mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

BASIC ASSESSMENT REPORT

AND

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

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

NAME OF APPLICANT:	EAST LONDON QUARRY (PTY) LTD
TEL. NO:	(032) 947 7146
POSTAL ADDRESS:	P.O. BOX 608 UMHLALI, KWAZULU-NATAL, 4390
PHYSICAL ADDRESS:	REMAINDER OF FARM 299, EAST LONDON, 5201
FILE REFERENCE NUMBER SAMRAD:	EC 30/5/1/3/2/10577MP

1. IMPORTANT NOTICE

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

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

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

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

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

2. OBJECTIVE OF THE BASIC ASSESSMENT PROCESS

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

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

(b) Identify the alternatives considered, including the activity, location, and technology alternatives;

(c) Describe the need and desirability of the proposed alternatives,

(d) Through the undertaking of an impact and risk assessment process inclusive of cumulative impacts which focused on determining the geographical, physical, biological, social, economic, heritage , and cultural sensitivity of the sites and locations within sites and the risk of impact of the proposed activity and technology alternatives on the these aspects to determine:

(i) The nature, significance, consequence, extent, duration, and probability of the impacts occurring to; and

(ii) the degree to which these impacts—

(aa) can be reversed;

(bb) may cause irreplaceable loss of resources; and

(cc) can be managed, avoided or mitigated;

(e) Through a ranking of the site sensitivities and possible impacts the activity and technology alternatives will impose on the sites and location identified through the life of the activity to—

(i) Identify and motivate a preferred site, activity and technology alternative;

(ii) Identify suitable measures to manage, avoid or mitigate identified impacts; and

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

ABBREVIATIONS & ACCRONYMS

BAR: Basic Assessment Report

CA: Competent Authority

DBAR: Draft Basic Assessment Report

DMR: Department of Mineral Resources

DWS: Department of Water & Sanitation

ECO: Environmental Control Officer

FBAR: Final Basic Assessment Report

GPS: global positioning system

HIA: Heritage impact Assessment

I&AP: Interested & Affected Party(ies)

MPRDA: Minerals & Petroleum Resources Development Act (No. 28 of 2002)

NEMA: National Environmental Management Act (No. 107 of 1998)

NWA: National Water Act (No. 36 of 1998)

NHRA: National Heritage Resources Act (No. 25) of 1999

ECPHRA: Eastern Cape Provincial Heritage Resources Authority

PPP: Public Participation Process

SAHRA: South African Heritage Resources Agency

SAHRIS: South African Heritage Resources Information System

SWMP: Storm Water Management Plan

WUL: Water Use License

WULA: Water Use License Application

CONTENTS

PART A

SCOPE OF ASSSSMENT AND BASIC ASSESSMENT REPORT

3. Contact Person and correspondence address

a) Details of

i) Details of the EAP

ZN Geo Services (Pty) Ltd

Zama Sithole

Tel: +2783 467 3532

Email: zama@zngeo.co.za

ii) Expertise of the EAP.

(1) The qualifications of the EAP

(with evidence).

Refer to **Appendix 1**: EAP CV & Declaration

Zama Sithole is the sole managing director of ZN Ge Services (Pty) Ltd. She possesses BSc. Geological Science and BSc. Geology Honours degrees obtained at the University of KwaZulu-Natal (Westville Campus) in 2011 and 2012. She has recently completed her MSc degree majoring in Environmental Management at the University of Free State (Bloemfontein Campus) and is awaiting graduation in July 2020. Zama has worked extensively in the mining (especially quarrying) and environmental fields; working on projects spanning throughout South Africa. She is a registered Professional Natural Scientist, as per South African Council for Natural Scientific Professions (SACNASP) requirements. See below for the EAP BSc Honours degree and SACNASP registration certificate (Figure 1).

(2) Summary of EAP's past experience

(In carrying out the Environmental Impact Assessment Procedure)

Refer to **Appendix 1**: EAP CV & Declaration

Recent mining-related project involvement includes:

- Idwala Industrial Minerals Mining Right Application: 2019
- Grand Wave Quarries Mining Permit Renewal: 2019
- Active Blue Trading (Real Stone Quarry) Mining Right Application: 2018

Figure 1 EAP BSc Honours degree and SACNASP registration certificate.

2. LOCATION OF ACTIVITY

b) Location of the overall Activity

Farm Name	Portion 44 of Farm 807
Application area (Ha)	±4.9 ha
Magisterial district	East London, Buffalo City Metropolitan Municipality.
Distance and direction from nearest town	±5 km south west of Gonubie, East London in the Eastern Cape Province
21 digit Surveyor General Code for each farm portion	C02300000000080700044

c) Locality map

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

Figure 2 Locality map (ESRI 2019).

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.

Figure 3 Site layout

3. DESCRIPTION OF ACTIVITY

(i) Listed and specified activities

Table 1 Listed activities applicable to the project

NAME OF ACTIVITY	AERIAL EXTENT OFTHE ACTIVITY Ha or m²	LISTED ACTIVITY Mark with an X where applicable or Affected.	APPLICABLE LISTING NOTICE (*GNR 327, GNR 325 or GNR 324)*
Mining of sand within Farm Portion 44 of the Farm 807, including: • Removal and stockpiling of topsoil • Accessing the site via existing gravel road tracks • Temporary stockpiling of extracted sad prior to hauling in trucks • Refuse collection containers • Mobile ablution facilities • Removal of natural and alien vegetation	4.99 ha	x	**GN. No. 983 EIA Regulations Listing Notice 1 of 2014, amended by GN. No. 327 April 2017** **Activity 21:** Any activity including the operation of that activity which requires a mining permit in terms of section 27 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), including — (a) associated infrastructure, structures and earthworks, directly related to the extraction of a mineral resource; or (b) the primary processing of a mineral resource including winning, extraction, classifying, concentrating, crushing, screening or washing. but excluding the secondary processing of a mineral resource, including the smelting, beneficiation, reduction, refining, calcining or gasification of the mineral resource in which case activity 6 in Listing Notice 2 applies.
Mining of sand within Farm Portion 44 of the Farm 807 is most likely require the clearance of an area of 1 hectare or more of indigenous vegetation.	Less than 4.99ha (most of the project site is already disturbed and bare)	x	**GN. No. 983 EIA Regulations Listing Notice 1 of 2014, amended by GN. No. 327 April 2017** **Activity 27:** The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for—

			(i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan.
The rehabilitation, decommissioning and closure of the sand mining site, which will only be required at final decommissioning and closure.	4.99 ha	x	**GN. No. 983 EIA Regulations Listing Notice 1 of 2014, amended by GN. No. 327 April 2017** **Activity 22:** The decommissioning of any activity requiring – (i) a closure certificate in terms of section 43 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)
Temporary hydrocarbon waste storage and general domestic waste	Less than $0.5m^3$		**Not Listed**
Sanitation requirements (chemical toilets)	Less than $20m^2$		**Not Listed**

(ii) Description of the activities to be undertaken

(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).

East London Quarry (Pty) Ltd, which may be interchangeably referred to as the "applicant" is proposing to establish a sand mine within Farm Portion 44 of the Farm 807, near Gonubie in the Eastern Cape Province. The proposed sand quarry will be an opencast mine. The sand is intended to supply the requirements of the province's construction activities. Sand serves as an ideal additive to ready-mix concrete, precast products and brick making. Major projects such as the N2 highway expansion may have indirect needs for the sand material. Geological exploration as well as prior mining or diggings has revealed that there are viable and sufficient sand reserves within the project site.

Construction phase: Development of infrastructure and logistics

Due to the small scale of operations no permanent infrastructure will be developed, and only existing farm tracks will be used. Upgrading of the existing tracks will be done as part of the construction phase, as required. Access to the site will be via the already existing gravel road (i.e. Quenera Road) and the unmarked gravel road along the western extents of the project site. The sand product will be hauled via truck, along the Quenera Road to the market. No buildings and built infrastructure will be required. Minimal water and electricity will be used in the mining operation and no permanent infrastructure will be required due to the small scale and simple mining method to be employed. Domestic waste will be collected in plastic containers and a licensed waste service provider will be used to collect and dispose of waste. A temporary storage area for used lubrication products and other hazardous chemicals needs to be provided for the collection of the small volume of waste before it is

removed. It is estimated that only one 200 litre container is needed for the small amount of waste. Maintenance oil/grease/diesel management systems will be required for the parking area and will consist of drip trays. Ablutions will be operated by means of portable toilets. The applicant will engage a suitable service provider for this function.

Operational phase

Clearing vegetation will be limited to those areas within the authorised area, which has been earmarked for mining and/or infrastructure. The excavation of sand will be up to a 3m depth. Extraction of sand at the quarry will be carried out by "free dig" load and haul methods. In this regard, no drilling and blasting shall be conducted. Desktop and field studies carried out have identified the 'ideal' extraction area and thus mining will commence at the identified area, as per the mining plan. By means of an excavator or front-end loader, the sand is barred down. The derived sand is then loaded, by either an excavator or front-end loader, to the sorting screen where roots and other unwanted debris is removed while the sand is also "sieved" mechanically to the desired dimensions (see Figure 4) below. Only temporary product stockpiles will be developed.

The typical primary mining fleet for this mining method consists of excavators, back actors, front-end loaders and articulated dump trucks. The primary fleet to be utilised will be owned by the applicant. The typical ancillary fleet assisting the mining fleet for this mining method include graders, water trucks and diesel bowsers.

Estimated volume of sand that can be mined and is accessible for purposes of this mining permit is approximated at 496000m^3. The neighbouring Mzamomuhle township could serve as a viable source of the required employment pool. Refer to **Appendix 7** for site photographs.

No other processing is taking place except for limited screening/sieve and stockpiling. There is little to no overburden anticipated. Domestic or any other waste generated during the mining operation will be stored in a temporary storage area from where it will be removed by a licensed waste service provider. Only minor repairs will be done on site – in bunded areas. Maintenance and servicing of trackless mobile machinery and related equipment/machinery will be undertaken in the bunded mobile workshop, with an associated oil trap and designated wash bay. Drip trays will be during maintenance and accidental spills are cleaned up immediately by removing of the contaminated sand. The small volume of contaminated sand is sold with the rest of the sand to be used in the building industry. The trucks will transport sand from the site at most 6 days a week. No sales are to take place on Sundays. As part of this phase training of personnel in the implementation of the EMPr will be undertaken and the implementation of the environmental awareness plan as part of the EMPr will be an ongoing process.

Decommissioning phase

Planning for closure and restoration from the beginning of an operation makes the process easier; waste can be removed as it is created, excavation can be planned so that topography restoration is less complicated, and topsoil can be re-used at shorter intervals. Site rehabilitation can make the land more valuable and attractive for resale. Additionally, establishing a closure strategy (and communicating that activity to the public) can help enhance the company's reputation as a socially responsible operation. The decommissioning and closure phase at the end of the life of the mine will consist of implementing the Rehabilitation, Decommissioning and Closure plan.

Figure 4 The sand mining methodology.

e. Policy and Legislative Context

Table 2 Applicable legislation and guidelines.

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED	HOW DOES THIS DEVELOPME LEGISLATION AND POLICY CO
National Environmental Management Act (Act No. 107 of 1998) and the Environmental Impact Assessment ("EIA") Regulations, 2014 (as amended)	GN. R327 Listing Notice 1 Activity 21 & Activity 27	Application for Environmental Aut undertake sand mining.
Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) (as amended) (MPRDA)	Section 27 of the MPRDA (as amended)	Application for a Mining Permit to ur
National Water Act (Act No. 36 of 1998)	Section 21	The applicant should ensure that a w Department of Water and Sanitation include (c) and (i). A Wetland Study indicating that there is no wetla management plan (also in Appendi WU16005 has been lodged online.
National Heritage Resources Act (Act No. 25 of 1999)	Section 35 and 38	Section 35 and 38 of the Act become in terms of developing the heritage a 35 becomes relevant in terms of arch No heritage resources will be affec Heritage Resources Act legislates the in areas earmarked for developmer provision for the potential destruc recommendations through permittin African Heritage Resources Agency heritage resources, application to S permits. The proposed opencast mir resources, as no resources of signi proposed development. A Heritage In in Appendix 8.
Mine Health and Safety Act (Act No 29 of 1996)	EC 30/5/1/3/2/10577MP	This Act will be applicable during the should be taken to ensure compliance
National Environmental Management: Air Quality Act (Act No 39 of 2004)	S18, S19, and S20 of the Act allow certain areas to be declared and managed as "priority areas." Declaration of controlled emitters (Part 3 of Act) and controlled fuels (Part 4 of Act) with relevant emission standards. GN R 827 – National Dust Control Regulations prescribes general measures for the control of dust in all areas.	No permitting or licensing requireme Dust Control Regulations describe including penalties. These regulat operations.
Conservation of Agricultural Resources Act (Act No. 43 of 1983)	EC 30/5/1/3/2/10577MP	If any declared weed and/or invader must be removed.

National Environmental Management: Waste Act (Act No. 59 of 2008)	In terms of the Regulations published in terms of this Act (GN 921), A Basic Assessment or Environmental Impact Assessment is required to be undertaken for identified listed activities (Category A and B) while Category C Activities (such as storage of waste) must be undertaken in accordance with the necessary norms and standards. Any person who stores waste must at least take steps, unless otherwise provided by this Act, to ensure that: • The containers in which any waste is stored, are intact and not corroded or in any other way rendered unlit for the safe storage of waste. • Adequate measures are taken to prevent accidental spillage or leaking. • The waste cannot be blown away. • Nuisances such as odour, visual impacts and breeding of vectors do not arise; and • Pollution of the environment and harm to health are prevented.	As no waste disposal site is to be ass management license is required in th Waste handling, storage and disp undertaken in accordance with the r The applicant must ensure that all ac matters in compliance with the requi
National Environmental Management: Biodiversity Act (Act No 10 of 2004)	In terms of S57, the Minister of Environmental Affairs has published a list of critically endangered, endangered, vulnerable, and protected species in GNR 151 in Government Gazette 29657 of 23 February 2007 and the regulations associated therewith in GNR 152 in GG29657 of 23 February 2007, which came into effect on 1 June 2007. In terms of GNR 152 of 23 February 2007: Regulations relating to listed threatened and protected species, the relevant specialists must be employed during the EIA Phase of the project to incorporate the legal provisions as well as the regulations associated with listed threatened and protected species (GNR 152) into specialist reports in order to identify permitting requirements at an early stage of the EIA Phase. The Act provides for listing threatened or protected ecosystems, in one of four	As the proponent will not carry out a permit is required to be obtained in t If Protected species are found on site in the event that the mining permit is A Biodiversity Study has been undert

	categories: critically endangered (CR), endangered (EN), vulnerable (VU) or protected. The first national list of threatened terrestrial ecosystems has been gazetted, together with supporting information on the listing process including the purpose and rationale for listing ecosystems, the criteria used to identify listed ecosystems, the implications of listing ecosystems, and summary statistics and national maps of listed ecosystems (National Environmental Management: Biodiversity Act: National list of ecosystems that are threatened and in need of protection, (GG 34809, GN 1002), 9 December 2011).	
National Environmental Management: Biodiversity Act (Act 10 of 2004)	GNR 598: The Alien and Invasive Species (AIS) Regulations provides for the declaration of weeds and invader plants.	This Act will find application throug regard, soil erosion prevention and implemented. In addition, a weed co
Occupational Health and Safety Act (Act 85 of 1993)	Department of labour (DoL)	The Occupational Health and Safety A safety of persons at work; for the he of plant and machinery, and the prot persons other than persons at work in connection with the activities of pe under this Act including: • Environmental Regulations for Wor • Regulations for Hazardous Chemica • Asbestos Regulations (GN R109 of 2
National Veld and Forest Fire Act (Act 101 of 1998)	In terms of section 13 the landowner would be required to burn firebreaks to ensure that should a veld fire occur on the property, that it does not spread to adjoining land. In terms of section 13 the landowner must ensure that the firebreak is wide and long enough to have a reasonable chance of preventing the fire from spreading, not causing erosion, and is reasonably free of inflammable material. In terms of section 17, the proponent must have such equipment, protective clothing, and trained personnel for extinguishing fires.	While no permitting or licensing requ find application throughout the life pillar clearance also serves to mitigat
Hazardous Substances Act (Act No. 15 of 1973)	This Act regulates the control of substances that may cause injury, or ill health, or death due to their toxic,	It is necessary to identify and list all may be on the site and in what oper

	corrosive, irritant, strongly sensitising or inflammable nature or the generation of pressure thereby in certain instances and for the control of certain electronic products. To provide for the rating of such substances or products in relation to the degree of danger; to provide for the prohibition and control of the importation, manufacture, sale, use, operation, modification, disposal or dumping of such substances and products. • Group I and II: Any substance or mixture of a substance that might by reason of its toxic, corrosive etc, nature or because it generates pressure through decomposition, heat or other means, cause extreme risk of injury etc., can be declared as Group I or Group II substance • Group IV: any electronic product; and • Group V: any radioactive material. The use, conveyance, or storage of any hazardous substance (such as distillate fuel) is prohibited without an appropriate license being in force.	applicable, a license is required to be that the mining permit is granted.

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).

