported off site in the back of the trucks must be covered. Dust generation will be primarily managed through application of water from the borehole and sump area, which will be created during mining. The previous landowner has confirmed the presence of three boreholes on the property, however only one is currently functioning. Dust is an impact associated with on-going operation of a quarry and even with mitigation, some dust will still be released. It is therefore important that it is monitored to ensure levels remain within the legislated parameters and that all necessary mitigation measures are implemented. 	
Generation of emissions from vehicles.	Emissions for the construction vehicles on site and travelling on the access road may impact air quality in the immediate area.	9 (med)	All construction vehicles will be fitted with the appropriate silencers and exhausts. Emissions generated from these vehicles is not expected to significantly affect the workers on site or neighbouring farmers. This impact can be managed and mitigated.	5 (low)
10. Increase in heavy truck traffic as trucks enter and leave the site to transport material to where it is required.	Safety and nuisance impact on existing traffic and pedestrians. The increase in traffic will	7 (Med)	This cannot be avoided as traffic will increase slightly with the haulage trucks moving to and from the property. As shown in Figure 17 above, the access road through Portion 14 of Farm West Slopes 5828 is located more than 500m west of the neighbouring households, with alternative access available for these households. The access road joins the P68-2, which is a main road heading north from the N2. It is unlikely that the number of trucks from the African Lime Quarry operations will significantly increase the traffic on the P68-2. There is an existing impact of heavy trucks transporting material from the Rossmin Quarry. The following mitigation measures are included in the EMPr to manage this impact: All drivers must operate within the speed limits and due caution must be exercised especially when pedestrians are on the road. All drivers must be appropriately licenced and trained. Roads must not be located within adjoining properties and must remain on the existing dirt track on Portion 14 of Farm West Slopes 5828. No ad hoc haulage roads or turning areas may be created. Limit vehicle entry point to the designated access point and ensure no other point of entry is used. All vehicles to remain within the designated quarry site.	5 (Low)

NAME OF ACTIVITY	POTENTIAL IMPACT	SIGNIFICANCE if not mitigated	MITIGATION TYPE	SIGNIFICANCE if mitigated:
			Vehicles travelling to and from the quarry are not permitted to stop. Thereby reducing the likelihood of the collection of medicinally valuable plants.	
11. Operation of excavators and trucks on site.	Petrochemical spills from excavators and trucks.	8 (Med)	 All vehicles to be properly maintained and serviced. All vehicles to be equipped with drip trays. Drip trays are to be used under all leaking vehicles and equipment. All small machinery used on site must be situated on a drip tray (i.e. pumps, generators, compressors etc). All vehicles to be regularly maintained and maintenance records must be made available on request. Any vehicles that are leaking must not be allowed entry to site. Vehicles leaking oils must be removed from site and repaired. All spills must be contained, placed in a hazardous waste container and removed off site to be disposed of at a licensed hazardous waste landfill site. Adequate spill kits and containers for spilled and contaminated material to be on standby with the vehicles on site. If a spill occurs, stop the source, contain it, clean up in accordance with MSDSs and notify relevant authorities. All staff must be trained on how to react in the case of an emergency. Make staff aware of emergency phone numbers to use in the case of a large spill. No major equipment or vehicle servicing to occur on site i.e. major disassembly and repair work, clutch replacements and oil or lubricant changes must be carried out at a suitably equipped workshop. Only minor emergency repairs, i.e. those necessary to get the vehicle moving so that it can be taken to a repair facility to be carried out i.e. stopping of oil leaks, lubricating of hydraulics, changing of buckets / breakers on Excavators and TLBs or changing of tyres. 	4 (Low)
12. Poor stormwater management during operation – "Dirty" water mixing.	Poorly managed stormwater run- off resulting in "dirty" water from within the quarry mixing.	10 (Med)	Provision must be made to control stormwater runoff, especially down the slope of the mine face. The aim of the stormwater management is to ensure that clean water running off surrounding slopes does not enter the mine area and "dirty" water from within the mine area does not leave the mine area. This will be assessed as part of the WULA submitted to DWS. The following measures will be taken to manage runoff in and around the mine area: • Strategic placement of diversion berms and ditches around the mine area to divert clean water away from the mine and prevent potentially contaminated run off from leaving the mine area. • The ditches and berm area must be vegetated. • A sump/s are to be created at the low point of the quarry to capture runoff from within the mine area. This water is considered "dirty" and will be stored on the site and used for dust suppression.	6 (Med)

NAME OF ACTIVITY	POTENTIAL IMPACT	SIGNIFICANCE if not mitigated	MITIGATION TYPE	SIGNIFICANCE if mitigated:
13. Poor stormwater management during operation and closure – Erosion on site.	Poorly managed stormwater run- off resulting in erosion of the site.	9 (Med)	The sump area may need to move as the mining area changes and moves. This impact can be avoided, managed and mitigated. Provision must be made to control stormwater runoff, especially down the slope of the exposed mine face to prevent erosion and excess sediment entering the sump and surrounding environment. Temporary stormwater protection measures must be established before operational activities commence. Install appropriate erosion barriers (berms or diversion ditches, sandbags) and other sediment control structures (grates or grids, geofabric) in order to prevent substances from entering exposed drains or channels. Identify steeper areas where erosion is more likely to occur and ensure adequate protection of these slopes through planting of vegetation, placement of berms or use of hessian material. Regularly check and clean material from behind erosion barriers.	5 (Low)
14. Risk to water quality on nearby watercourses and wetlands.	Poorly managed stormwater run- off will cause erosion on site and may lead to deposition of material and sediment into the drainage lines to the west, and channelled valley bottom wetland to the east.	9 (Med)	 This impact can be managed and mitigated. Due to the topography of the site (i.e. a ridge line), water runoff will naturally run in a westerly and easterly direction into the surrounding environment. The water runoff from the floor of the quarry, where mining is taking place, will be directed into a sump which is to be created at the lowest point of the quarry, located to the east during Phase 1. Phase 2 will only commence after Phase 1 is complete and will be dependent on the quantity and quality of material, and whether expansion into Phase 2 is justified. When Phase 2 begins, a new sump will be created prior to mining the western face. This will be located at the lowest point on the western face (as per Figure 4). This preferred flow path is to be monitored for signs of erosion during the operation of the quarry. A 30m buffer must be maintained between the drainage lines within the valley to the west of the quarry (i.e. outside the mining footprint). Identify any steeper areas where erosion is more likely to occur and ensure adequate protection of these slopes. This can be achieved through planting of vegetation, placement of berms or use of hessian material. Provision must be made to control stormwater runoff, especially down the slope of the mine face. Stormwater to be managed through placement of diversion berms and ditches at the top of the eastern perimeter of the site and at 10m intervals down the sides of the slope which will act to divert and slow water flow 	5 (Low)

