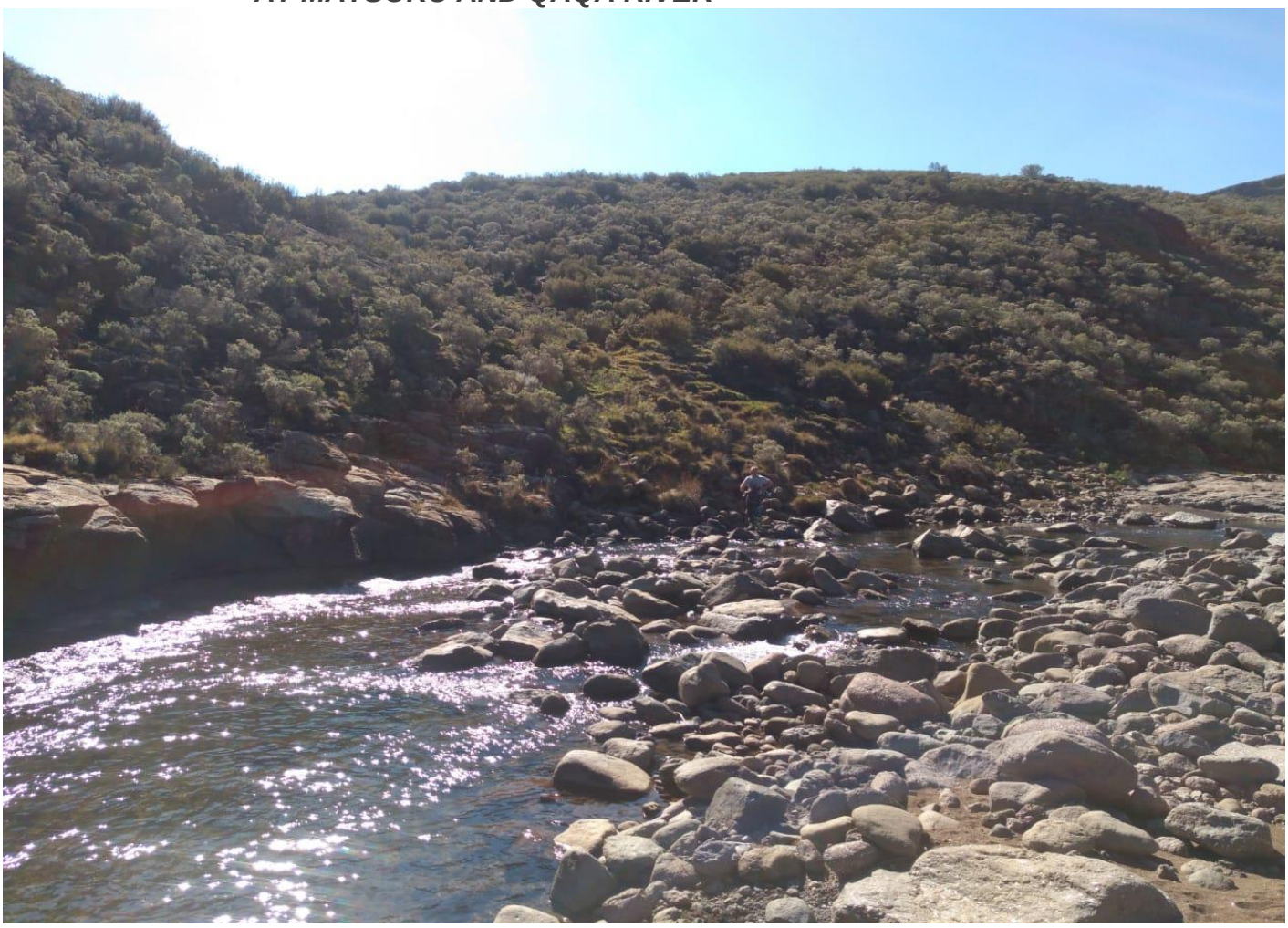
ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR THE PROPOSED ALLUVIAL PROSPECTING PROJECT IN THE DISTRICT OF MOKHOTLONG AND LERIBE AT MATSOKU AND QAQA RIVER



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FOREWORD

The purpose of this Environmental and Social Impact Assessment (ESIA) document is to prepare the

Environmental and Social Management Plan (ESMP) that guides Big Blue Mining Pty ltd (Pty) Ltd as the contractor. This ESIA report gives strategies and procedures of mitigations on the biophysical and socioeconomic impacts of alluvial prospecting project in the district of Mokhotlong and Leribe at Matsoku and Qaqa river.