Building Material Supply and Employment Benefits

South Africa is a county with a high unemployment rate, in excess of 29% (Stats SA, 2019). This mining venture will result in the creation of much-needed employment opportunities. Some fifteen (15) employment opportunities are anticipated to be created; as per the Financial and Technical Competence Report in Appendix 6. The neighbouring township of Mzamomuhle occurs ~2km east of the project site (Figure 5). The Buffalo City Municipality's 2017/2018 IDP outlines the municipality's 5 long term strategies. The first strategic objective relates to rapid and inclusive economic growth, and reducing unemployment (Buffalo City Municipality, 2017). On September 25th 2015, countries adopted a set of goals to end poverty, protect the planet, and ensure prosperity for all as part of a new sustainable development agenda. Each goal has specific targets to be achieved over the next 15 years until 2030. There are 17 goals in total. Goal 7 stipulates **"**Ensure access to affordable, reliable, sustainable economic growth, full and productive employment and decent work for all." The National

Development Plan (NDP) is a plan for the country to eliminate poverty and reduce inequality by 2030. It presents a long-term strategy to increase employment through faster economic growth. Page 48 of the 2017/2018 Buffalo City IDP indicates that “poverty and inequality remain major challenges for the Buffalo City Metro.” Projects such as this are thus critical to mitigate the intensity of unemployment in the Metro and country as a whole.

There is a budding natural sand market in South Africa. Demand for aggregate and sand in South Africa is driven by the construction industry, which is comprised of residential building, non-residential building and civil construction (DMR, 2012). Natural sand is usually mined with conventional earth-moving equipment. The quality and final use of the sand usually determine the amount of processing necessary. Washing and screening are used in some instances to produce better quality sand. Sand is utilised as an integral material in ready-mix concrete, precast products and block-making. There is the upcoming N2 expansion project which is earmarked to boost the construction market in the Eastern Cape Province. Residential and other infrastructural requirements significantly boost the sand mining sector. Infrastructural growth is directly proportional to the availability of raw materials such as bricks, cement, sand etc.

Figure 5 Site location relative to Mzamomuhle (Google earth, 2019).

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

Sand is required as a stable in the construction industry; and the Gonubie extents are no exception. The project site is located within the Buffalo City Municipality. Figure 6 below indicated how three (3) project sites were assessed prior to determining the project site for this mining permit application. See **Error! Reference source not found.**, **Error! Reference source not found.** and **Error! Reference**

source not found. below. As such, Alternative Site 3 was selected as it was the most viable. The mining technology to be utilised is a screen to “sieve” and remove debris from the sand. Drilling and blasting is not required. The layout and technology of this sand mining project has been determined by the shape, position and orientation of the mineral resource.

Aside from the assessment of locations within the Parent Farm, there are no other reasonable or feasible sites, layouts, activities, technologies, or operational alternatives for further consideration in the impact assessment component, other than the mandatory “no-go” alternative that must be assessed for comparison purposes as the environmental baseline.

Figure 6 The alternative sites considered

Any general waste that may be produced on-site will be contained in sealed refuse bins to be transported to the local municipal landfill site. Maintenance and servicing of trackless mobile machinery and related equipment/machinery will be undertaken in the bunded mobile workshop; with an associated oil trap and designated wash bay. The amount of hazardous waste to be produced at the site will be removed by a reputable and South African Waste Information Centre (SAWIC) registered contactor. Contaminated soil will be removed to the depth of the spillage and contained in sealed bins until removed from site by a hazardous waste handling contractor to be disposed of at a registered hazardous waste handling site. Certificates of safe disposal shall be kept on site.

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

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

i) Details of the development footprint alternatives considered.

With reference to all the site plans and maps combined provided as **Appendix 3** (for site location map only) and **Appendix 4** (for all maps) 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

Geological exploration undertaken by East London Quarry (Pty) Ltd has offered sufficient evidence of a viable sand deposit. The applicant, East London Quarry (Pty) Ltd, is also the landowner of the study area located on Portion 44 of Farm 807. The entire farm covers an area of some 21 hectares, however, only ±4.99 hectares is being applied for as per the mining permit. This potential sand mining operation is situated ±5 km south west of Gonubie, East London in the Eastern Cape province; with Quenera to the north east and Bonza Bay to the south west.

Three site alternatives were considered, and detailed in tables 3, 4 and 5 below. The preferred site is Site No. 3. The applicant is the landowner and there are no interactions with watercourses or wetlands.

Site 1:

Table 3 Alternative Site 1 characteristics.

Aspect	Comments	Suitability
Geology	Sand (required mineral)	✓
Access//distance to the road network	A longer distance is travelled prior to reaching the main gravel access road. This would negatively impact on the costing for sand as hauling is an important factor when quoting or trading in construction materials such as sand.	X
Distance from residential areas	Relatively close to the residential area north of Mzamomuhle.	X
Distance from wetlands and/or other environmentally sensitive areas	Close to the Quenera River	✓
Overburden	Minimal overburden	✓

Mineability	The mineral deposit is expansive. This indicates a higher environmental liability / disturbed area.	X
Land Ownership	No. The applicant is not the landowner and would thus need to engage further with the landowner.	X
Access to water	Municipal water is earmarked	✓
Access to electricity	Engagements with Eskom could be facilitated	✓
Mining Technology	No drilling as blasting. The sand is "free-dig." This in turn reduces the amount of noise and air blast or vibration effects.	✓

Site 2:

Table 4 Alternative Site 2 characteristics.

Aspect	**Comments**	**Suitability**
Geology	Sand (required mineral)	✓
Access//distance to the road network	A longer distance is travelled prior to reaching the main gravel access road. This would negatively impact on the costing for sand as hauling is an important factor when quoting or trading in construction materials such as sand.	X
Distance from residential areas	Relatively close to the residential area north of Mzamomuhle.	X
Distance from wetlands and/or other environmentally sensitive areas	Beyond 100m from the Quenera River, but there is another watercourse south of the intended mining area which is less than 32m from the intended mining area.	X
Overburden	Dense vegetation cover.	X
Mineability	The mineral deposit is expansive. This indicates a higher environmental liability /	X

	disturbed area. Hilly and undulating topography is also a deterrent. There is a steep hill towards the south of the intended mining area.	
Land Ownership	No. The applicant is not the landowner and would thus need to engage further with the landowner.	X
Access to water	Municipal water is earmarked	✓
Access to electricity	Engagements with Eskom could be facilitated	✓
Mining Technology	No drilling as blasting. The sand is "free-dig." This in turn reduces the amount of noise and air blast or vibration effects.	✓

Site 3:

Table 5 Alternative Site 3 characteristics. This is the chosen location and hence project site.

Aspect	**Comments**	**Suitability**
Geology	Sand (required mineral)	✓
Access//distance to the road network	The site is located along the main gravel road. Therefore, no additional roads are required to be built.	✓
Distance from residential areas	Some residential units occur relatively close	X
Distance from wetlands and/or other environmentally sensitive areas	Beyond 100m from the Quenera River	✓
Overburden	Minimal overburden.	✓
Mineability	The mineral deposit is confined well within the site. Furthermore, the area has been mined before and thus mineability would not be cumbersome. This indicates a lower environmental liability / disturbed area.	✓

Land Ownership	No. The applicant is not the landowner and would thus need to engage further with the landowner.	✓
Access to water	Municipal water is earmarked	✓
Access to electricity	Engagements with Eskom could be facilitated	✓
Mining Technology	No drilling as blasting. The sand is "free-dig." This in turn reduces the amount of noise and air blast or vibration effects.	✓

(b) The type of activity to be undertaken

The opencast mining of the area; Alterative Site 3 (i.e. The project site), (using an excavator and/or front-end loader) was identified as the most effective method to excavate the required mineral (sand). As a result of the already disturbed nature of the project site (i.e. due to prior mining/diggings and illegal dumping of waste), coupled with the limited expanse size of the mining (i.e. ~4.99 hectares), anticipated potential impacts on the surrounding environment is of rather low significance. See **Error! Reference source not found.**, **Error! Reference source not found.** and **Error! Reference source not found.** above, read with Figure 6 above. No drilling and blasting will take place. The sand shall be obtained by free-dig means.

(c) The design or layout of the activity

Please see Map 2 (Site Layout) and Map 9 (Regulation 2(2)) of Appendices 3 and 4 respectively.

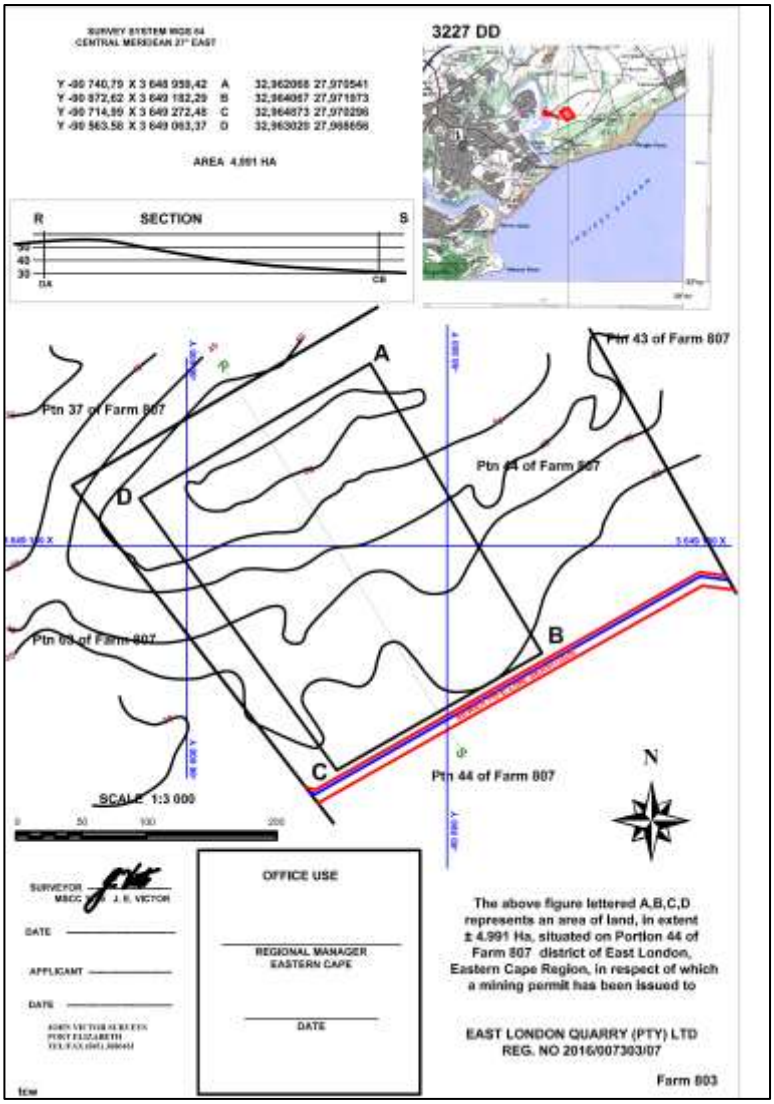


Figure 7 Regulation 2(2) plan

Figure 8 The location of the intended quarry, spanning locations A, B, C and D had to be positioned as such so as to accommodate the applicable buffer from the Quenera Road and pipeline (see red insert).

(d) The technology to be used in the activity

The technology used in a mining project is determined by the shape, position and orientation of the mineral resource, with the technology alternative for sand mining being restricted to the use of a Front End Loader to remove the sand to a maximum depth of less than 3 metres, and includes trucks for the hauling of the sand. There are no technology alternatives for further consideration.

(e) The operational aspects of the activity

The proposed sand mining, sales and maintenance activities will take place between 06h00 to 18h00 on weekdays only. Sales, and when production pressures require, mining activities are however anticipated to take place on Saturday between 06h00 and 16h00. No sales and mining, with the exception of maintenance where required, shall take place on Sunday (for which the application authorisation must be obtained from the DMR). The hauling of the sand will therefore also take place during these hours. There are no operational alternatives for further consideration.

(f) The option of not implementing the activity

The No-Go Alternative will mean that sand mining will not take place. There will no supply of sand for the construction industry from this site, resulting in the need to look for suitable sand deposits in other areas. There will be no new employment opportunities.

The No-go alternative will result in the current status quo and the risks and impacts associated with it. The current land use of the proposed site is rural grazing land. Some portions of the mining site and surrounding areas have been impacted by illegal or prior mining/diggings. Should the project not be implemented the area will not be disturbed more than it already has been by the proposed mining operations and there could be less damage to the environment.

Disadvantages of the no-go option are that the area could continue to be mined illegally, leading to increased erosion and sedimentation. Furthermore, waste dumping which is taking place in the site shall continue. This translates to a potential loss of employment opportunities for the surrounding communities which could have been brought about by this mining. Advantages of the no-go option are a reduced risk of potential environmental degradation (i.e. water pollution, soil erosion, etc.). The No-Go alternative is assessed further in the impact assessment process.

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.

The public participation process will be conducted according to the requirements as prescribed in Regulations 40 to 44 of the EIA Regulations, 2014 (as amended). Full details of the public participation process conducted including copies of all supporting documents (e.g. the information provided to Interested & Affected Parties (I&APs) and the comments received) has been included in Appendix 2. Kindly refer to **Appendix 2** for proof of the public participation process (PPP) aspects undertaken as well as the Comments and Responses Report (CRR).

- Stakeholders and I&AP's were informed of the project by means letters of notification and Background Information Documents (BIDs). Three site notices were placed along the main gravel road (Quenera Road), on the 19th November 2019 inviting Interested and Affected parties (I&APs) to register and get more information on the project.
    - Following the placement of these site notices, a response has been obtained from Mr Andrew Craib on the 02nd December 2019, requesting that he be included in the database.
- The Buffalo Metropolitan Municipality's Ward 28 Councillor, Ms Marion Mackley, was contacted telephonically on the 9th January 2020 informing her of the project.
    - To this effect, she registered as an interested and affected party on the 13 January 2020 (see Summary of **issues raised by I&Aps**

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

    - Table 6).
    - Ms Mackley further suggested that Mr Malcom Symons of the Beacon Bay Civic & Rate Payers Association be included as an interested and affected party.
    - My Symons was contacted via email on the 23rd January 2020 and notified of the project, including the BID and explaining what he should do should he wish to be registered as an interested and affected party. No response was received.
- A newspaper advert was placed in the Daily Dispatch Newspaper on Thursday, 23rd January 2020.
- All stakeholders, including organs of State where notified via email of the availability of the Draft basic Assessment Report on the 27th January 2020. The email included a DropBox link of

where the electronic version of the Draft basic Assessment and associated appendices were located.

- The Draft Basic Assessment Report with appendices hardcopy was hand delivered at the Gonubie Public Library (i.e. a public venue) between 28th January 2020 and 27th February 2020.
- Hardcopies of the Draft Basic Assessment Reports, with associated appendices were hand delivered to the identified organs of State on the 28th January 2020. No comments were received; besides a request for an electronic DBAR copy which was honoured.
- A land claims enquiry has been made with the provincial Eastern Cape Department responsible for land reform but no response had been received as of the 28th February 2020.
- The project details, including location and BID has been uploaded onto the SAHRIS portal.
- This draft BAR shall be made available to all I&APs and stakeholders for comment for a period of at least 30 days (between 27 January 2020 and 27 February 2020).
- Comments received have been included in this Final Basic Assessment Report submitted to DMR for consideration.
- Registered I&APs will be notified of the outcome of the Environmental Authorisation issued by DMR.

Summary of issues raised by I&Aps

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

*Table 6 Interested and affected parties (to be read with **Appendix 2**)*

Interested and Affected Parties List the names of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted.		**Date Comments Received**	**Issues raised**	**EAPs response to issues as mandated by the applicant**	**Section and paragraph reference in this report where the issues and or response were incorporated.**
AFFECTED PARTIES					
Landowner/s	N/A	The applicant is the landowner			
Lawful occupier/s of the land	N/A	There are no inhabitants on the land			
Landowners or lawful occupiers on adjacent properties	X	02 December 2019	Refer to Appendix 2		
Mr Andrew Craib (Quinera Homeowner's Association)	X				
Municipal councillor	X				
Ms Marion Mackley (Ward 28 Buffalo City Municipality Councillor)	X	13 January 2020	Refer to Appendix 2		
Municipality	X				
Municipal Manager	X	Included in the I&AP Database and to receive notification of the Draft basic			

Interested and Affected Parties List the names of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted.		**Date Comments Received**	**Issues raised**	**EAPs response to issues as mandated by the applicant**	**Section and paragraph reference in this report where the issues and or response were incorporated.**
		Assessment (DBAR) availability and hard copy.			
Organs of state (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWA etc.					
DWS (Department of Water & Sanitation)	X	N/A	None	None	N/A
ECPHRA (Eastern Cape Provincial Heritage Resources Authority)	X	N/A	None	None	N/A
Telkom	X	N/A	None	None	N/A
DRDAR (Department of Rural Development & Agrarian Reform)	X	N/A	None	None	N/A
Eskom	X	N/A	None	None	N/A
DoT (Department of Transport)	X	N/A	None	None	N/A
Communities	X				
Bonza Bay Rate Payers' Association	X	N/A	None	None	N/A
Dept. Land Affairs	X				
Department of Rural Development and Land Reform: Land Claims (Zukile Pityi)	X	N/A	None	None	N/A

Interested and Affected Parties List the names of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted.		**Date Comments Received**	**Issues raised**	**EAPs response to issues as mandated by the applicant**	**Section and paragraph reference in this report where the issues and or response were incorporated.**
Department of Rural Development and Land Reform: Land Claims (Odwa Metu)	X	N/A	None	None	N/A
Department of Rural Development and Land Reform: Land Claims (Siyabonga Ntamesi)	X	N/A	None	None	N/A
Traditional Leaders	N/A	The area is not under the authority of a traditional leader. The applicant is the landowner.			
Dept. Environmental Affairs	X				
DEDEAT (Department of Economic Development, Environmental Affairs& Tourism)	X	N/A	None	None	N/A
Other Competent Authorities affected	X				
ECPTA (Eastern Cape Parks & Tourism Agency)	X	04 February 2020	No issue, but a request for a PDF version of the DBAR was raised and received via email.	05 February 2020: The requested PDF DBAR and appendices was shared via email.	None noted
OTHER AFFECTED PARTIES	N/A				
INTERESTED PARTIES (Stutt Group)	X	27 January 2020	27 January 2020: Request via email to be included in the Interested and Affected parties' Database	27 January 2020: Response via email with the BID. Furthermore, the DBAR and	None noted as no issues were raised.