NAME OF ACTIVITY	POTENTIAL IMPACT	SIGNIFICANCE if not mitigated	MITIGATION TYPE	SIGNIFICANCE if mitigated:
			 down the slope and prevent water from dispersing off the western side of the site. The ditches and berm area must be vegetated. Install appropriate erosion barriers (berms or diversion ditches, sandbags) and other sediment control structures (grates or grids, geofabric) in order to prevent substances from entering exposed drains or channels associated with the access road. Regularly check and clean material from behind any erosion barriers. Channelled flow must not be permitted to leave the site or enter any watercourses where it can erode the banks and damage the drainage channels. Sediment / soil must not be permitted to enter any watercourse. The water quality of the drainages line to the west of the quarry, the wetland system to the east, and the Mzimkhulu river (upstream and downstream) must be tested quarterly for the duration of the project, as well as one-year post closure. Phase 2 of mining can only commence once the material in phase 1 has been exhausted. Prior to mining continuing over the ridgeline (i.e. into Phase 2), a detailed mine methodology, prepared by a suitable qualified mine engineer, must be submitted to the ECO for review and approval. The mine methodology must include provision for a sump to contain stormwater runoff (as per the stormwater runoff plan to address the concerns raised by the faunal specialist). 	
15. Insufficient number of toilet facilities on site	Contamination of the surrounding environmental as a result of insufficient number of toilet facilities.	9 (Med)	 Workers on site will require an appropriate number of toilet facilities on site. Appropriate and sufficient toilet facilities (1 toilet per 15 employees) must be provided by the applicant; All toilet facilities must be checked on a daily basis; All toilet facilities must be emptied and cleaned on a weekly basis. A registered waste removal contractor must remove effluent waste from site or effluent waste must be disposed of at a permitted Waste Water Treatment Site. 	5 (Low)
16. Location of mine.	Suitability of operation with respect to surrounding land use i.e. a visual impact, and impact on sense of place.	8 (Med)	 The site is situated on a private property, in a rural area which is not a noted tourist destination, therefore there should not be an economic impact as a result of this impact. In terms of surrounding land use, the property is surrounded by other privately-owned farms which are mainly used for agriculture (sugar cane), or have been undisturbed and remain vegetated. The nearest residential household is 480m east and is located on the opposite side of the valley. As the mine is not in direct conflict with surrounding land use, this impact is considered manageable. During operation, the site must be maintained and shaped on an ongoing basis to manage and reduce the visual impact as far as possible. 	5 (Low)

NAME OF ACTIVITY	POTENTIAL IMPACT	SIGNIFICANCE if not mitigated	MITIGATION TYPE	SIGNIFICANCE if mitigated:
			Once the site is closed, rehabilitation in the form of topsoil and hydroseeding must take place to allow for the re-growth of vegetation on this site.	
17. Generation of waste during course of operation.	Improper storage and disposal of waste generated by drivers i.e. domestic waste, toilet waste, oil contaminated soils percolating into the natural areas around the quarry.	6 (Med)	 Suitable and sufficient waste bins must be brought to site to allow proper disposal of domestic waste generated by staff and also for disposal of any contaminated soils as a result of oil leaks / spills. A register of all waste generated and disposed of must be maintained. Waste to be disposed of at a registered landfill site. Proof of safe disposal of solid waste must documented and these records must be maintained on site for review by DMR. There must be no illegal dumping or burying of waste on site or on adjacent properties under any circumstances. Waste material and refuse must not percolate into the remaining natural areas otherwise regular checks and clean-ups will be necessary. This is to be monitored by the ECO. Chemical toilets must be provided on site for duration of mining activity. Chemical toilets must be regularly emptied by registered companies and record of waste disposal must be maintained. Safe disposal certificates for toilet waste must be obtained and kept on site as assurance that the waste was properly disposed of. Toilets must not be situated on slopes or within 30m of the drainage lines and must be secured to prevent them tipping over. Staff must make use of facilities or arrangements provided and are not permitted to use surrounding properties or vegetated areas as toilet facilities. Hazardous materials that require disposal (old fuel / oil, contaminated soils etc.) must be disposed of at a registered hazardous landfill site. These materials must be removed by an appropriate hazardous waste contractor. Proof of appropriate disposal must be available to the ECO for scrutiny and kept on record. 	2 (Low)
18. Degradation of the Primary Grassland.	Isolation of the Primary grassland located below the preferred quarry site. Encroachment of scrub and woody vegetation into the primary grassland below quarry site (Vegetation Impact Assessment).	8 (med)	Although the location of the quarry avoids the majority of the Primary grassland, it will isolate this vegetation type to the western bank. Isolation of the grassland could increase the possibility of scrub and woody plant encroachment overtime (Vegetation Impact Assessment). The specialist recommended that a burning regime be implemented, and that the grassland below the quarry is burnt once every two years.	4 (low)
19. Quarrying contaminating the groundwater.	Contamination of the groundwater impacting the adjacent farms and borehole users.	9 (med)	The quarry is located at the top of a watershed, with water flowing towards both the east and west. There is a borehole located approximately 650m north east of the proposed quarry area. The adjacent landowner raised a concern that the proposed quarry will negatively affect the quality of the water within	6 (Med)