Interested and Affected Parties List the names of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted.		**Date Comments Received**	**Issues raised**	**EAPs response to issues as mandated by the applicant**	**Section and paragraph reference in this report where the issues and or response were incorporated.**
				appendices were also shared via email.	
Ward 28 Councillor (Marion Mcklay)	X	N/A	None	None	N/A
Quenera Homeowners Association (Andrew Craib)	X	N/A	None	None	N/A
Municipal Manager (Andile Sihlahla)	X	N/A	None	None	N/A
Gonubie Public Library (public venue where the DBAR was made available)	X	N/A	None	None	N/A

iv) The Environmental attributes associated with the alternatives.

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

(1) Baseline Environment

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

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

Regional Setting

The proposed sand mining area is located within Portion 44 of the Farm 807, located ±5 km south west of Gonubie, East London in the Buffalo City Municipality, in the Eastern Cape Province.

Geology and Soils

The majority of the Eastern Cape Province is underlain by shallow marine, coastal and terrestrial sediments of Phanerozoic (*i.e.* post-Precambrian) age that are known to contain fossils. The project site is no exception. Unconsolidated brown to red-brown sand with intermittent biological fragments in the form of shells exist (Figure 9). There also exists calcrete concretions, though more prominent in the north eastern extent of the project site where the concretions occur as a hard "crust" with some shell fragments. Each of the afore-mentioned white calcrete bands is less than 10cm thick. The study area is characterised by minima overburden or topsoil; accounting for only 0.3m on average. The sand is a similar brown to red-brown colour throughout the study area. No anomalies between the two target locations could be determined. Based on the regional and local geology, an assumption of a 10m height of saleable sand is estimated for the study area.

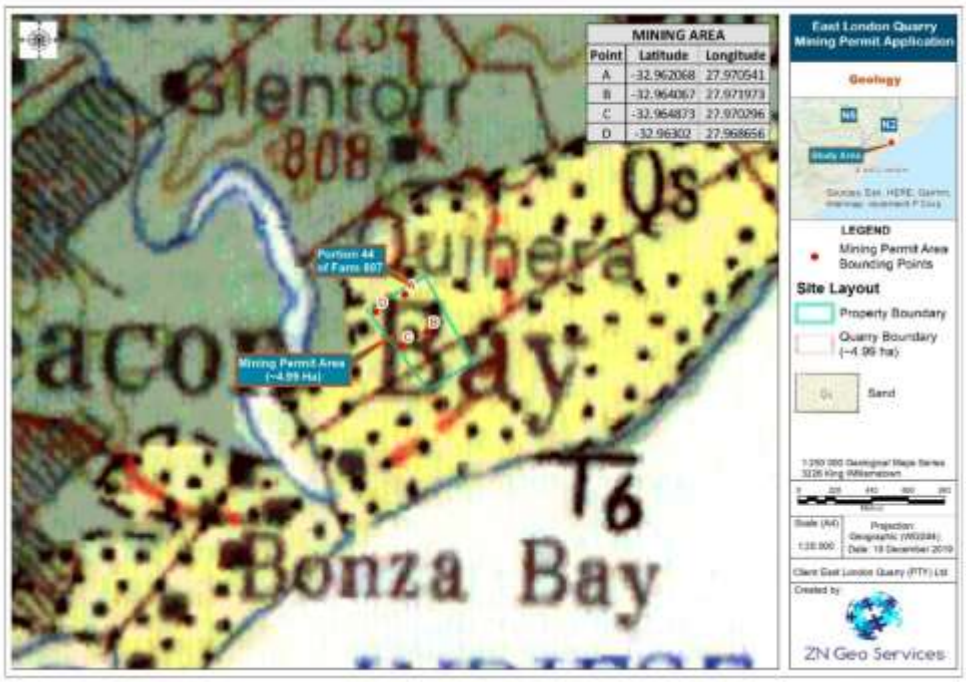


Figure 9 The geology of the project site.

The majority of the study site is located on the soil type Db 184 (Figure 10) which is classified as Prismacutanic and/or pedocutanic diagnostic horizons dominant, B horizons are mainly not red and mainly grey mudstone, shale and sandstone of the Balfour Formation; Beaufort Group, with influence of dolerite. The extreme southern edge is located on soil type Hb 87, classified as Grey regic sands and other soils. For more information on the soils please see the Wetland Specialist Assessment (**Appendix 8**).

Figure 10 The soils of the project site

Vegetation

The proposed mine layout is concentrated on the Albany Coastal Belt biome vegetation. The description of vegetation types for the area relied on literature from Mucina and Rutherford (2006). To identify vegetation occurring onsite, Mucina and Rutherford (2006), Palgrave (2005) and Van Oudtshoorn (2002). The conservation status of the affected vegetation was verified from SANBI (2019). Vegetation is characterised by trees, bush clumps and open grassland. The study area is situated between two biomes, namely, the Albany-Thicket on the north and Forest biomes south of the site (see Figure 3). According to the SANBI BGIS database, the portion of the site that lies in the Forest biome has been reclassified to Azonal vegetation. However, this report will use the former classification of 2006 (by Mucina and Rutherford), thus will use Forest biome due to the nature and characteristics of the vegetation unit.

Figure 11 The project site's vegetation.

This site has two broad scale vegetation, namely, the Albany Coastal Belt (AT 9) north of the site and the Southern Coastal Forest (FOz6) on the south of the site (Mucina and Rutherford, 2006). The study area experiences less extreme climatic variability due to the influence of the ocean (Mucina and Rutherford, 2006). As a result of high rainfall experienced in this area, the vegetation that occurs in this area is less succulent, and with the leaves being less schlerophylous.

Albany Coastal Belt:

Albany Coastal Belt is widely spread in the Eastern Cape, primarily close to the coastline from Kei Mouth to the Sundays River, interrupted by many valleys. The vegetation is found on gently to moderately undulating landscapes and dissected hilltops slopes close to the coast, dominated by short grasslands punctuated by scattered bush clumps or solitary *Vachellia karroo* trees. This vegetation type is listed as *"least threatened"* by Mucina and Rutherford (2006). A site assessment confirmed the presence of this vegetation type in this area. However, the Sideroxylon inerme (milkwood) protected species (see Figure 11 below) occurs along the west of the project site. For more information see the Biodiversity (Vegetation) Specialist Assessment **(Appendix 8)**.

Figure 12 Location of the Sideroxylon inerme protected species (Google Earth, 2019).

Southern Coastal Forest:

The Southern Coastal Forest extends from the Western Cape to the Eastern Cape provinces at low altitude in the deeply incised river valleys in the Albany District surrounded by succulent thickets (Mucina and Rutherford, 2006). This forest type is characterised by the dominance of *Celtis Africana, Sideroxylon inerme, Mimusops caffra* and *Dovyalis rotundifolia.* The southern regions also consist of well-developed low tree and shrub species, such as, *Brachylaena discolour, Strychnos decussate, Euclea natensis* and *Dracaena aletriformis*. This vegetation type is also listed as *"least threatened",* however, it has *Sideroxylon inerme* which is a protected tree in South Africa (National Forest Act, 1998).

Figure 13 The vegetation cover of the project site's Albany Coastal Belt; to which the majority of the study area conforms (Zondi, 2019).

Critical Biodiversity Areas (CBA)

The Eastern Cape Biodiversity Conservation Plan includes reference to Critical Biodiversity Areas (CBA's) which are terrestrial and aquatic features in the landscape that are critical for retaining biodiversity and supporting continued ecosystem functioning and services (ECBCP, 2007). These form the key output of a systematic conservation assessment and are the biodiversity sectors inputs into multi-sectoral planning and decision making. CBA's are therefore areas of the landscape that need to be maintained in a natural or near-natural state to ensure the continued existence and functioning of species and ecosystems and the delivery of ecosystem services. In other words, if these areas are not maintained in a natural or near-natural state then biodiversity conservation targets cannot be met. Maintaining an area in a natural state can include a variety of biodiversity-compatible land uses and resource uses (ECBCP, 2007). For more information see the Biodiversity (Vegetation) Specialist Assessment **(Appendix 8)**.

The main outputs of the ECBCP are "critical biodiversity areas" or CBAs and land use management categories or BLMCs, which include of the following categories:

- CBA 1 = Maintain in a natural state;
- CBA 2 = Maintain in a near-natural state;
- BLMC 3 = Functional landscapes; and
- BLMC 4 = Towns and Settlement, cultivated land or plantations

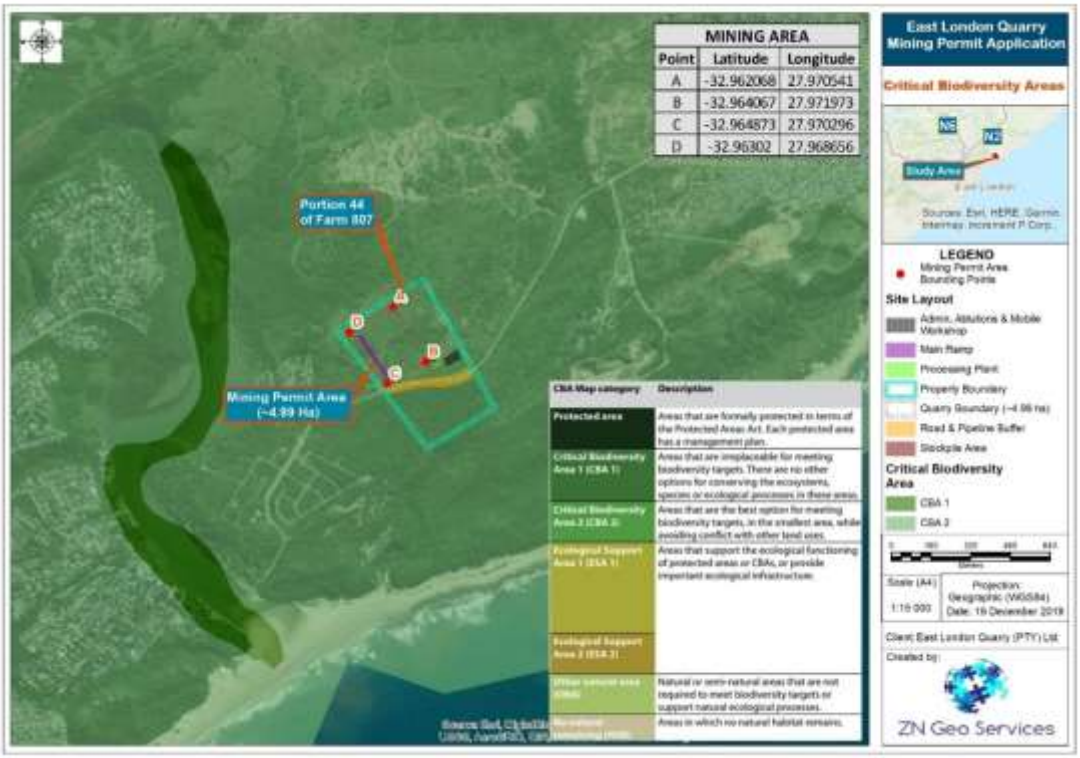


Figure 14 Critical Biodiversity Area (CBA) for the project site.

The mining site falls within an ECBCP Terrestrial CBA 2 region (Figure 14), which is defined as "endangered vegetation types identified through the ECBCP systematic conservation assessment" Site observations and historical imagery confirm that it is not in its natural state (especially the northern section, where mining and related activities are to take place).

Fauna

For mammal assessment, The Complete Book of Southern African Mammals (Mills & Hes, 1997), The 2016 Red List of Mammals of South Africa, Swaziland and Lesotho (eds) (Child *et al*., 2016), and Red Data Book of the Mammals of South Africa: A Conservation Assessment (Friedmann & Daly, 2004).

A list of bird species expected to occur on site was derived from the quarter degree grid records presented in an Atlas of Southern African Birds (1997). Other materials consulted for this assessment includes, Roberts – Birds of Southern Africa, VIIth ed. (Hockey, Dean & Ryan, 2005), Complete Photographic Field Guide: Birds of Southern Africa (Sinclair & Ryan, 2009) and Southern African Bird Atlas Project 2: South Africa, Swaziland, Lesotho, Namibia, Zimbabwe, Zambia, Botswana, Mozambique and Malawi (2007-2019).

A list of herpetofauna species that may occur on the site was compiled, based on the publications such as A Complete Guide to the Frogs of Southern Africa (Du Preez & Carruthers, 2009), Atlas and Red Data Book of the Frogs of South Africa, Lesotho and Swaziland (Minter, Burger, Harrison, Braack, Bishop & Kloepfer, 2004) and Atlas and Red List of the Reptiles of South Africa, Lesotho and Swaziland (Bates, Branch, Bauer, Burger, Marais, Alexander & De Villiers, 2014).

The distribution of animals is determined not only by climate and topography, but also by the available vegetation, which acts as food and the habitat. The study area is situated between two biomes, namely, the Albany-Thicket on the north and Forest biomes south of the site (see Figure 10). According to the SANBI BGIS database, the portion of the site that lies in the Forest biome has been reclassified to Azonal vegetation. For more information see the Biodiversity (Fauna) Specialist Assessment **(Appendix 8)**.

Figure 15 Possible fossorial habitats (red arrows are entrance holes) within the project site(Zondi, 2019).

Topography

The proposed sand mine is located on 20 meters above seal-level and approximately 900 meters from the Amathole Marine Protected Area (on the Gonubie area). The topography of this area is gently to moderately undulating (see Figure 13).

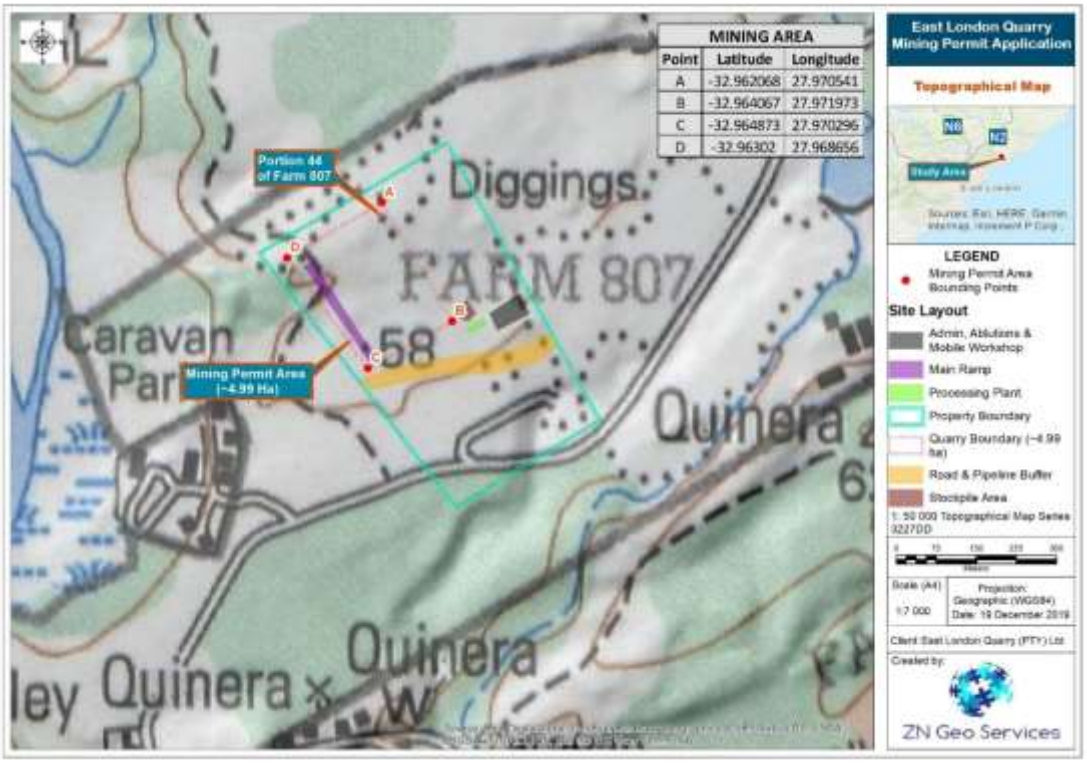


Figure 16 Project site topography.

Hydrology

There is no wetland located within 500m of the intended project site. Surface water spatial layers such as the National Freshwater Ecosystems Priority Areas (NFEPA) Wetland Types for South Africa (SANBI, 2010) were consulted for the presence of wetlands and rivers. This was coupled with a site visit undertaken in January 2020. Only one small non-perennial river is indicated in the south-eastern corner of the southern section of the Farm 807 (portion 44) boundary, but not within the ~4.99-hectare mining permit area. The Qinira River and Estuary is located in close proximity to the proposed development. The separation of clean and dirty water system is vital. This is underpinned in GN704. As such, soft berms are vital for this person.

Quaternary Catchment R30F is located in the seventh water management area (WMA), the Mzimvubu -Tsitsikamma WMA (Government Gazette, 16 September 2016). In this WMA the major rivers include the Mzimvubu-, Mtata-, Mbashe-, Buffalo-, Nahoon-, Groot Kei-, Keiskamma-, Fish-, Kowie-, Boesmans-, Sundays-, Gamtoos-, Kromme-, Groot and Tsitsikamma Rivers. Watercourse can be classified based on the stream order, known as the Strahler stream order to reflect the morphology of a catchment and forms the basis of important hydrographical indicators of its structure, such as its bifurcation ratio, drainage density and frequency (Strahler, 1964). The watercourse associated with the study site is an unknown tributary not associated with any river and flows towards the ocean from upstream wetland areas and is thus classified as an Ephemeral non-perennial first order stream. The site is situated in the Quaternary Catchment R30F. In this catchment, the precipitation rate is lower than the evaporation rate with a Mean Annual Precipitation (MAP) to Potential Evapotranspiration (PET) of 0.47. Consequently, watercourses in this area are sensitive to changes in regional hydrology, particularly where their catchment becomes transformed and the water available to sustain them becomes redirected.

The NWA defines a wetland as “land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil.” In addition to water at or near the surface, other distinguishing indicators of wetlands include hydromorphic soils and vegetation adapted to or tolerant of saturated soils (DWA, 2005). No watercourses were recorded in the northern section of the study site where the infrastructure is proposed to be located. A small section of a non-perennial ephemeral stream was located in the southern section of the study site, which currently has no development plans. No wetlands interact or occur within 500m of the mining permit application area. For more info see the Wetland Specialist Assessment **(Appendix 8)**.

Figure 17 General project site hydrology

The Storm Water management Plan (SWMP) specialist assessment (**Appendix 8**) is required as part of a Water Use Licence Application (WULA) process as stipulated in Section 21 of the National Water Act No. 36 of 1998 (NWA) and for application of the sand quarrying (i.e. Mining Permit), as per the requirements of the MPRDA, 2002, as well as any other relevant environmental approvals in terms of the requirements of the NEMA, 1998 and EIA Regulations, 2014 (as amended in 2017). The SWMP has been developed in line with the requirements of General Notice (GN) 704 of the NWA No. 36 of 1998, as outlined in the Department of Water and Sanitation (DWS) and is inline the Best Practice Guidelines (BPGs) - A1 (2006). As per principle two of the BPGs - A1 (Small-Scale Mining), dirty water must be collected and contained in a system separate from the clean water system and the risk of spillage or seepage into the clean water systems must be minimised. The main concern for the dirty storm water management is to limit fine sediments and hydrocarbon spills from entering the environment downstream of the quarry. Six gravel berms (fine rock aggregates) are proposed to be constructed on the downstream boundaries of the dirty catchment areas.

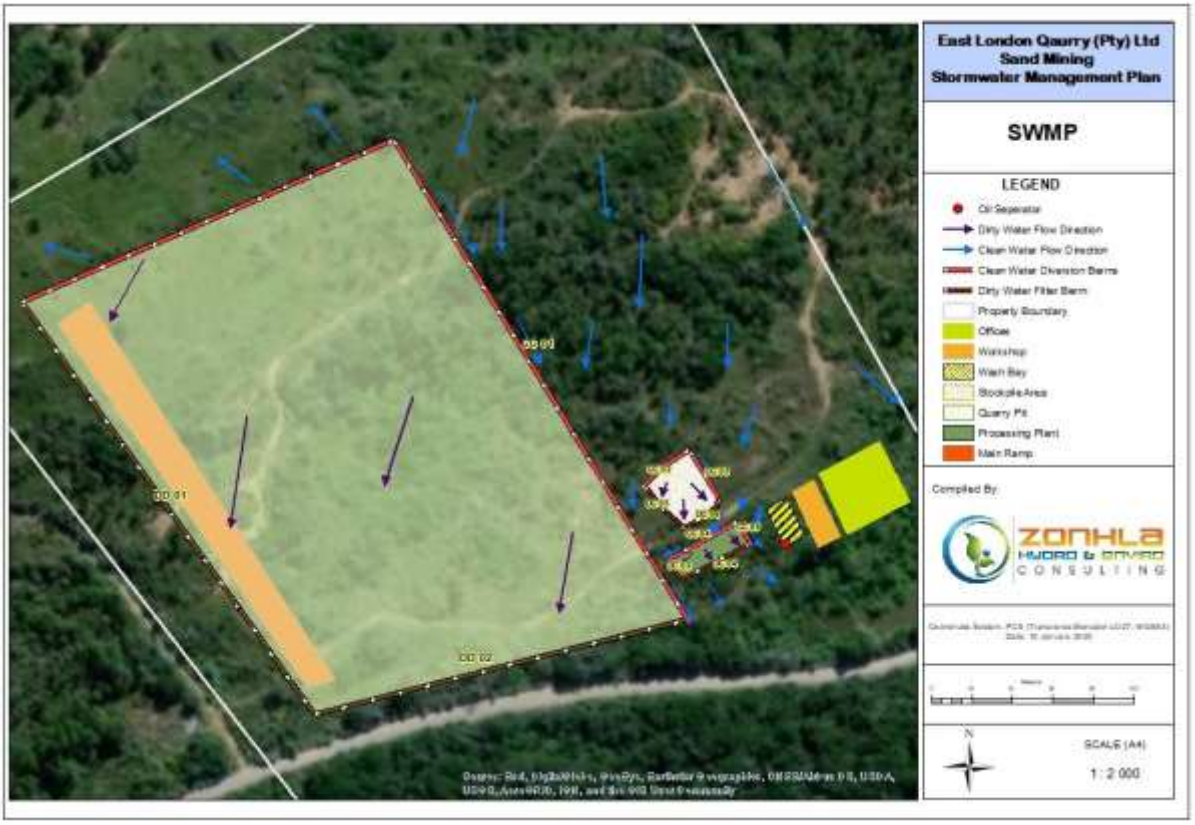


Figure 18 Storm water management plan (Zondi, 2020).

Climate

The East London lies on 24m above sea level. The climate here is mild, and generally warm and temperate. East London is a city with a significant rainfall. Even in the driest month there is a lot of rain. This climate is considered to be Cfb according to the Köppen-Geiger climate classification. The temperature here averages 18.2 °C. The average annual rainfall is 822 mm. Precipitation is the lowest in June, with an average of 36 mm. Most of the precipitation here falls in March, averaging 97 mm. At an average temperature of 21.5 °C, February is the hottest month of the year. July is the coldest month, with temperatures averaging 15.0 °C. Between the driest and wettest months, the difference in precipitation is 61 mm. throughout the year, temperatures vary by 6.5 °C.

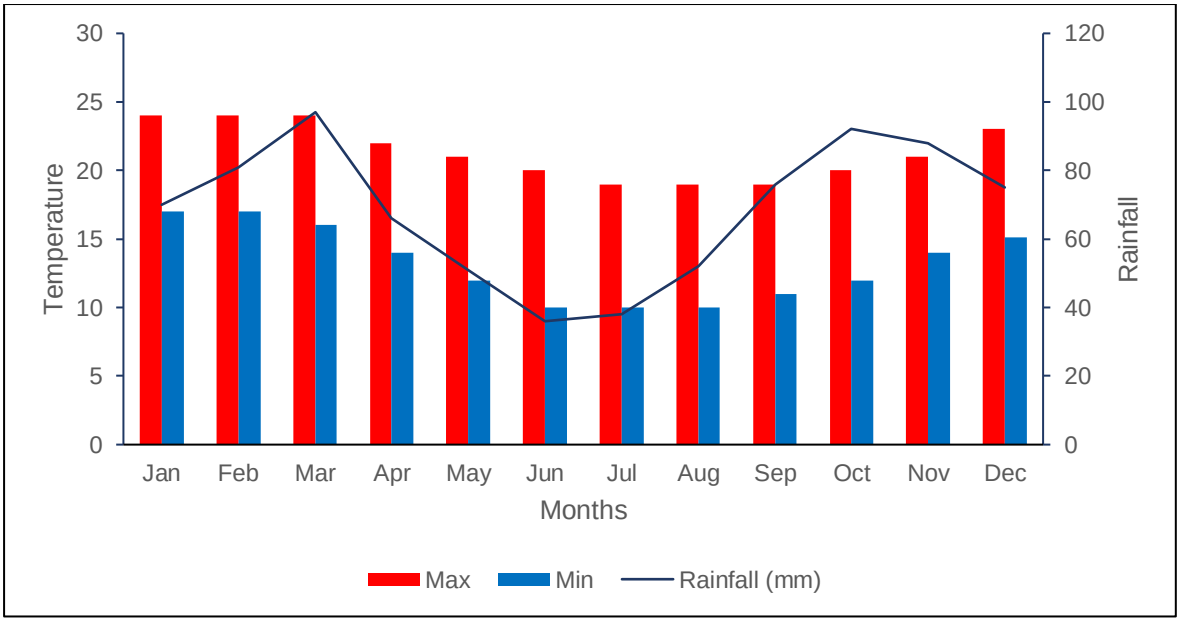


Figure 19 The East London's average temperatures and precipitation (Climate Data, 2019).

(b) Description of the current land uses.

The dominant land use in the area is subsistence grazing and sand mining, both formal and informal. Illegal dumping has also been observed. The surrounding area is characterised by residential areas to the west and south-west. The closest residential area is located approximately 400 meters to the west. Historically large sections of the area, including the northern section of the site, was converted to pine plantations. North of Waxbill Drive road farming, nature and hunting resorts dominate land use. Several cleared paths on the site shows sand mining and other activities has led to an increase in illegal dumping in the area. The project site of the study site is significantly disturbed. For more info see the Wetland Specialist Assessment **(Appendix 8)**.

There is large well-maintained gravel road and power line towards the southern boundary of the development footprint. A few single-track off-road motorbike tracks exist in the area that was used as access points into the study area. The study area has been largely transformed by previous clearing and levelling. Roads and possibly previous sand mining activities marked by soil heaps.

As per historical images, there has been natural and man-made changes that took place, but it has only somewhat recovered from those changes (Figure 19).

Figure 20 A comparison of the site between 2004 and 2019 (Google earth 2019).

Figure 21 illegal dumping within the project site (Bezuidenhout, 2020).

Figure 22 Sand heap within the project site, indicating evidence of prior mining (van der Walt, 2019).

Cultural & Heritage Landscape

Historical land use and the cultural landscape are linked since the cultural landscape is shaped to some extent by the history of the area - the greater study area is located in a partially developed area that is characterised by a combination of new residential developments as well as township development and informal settlements. According to the topographic map evidence, the immediate adjacent study area was developed as a caravan park previously and with diggings. Levelling and clearing activities would have destroyed any surface indicators of heritage resources. It is clear that most of the study area has been previously disturbed and no surface indicators of significant heritage sites or features were identified. In terms of the paleontological component of Section 35, the area is indicated as of low significance on the SAHRA paleontological map. No graves were encountered. For more info see the Specialist Heritage Impact Assessment **(Appendix 8)**.

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

Refer to Figure 3 and Figure 12 which provides an overview of the position of the propose project site, the existing access tracks, and the extent of the vegetation (specifically Milkwood).

(d) Environmental and current land use map

(Show all environmental, and current land use features)

Refer to Figure 23.

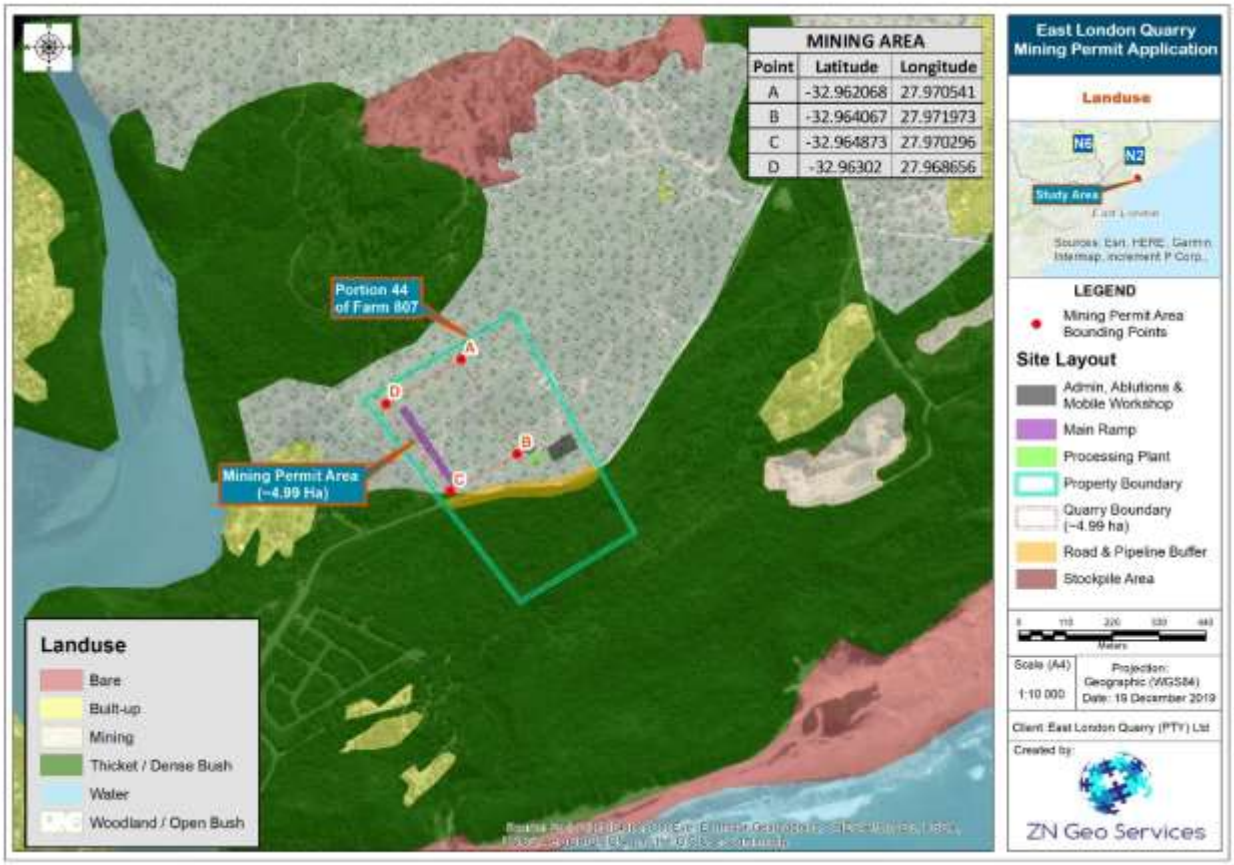


Figure 23 Land use

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

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

The mining activities are restricted to the removal of sand up to an average depth of 3 metres. The impacts and risks below were identified and are listed below. 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 will be discussed further below in the Impact Assessment.

Construction phase: Development of infrastructure and logistics

- Compliance with relevant environmental legislation and policy
- Design of the mine site
- Socio-economic
- Health and safety (animals and humans)

Operational phase

- Compliance with relevant environmental legislation and policy
- Visual intrusion associated with mining activities
- Sanitation facilities, use thereof
- Demarcation of mining site
- Storm water and erosion
- Spillages of hazardous substances
- Dust control
- Noise
- Waste management
- Socio-economic
- Changes to water quality
- Loss of Protected Plant Species (milkwood)
- Health and safety (animals and humans)

Decommissioning and Closure phase

- Final rehabilitation and decommissioning
- Closure

No-Go Alternative

- Socio-economic effects in terms of loss of potential employment opportunities
- Lower potential for positive competition within the sand mining industry of the greater East London area
- Lower risk of environmental degradation due to the sand mining activities
- Loss of main reason for the applicant having purchased the land.

Refer to Table 7, Table 8, Table 9, Table 10, Table 11 and Table 12 below for a detailed impacts tables and descriptions.

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

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

Methodology for Assessing Impacts and Alternatives

Identified impacts will be assessed against the following criteria:

- Temporal scale

- Spatial scale
- Risk or likelihood
- Degree of confidence or certainty
- Severity or benefits
- Significance

The relationship of the issue to the temporal scale, spatial scale and the severity are combined to describe the overall importance rating, namely the significance of the assessed impact.

Description of criteria

Direct, indirect and cumulative impacts of the issues identified, as well as all other issues identified, in the Basic Assessment phase must be assessed. This methodology allows for the identified potential impacts to be analysed in a systematic manner, with significance rating (from insignificant to very high) assigned to each potential impact. The significance of an impact is defined as a combination of the consequence of the impact occurring and the probability that the impact will occur. The criteria used to determine impact consequence include extent, intensity and duration of the impact and are presented in the tables and descriptions below.

Table 7: Criteria used to determine the consequence of the impact

Rating	Definition of Rating	Score
A. EXTENT – the area in which the impact will be experienced		
Local	Confined to project or study area or part thereof (e.g. site)	1
Regional	The region, which may be defined in various ways, e.g. cadastral, catchment, topographic	2
Inter(national)	Nationally or beyond	3
B. INTENSITY – the magnitude or size of the impact		
Low	Site-specific and wider natural and / or social functions and processes are negligibly altered	1
Medium	Site-specific and wider natural and / or social functions and processes continue albeit in a modified way	2
High	Site-specific and wider natural and / or social functions or processes are severely altered	3
C. DURATION – the time frame for which the impact will be experienced		
Short-term	For the duration of project activities / up to 2 years	1
Medium-term	2 to 15 years	2
Long-term	More than 15 years	3

The combined score of these three criteria corresponds to a consequence rating, as set out in Table 2 (Note that the lowest possible consequence score is 3).