NAME OF ACTIVITY	POTENTIAL IMPACT	SIGNIFICANCE if not mitigated	MITIGATION TYPE	SIGNIFICANCE if mitigated:
20. Effect of operation on surrounding community.	Potential positive impacts for local employment opportunities.	0 (Positive)	their borehole (see Appendix G, Comments and Response Table). Feedback from the water resource specialist (see Appendix G, Comments and Response Table) stated that without knowing the extent of the aquifer, the depth of the borehole, and the planned depth of the quarry, there is no certainty that there will or will not be an impact on the borehole. However, the borehole is located upstream and at a higher gradient to the proposed mining area. It is recommended that the water be tested prior to commencement of mining, as well as during the mining process. This is a positive impact, however it is to be noted that local labour must be sought, where possible, for the mining of this site.	0 (Positive)
21. Cumulative impact on air quality.	Increase in the volume of dust produced which may impact air quality in the immediate area and create a nuisance and potential health risk for nearby residents.	9 (Med)	Air emissions from the quarry will be dust related and to some extent will add to the cumulative impact on air quality in the area. The nearest dust generating activity is the Rossmin Mine (approximately 1 km north). Although dust cannot be completely prevented due to the nature of the activity, it will be mitigated to a large extent through a dust watering program as well as management and screening of certain equipment. Perimeter dust monitoring will be carried out as per the requirements of the legislation to ensure that levels remain within legislated limits. Water from the onsite sump will be used to supress dust on site. A water tanker will be permanently on site to provide an alternative borehole supply, should water from the sump run out. No water will be abstracted from nearby water resources. A complaints register has been attached to section 7 of the EMPr, which will be kept on site. Any complaints received are to be addressed in a timeously fashion. A review of the complaints and close out register are to be included in environmental auditing for the quarry. This impact can be managed and mitigated.	5 (Low)
PHASE: CLOSURE / REHABI	LITATION			
22. Closure of the site and rehabilitation of the quarry.	If the quarry is not rehabilitated upon completion of the activity, the current activity will create an on-going safety risk and be a danger to animals who may fall off the cliff edges or be hurt by unstable collapsing rock faces. It will continue to have a visual impact on the landscape and there may be further slippage of unshaped slopes and erosion of soil above unstable slopes.	10 (Med)	 Appropriate rehabilitation can mitigate this risk. The area must be shaped, topsoil placed on the slopes and re vegetated to ensure that it does not pose a safety or erosion and environmental hazard. Stormwater flow must be managed by placing a diversion berm and ditch at the top of the slope which will act to divert and slow water flow down the slope. The ditch and berm must be vegetated. Slopes must not be left at an angle steeper than 1:3. This will also act as a safety measures as it will clearly demarcate the edge of the slope and make it less easy for people or animals to fall off the top of the slope of the cut face. 	6 (Med)

NAME OF ACTIVITY	POTENTIAL IMPACT	SIGNIFICANCE if not mitigated	MITIGATION TYPE	SIGNIFICANCE if mitigated:				
	OPTION 1 – ALTERNATIVE SITE							
PHASE: OPERATION								
Clearance of indigenous vegetation from within the mining footprint.	Physical disturbance of vegetation (Vegetation Impact Assessment). There will be clearing of up to 4.8ha of vegetation as the mining area is expanded.	11 (High)	 The quarry footprint consists of three vegetation components: Good quality Primary Grassland – Pondoland-Ugu Coastal Sourveld (4.62 ha), Thicket-Grassland Transitional (0.1 ha) and Dry Scarp Forest (0.11 ha). The good quality Pondoland-Ugu Coastal Sourveld vegetation makes up 96.25% of the quarry site. Partial mitigation will only occur when the site is closed and rehabilitated and parts of the site are re-vegetated. Some areas such as the slopes may not be suitable for re-vegetating. Vegetation clearing must only take place within the quarry footprint area. Vehicles must remain within the mining footprint and access road. Vegetation may only be cleared when the current mining footprint requires expansion (i.e. at intervals and not all at once). 	11 (High)				
	Clearance of plant species protected under the National Forest Act (No. 84 of 1998) and the KZN Nature Conservation Ordinance (No. 15 of 1974).	10 (Med)	 No tree species protected under the NFA were located within the proposed mining area. However, one Sideroxylon inerme (White Milkwood) was identified on the boundary of the preferred quarry site. Seven plant species protected under the KZN Provincial Conservation Ordinance are located in the preferred mining area (Albuca setosa, Aloe ferox, Boophone disticha, diorama igneum, Kniphofia coddiana, Merwilla plumbea, and Watsonia cf. densiflora; Figures 9, 18 and 19). A permit from Ezemvelo KZN Wildlife is required prior to the clearing / relocation of these plants. 	6 (Med)				