Table 8: Method used to determine the consequence score

Combined Score (A+B+C)	3 - 4	5	6	7	8 - 9

Consequence Rating	Very Low	Low	Medium	High	Very High

Once the consequence is derived, the probability of the impact occurring is considered, using the probability classifications presented in Table 3.

Table 9: Probability classification

Probability of impact – the likelihood of the impact occurring	
Improbable	< 40% chance of occurring
Possible	40% - 70% chance of occurring
Probable	> 70% - 90% chance of occurring
Definite	> 90% chance of occurring

The overall significance of impacts is determined by considering consequence and probability using the rating system prescribed in Table 4.

Table 10: Impact significance ratings

		Probability			
		Improbable	Possible	Probable	Definite
Consequence	Very Low	INSIGNIFICANT	INSIGNIFICANT	VERY LOW	VERY LOW
	Low	VERY LOW	VERY LOW	LOW	LOW
	Medium	LOW	LOW	MEDIUM	MEDIUM
	High	MEDIUM	MEDIUM	HIGH	HIGH
	Very High	HIGH	HIGH	VERYHIGH	VERY HIGH

Finally the impacts are considered in terms of their status (positive or negative) and the confidence in the ascribed impact significance rating is noted. The classification for considering the status of impacts and the confidence in assessment is laid out in Table 5.

Table 11: Impact Status and Confidence Classification

Status of Impact	
Indication whether the impact is adverse (negative) or beneficial (positive)	+ ve (positive – a 'benefit')
	– ve (negative – a 'cost')
	Neutral
The degree of confidence in predictions based on available information, the environmental consultant's judgment and / or specialist knowledge.	Low
	Medium
	High

Different types of impacts were also considered in the impact ratings, as listed in Table 6.

Table 12: Types of Impact

Direct – impacts that result from the direct interaction between a project activity and the receiving environment (e.g. dust generation which affects air quality).
Indirect – impacts that result from other (non-project) activities but which are facilitated as a result of the project or impacts that occur as a result of subsequent interaction of direct project impacts

within the environment (e.g. reduced water supply that affects crop production and subsequently impacts on subsistence-based livelihoods).
Cumulative – impacts that act together with current or future potential impacts of other activities or proposed activities in the area / region that affect the same resources and / or receptors (e.g. combined effects of waste water discharges from more than one project into the same water resource, which may be acceptable individually, but cumulatively result in a reduction in water quality).

There is no statutory definition of 'significance' and its determination is therefore necessarily partially subjective. Criteria for assessing the significance of impacts arise from the following key elements:

Status of compliance with relevant local legislation, policies and plans, any relevant or industry policies, environmental standards or guidelines and internationally accepted best practice:

- The consequence of the change to the biophysical or socio-economic environment (e.g. loss of habitats, decrease in water quality) expressed, wherever practicable, in quantitative terms. For socio-economic impacts, the consequence must be viewed from the perspective of those affected, by taking into account the likely perceived importance of the impact and the ability of people to manage and adapt to the change;
- The nature of the impact receptor (physical, biological, or human). Where the receptor is physical (e.g. a water resource) its quality, sensitivity to change and importance must be considered. Where the receptor is biological, its importance (e.g. its local, regional, national or international importance) and its sensitivity to the impact must be considered. For a human receptor, the sensitivity of the household, community or wider societal group must be considered along with their ability to adapt to and manage the effects of the impact; and
- The probability that the identified impact will occur. This is estimated based upon experience and / or evidence that such an outcome has previously occurred.

The impact significance rating also reflects the need for mitigation. While low significance impacts may not require specific mitigation measures, high significance negative impacts demand that adequate measures be put in place, to reduce the residual significance (impact significance rating, after mitigation), as described below in Table 7.

Table 13: Definitions of Impact Significance

Insignificant: the potential impact is negligible and no mitigation measures or environmental management is required.
Very Low & Low: no specific mitigation measures required, beyond normal environmental good practices.
Medium - High: specific mitigation measures should be devised, to reduce the impact significance to an acceptable level. If mitigation is not possible, compensation measures should be considered.

Very High: specific mitigation measures should be identified and implemented, to reduce the impact significance to an acceptable level. If such mitigation is not possible, very high significance negative impacts should be considered in the project's authorisation process.

Note that impact significance will be rated in the prescribed way both without and with the effective implementation of the recommended mitigation measures.

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)

No concerns have been raised by any interested and affected parties during the Draft Basic Assessment (BA) phase spanning 27 January 2020 to 27 February 2020, which is 31 days. However, changes were made to the final site layout by relocating the main ramp from the west to the east so as to be situated beyond the milkwood habitat.

Figure 24 Initial site layout map

Figure 25 final site layout map

viii) The possible mitigation measures that could be applied and the level of risk

(With regard to the issues and concerns raised by affected parties provide a list of the issues raised and an assessment/ discussion of the 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).

No concerns have been raised by any interested and affected parties at the Draft Basic Assessment comment phase between 27 January 2020 and 27 February 2020. See Appendix 2 for the public participation and Comments & Responses Report.

ix) Motivation where no alternative sites were considered

Alternatives were considered, as described in section i) Details of the development footprint alternatives considered. However, the alternative sites were not considered feasible, and therefore were not assessed due to the following reasons:

- Geological reserves prove the existence of a viable sand deposit.
- The applicant bought the land with the sole intention to mine sand as evidence of disturbance indicates commercial viability.
- The area earmarked for sand mining is already significantly disturbed due to prior sand mining as well as illegal dumping. Thus, the associated environmental degradation is minimal as compared to another greenfield site. The site disturbance is also limited to the earmarked area.

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

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

The open cast sand mining methodology to be employed is the most cost-effective method to extract the sand reserves. Any encountered overburden (though unlikely), and unusable calcrete will be utilised to make soft berms where required. The proposed project site is situated in an already disturbed environment with evidence of prior sand mining or diggings. Therefore, the environment to be disturbed is minimal and thereby keeping rehabilitation and closure costs and requirements minimal. The location of the milkwood trees is confined to the western extents of the propose mining area. Therefore, mining can proceed on the other sections of the mining permit area while this area is demarcated, and a permit is applied for the removal of the trees. The project site does not interact with any wetland or any type of watercourse. The gravel roads to the west and south of the project site are already well-established thus significantly further reducing the area of the environment to be disturbed. There are already motor vehicles utilising the main Quenera Road. Also, operations and haulage will only take place until 18h00 at the latest. Noise after hours will therefore not be an issue.

The operational approach is practical and based on best practice to ensure a phased approach of mining followed by rehabilitation in sequential stages.

There are therefore no other reasonable or feasible sites, layouts, activities, technologies, or operational alternatives for further consideration in the impact assessment component, other than the mandatory “no-go” alternative that must be assessed for comparison purposes against the baseline.

i) Full description of the process undertaken to identify, assess and rank the impacts and risks the activity will impose on the preferred site

(In respect of the final site layout plan) through the life of the activity. (Including (i) a description of all environmental issues and risks that were identified during the environmental impact assessment process and (ii) an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures.)

Refer to Figure 3 for the Site Layout Plan of the Preferred and most viable alternative. Refer to Section (v) above where the risks have been described. Refer to Section (vi) above where the methodology has been described and refer further below for the full Impact Assessment Tables for the Preferred and Only Alternative (Sand Mining Activity) and Appendix 9.

This BAR and EMPr were compiled through a detailed desktop investigation and site assessment in order to determine the environmental setting in which the project is located.

Input from stakeholders during the public participation process will also assist the EAP in the identification of any additional impacts associated with the proposed sand mining activities.

The methodology described above was used to assess the significance of the potential impacts of the sand mining activities. The assessment of impacts is based on the experience of the EAP.

The mitigation measures proposed are considered to be reasonable and based on the location of the mining area and must be implemented in order for the outcome of the assessment to be accurate.

(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). The supporting impact assessment conducted by the EAP must be attached as an appendix, marked **Appendix 9.**

…….Page left blank intentionally prior to EIA/Significance of Impacts…….

Table 14 Significance of Impacts per Activity per Phase

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE if not mitigated					MITIGATION TYPE	SIGNIFICANCE if mitigated				
				EXTENT	INTENSITY	DURATION	PROBABILITY	RATING		EXTENT	INTENSITY	DURATION	PROBABILITY	RATING
• Mining • Haul roads, mine and access road to the main road; • Stockpiles • Screening plant • Administration offices and stores • Ablutions • Trackless mobile machinery and light delivery vehicle parking bays	Damage to heritage resources	No surface sites were identified	Pre-Construction and construction.	1	1	3	Low	Very Low	• Chance find procedure	1	1	3	Low	Very Low
• Mine layout and site establishment	<u>Direct impact</u> Destruction of natural vegetation on the site <u>Cumulative impact:</u> Loss of a portion of a CBA2 <u>Status of impact</u> Negative, High	Clearing of and damage to vegetation in the mining footprint, access roads, construction camps, vehicle/machinery traffic and trampling by workers.	Construction	2	3	3	Definite	Very high	• Before mining operations commences, the mining manager in consultation with the ECO or surveyor must clearly demarcate the mining footprint and the access road footprint. • No-go and sensitive areas must be clearly marked and avoided. • Disturbance of indigenous vegetation and the natural ecology in the surrounding areas must be avoided where possible. • Mining activities must be done with rehabilitation in mind. Removed vegetation must kept for rehabilitation. • Concurrent rehabilitation is also encouraged.	2	2	3	Definite	Medium

• Mine layout and site establishment	Direct impacts: Removal/destruction of protected plants of conservation concern. Indirect impacts: Mining will impact on habitat, and pollinators and seed dispersers of such plant species. Status of impact: Negative, High	The proposed quarry and mining activities will destroy the habitat of the protected plant species (*Sideroxylon inerme*)	Construction and operation	1	2	3	Definite	Medium	• Since there are plants which are nationally protected, these plants have to be rescued and removed by a suitably qualified specialist and replanted as part of vegetation rehabilitation after the construction (Note: these plants may only be removed with the permission [permit] of the provincial authority). • Buffers are to be applied to this area before mining commences. Mining can commence in other areas while the permit is being applied for. • The plant relocation permit should be applied at the provincial Department of Agriculture Fisheries and Forestry (in King Williams Town, Eastern Cape). • This permit is only obtainable when the applicant has obtained the mining permit. The mining permit will be attached to the plant relocation permit application.	1	1	2	Probable	Very low
• Mine infrastructure and clearing of vegetation	Direct impacts: Exposure of soil to erosion Status of impacts: Negative, medium	Due to the topography of the site that is slopy, the removal of vegetation will results in soil erosion as a result of	Construction and operation	1	2	2	Definite	Low	• Plan the development layout in such a way to prevent storm water and runoff from roads does not lead to excessive soil erosion. • Do not allow erosion to develop on a large scale before acting.	1	2	2	Probable	Low

		rainfall, and high vehicular activity. The lack of or failure to properly rehabilitate the site will leave a scared environment.							• As the site is sandy, roads on inclined should be overlain with rocks to prevent or reduce erosion. • Remove only vegetation where essential for construction and mining and do not allow any disturbance to the adjoining natural vegetation cover. • Protect all areas susceptible to erosion and ensure that there is no undue soil erosion resultant from activities within and adjacent to the mine.					
• Disturbance to soils, earthworks and use of machinery	<u>Direct impact:</u> Spread of alien invasive plant species <u>Cumulative impact:</u> Negative, high	The seed of alien invasive plant species that occur on and near the construction area the construction areas could spread into the disturbed and stockpiled soil. Mine and construction vehicles and equipment were likely used on various other sites and could introduce alien invasive plant seeds or indigenous	All phases	1	2	3	Possible	Medium	• Alien invasive species, especially category 1b invaders that were identified within the mining site should be systematically removed. By removing these species, the spread of seeds will be prevented into disturbed soils which could thus have a positive impact on the surrounding natural vegetation. • All alien seedling and saplings must be removed as they become evident. • Method used to clear these plants can either be manual/mechanical or chemical or a combination of these methods. • If filling material is to be used, it should be sourced	1	1	2	Possible	Very low

		plants not belonging to the vegetation systems of the site.							from areas free of invasive species. *Decommissioning and closure* • Site should be monitored for the emergent of invasive species. • These plants should controlled as soon as they emerge and follow up treatment should be in place. • Monitoring and rehabilitation should take at least 2 years. • Indigenous vegetation from the area should be used for rehabilitation.					
• Excavation	<u>Direct impact:</u> Reduce air quality <u>Status of impact:</u> Negative, medium	Natural environment, road users and nearby residents	Construction, commissioning, operational, decommissioning and closure	1	2	3	Probable	Medium	• Reduce drop height of material to a minimum. • A speed limit of 30km/hour will be displayed and enforced through the company's safety policies and systems. • All vehicle drivers entering the site will be informed of the speed limit.	1	1	1	Probable	Very low
• Emissions	<u>Direct impacts:</u> Reduce air quality <u>Status of impact:</u> Negative, medium	Natural resources	Construction, commissioning, operational, decommissioning and closure	1	2	3	Definite	Medium	• Vehicles and machinery on the site will be monitored for excessive emissions. • Vehicles and machinery will be maintained to minimise emissions. • A log book will be used to keep records of maintenance and mitigation measures implemented to resolve problems encountered.	1	1	1	Possible	Very low

									• Vehicles and machinery emitting excessive emissions will be stopped immediately and not allowed to operate until the necessary repairs have been done.					
• All mining activities	Direct impacts: Pollution of soil and soil water Indirect impact: Deterioration of soil health, and vegetation Cumulative impact: Pollution of soil water in the area Status of impact: Negative, medium	Spillage of construction material and harmful chemicals. Illegal disposal and dumping of construction material such as cement or soil, as well as maintenance materials during construction and operation.	Construction and operation	1	3	3	Probable	High	• Prevent spillage of material, oils or other chemicals, strictly prohibit other pollution. Ensure there is a method statement in place to remedy any accidental spillage immediately. • Trucks and equipment should not be washed in dedicated areas. • The mine should maintain a store of suitable absorbent material, suitable bioremediation substance and a spill kit. • All incidents/spillages are to be recorded in an incident log book. • Contaminated soil material be disposed at a proper site.	1	2	2	Probable	Low
• Rehabilitation	Direct impacts: Failed rehabilitation Indirect impact: Change vegetation community which can be dominated by alien invasive plant species Status of impact: Negative, medium	Lack of adequate rehabilitation of soils and vegetation	Closure	1	3	3	Probable	High	• Topsoil removed prior to or during mining should used in rehabilitation. • Indigenous vegetation on topsoil stockpiles should be used in the rehabilitation process. • The area should be re-landscaped and resemble the land form prior to the	1	2	2	Probable	Low

									open cast activities as far as possible. • Vegetation rehabilitation plan should be implemented prior to mining and construction, grass can be removed as sods and stored within transformed vegetation. Tree seedlings and saplings should be placed in flower pots using the local soil and organic material.					
• Mine layout, site establishment (including access roads, berms, construction of infrastructure etc.) and mining	Direct impact: Minimal, as the site does not encroach within a wetland. Cumulative impact: Construction and operational activities may result in cumulative impact to the water courses within the local catchments and beyond should the site boundary not be adhered to. Status of impact Negative, very low	Unlikely interaction of the site with the surrounding watercourses as municipal water shall be utilised.	Construction and operation	1	1	3	Low	Very Low	• Effective storm water management should be a priority during both construction and operational phase. This should be monitored as part of the EMP.	1	1	1	Probable	Low
• Mine layout, site establishment (including access roads, berms, construction of infrastructure etc.) and mining	Direct impact: There are potential impacts as the topography is not entirely flat but gently undulating. This has connotations for storm water	Soft berms are to be well maintained at all times to ensure effective separation of clean and dirty water systems.	Construction and operation	1	2	3	Medium	Low	• Effective storm water management should be a priority during both construction and operational phase. This should be monitored as part of the EMP.	1	1	1	Probable	Low

	management. Soft berms are thus important. <u>Cumulative impact:</u> Construction and operational activities may result in cumulative impact to the water courses within the local catchments and beyond should the site boundary not be adhered to. <u>Status of impact</u> Negative, medium													
• Mine layout and site establishment	<u>Direct impact</u> Destruction of natural and sensitive vertebrate habitat <u>Cumulative impact:</u> Loss of natural vertebrate habitat on site and beyond <u>Status of impact</u> Negative, High	Clearing of and damage to vertebrate habitat and killing of terrestrial and fossorial small mammals and herpetofaunal in the mining footprint, access roads, construction camps, vehicle/machinery traffic and trampling by workers.	Construction	1	3	3	Definite	High	• Limit the creation of new roads, and try use the already existing ones. • An independent Ecological Control Officer (ECO) should be appointed to oversee construction and operation. The ECO should be knowledgeable on the protected species that may occur within the development footprint. If any vertebrate especially herpetological species are encountered or exposed during the construction phase, they should be removed and relocated to natural areas in the vicinity.	1	2	3	Definite	Medium

• Use of vehicles and machinery for loading, hauling and transport	Direct impact: Soil compaction and destruction of underground habitats Status of impact: Negative, Medium	Soil compaction will destroy underground tunnels and nests for rodents and other fossorial species. Also movement of vehicles will cause vibrations that will scare and drive underground animals away from the site.	Construction and operations	1	2	3	Definite	Medium	• Vehicles may not veer from the dedicated roads. • Once operation is complete, unused roads should be closed and their surface be broken and revegetated with the locally occurring plants.	1	1	3	Probable	Low
• All mining activities	Indirect impact: Loss of vegetation and habitat will cause localised disruption of food web. Negative, Medium	• The development will modify habitat of various vertebrates. • The proposed development will lead to a decline in population numbers, but not necessary to local extinction	All phases	2	2	2	Probable	Medium	• Prevent edge effects. • The rehabilitation activities must try if all means possible to be similar to the natural state of the local area, so as to recreate lost habitats	1	2	2	Low	Possible
• All mining activities	Direct impacts: Noise, soil and water pollution. Indirect impacts: Vegetation condition will deteriorate and	• Spillages of construction material and harmful chemicals. • Illegal disposal and dumping	Construction and operation	2	2	3	Probable	High	• Prevent spillage of material, oils or other chemicals, strictly prohibit other pollution. Ensure there is a method statement in place to	2	2	2	Probable	Medium

	animals will avoid this areas due to noise and the possible contamination of soil and soil water. <u>Status of impact:</u> Negative, High	of construction material such as cement or oil, as well as maintenance materials during construction and operation. • Noise from vehicles will deter animals from using this site or area.							remedy any accidental spillages immediately. • Trucks and equipment should only be washed in dedicated areas and the dirty water is not allowed to discharge into the surrounding natural vegetation.					
• Rehabilitation	<u>Direct impacts:</u> Failed rehabilitation <u>Indirect impacts:</u> Scared landscape that is inhabitable by animals. Invasion of alien plant species that will change the original the biodiversity and ecology of the area. <u>Cumulative impacts:</u> Spread of invasive plant species and encroacher species will change the local ecology <u>Status of impact:</u> Negative, Medium	Lack of adequate rehabilitation of soils and vegetation	Closure	2	2	3	Probable	High	• It is important that rehabilitation is not planned after mining activities have come to an end, it should be planned right at the beginning of the mining plans. • Disturbance of vegetation and habitats outside of the mining site and where quarrying will take place should not wait till the end of mining activities but should be taken care of immediately. • Rehabilitation activities should attempt to return the landscape functioning to its original state wherever possible. • Monitoring of the landscape after rehabilitation should be conducted post mine closure. This will monitor	1	1	2	Probable	Very low

									the success of rehabilitation programme and check for invasion of alien plant species and the local ecology.						
• Excavation & Concurrent Rehabilitation Methods	<u>Direct impacts:</u> Failed mine planning <u>Indirect impacts:</u> Scared landscape that is inhabitable by animals. Invasion of alien plant species that will change the original the biodiversity and ecology of the area as mining will not be in accordance with the plan and rehabilitation efforts will be hindered as well. <u>Cumulative impacts:</u> Unnecessary lateral expanse of mining pit prematurely inn the bid to obtain reserves. <u>Status of impact:</u> Negative, Medium	Lack of mine planning and concurrent rehabilitation planning	Operation	2	2	3	Probable	High	• A rehabilitation and mine plan must be implemented and adhered to. • Environmental control officer is to consider adherence to or lack thereof in terms of these afore-mentioned plans.	1	1	2	Probable	Very low
• Air Emissions (dust)	<u>Status of impact:</u> Negative, Medium			2	2	2	Probable	Medium	• Chutes/curtains to be utilised to reduce the liberated dust when the sand enters the screen. • Where reasonably practicable; seeing as there is a power line along the southern extents of the	1	1	2	Probable	Low

									project site, indigenous vegetation to screen excessive dust would be ideal. • Road wetting where required to minimise liberated dust is recommended. • A dust monitoring programme with dust buckets installed in accordance with the applicable legislation (ASTM D1979) is to be implemented. • An occupational hygienist is to conduct personal noise and dust exposure on the applicable or exposed employees.					
• Noise	<u>Status of impact:</u> Negative, Medium			2	2	2	Probable	Medium	• Sales and hauling to customers will only take place until 18:h00 at the latest. • Where reasonably practicable; seeing as there is a power line along the southern extents of the project site, indigenous vegetation to screen noise would be ideal. • Mining operations shall take place as per the required production tonnages but be cognisant of the noise. • The applicable permission is to be obtained from the DMR for work to take place on Sundays.	1	1	2	Probable	Low

• Fire	There is the potential for fire to occur on the mining site. <u>Status of impact:</u> Negative, high	Natural and agricultural resources	Construction, Operation and decommissioning	2	2	3	Probable	High	• All employees will be inducted on general fire awareness. • Anyone who observes a fire must report it immediately to the fire protection agency/ fire brigade and their supervisor/ mine manager. • The mine boundary pillar must be maintained clear,, to add in breaking fires.	1	1	2	Probable	Low
• Hydrocarbon spill	Surface water contamination and loss of natural and agricultural resources. <u>Status of impact:</u> Negative, High	Natural and agricultural resources	Construction, Operation and decommissioning	2	2	3	Probable	High	• Any mine vehicle which is leaking hydrocarbons (e.g. petrol, diesel or oil) will be serviced in a concreted workshop to repair the leak. • Hydrocarbon spillages are to be cleaned up immediately. The mine will also maintain a store of suitable absorbent material, suitable bioremediation substance and a spill kit. • All incidences/ spillages are to be recorded in an incident logbook. • Contaminated soil must be collected by a SAWIC registered contractor.	1	1	2	Probable	Low
• Waste from chemical toilets and litter	Pollution and nuisance <u>Status of impact:</u> Negative, Medium	Natural and agricultural resources	Construction, Operation and decommissioning	2	2	3	Probable	High	• The toilet is serviced when needed and emptied when almost full. • If a leak occurs the correct emergency procedure is to be followed. Litter will be removed from site by the mine manager; as per the	1	1	2	Probable	Low

									frequency and procedure to be developed on site as activities commence.						

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):-

See **Appendix 8** for the specialist studies which were conducted, including:

- Heritage
- Biodiversity (vegetation and fauna)
- Wetlands
- Storm Water Management Plan

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
Heritage	The impact of the proposed project on heritage resources is considered to be low and it is recommended that the proposed project can commence on the condition that the following recommendations are implemented and based on approval from SAHRA: • Implementation of a chance find procedure as outlined below.	X	Environmental Impact Assessment (Section J)
	Potential risks to the proposed project are the occurrence of unknown and unmarked graves. The possibility exists that the study area could contain graves of which surface indicators have been destroyed and subsurface material could be uncovered during earth works. These risks can be mitigated to an acceptable level with the implementation of a	X	Environmental Impact Assessment (Section J)

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
	chance find procedure as outlined in Section 10.1.		
Wetland	The proposed mining activities are unlikely to have a significant impact to regional hydrology and as such impacts during the construction and operational phase fall in the *Low* risk category. • The layout of mining activities should not encroach onto the watercourse or its buffer zone • No development should encroach into the southern section of the study site.	X	Environmental Impact Assessment (Section J)
Biodiversity (vegetation and fauna)	It is imperative that the rehabilitation and monitoring be planned and implemented at the beginning of the mining activities. Protected species and those that are of conservation concern should be handled according to the prescript of the law.	X	Environmental Impact Assessment (Section J) (Section 2): Manner in which risks will be dealt with in order to avoid pollution or the degradation of the environment (Section 3): Hydrology
Storm Water Management Plan	The purpose of the gravel berms is to act as a sediment traps by filtering storm water emanating from the open cast, screening plan and stockpile areas.	X	(Section 2): Manner in which risks will be dealt with in order to avoid pollution or the degradation of the environment
	This SWMP has been divided into two sections presenting clean storm water and dirty storm	X	Environmental Impact Assessment (Section J) (Section 3): Hydrology

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
	water management recommendations.		

l) Environmental impact statement

(i) Summary of the key findings of the environmental impact assessment

This Basic Assessment illustrates that there are various potential negative and positive impacts that may arise as a result of the proposed sand mining at Farm 807 which will have an effect on the following environmental components:

• Terrestrial ecology;

• Air quality;

• Noise generation;

• Soils and land capability;

• Social environment; and

• Topography and Visual aesthetics

The project entails the opencast excavation of sand from Portion 44 of Farm 807. The area is dominated by vegetation, the mine procedure will only entail the mechanical excavation of the sand by means of an excavator, after which it will be loaded onto trucks and transported from site. No blasting or drilling will be necessary on site. No alternative activity was assessed as sand was the target mineral. The method of sand mining is singular. The No-Go option will result in the site remaining as it is presently, vacant land. The benefits of the project can be divided into social and economic classifications. The mine will provide direct employment to local persons. Of more importance is the supply of economic viable building material to ensure that the local business can construct vital infrastructure. The operation further creates indirect employment opportunities in equipment supply industries, transport and sand mining, and the construction environment. The objective of Basic Assessment and Environmental management programme, in this case a basic assessment is to find the alternative having the least negative environmental impact and which best benefits society. The assessment and evaluation of potential impacts associated with the proposed development was

undertaken in an iterative manner, to inform proactively the 'shaping' of the most favourable development proposal.

The proposed site is considered suitable provided that all the mitigation measures contained in this report are applied.

The construction phase and operational phase have very similar negative impacts. However, the potential impacts identified will be adequately managed and effectively mitigated through the implementation of the recommendations outlined in this report as well as the proposed Environmental Management Programme (EMPr).

Major environmental findings

The following aspects require attention from an environmental management point of view were identified, and are addressed in this document:

Fire

• Fire is a real threat thus no open space fires are to be permitted or indeed necessary on site.

Animals

• No introduced animals of any kind are permitted on site. Hunting or trapping or interfering with any wildlife is again contractually prohibited.

• There are holes that indicate of Aardvark and warthog animal habitat on site. No hunting will be allowed.

A monitoring programme will be implemented for the duration of the construction phase of the project. This programme will include:

• Monthly audits will be conducted by the Environmental Control Officer, which are according to the EMP and conditions of the Environmental Authorisation.

• Compilation of an audit report with a rating of the compliance with the EMP. This report will be submitted to the relevant authorities (DMR).

• Proper and continuous liaison between developing contractors, the applicant and other stakeholders and members of the public (where necessary) to ensure all parties are appropriately informed at all times.

• The impact will not have an influence on the decision for the mitigation.

All of the negative identified impacts will occur for a limited period and the extent of the negative impacts will be localised. All of the identified impacts can be suitably mitigated. There is a correlation between cumulative impacts post mitigation, and significance rating of impacts after mitigation as indicated in **Appendix 9**.

(ii) Final Site Map

Provide a map at an appropriate scale which superimposes the proposed overall activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers. Attach as an Appendix 3

Please refer to Appendix 3.

(iii) Summary of the positive and negative impacts and risks of the proposed activity and identified alternatives

Please refer to Section (I) and below

Positive impacts associated with the project include:

- Job opportunities
- A lawful use for the proposed project site as it is currently utilised for illegal dumping and/or mining and is largely already disturbed
- The applicant shall utilise its financial and other related resources to rehabilitate the proposed project site once mining activities have been completed (and during operational phase, as concurrent rehabilitation). This is advantageous as otherwise the project site would have been infested with weeds and illegal activities
- Access control measures to be employed by the applicant in the event that the authorisation is granted, shall assist in deterring any would-be loiterers who may have been involved in the illegal dumping and/mining practices on the project site
- Ideal mining environment as the required mineral (i.e. sand) is located at the surface
- The proposed mine has the potential to contribute to the maintenance of infrastructure in and around the local area.
- Sand will not be mined from within a watercourse.

Negative Impact associated with the project include:

- The mining activities will cause noise and dust issues; however this is easily mitigated by strategically planting indigenous vegetation as a screen and frequent road wetting
- Negative impacts with regards to the biophysical environment include potential contamination of the area due to spillage by hydrocarbon products
- Loss of soil resources
- Additional traffic on the road network due to the sales haulage from the proposed sand mine

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 proposed impact management objectives are listed below:

- Objective 1 - To create a safe and rehabilitated post-mining environment.
  - Ensure safe mining area with no potentially dangerous areas like deep excavations.
  - Topsoil to be stockpiled and replaced during decommissioning and closure, and rehabilitation.
- Objective 2 - To minimise pollution or degradation of the environment
  - Provide sufficient information and guidance to plan the sand mining activities in a manner that would reduce impacts as far as practically possible.
  - Limit residual environmental impact with no surface water or soil contamination by ensuring that no fuel or oil spills occur in the mining area.
  - Ensure that no solid waste or rubble is dumped on the site.
  - Ensure that Protected speciies identified within the proposed mining area is removed according to best practice, with all relevnt permits in place.
  - Ensure that portable toilets are used.
- Objective 3 – To minimise impacts on the community and to provide optimal post-mining social opportunities
  - Ensure that workers remain within the mining permit area.
  - Operate during normal working hours only.

- Minimise the generation of noise and dust.
- Respond rapidly to any complaints received.
- Minimal negative aesthetic impact.
- Optimised benefits for the social environment.
- Promote the health and safety of workers.

The proposed impact management outcomes are listed below:

- By providing sufficient information to strategically plan the sand mining activities, unnecessary social and environmental impacts be avoided.
- Ensure an approach that will provide the necessary confidence in terms of environmental compliance.
- Provide a management plan that is effective and practical for implementation.
- Through the implementation of the proposed mitigation measures it is anticipated that the identified social and environmental impacts can be managed and mitigated effectively.
- Noise generation can be managed through consultation and restriction of operating hours and by maintaining equipment and applying noise abatement equipment if necessary.
- Visual intrusion can be managed through natural vegetation or shade cloth, etc.
- Dust fall can be managed by reducing driving speeds when driving on unpaved roads.
- Wildlife disturbance and clearance of vegetation will be limited to the absolute minimum required and disturbed areas will be re-vegetated with locally indigenous species as soon as possible.

  Surface water and groundwater contamination by hydrocarbons can be managed by conducting proper vehicle or related mine maintenance, refuelling with care to minimise the chance of spillages and by having a spill kit available on each site where sand mining activities are in progress.

n) Aspects for inclusion as conditions of Authorisation.

Any aspects which must be made conditions of the Environmental Authorisation

- All mining and rehabilitation to be conducted as per the approved EMPr.
- The proposed mining area must be clearly demarcated with semi-permanent markers.
- Vegetation clearing should be restricted to the footprint of the site applied for.
- Eradicate all alien vegetation in the area during and regularly after mining.
- Movement of the mining fleet / vehicles and employees must be restricted from areas outside of the boundaries of the demarcated mining area.

- All employees should be trained on the implementation of the EMPr and the conditions of the Environmental Authorisation.
- The applicant must appoint a suitably qualified ECO who will be responsible for ensuring compliance with the requirements of the EMPr during the mine operation and decommissioning.
    - The ECO must:
        - Inspect the site and record compliance with the EMPr;
        - Inform key, on-site staff of their roles and responsibilities in terms of the EMPr;
        - Ensure that all activities on site are undertaken in accordance with the EMPr;
        - Immediately notify the mine operator of any non-compliance with the EMPr, or any other issues of environmental concern.
- Stockpiling of topsoil should be according to the ECO recommendations.
- Should a grave or any other historically significant feature be identified in the construction footprint, the feature may not be removed, and a heritage specialist must be contacted immediately.
- Appropriate dust abatement measures must be implemented in areas where required.
- A network of dust fall monitoring units should be installed for monitoring during the construction and operational periods for unpaved roads.
- Regular dust suppression/road -wetting should occur as required.
- Invasive or exotic plant species should not be allowed to establish during and after the construction phase and it is imperative that an effective management plan is implemented to ensure that all mitigation measures discussed in the report are adhered to.
- A speed limit of 30km/hour will be displayed and enforced through a fining system. All vehicle drivers will be informed of the speed limit applicable to the length of the access road where after the national speed limits will be applicable for hauling trucks. The access road will be maintained during operational activities.

The project proposal will be permissible if all the conditions, mitigation measures and environmental impact regulations are implemented.

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

(Which relate to the assessment and mitigation measures proposed)

- The assumptions made in this document related to the assessment and mitigation measures proposed, stem from site specific information gathered from the applicant, local community, site inspections and background information gathering.
- The desk-top research included reference to the SANBI BGIS database map viewer for the various baseline environmental attributes, and any assumptions or gaps in knowledge expressed by SANBI in the provision of this information would be applicable to this information as referenced.
- It is assumed that the proposed mitigation measures as listed in this report and included in the EMPr will be implemented and adhered to. Mitigation measures are proposed which are considered to be reasonable and must be implemented in order for the outcome of the assessment to be accurate.