NAME OF ACTIVITY PO	OTENTIAL IMPACT	SIGNIFICANCE if not mitigated	MITIGATION TYPE	SIGNIFICANCE if mitigated:
Clearance of vegetation from within the mining footprint	Cumulative impact on biodiversity ue to further loss of this egetation type and limestone abitat in this area and on the roperty.	10 (Med)	 The faunal and vegetation specialists both do not support the mining of Option 1, the alternative site (Appendix B). The drainage lines to the north host numerous species of conservation concern. Any snails and frog species that are encountered during the clearing process must be carefully removed and placed outside of the quarry footprint area. Vehicles and pedestrians must remain within the mining footprint and access road, reducing the area of disturbance. A 30m buffer must be maintained between the streams located on the western bank and the mining operations. Additional berms must be created along the northern and southern side of the quarry, reducing the surface runoff entering the quarry. No waste or materials of any kind must be allowed to enter the surrounding natural environment and old quarry sump. 	8 (Med)
3. Risk to water quality on nearby watercourses and wetlands.	Poorly managed stormwater runff will cause erosion on site and nay lead to deposition of material nd sediment into the drainage nes to the west, and channelled alley bottom wetland to the east.	9 (Med)	 Due to the topography of the site (i.e. a steep west facing hillside), water runoff will run in a westerly (down slop) and northerly direction (towards the drainage lines) into the surrounding environment. The water runoff from the floor of the quarry, where mining is taking place, will be directed into a sump which is to be created at the lowest point of the quarry. The preferred flow path is to be monitored for signs of erosion during the operation of the quarry. A 30m buffer must be maintained between the drainage lines within the valley to the north of the quarry (i.e. outside the mining footprint). Identify any steeper areas where erosion is more likely to occur and ensure adequate protection of these slopes. This can be achieved through planting of vegetation, placement of berms or use of hessian material. Provision must be made to control stormwater runoff, especially down the slope of the mine face. Stormwater to be managed through placement of diversion berms and ditches at the top of the eastern perimeter of the site and at 10m intervals down the slope and prevent water from dispersing off the western side of the site. The ditches and berm area must be vegetated. Install appropriate erosion barriers (berms or diversion ditches, sandbags) and other sediment control structures (grates or grids, geofabric) in order to prevent substances from entering exposed drains or channels associated with the access road. Regularly check and clean material from behind any erosion barriers. 	7 (Med)

NAME OF ACTIVITY	POTENTIAL IMPACT	SIGNIFICANCE if not mitigated	MITIGATION TYPE	SIGNIFICANCE if mitigated:
			 Channelled flow must not be permitted to leave the site or enter any watercourses where it can erode the banks and damage the drainage channels. Sediment / soil must not be permitted to enter any watercourse. The water quality of the drainages line to the west of the quarry, the wetland system to the east, and the Mzimkhulu river (upstream and downstream) must be tested quarterly for the duration of the project, as well as one-year post closure. 	
4. Location of mine.	Suitability of operation with respect to surrounding land use i.e. a visual impact, and impact on sense of place.	8 (Med)	 The site is situated on a private property, in a rural area which is not a noted tourist destination, therefore there should not be an economic impact as a result of this impact. In terms of surrounding land use, the property is surrounded by other privately-owned farms which are mainly used for agriculture (sugar cane), or have been undisturbed and remain vegetated. The nearest residential household is 700m east and is located over a hillside. There is no line of site from the households towards the quarry face. As the mine is not in direct conflict with surrounding land use, this impact is considered manageable. During operation, the site must be maintained and shaped on an ongoing basis to manage and reduce the visual impact as far as possible. Once the site is closed, rehabilitation in the form of topsoil and hydroseeding must take place to allow for the re-growth of vegetation on this site. 	6 (Med)
5. Quarrying contaminating the groundwater.	Contamination of the groundwater impacting the adjacent farms and borehole users.	7 (med)	The quarry is located on a steep hillside, with water flowing towards the west. There is a borehole located approximately 920m north east of the quarry area. The adjacent landowner raised a concern that the proposed quarry will negatively affect the quality of the water within their borehole (see Appendix G, Comments and Response Table). Feedback from the water resource specialist (see Appendix G, Comments and Response Table) stated that without knowing the extent of the aquifer, the depth of the borehole, and the planned depth of the quarry, there is no certainty that there will or will not be an impact on the borehole. However, the borehole is located upstream and at a higher gradient to the proposed mining area. It is recommended that the water be tested prior to commencement of mining, as well as during the mining process.	5 (Low)

6.5. Section 1 (h) (x) Motivation Where No Alternative Sites Were Considered.

The Preferred site (Option 2) was considered suitable as it falls within an area that has already been disturbed (habitation and clearing) and there is easy access to the material. The site is located within close proximity to a road, thereby reducing the cost of transporting the limestone that is to be mined. Due to the applicant owning the property, and the site-specific material found at this site, no alternative locations have been considered for this application.

6.6. Section 1 (h) (xi) Concluding Statement Indicating the Preferred Alternatives, Including Preferred **Location of the Activity**

In determining the preferred location of the guarry, the EAP has taken into account the location of the existing impacts, quality and type of vegetation (delineated by the vegetation specialist) and the drainage lines to the west (identified as a biodiversity feature that contains numerous species of conservation concern by the faunal specialist), as well as the location of the provincially protected species. The preferred (Option 2) mining area has been strategically positioned by the EAP to avoid as much of the good quality grassland vegetation as possible while still providing enough area to mine. The recommended 30m buffer between the drainage lines to the west and the mining operations has been accommodated. The availability of material, the existing impact and buildings on site, as well as availability of existing access to the site were factored in.

6.7. Section 1 (i) Full Description Of The Process Undertaken To Identify, Assess And Rank The Impacts And Risks The Activity Will Impose On The Preferred Site In Respect Of The Final Site Layout Plan Through The Life Of The Activity, Including

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

Impacts have been identified by conducting a site visit to the guarry in question and reviewing topographical maps and aerial photographs of the area in question. The consultants involved in identifying these impacts all have a minimum of 3 years' experience in environmental impact assessments as well as specific experience with mining applications. All applications are reviewed and checked by a lead consultant with 17 years' experience in environmental impact assessment and 9 years' experience in assessing mining applications. Section 3(h)(v) above describes the process used to assess and rank impacts and risks of the proposal. Table 8 above includes a description of all issues and risks identified and provides an assessment of significance as well as mitigation measures required.

6.8. Section 1 (h) (j) Assessment Of Each Identified Potentially Significant Impact And Risk

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

Table 8 above provides a thorough consideration of all known typical impacts of the activities.