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

i) Reasons why the activity should be authorized or not

A mining permit will ensure that the sand mined legally and provisions will be made for the rehabilitation of the disturbed area after sand mining has been completed. The applicant is applying for a mining permit and it will be a small-scale operation. Should the mitigation measures and monitoring programmes proposed in this document be implemented on site, no fatal flaws could be identified that were deemed as severe as to prevent the activity from continuing.

ii) Conditions that must be included in the authorisation

As per Section (n) above:

- All mining and rehabilitation to be conducted as per the approved EMPr.
- The proposed mining area must be clearly demarcated with semi-permanent markers.
- Vegetation clearing should be restricted to the footprint of the site applied for.
- Eradicate all alien vegetation in the area during and regularly after mining.
- Movement of the mining fleet / vehicles and employees must be restricted from areas outside of the boundaries of the demarcated mining area.
- All employees should be trained on the implementation of the EMPr and the conditions of the Environmental Authorisation.
- The applicant must appoint a suitably qualified ECO who will be responsible for ensuring compliance with the requirements of the EMPr during the mine operation and decommissioning.
    - The ECO must:

    - Inspect the site and record compliance with the EMPr;
    - Inform key, on-site staff of their roles and responsibilities in terms of the EMPr;
    - Ensure that all activities on site are undertaken in accordance with the EMPr;
    - Immediately notify the mine operator of any non-compliance with the EMPr, or any other issues of environmental concern.
- Stockpiling of topsoil should be according to the ECO recommendations.
- Should a grave or any other historically significant feature be identified in the construction footprint, the feature may not be removed, and a heritage specialist must be contacted immediately.
- Appropriate dust abatement measures must be implemented in areas where required.
- A network of dust fall monitoring units should be installed for monitoring during the construction and operational periods for unpaved roads.
- Regular dust suppression/road -wetting should occur as required.
- Invasive or exotic plant species should not be allowed to establish during and after the construction phase and it is imperative that an effective management plan is implemented to ensure that all mitigation measures discussed in the report are adhered to.

A speed limit of 30km/hour will be displayed and enforced through a fining/noncompliance reporting system or similar. All vehicle drivers will be informed of the speed limit applicable to the length of the access road where after the national speed limits will be applicable for hauling trucks. The access road will be maintained during operational activities.

q) Period for which the Environmental Authorisation is required

The authorisation is required for the duration of the sand mining permit which is an initial 2 years plus a potential to extend the permit by an additional 3 years ; should it be required.

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 BA Report and the EMPr.

It is confirmed 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 EMPr.

s) Financial Provision

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

With the repeal of Section 41 of the MPRDA (Act 28 of 2002) that requires that the owner of a mine must make financial provision for the remediation of environmental damage, regulations pertaining

to the financial provision for prospecting, exploration, mining or production operations under section 44, read with sections 24 of the National Environmental Management Act, 1998 (Act No.107 of 1998) were issued in 2015.

According to regulation 7 the applicant or holder of a right or permit must ensure that the financial provision is, at any given time, equal to the sum of the actual costs of implementing the plans and report contemplated in regulation 6 and regulation 11(1). In terms of regulation 11(1) the holder of a right or permit must ensure that a review is undertaken of the requirements for:

a) Annual rehabilitation, as reflected in an annual rehabilitation plan;
b) Rehabilitation, decommissioning and closure of the prospecting, exploration, mining or production operations at the end of the life of operations as reflected in a final rehabilitation, decommissioning and mine closure plan; and,
c) Remediation of latent or residual environmental impacts which may become known in the future, including the pumping and treatment of polluted or extraneous water, as reflected in an environmental risk assessment report.

The closure liability was calculated at R 105 151, 64. The financial provision for the mining operations was determined based on information currently available. An assessment was conducted of all the activities taking place on site that fall within the properties associated to the mining permit application. R105 151, 64 (including VAT) for the biophysical components associated with the current activities.

Financial Provisions Calculations:

See **Appendix 5** for the financial provisions.

i) Explain how the aforesaid amount was derived.

The financial provisions calculation is based on the DMR-supplied Guideline Document for the Evaluation of the Quantum of Closure-Related Financial Provision Provided by a Mine, published in 2005. The project conforms to Class C for primary risk class. Furthermore, the environmental sensitivity of mine area is low. The project site is already extensively disturbed, this is evident in the previous mining or “diggings” located here as indicated in historic Google earth images and topographical maps (Figure 16, Figure 20 and Figure 21). Furthermore, the historic Google earth images testify to the historic disturbance of the area.

According to regulation 6 an applicant must determine the financial provision through a detailed itemisation of all activities and costs, calculated based on the actual costs of implementation of the measures required for:

a) annual rehabilitation, as reflected in an annual rehabilitation plan;
b) rehabilitation, decommissioning and closure of the prospecting, exploration, mining or production operations at the end of the life of operations, as reflected in a final rehabilitation, decommissioning and mine closure plan; and,
c) remediation of latent or residual environmental impacts which may become known in the future, including the pumping and treatment of polluted or extraneous water, as reflected in an environmental risk assessment report

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

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

The project shall be self-funded by the applicant. This serves as confirmation that the required financial provisions shall be made available to the Department of Mineral Resources (DMR) on finalisation of the mining permit. Please refer to **Appendix 6** for the financial and technical competence report.

t) Specific Information required by the competent authority

i) Compliance with the provisions of sections 24(4) (a) and (b) read with section24 (3) (a) and (7) of the National Environmental Management Act (Act 107 of1998). The EIA report must include the:-

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

(Provide the results of Investigation, assessment, and evaluation of the impact of the mining, bulk sampling or alluvial diamond prospecting on any directly affected person including the landowner, lawful occupier, or, where applicable, potential beneficiaries of any land restitution claim, attach the investigation report as an Appendix 2)

A full consultation process is being implemented during the environmental authorisation process. The purpose of the consultation is to provide affected persons the opportunity to raise any potential concerns. No concerns were raised during the DBAR comment period. Please refer to the public participation section of this report (attached as Appendix 2).

The proposed mining project site is located on land owned by the applicant. The land claims enquiry is still being processed. Therefore, no outcome as to whether there are any claimants can be

determined as yet. Due to the already disturbed nature of the proposed mining area, very few negative impacts on the surrounding community were identified. The dust and noise impacts that may emanate from the mining area during the operational phase could have a negative impact on the land users if the mitigation measures proposed in this document are not implemented and managed on-site. However, due to the small size of the proposed mining activity these impacts are deemed to be of low significance. Chutes will also be utilised to reduce the amount of dust which is liberated into the atmosphere during loading into the screen.

The operation of the mine will however also have a number of positive impacts such as job creation and other social economic benefits (to be finalised with the local community once the permit is authorised). The sand to be removed from the mining area will be used for the maintenance or grading of the main Quenera road as required. In the event that this mining permit is granted, access control measures employed by the applicant will likely reduce if not eradicate the illegal dumping practises currently taking place within the project site.

(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 Appendix 2.19.2 and confirm that the applicable mitigation is reflected in 2.5.3; 2.11.6.and 2.12.herein).

Refer to the Heritage Impact Assessment attached at Appendix 8. The project was uploaded onto the SHRIS platform and the Eastern Cape Provincial Heritage Resources Authority (ECPHRA) was on the database on interested and affected parties which received the electronic DBAR and appendices access link on the 27th January 2020 and the hand delivered hardcopy on the 28th January 2020. No comments have been received from SAHRA.

u) 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).

Alternatives considered for this project site are outlined in the section covering alternative sites as per Section (g) motivation for the overall preferred site, activities and technology alternatives above.

PART B

ENVIRONMENTAL MANAGEMENT PROGRAMME

1) Draft environmental management programme.

a) Details of the EAP

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

Details of the EAP are included in Part A of this report. The CV is attached in Appendix 1.

b) Description of the Aspects of the Activity

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

This is addressed in Part A of this report.

c) Composite Map

(Provide a map (Attached as an Appendix 3) at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that any areas that should be avoided, including buffers).

Please refer to Appendix 3.

d) Description of Impact management objectives including management statements

i) Determination of closure objectives

(Ensure that the closure objectives are informed by the type of environment described)

The overall goal for closure of the sand mining project site is to shape the excavations to avoid damming of water, ensuring that the land is stable and safe in the long-term. For post closure, the opencast will be shaped and rehabilitated and proposed future use after mining shall be to leave the area as open bush; similar to the adjacent land (as per land use ap). The closure will involve removal of all machinery/equipment and infrastructure from site. All material stockpiles will be removed from the site or levelled. Alien vegetation will be removed, if any establish. All encountered topsoil shall be stockpiled in demarcated area to assist with rehabilitation. The topsoil shall be stockpiled at suitable heights to ensure health of the seedbank. The applicant will comply with the minimum closure objectives as prescribed by DMR and detailed below.

Closure:

In compliance to GN R. 1147 of 20 November 2015, a number of closure objectives have been determined. The closure objectives, identified in the river sand Mine Rehabilitation and Closure and which will drive the closure criteria and which have been developed to support the closure vision are:

- Haul roads: Dependent of future landholder desires. Planned to be ripped and rehabilitated to grasslands
- Any remaining sand stockpiles must be removed or levelled.
- Site clean-up must be done.
- No erosion must be allowed on the mine site or haul road.
- Waste material of any description, including receptacles, scrap, rubble, etc. must be removed from the mining area and disposed of at a registered landfill site. It will not be permitted to be buried or burned on site.
- Mined out areas must be stabilised and profiled (if necessary).
- The post rehabilitation topography should result in the same slope as prior to mining.
- Weeds/alien plants growing on site must be manually removed and deposited at a registered landfill site.
- All equipment and other items used during the mining period must be removed from site.
- At closure the internal haul road must be left in a good and non-eroded state (as it was prior to mining activities).
- The closed site must pose no safety risks.
- Rehabilitation must be completed in such a manner that the land can be optimally used post-mining.
- Closure must comply with the MPRDA (Act 28 of 2002), NEMA (Act 107 of 1998) and the NEMA Regulations (2017) requirements for mine closure.
- A closure plan must be compiled using the guidelines described in Appendix 5 of the NEMA Regulations (2017) and submitted to DMR.
- A closure certificate must be obtained from the Minister of Mineral Resources.

Environmental Management Approach

Globally, there are a number of tools or guideline documents available to assist or describe environmental management. The purpose of an EMP (Part B of this report) is to describe the process of managing the identified potential environmental impacts or risks described in Part A of this report (EIR) throughout the entire life cycle (from design, to implementation, operation, and decommissioning) of the proposed river sand mining project. The IEM (Integrated Environmental Management) tool used for managing the identified environmental impacts by the EAP in this document is the Environmental Management System (EMS). This approach will assist the river sand mining project to achieve continual improvement in environmental performance. The EMPr in essence will be adopting the approach of the internationally recognised ISO 14001 Environmental Management System (EMS) standard that is essentially based on the Deming Cycle rationale which is a simplified continuous improvement model consisting of four main iterative steps. These steps are described as follows:

• Plan – Establish objectives and processes necessary to deliver results in accordance with the developed organisational environmental policy.

• Do – Implement the process.

• Check – Monitor and measure processes against environmental policy, objectives, legal and other requirements and report the results.

• Act – Take action to continually improve environmental performance.

Continual improvement is achieved by periodically monitoring and reviewing the EMP and the subsequent implementation of corrective actions when required. Therefore, this document should be considered as a living document which should be continuously updated and possibly improved. This approach taken in the development of the EMP is in line with the requirements stipulated in GN R. 327 (2017 EIA regulations).

ii) Volumes and rate of water use required for the operation.

The project site will utilise municipal water. It is estimated that 135 000 litres of municipal water shall be utilised per quarter. Water will be mostly used for dust suppression, wash bay activities and domestic requirements. No sand washing activities will be required for this proposed operation. Sand will be mined, screened, stockpiled and sold. Thus, no water shall be drawn directly from the natural sources such as groundwater or watercourses etc.

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

A water use licence in terms of Section 21 (c and i) has been applied for. The water use license (WUL) with reference WU16005 was been lodged online on the 5th January 2020. The Department of water & Sanitation (DWS) is also an interested and affected party (I&AP) free to comment on this process.

iv) Impacts to be mitigated in their respective phases

Measures to rehabilitate the environment affected by the undertaking of any listed activity

Table 15 Measures to rehabilitate the environment affected by the undertaking of any listed activity

ACTIVITIES	PHASE	SIZE AND SCALE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
• Mining • Haul roads, mine and access road to the main road; • Stockpiles • Screening plant • Administration offices and stores • Ablutions • Trackless mobile machinery and light delivery vehicle parking bays	Pre-Construction and Construction	4,99 hectares	A chance find procedure should be implemented for the project and this will ensure that if heritage resources are uncovered potential impact on these resources is minimised.	NHRA (Act 25 of 1999)	The Chance find procedure should be applied for the life of the project.
• Planning and design	Planning & Design	4.99 ha	• All relevant legislation and policy must be consulted and the proponent must ensure that the project is compliant with such legislation and policy. • These should include (but are not restricted to): MPRDA, NWA, NEMA, Local and District Spatial Development Frameworks, Eastern Cape Biodiversity Conservation Plan (ECBCP), Local Municipal bylaws.	NWA; MPRDA; NEMA, etc.	Prior to commencement of mining activities and during mining.
• Excavation	Mining	4.99 ha	• All relevant legislation and policy must be consulted and the proponent must ensure that the project is compliant with such legislation and policy. • These should include (but are not restricted to): MPRDA, NWA, NEMA, Local and District Spatial Development Frameworks, Eastern Cape Biodiversity Conservation Plan (ECBCP), Local Municipal bylaws. • Mining activities should only take place only as per the production targets determine and should take complaints (should they arise) into consideration. • Mining activities must be limited to the designated area and not encroach into surrounding areas.	Health & Safety Act NWA NEMA Regulations MPRDA NEM: AQA	Operational

ACTIVITIES	PHASE	SIZE AND SCALE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			• The boundaries of the mining site must be adequately demarcated to restrict mining and other activities. • All plant, equipment and other materials must remain within the demarcated boundaries. • Soft berms must be well-maintained. • Sanitation waste is to be well maintained and collected regularly. • A complaints register must be kept on site. • Alien vegetation is to be removed earnestly. • A rehabilitation plan is to be implemented and maintained. • Hazardous waste is to be collected by a SAWIC registered contractor. • A speed limit of 30km/hr is to be maintained onsite. • Mine management must be cognisant of the weather and apply dust suppression as required.		
• Haul Road	Operational	4,99 hectares	• Dust suppression • Minimisation of vehicle movement to only when necessary. • Monitoring of dust fallout to determine if measures are effective	Conduct dust suppression techniques to ensure that applicable standards for dust monitoring are maintained.	During construction
• Haul Road	Operational	4,99 hectares	• Endeavour to undertake mining activities as much as possible in the already disturbed areas. • Restrict spillage from haulage Vehicles • Removal of all overburden (where encountered) and store as terraced material to minimise the expanse of sterilised land. • Implement of storm water management measures • Treat contaminated soils as per the procedures to be developed by the safety department.	Meet rehabilitation standards/objectives	During construction
• Mine closure and decommissioning	Decommissioning	4.99 ha	• Any remaining sand stockpiles must be removed or levelled. • Site clean-up must be done.	NEMA NEMBA MPRDA NWA	During decommissioning

ACTIVITIES	PHASE	SIZE AND SCALE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			• Waste material of any description, including receptacles, scrap, rubble and tyres, will be removed entirely from the mining area and disposed of at a registered landfill site. It will not be permitted to be buried or burned on the site. • Mined out areas must be stabilised and profiled (if necessary). • The post rehabilitation topography should result in the same slope as prior to mining. • Weeds/alien plants growing on site must be manually removed and deposited at a registered landfill site. • All equipment and other items used during the mining period must be removed from site. • Rehabilitation must be completed in such a manner that the land can be optimally used post-mining. • Final rehabilitation shall be completed within a period specified by the Regional Manager. • Closure must comply with the MPRDA (Act 28 of 2002), NEMA (Act 107 of 1998) and the NEMA Regulations (as amended).		

e) Impact Management Outcomes

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

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
• Mining • Haul roads, mine and access road to the main road; • Stockpiles • Screening plant • Administration offices and stores • Ablutions • Trackless mobile machinery and light delivery vehicle parking bays	No sites were recorded but there is a chance that completely buried sites would still be impacted but this cannot be quantified.	Chance Find Procedure	All phases	• Avoid damage to heritage resources	Impacts minimised and mitigated End use objectives achieved through rehabilitation.
• Excavation (mining)	Visual intrusion associated with the mining activities	The mining activities could result in a negative impact on the aesthetic value of the study area and immediate surrounds.	Operation	• Control: • Implementation of proper housekeeping, management and monitoring	Impact on the surrounding environment mitigated through proper management
• Excavation (mining)	Sanitation issues	Inappropriate siting and servicing of sanitation facilities could result in contamination of surface and ground water.	Operation	• Control: implementation of mitigation measures, management	Impact on the surrounding environment mitigated through proper management and management of sanitation facilities
• Excavation (mining)	Demarcation of mining site	Encroachment of mining activities onto areas outside the mining footprint could	Operation	• Control: proper demarcation of site, management	Impact on the surrounding environment

					mitigated through proper management and d**emarcation of site.**
• Excavation (mining)	Storm water and erosion	Inadequate stormwater and erosion control could result in soil erosion and impact surface water quality.	Operation	• Control: stormwater management when required	Impact on the surrounding environment mitigated through proper management and stormwater control (when/if required)
• Excavation (mining)	Spillage of hazardous substances	Spillage of any hazardous substances such as fuel, chemicals, etc. could result in ground and surface water contamination.	Operation	• Control: management of hazardous substances, spill kits	Impact on the surrounding environment mitigated through proper management and stormwater control (when/if required)
• Excavation (mining)	Dust nuisance	Dust (generated from mining activities and from vehicles traveling on dirt roads) could be a nuisance during windy conditions.	Operation	• Control: dust management	Impact on the surrounding environment mitigated through proper dust management (NEM: AQA, 2004)
• Excavation (mining)	Waste management	Littering on site may attract pests.	Operation	• Control: waste management	Impact on environment mitigated through

					ideal waste management. (NEMWA, 2008).
• Mining • Haul roads, mine and access road to the main road; • Stockpiles • Screening plant • Administration offices and stores • Ablutions Trackless mobile machinery and light delivery vehicle parking bays	No sites were recorded but there is a chance that completely buried sites would still be impacted but this cannot be quantified.	No surface sites were identified.	Pre-Construction and Construction Phase	• Chance Find Procedure	Avoid damage to heritage resources.
• Excavation (mining)	Noise nuisance	Mining activities and movement of heavy vehicles could result in an increase in ambient noise levels on site and on surrounding properties.	Operation	• Control: noise management	Impact on surrounding environment mitigated through proper noise management and planting screening vegetation where possible.
• Closure & Decommissioning	Final rehabilitation and decommissioning	Failure to decommission and rehabilitate the mining site properly could result in soil erosion, storm water issues, safety risks and invasion of alien plant species.	Decommissioning	• Control: removal of all equipment from site, stabilising of mined areas, removal of alien plant species.	Impact on surrounding environment can be mitigated through proper decommissioning and

					rehabilitation (MPRDA, 2002, NEMA, 1998).
• Closure & Decommissioning	Closure	Failure to comply with the closure requirements could result in unnecessary environmental degradation and failure to obtain a closure certificate from DMR.	Closure	• Control: comply with the MPRDA and NEMA mine closure requirements, submission of closure plan.	Impact on environment mitigated through proper mine closure (MPRDA, 2002, NEMA, 1998).

f) Impact Management Actions

(A description of impact management actions, identifying the manner in which the impact management objectives and outcomes contemplated in paragraphs (c) and (d) will be achieved).