6.9. Section 1 (k) Summary Of Specialist Reports.

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

Table 10: Section 1 (k) Specialist Reports				
LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with an X where applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED.	
The Biodiversity Company (September 2019) "Wetland Baseline & Impact Assessment for the proposed Limestone Quarry".	The recommended buffer zones (30m on watercourses, 100m on Mzimkhulu River) must be strictly adhered to during the all phases of the project. All	X	Section 6.4 (Table 8) of the BAR. Section 2 of the attached EMPr.	

	 activities must be beyond the buffer zone. A stormwater management plan must be compiled and implemented for the project. All clean water must be 	X	
	diverted back into the wetland system. • An alien vegetation control and eradication plan must be initiated from the onset of the	Х	
	project, and must be continued for one-year post closure. • Measures to trap and treat impaired water quality stemming from the quarry	X	
	area, particularly within the drainage channels must be implemented. This may include the construction of a passive water treatment system. • It is recommended that water quality monitoring be conducted on a quarterly basis for the duration of the project, and for one-year post closure. Monitoring sites should include the wetland system, the associated drainage line and also an upstream and	X	
	downstream site on the Mzimkhulu River.		
David Styles (2019) "Vegetation Impact Assessment for the proposed African Lime Quarry".	 Highest value vegetation on the site, should be avoided and protected from mining-related disturbance. This includes Scarp Forest, woody vegetation close into the intermittent stream and the cliff edges and 50 metres above and below. An alternate and smaller footprint is suggested to protect valuable vegetation and habitats. This provides a 30 metre buffer between this vegetation and footprint and proposed quarrying. If possible, the adjacent land under cultivation should be considered for inclusion, together with other seral or secondary indigenous plant growth along the same contour as that under cultivation. Controlling vehicle and pedestrian traffic, ensuring it is kept away from the Scarp Forest, Pondoland-Ugu Coastal Sourveld and the drainage line and confined to designated roads and work areas. 	Based on the findings of the specialist studies, the alternative layout (lower site) was deemed to not be feasible and will be avoided to maintain as much of the good quality grassland as possible, while still allowing mining to continue within the degraded areas. A 30m buffer on the good quality Pondoland-Ugu Coastal Sourveld was not feasible for the preferred mining area, and a portion of this vegetation will be cleared as the mining area expands into Phase 2.	Section 6.4 (Table 8) of the BAR. Section 2 of the attached EMPr.

Controlling of alien plants should be included within a management plan approved by and audited for the competent authority for the site and include all the valuable or the competent authority for the site and include all the valuable or the competent authority for the site and include all the valuable or refuse does not perceive into the remaining natural area, and to ensure that it does not, make regular checks and clean ups as necessary. Livestock should be excluded from grazing the grassland on the site. These animals will in any event pose a hazard if mining is taking place. A magement plan including more detail on alien plent control should be drawn up by a suitably qualified specialist for the site and an area of 100 metres around, and which sats out specific milestones, timeframes and reporting to ensure that this management is implemented. Burning of the grassland beneath the quarry is to occur every two years. A permit is required from Ezorwelo KZN Wildlife before any plants proceed by the same and read of disturbed, damaged, destroyed or relocated. For those plants that are relocated, the following must be carried out: The development areas (and my adjacent area at risk of disturbance) should be searched for protected and Red Listed plants from late October and before the end of summer, as some as more agriculture, and should be searched for protected and Red Listed plants from late October and before the end of summer, as some as micromapicuous end on the summer months, and be carried out by suitably qualified persons (such as a horticulturist), with due care and incurring minimal.				
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	disturbance to roots or bulbs. Depending on the species involved, watering and maintenance will need to be carried out (Aloe species and bulbs do not need much more than initial watering but species that are not succulent or lack bulbs require extended watering). - Plants must be planted into similar habitat. No mining is to occur on the lower site (alternative 2). The Primary Pondoland-Ugu Coastal Sourveld is protected.	X A portion of the Primary Pondoland-Ugu Coastal Sourveld falls within the preferred mining footprint. This vegetation will be lost when mining expands into Phase 2 (the western bank). The Primary grassland located below the proposed quarry will be conserved and avoided, with no anticipated impact predicted.	
Brousse-James & Associates cc (2019) "Mining Permit Application – African Lime (Pty) Ltd: Faunal Report"	 Water quality assessments need to be conducted, both prior to mining (baseline) and at regular intervals during the operational lifespan of the mine. The breeding status of the frogs (Natalobatrachus Bonebergi) should be assessed annually and measures taken to protect them if there is any evidence of negative impacts on the population. 	X	Section 6.4 (Table 8) of the BAR. Section 2 of the attached EMPr.
Active Heritage cc. (March 2019) "Phase one Heritage Impact Assessment of the proposed African Lime Quarry near Port Shepstone, Hibiscus Coast Local Municipality, KZN	A desktop palaeontological assessment is required prior to the initiation of the quarry. If any fossils, graves and archaeological and historical residues are exposed, mining should cease immediately pending an evaluation by the heritage authorities.	X	Section 5.1.1.2 of the BAR. Section 2 of the attached EMPr.

6.10. Section 1 (I) Environmental Impact Statement

- (i) Summary Of The Key Findings Of The Environmental Impact Assessment;
- (ii) Final Site Map (See Figure 15 below)

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

(iii) Summary Of The Positive And Negative Impacts And Risks Of The Proposed **Activity And Identified Alternatives**

The key impacts associated with the African Lime Quarry relate to those associated with the operation period itself. Issues such as clearly defining the boundaries of the quarry and no-go areas as well as the management of erosion need to be addressed and managed.

General quarry operations

Noise generated during processing (screening, blasting and crushing) as well as heavy vehicles moving around site may become a nuisance to surrounding residents. It is unlikely that the farming activities to the east of the proposed quarry site will be significantly affected by the noise. Some of the noise will be absorbed into the hillside however there are residential farms and houses further to the east of the quarry site. All vehicles will be fitted with standard silencers and will be maintained regularly to prevent undue noise. The noise from machinery, trucks and loading of stone will occur during operating hours (8 hours a day Monday – Saturday). The impact of noise during operating hours was rated as low, after mitigation.

Leaving the quarry un-rehabilitated after mining is complete, is not only a safety risk but will have an environmentally negative impact on the landscape (aesthetics, faunal movement, erosion, alien vegetation encroachment into grassland etc.). In terms of section 43 (1) of the Mineral and Petroleum Resources Development Act 28 of 2002 (MPRDA) "The holder of a mining permit, remains responsible for any environmental liability, pollution, ecological degradation, the pumping and treatment of extraneous water, compliance to the conditions of the environmental authorisation and the management and sustainable closure thereof. until the Minister has issued a closure certificate in terms of this Act to the holder or owner concerned." Procedures and requirements on mine closure will be stipulated in the environmental authorisation issued in terms of NEMA [s43 (8)]. The rehabilitation measures provided in section 3 of the EMPr are therefore to be adhered to once mining is complete. The EMPr also details the financial provisions for the rehabilitation of the site once mining is complete. The funds for the rehabilitation have to be deposited into DMR's account before they will issue the Mining Permit, as a guarantee that rehabilitation will take place.

Fauna

Although the quarry will directly impact 4.9 hectares of the 26.8 hectare property, there is the potential for critical IUCN and nationally threatened faunal species to occur within the quarry footprint. As the proposed quarry footprint predominantly falls within an existing disturbed area, very few faunal species are expected to be found. However, the initial disturbance (vehicles, excavations etc.) will result in any present species moving off the site. The rest of the property is undeveloped and it is therefore likely that faunal species will continue to use the remainder of the site for foraging and habitation, specifically the drainage lines and scarp forest located to the west of the quarry footprint. A buffer of 30m must be maintain between the quarry and the drainage lines within the valley to the west.

Flora

A large portion of the property contains Primary Pongoland-Ugu Sandstone Coastal Sourveld grassland, however, the preferred site alternative is predominantly comprised of transformed and alien vegetation. The majority of this Primary grassland is located below the proposed quarry footprint, and will be demarcated as a no-go area. Section 2.4 of the EMPr provides mitigation measures which are to be adhered to during operation.

Cumulatively, there will be a loss of 1.17 ha of good quality Primary Pondoland-Ugu Sandstone Coastal Sourveld grassland. Measures are provided to reduce the extent of the vegetation clearing however this impact cannot be avoided. The alien vegetation in the guarry area will be cleared, which is a positive impact.

The strategic location of the property, in close proximity to main transport routes (i.e. N2 Highway), as well as the property located within the Marble Delta, provides a prime development opportunity for the landowner.

Once rehabilitation has taken place there should be no further impacts related to the closure phase/ post operation for this site.

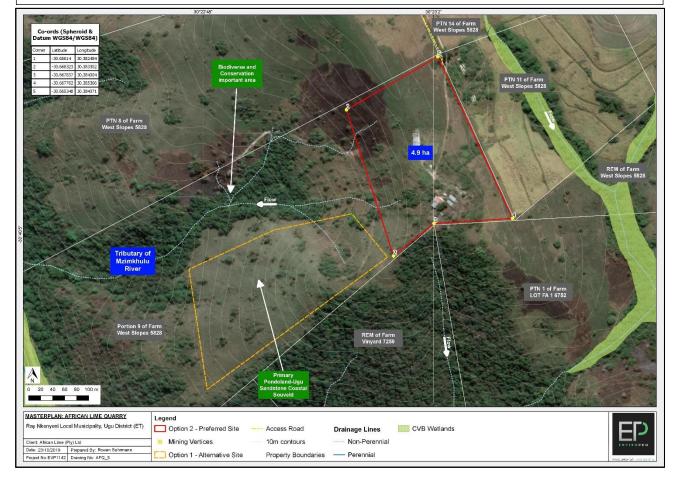


Figure 21: Section 1(I) (ii) Overview And Sensitivity Map

Section 1 (m) Proposed Impact Management Objectives And The Impact Management **Outcomes For Inclusion In The EMPr;**

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

The following objectives and outcomes must be considered for this project:

- Objectives:
 - For there to be no lasting negative impacts on the environment post operation.
 - To practice responsible operation, 'best practice principles' with regards to housekeeping on site during operation (outlined within the EMPr) and enforcing the polluter pays principle. The applicant/ contractor must be responsible for their actions on site during operation and the rehabilitation of the site.
 - The holder of the Mining Permit is to rehabilitate the guarry effectively to ensure that there is no longterm scar left on the hillslope.
- Outcomes:
 - To promote sustainable development. Create infrastructure and an environment that is healthy and sustainable for future generations to come.

Section 1 (n) Aspects For Inclusion As Conditions Of Authorisation.

Any aspects which must be made conditions of the Environmental Authorisation

Stakeholders, Properties & Services

As standard construction practice the engineer and contractor to identify all existing services that may be affected prior to commencement of mining.

Traffic & Construction Vehicles

- The existing access road through the farm must be utilised.
- No ad hoc roads are to be created.
- All vehicles to be fitted with the appropriate silencers and exhausts.
- All drivers must operate within the speed limits.

- All drivers must be appropriately licenced and trained.
- All vehicles to be properly maintained and serviced.
- Vehicles to be equipped with drip trays should any leaks occur.
- Vehicles leaking oils must be removed from site and repaired.
- All spills must be contained, placed in a hazardous waste container and removed off site to be disposed of at a licensed hazardous waste landfill site.
- Adequate spill kits and containers for spilled and contaminated material to be on standby with the vehicles on site.

Housekeeping, Waste Management, Storage and Materials Handling

- Littering must not be permitted on site.
- Although there will be no formal site camp on site, contractors must bring suitable and sufficient waste bins to site to allow proper disposal of domestic waste generated by staff and also for disposal of any contaminated soils as a result of oil leaks / spills.
- There must be no dumping on site under any circumstances.
- Waste to be disposed of at a registered landfill site and record of all waste disposal must be retained.
- Staff must be provided with access to toilet facilities.
- Chemical toilets must be regularly emptied by registered companies and record of waste disposal must be maintained.

Dust and Erosion Control

- Dust suppression must be carried out on the access road and operational areas within the guarry area when it becomes a nuisance.
- The applicant must comply with the National Dust Regulations (Government Notice R827, 2013) with regards to dust levels produced on site. If necessary water carts must be used on site should dust levels elevate to a nuisance level.
- Further steps may need to be taken such as using shade cloth for screening, if complaints are received regarding dust.