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
Vegetation clearance for establishment of proposed mine site.	Removal of / damage to natural vegetation	Control through limiting area. Revegetation encouraged during spring.	During site establishment	Concurrent rehabilitation in line with sustainable development practices
Vegetation clearance for establishment of proposed mine site. (Dust)	Air quality impact (Dust)	Control through dust suppression and management options	During mine site establishment and mine operations	National Dust Control Regulations GN 827 (2013)
Hauling and transport of during operations	Dust pollution	• Control through dust suppression • Control through minimisation of vehicle movement • Control through monitoring of dustfall to determine if measures are effective.	During mine site establishment and mine operations	Conduct dust suppression techniques to ensure that applicable standards for PM10and PM2.5 are not exceeded
Vegetation clearance for establishment of proposed project site. (Biodiversity impact)	Permanently alter biodiversity areas (ecological support area)	Avoid through identification of areas and remedied through rehabilitation as required	Prior to mine site establishment	Avoidance in line with National Biodiversity Act (10 of 2004)
Vegetation clearance for establishment of proposed mine site. (Dust)	Air quality impact (Dust)	Control through dust suppression and management options	During mine site establishment and mine operations	National Dust Control Regulations GN 827 (2013)
Waste management	Contamination of soils through spills from sanitation facilities &litter	Control through placement of facility and regular maintenance. Collection and safe disposal of waste	For duration of mining activities on site	Waste collection and disposal in terms of Regulation 69 of GN 527 of 2004 of National Environmental Management: Waste Act (59 of 2008)
Faunal Species-No poaching	Poaching	Control through supervision, training and operational hours on site	For duration of mining activities on site	No poaching in line with Animals Protection Act (No. 71 of 1962)
Fire control	Fire	Avoid through Training, Code of Conduct & Control through Fire Breaks	For duration of mining activities on site	Fire prevention in line with Regulation 65 of GN 527 (2004) and National Veld and Forest Fire Act (Act no 101 of 1998)

Employment	Contribution to the economy through employment	Employment of local people and businesses where possible	For duration of mining activities on site	Contractual agreements between the service provider and the applicant
Employees induction	Spread of HIV/Aids to farm workers and local community	Control through awareness	For duration of mining activities on site	National Strategic Plan on HIV, STIs and TB 2012-2016
Use of heavy machinery & vehicles on site for sand mining - Maintain vehicles	Resource consumption (diesel - non-renewable resource)	Control through maintenance	For duration of mining activities on site	Maintenance of vehicles and equipment in line with responsible environmental management practice
Use of heavy machinery & vehicles on site for sand mining–no storage of chemicals	Contamination of soils through hydrocarbon leaks and spills from machinery & equipment.	Avoid through engineering controls. Remedy through clean-up	For duration of mining activities on site	Prevention of soil pollution in line with Regulation 70 of GN 527 (2004)
Use of heavy machinery & vehicles on site for sand mining - Clean up spills	Contamination of groundwater through hydrocarbon leaks and spills from machinery & equipment	Avoidance through engineering controls and clean-up	For duration of mining activities on site	Prevention of groundwater pollution in line with National Water Act (36 of 1998)
Use of heavy machinery & vehicles on site for sand mining – Soil compaction	Compaction of soils through movement of heavy vehicles and machinery on site	Avoid through limiting area. Remedy through concurrent rehabilitation	Concurrently on completion of mining activities at mine site	Concurrent rehabilitation in line with sustainable development practices
Use of heavy machinery &vehicles on site for sand mining	Release of gaseous emissions	Control through maintenance	For duration of mining activities onsite	Maintenance of vehicles and equipment in line with responsible environmental management practice
Dust	Dust fallout	Control through speed limit & dust suppression	During mine site establishment &mining operations	National Dust Control Regulations GN 827 (2013)
Use of heavy machinery & vehicles main gravel road (Dust)	Dust nuisance - use of gravel roads	Control through speed limit	For duration of mining activities on site	National Dust Control Regulations GN 827 (2013)
Noise	Increase in ambient noise levels	Control through speed limit &operational times	For duration of mining activities on site	Noise Standards-SANS10103:2008

i) Financial Provision

(1) Determination of the amount of Financial Provision.

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

- Objective 1 - To create a safe and rehabilitated post-mining environment.
    - Ensure safe mining area with no potentially dangerous areas like deep excavations.
    - Topsoil to be stockpiled and replaced during decommissioning and closure, and rehabilitation.
- Objective 2 - To minimise pollution or degradation of the environment
    - Provide sufficient information and guidance to plan the sand mining activities in a manner that would reduce impacts as far as practically possible.
    - Limit residual environmental impact with no surface water or soil contamination by ensuring that no lubricant, fuel or oil spills occur in the mining area.
    - Ensure that no solid waste or rubble is dumped on the site.
    - Ensure that Protected species identified within the proposed mining area is removed according to best practice, with all relevant permits in place.
    - Ensure that portable toilets are used.
- Objective 3 – To minimise impacts on the community and to provide optimal post-mining social opportunities
    - Ensure that workers remain within the mining permit area.
    - Operate during normal working hours only.
    - Minimise the generation of noise and dust.
    - Respond rapidly to any complaints received.
    - Minimal negative aesthetic impact.
    - Optimised benefits for the social environment.
    - Promote the health and safety of workers.

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

The closure objectives are included in this final BAR and EMPr, which is being made available to all registered Interested and Affected parties for comment between 27 January 2020 and 27 February 2020. Furthermore, the applicant is the landowner for the entire Portion 44 of the Farm 807, which includes the property on both sides of the main Quenera Road. No comments were raised during the

Draft Basic Assessment Report's commenting period to be included in this, the final Basic Assessment Report.

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

The Rehabilitation Plan is explained below. Upon closure of the mine all machinery and equipment will be removed. The small excavation sides will be profiled to 1:3 to ensure safety and prevent erosion. No permanent structures will remain upon closure of the site. The rehabilitated area will be the affected area as is indicated in **Appendix 3**.

Rehabilitation

- Mining areas must be levelled out once mining has progressed beyond those areas.
- No erosion rills must be allowed to develop**.**
- Weed/alien vegetation clearing must take place continuously during mining (if required).

Final rehabilitation and closure

- The affected rehabilitation area will be mining area as indicated in the Regulations
- Any remaining sand stockpiles must be removed or levelled.
- Site clean-up must be done.
- Waste material of any description, including receptacles, scrap, rubble and tyres, will be removed entirely from the mining area and disposed of at a registered landfill site. It will not be permitted to be buried or burned on the site.
- Mined out areas must be stabilised and profiled (if necessary).
- The post rehabilitation topography should result in the same slope as prior to mining.
- Weeds/alien plants growing on site must be manually removed and deposited at a registered landfill site.
- All equipment and other items used during the mining period must be removed from site.
- At closure the internal haul road must be left in a good and non-eroded state (as it was prior to mining activities).
- The closed site must pose no safety risks.
- Rehabilitation must be completed in such a manner that the land can be optimally used post-mining.
- Final rehabilitation must be completed within a period specified by the Regional Manager.

- Closure must comply with the MPRDA (Act 28 of 2002), NEMA (Act 107 of 1998) and the NEMA Regulations requirements for mine closure.
- A closure plan must be compiled using the guidelines described in Appendix 5 of the NEMA Regulations and submitted to DMR.
- A closure certificate must be obtained from the Minister of the DMR.

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

The closure objectives are to return the land, which is already disturbed by prior and/or current digging activities back to its original condition as far as it practicable considering the land's current or original state. The rehabilitation plan above on Part B (c) provides the detail on how this will be achieved. The decommissioning phase comprises dismantling infrastructure and rehabilitation. Upon cessation of the mining activities, the area will be rehabilitated accordingly.

(e) Calculate and state the quantum of the financial provision required to manage and rehabilitate the environment in accordance with the applicable guideline.

Refer to Part A, section (s).

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

Refer to Part A, section (s) (ii). Herewith I, the person, whose name is stated below confirm that I am the person authorised to act as representative of the applicant. I herewith confirm that the applicant will provide the amount that will be determined by the Regional Manager in accordance with the prescribed guidelines.

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

g) Monitoring of Impact Management Actions

h) Monitoring and reporting frequency

i) Responsible persons

j) Time period for implementing impact management actions

k) Mechanism for monitoring compliance

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
• Excavation	• Visual intrusion • Mining activities could result in a negative impact on the aesthetic value of the study area and immediate surrounds.	• Monitoring that mining activities only • Limited to the designated area and not encroach into surrounding areas.	• Role and responsibility: Site Manager to ensure compliance with the guidelines as stipulated in the EMPr. Annual audits by an independent person with the relevant environmental expertise.	To be implemented throughout the operational phase. Annual audits.
• Excavation	• Inappropriate siting and servicing of sanitation facilities could result in contamination of surface and ground water if not properly managed.	• Monitoring that sanitation facilities are in a suitable position and regularly maintained.	• Role and responsibility: Site Manager to ensure compliance with the guidelines as stipulated in the EMPr. Annual audits by an independent person with the relevant environmental expertise.	To be implemented throughout the operational phase. Annual audits.
• Excavation	• Encroachment of mining activities onto areas outside	• Monitoring that boundaries stay clearly demarcated and no mining activities encroach into the surrounding areas.	• Role and responsibility:	To be implemented throughout the operational

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
	the mining footprint could have detrimental environmental impacts.		Site Manager to ensure compliance with the guidelines as stipulated in the EMPr. Annual audits by an independent practitioner.	phase. Annual audits.
• Excavation	• • Inadequate stormwater and erosion control could result in soil erosion and impact surface water quality.	• Monitoring that erosion rills don't develop and monitoring of storm water on the haul road.	• Role and responsibility: Site Manager to ensure compliance with the guidelines as stipulated in the EMPr. Annual audits by an independent person with the relevant environmental expertise.	To be implemented throughout the operational phase. Annual audits.
• Mining (operational)	• Spillage of any hazardous substances such as fuel, chemicals, etc. could result in ground and surface water contamination.	• Monitoring of hazardous substances, vehicle maintenance and spill kits.	• Role and responsibility: Site Manager to ensure compliance with the guidelines as stipulated in the EMPr. Annual audits by an independent person with the relevant environmental expertise.	To be implemented throughout the operational phase. Annual audits.
• Mining (operational)	• Dust (generated from mining activities and from vehicles	• Monitoring of dust and complaints related to dust.	• Role and responsibility:	To be implemented throughout the operational

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
	traveling on dirt roads) could be a nuisance during windy conditions.		Site Manager to ensure compliance with the guidelines as stipulated in the EMPr. Annual audits by an independent person with the relevant environmental expertise.	phase. Annual audits.
• Mining (operational)	• Mining activities and movement of heavy vehicles could result in an increase in ambient noise levels on site.	• Monitoring of noise and complaints relating to noise.	• Role and responsibility: Site Manager to ensure compliance with the guidelines as stipulated in the EMPr. Annual audits by an independent person with the relevant environmental expertise and skills.	To be implemented throughout the operational phase. Annual audits.
• Mining (operational)	• Littering on site may attract vermin, detract from the visual appeal of the area and pollute the surrounding areas.	• Monitoring and management of waste on site.	• Role and responsibility: Site Manager to ensure compliance with the guidelines as stipulated in the EMPr. Annual audits by an independent person with the relevant environmental expertise.	To be implemented throughout the operational phase. Annual audits.
• Closure & Decommissioning	• Failure to decommission and rehabilitate the mining site	• Monitoring of decommissioning/rehabilitation activities.	• Role and responsibility:	To be implemented throughout the

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
	properly could result in soil erosion, storm water issues, safety risks and invasion of alien plant species.		Site Manager to ensure compliance with the guidelines as stipulated in the EMPr. Final audit by an independent person with the relevant environmental expertise.	decommissioning phase.
• Closure & Decommissioning	• Failure to comply with the closure requirements could result in unnecessary environmental degradation	• Monitoring of effective mine closure.	• Role and responsibility: Site Manager to ensure compliance with the guidelines as stipulated in the EMPr. Final audit by an independent person with the relevant environmental expertise.	To be implemented at closure.

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

An external environmental performance audit and the BA & EMPr performance assessment shall be conducted annually by an independent environmental assessment practitioner. Please note this is an application for a mining permit which is only granted for two years, though subject to renewal in such cases where circumstances require.

m) Environmental Awareness Plan

(1) Manner in which the applicant intends to inform his or her employees of any environmental risk which may result from their work

Environmental awareness and training includes:

- Awareness training for contractors and employees.
- Job specific training – training for personnel performing tasks which could cause potentially significant environmental impacts.
- Comprehensive training – on emergency response, firefighting, spill management, etc
- Emergency drills and record keeping

In the event of approval of the mining permit, all employees and contractors who are involved with such activities should attend relevant induction. It is standard practice for employees and the employees of contractors that will be working on a new project or at a new site to attend an induction course where the nature and characteristics of the project and the site are explained.

The induction course should include key information abstracted from the EMPr pertaining to the potential environmental impacts, the mitigation measures that will be applied, the monitoring activities that will be undertaken and the roles and responsibilities of contractors' and personnel.

The EMPr document will also be made available to attendees.

(2) Manner in which risks will be dealt with in order to avoid pollution or the degradation of the environment.

The appointed Mine Management (AS Per Mine Health & Safety Act), must ensure that he/she understands the EMPr document and its requirements and commitments before any mining takes place. The site manager must continuously monitor compliance with the EMPr. An independent person with the relevant environmental experience must audit compliance with the EMPr at least

annually. All the mitigation measures listed in the Impact Assessment and EMPr must be adhered to in order to prevent environmental degradation. Environmental risks and how to manage them are dealt with in the induction course referred to in Section m (1) above. Should an incident of environmental pollution or damage occur it will be analysed and appropriate prevention and/or mitigation measures developed. All unplanned incidents with the potential to cause pollution or environmental degradation will be reported to the Mineral Resources Manager within 24 hours. The following list represents the basic steps towards environmental awareness, which all mining employees should consider when carrying out their tasks.

Vegetation and Animal Life:

- Do not remove any plants or trees without approval of the appointed mine manager.
- Ensure that the protected species area is well demarcated.
- Do not collect fire wood.
- Do not catch, kill, harm, sell or play with any animal, reptile, bird or amphibian on site.
- Report any animal trapped in the work area.
- Do not set snares or raid nests for eggs or young.

Hydrocarbon Spills

Hydrocarbon spills that are considered to be emergency incidents are large-scale spills (cover a surface area >1m^2), resulting from situations such as: a leaking diesel bowser; an oil drum that is knocked over; and, large spillages from equipment. Activities that are involved in the clean-up of such instances include:

- The containment of the spill;
- The removal of all contaminated material; and,
- The disposal (at a licensed hazardous disposal facility) or bioremediation (at a licensed facility) of this material.

Fire

There is the potential for fire to occur in the following locations of the sand mining site:

- Veld fires across vegetated areas; and
- Vehicles and equipment.

Veld fires: Any person who observes the fire must report it to the fire brigade immediately and then to their supervisor. If possible, additional personnel may be sent to contain the fire, but only if the lives of the personnel will not be endangered.

Vehicles and Equipment: Fire extinguishers will be available at the site where sand mining activities will take place and in the vehicles. All staff members will be trained in the use of fire-fighting equipment.

n) Specific information required by the Competent Authority (Among others, confirm that the financial provision will be reviewed annually).

No specific information has been required by the Competent Authority at this stage. The applicant undertakes to annually review and update the financial provision calculation (more often if necessary or requested), for review and approval by the DMR competent authority.

2) UNDERTAKING

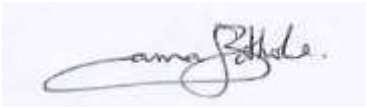
The EAP herewith confirms:

a) the correctness of the information provided in the reports X

b) the inclusion of comments and inputs from stakeholders and I&APs; To be included in Final BAR X

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

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



Signature of the environmental assessment practitioner:

ZN Geo Services (Pty) Ltd

Name of company:

28 February 2020

Date:

-END-