Stormwater Management

- Provision must be made to control stormwater runoff, especially down the slope of the mine face.
- This must be managed through placement of diversion berms and ditches at the top and at 10m intervals down the sides of the adjacent slopes which will act to divert and slow water flow down the slope and prevent water from entering the quarry area.
- The ditches and berm area must be vegetated.
- No "dirty" stormwater that falls within the quarry area must enter the drainage lines or wetlands surrounding the site. This water must be channelled into the sump within the mining area.
- A 30m buffer must be maintained between the drainage lines and the mining operations.
- Identify steeper areas where erosion is more likely to occur and ensure adequate protection of these slopes through planting of vegetation, placement of berms or use of hessian material.
- Regularly check and clean material from behind erosion barriers.

Protection of Heritage Resources

- Attention is drawn to the South African Heritage Resources Act. 1999 (Act No. 25 of 1999) and the KwaZulu-Natal Heritage Act (Act no 4 of 2008) which, requires that operations that expose archaeological or historical remains should cease immediately, pending evaluation by the provincial heritage agency.
- Should vertebrate palaeontological material be uncovered, a palaeontologist should be consulted.

Operation of Mine

- The slope face must not be heavily undercut as this could lead to collapse of the slope. Mining activity needs to take into account the final shape of the excavated area so as to reduce the risk of potential collapse and shifting.
- Undercutting of the slope and creation of over-steep slopes must not be permitted.
- The slope angle and stability must be regularly evaluated by the resident engineer and adjustments made to the area and angle of excavation as needed.
- A fence must be established around this site to prevent animals from entering the site.
- Vehicles must remain within the mining footprint.
- Working hours must be limited to standard daylight working hours (8am-5pm).
- Vegetation may only be cleared when the current mining footprint requires expansion.

- The surrounding natural area is to be treated as a No-Go area.
- Restrictions associated with the surrounding natural area are to be included in the environmental induction training, which is to take place when mining commences.
- Mining must initially take place within Phase 1. Phase 2 of mining can only commence once the material in phase 1 has been exhausted.

Conditions Specific to the Site

- No "dirty" or potentially contaminated water from within the guarry is permitted to enter the drainage lines to the west of the quarry site. The breeding status of the Kloof Frog must be monitored for any negative effects brought about through mining once every year.
- Six plant species protected under the KZN Provincial Conservation Ordinance are located in the mining area (Aloe maculate, Boophone disticha, Dierama igneum, Kniphofia coddiana, Merwilla plumbea, and Watsonia cf. densiflora). A permit from Ezemvelo KZN Wildlife is required prior to the clearing / relocation of these plants.
- No waste or materials of any kind must be allowed to enter the surrounding natural environment and old quarry sump.

Section 1 (o) Description of Any Assumptions, Uncertainties and Gaps in Knowledge. 6.13.

Which relate to the assessment and mitigation measures proposed.

Given the range of input from the various specialist studies, there is only one gap in knowledge: 1) To what depth does the limestone extend, and what quality limestone is present.

Section 1 (p) Reasoned Opinion As To Whether The Proposed Activity Should Or Should Not 6.14. Be Authorised

It is the opinion of the EAP that potential impacts that could occur during the operational and rehabilitation phase of the African Lime Quarry operation have been identified (see the EAP declaration provided in Appendix I). Further to the above mitigation methods, an EMPr (Appendix J) has been developed to manage and control potential impacts. The EMPr must be implemented through annual operation audits during which time recommendations within the EMPr must be enforced. If the EMPr is implemented correctly and the mitigation measures listed in this report are adhered to then the potential impacts associated with the quarry are considered low.

It is the opinion of the EAP that there are no significant environmental impacts associated with the proposal which cannot be mitigated and therefore the proposed permitting of the African Lime Quarry should be authorised.

Section 1 (g) Period for Which the Environmental Authorisation Is Required.

The Mining Permit will be valid for a 2 year period. It can be renewed three times for a year at a time allowing a maximum of 5 years validity of the permit. On expiration of the Mining Permit, the site is to be decommissioned and rehabilitated according to the Rehabilitation Plan, outlined in more detail in section 3 of the EMPr attached under Appendix J. The Environmental Authorisation should therefore be valid for a 5 year period.

Section 1 (r) Undertaking

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

Please see the EAP declaration provided in Appendix I.

6.17. Section 1 (s) Financial Provision

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

Financial provision is required for rehabilitation of the site once mining is complete. The applicant is responsible for and must ensure that the site has been rehabilitated in full before leaving the site. The applicant has allocated sufficient budget for payment of the financial rehabilitation fee. The amount allocated for financial provision depends on the size and state of the cleared area requiring rehabilitation. Table 10 below extracted from the DMR standard rehabilitation guideline8 provides guidance on rehabilitation fees applicable for mines based on sensitivity and area affected. The highlighted items are applicable to the site in question.

Table 11: Section 1 (s) Financial Provision Calculation: Sensitivity of Area					
Concitivity	Sensitivity Sensitivity				
Sensitivity Biophysical		Social	Economic		
Low	 Largely disturbed from natural state. Limited natural fauna and flora remains. Exotic plant species evident. Unplanned development. Water resources disturbed and impaired. 	 The local communities are not within sighting distance of the mining operation. Lightly inhabited area (rural). 	 The area is insensitive to development. The area is not a major source of income to the local communities. 		
Medium	 Mix of natural and exotic fauna and flora. Development is a mix of disturbed and undisturbed areas, within an overall planned framework. Water resources are well controlled. 	 The local communities are in the proximity of the mining operation (within sighting distance). Peri-urban area with density aligned with a development framework. Area developed with an established infrastructure. 	 The area has a balanced economic development where a degree of income for the local communities is derived from the area. The economic activity could be influenced by indiscriminate development. 		
High	 Largely in natural state. Vibrant fauna and flora, with species diversity and abundance matching the nature of the area. Well planned development. Area forms part of an overall ecological regime of conservation value. Water resources emulate their original state. 	 The local communities are in close proximity of the mining operation (on the boundary of the mine). Densely inhabited area (urban/dense settlements). Developed and well-established communities 	 The local communities derive the bulk of their income directly from the area. The area is sensitive to development that could compromise the existing economic activity. 		

Table 12 below extracted from the DMR standard rehabilitation guideline⁹ provides guidance on rehabilitation fees applicable for mines based on rate per area depending on sensitivity.

Table 12: Section 1 (s) Financial Provision Calculation – Rehabilitation Rates				
Impacts and Mitigations				
	Environmental Sensitivity of mine area			
	Low Medium High			
Rate per hectare to determine the quantum	R 20 000.00	R 50 000.00	R 80 000.00	
Minimum amount	R 245 000.00			

⁸ DMR Financial Provision Guideline, 2005.

⁹ DMR Financial Provision Guideline, 2005.

As per tables 11 and 12 above, the sensitivity of the site is Medium. The standard DMR guideline for determining financial provision for a site of 4.90 ha in a 'medium sensitivity' area would amount to R245 000.00.

The DMR standard rehabilitation guideline¹⁰ has been used in conjunction with the costing spreadsheet below. As per Table 13 below, the rehabilitation cost for rehabilitating this site measuring 4.90 hectares is R144 250.00.

Table 13: Section 1 (s) Financial Provision Calculation: Rehabilitation Cost Estimate						
Description	UNIT	QTY	RATE	Amount R		
LANDSCAPING AND PLANTING						
Trimming	m²	3000	2	R 6 000.00		
Preparing areas for grassing						
Topsoiling within the quarry	m³	1000	20	R 20 000.00		
GRASSING	GRASSING					
Hydroseeding	ha	4.90	15000	R 73 500.00		
LABOUR						
Unskilled labour	Hour	40	20	R 800.00		
Semi Skilled	Hour	40	30	R 1 200.00		
Skilled	Hour	20	60	R 1 200.00		
PLANT WORK						
Tracked excavator (Bell HD 820 or similar)	Hour	40	300	R 12 000.00		
Tracked Loader Backhoe (CAT 428 or similar)	Hour	40	220	R 8 800.00		
Tip Truck (10m³)	Hour	50	225	R 11 250.00		
Water Tanker (10 000 litre)	Hour	50	190	R 9 500.00		
Total				R 144 250.00		

Section 7: Specific Information Required by Competent Authority

7.1. Section 1 (t) Specific Information Required By The Competent Authority

7.1.1.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 impact on the socio-economic conditions of any directly affected person. Provide the results of Investigation, assessment, and evaluation of the impact of the mining, bulk sampling or alluvial diamond prospecting on any directly affected person including the landowner, lawful occupier, or, where applicable, potential beneficiaries of any land restitution claim, attach the investigation report as an Appendix.

Please see Table 8 above detailing the investigation of all impacts associated with the proposal. Please see section 5.1.1.1 above describing the socio-economic conditions of the site. Please also see section 4 of this report detailing the public participation carried out and Appendices B-G providing proof of the consultation carried out. All comments received have been recorded in Appendix G.

7.1.2.Impact On Any National Estate Referred To In Section 3(2) Of The National Heritage Resources Act.

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

¹⁰ DMR Financial Provision Guideline, 2005.

As per 3 (1) of the National Heritage Resources Act:

"For the purposes of this Act, those heritage resources of South Africa which are of cultural significance or other special value for the present community and for future generations must be considered part of the national estate and fall within the sphere of operations of heritage resources authorities".

- (2) Without limiting the generality of subsection (1), the national estate may include
 - a. places, buildings, structures and equipment of cultural significance;
 - b. places to which oral traditions are attached or which are associated with living heritage;
 - c. historical settlements and townscapes:
 - d. landscapes and natural features of cultural significance:
 - e. geological sites of scientific or cultural importance;
 - archaeological and palaeontological sites;
 - g. graves and burial grounds, including
 - ancestral graves;
 - ii. royal graves and graves of traditional leaders;
 - graves of victims of conflict; iii.
 - graves of individuals designated by the Minister by notice in the Gazette: iv.
 - historical graves and cemeteries; and V.
 - other human remains which are not covered in terms of the Human Tissue Act, 1983 vi. (Act No. 65 of 1983);
 - h. sites of significance relating to the history of slavery in South Africa;
 - i. movable objects, including-
 - ii. objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects and material, meteorites and rare geological specimens;
 - iii. objects to which oral traditions are attached or which are associated with living heritage;
 - iv. ethnographic art and objects:
 - v. military objects:
 - vi. objects of decorative or fine art;
 - vii. objects of scientific or technological interest; and
 - viii. books, records, documents, photographic positives and negatives, graphic, film or video material or sound recordings, excluding those that are public records as defined in section 1(xiv) of the National Archives of South Africa Act, 1996 (Act No. 43 of 1996).

The site has existing disturbances on the property, with the building less than 60 years old (constructed by the Lukas Scheepers - previous land owner). No graves, or sites of cultural or historic interest will be disturbed. A desktop Palaeontological Assessment is required prior to commencement of mining.

7.1.3.Other Matters Required In Terms Of Sections 24(4)(A) And (B) Of The Act.

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

Due to the site-specific material found at this site, the previously disturbed nature of the site, and the applicant owning the property, no alternative location has been considered for this application. This site is located within close proximity to main access routes allowing for the limestone-based materials to be transported at a cheaper cost. Therefore, no alternatives sites were considered.

Appendix A: Proof of Qualification and CVs

Appendix B: Specialist Reports

Appendix C: Proof of Placement of Notice Board

Appendix D: Proof of Notification

Appendix E: Advert

Appendix G: Comments & Response Table & Comments Received

Appendix H: Impacts Scoring Matrix

Appendix J: Environmental Management Program