This report also serves to inform the Department of Environment (DoE) about the exact locations to be prospected and the camp side.

The ESMP included in the ESIA document is meant to be used by the Contractor as a guide to conserve the

environment. It guides the Contractor on anticipated project impacts and proposes mitigation measures to

manage potential negative impacts. Further, it informs the Contractor of requisite environmental legislation to comply with. The users of this document must always seek clarification and assistance when necessary.

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ABBREVIATIONS AND ACRONYMS

ESIA	Environmental and Social Impact Assessment
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
ERAP	Emergency Response Action Plan
ECO	Environmental Control Officer
SHE	Safety, Health and Environmental Officer
CLO	Community Liaison Officer
Ltd	Limited
Pty	Proprietary
AIDS	Acquired Immune Deficiency Syndrome
HIV	Human Immune Virus
STIs	Sexually Transmitted Diseases

CHAPTER 1, INTRODUCTION

1.1 BACKGROUND

Big Blue Mining Pty ltd is a company incorporated in Lesotho with registration number 66903. Big Blue Mining Pty ltd has applied for prospecting alluvial diamonds in Mokhotlong and Leribe at Matsoku and Qaqa River. The company`s vision is to complete the prospecting phase and to establish Big Blue Mining Company in Lesotho as an effective and efficient medium/ small diamond mining company. Suppliers and customers alike will know the company as being reliable, operating to high standards of excellence and ethics. If commercially viable, the company intends to extend prospecting operations to other alluvial occurrences within Lesotho

The main focus will be on its mission. This is to gather undisputed geological data from its alluvial prospecting sites during the period applied for and convert this data into a pre-feasibility study with the main aim to convert the same into a bankable feasibility. This will include establishing the economic viability off all deposits and to get the total exploration program managed. This management would be in terms of the people, particularly with respect to empowerment and development, giving the developer a good return of their investment and providing gainful employment for the people of the area.

Big Blue Mining will be the only prospecting company actively involved in the Mokhotlong (Qaqa River) and Leribe (Matsoku River) areas to establish if the abundance of the alluvial gravels that occur here are indeed diamondiferous. By providing that these deposits are indeed economical to exploit, Big Blue Mining would upgrade the prospecting to mining.

At present there are no prospecting activities on these areas and the areas have never been identified as diamondiferous. No existing access roads are in good condition. The water supply could be secured out of the Matsoku and Qaqa River the areas are clearly demarcated by geological map.

The objective of this report is to;

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

(b) 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 if:

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

(ii) The degree to which these impacts can be reversed,

(iii) May cause irreplaceable loss of resources;

(iv) Impacts 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,

Lastly, to define the present environment in which the proposed action is to occur and to evaluate all the possible outcomes, to ensure that all negative impacts are minimized and to demonstrate that the proposed project has been appropriately announced to all the interested parties and stakeholders so that their concerns can be considered.

1.2 SCOPE AND OBJECTIVES OF THE PROPOSED WORK

Scope of the Study

The scope of the present study involves identification of all environmental attributes that have a potential impact on the environment and defining suitable environmental measures to minimize the negative impacts and to ensure the compliance of operations as per the statutory requirement. Scope of the study also includes a detailed characterization of various environmental components like air, noise, water, soil and socio-economic conditions within and around the Mine site.

- **Identification of locations for mine equipment**: installing boundary fencing, construction facilities, Environmental controls and carrying out pre-clearing vegetation fauna surveys.
- **Prospecting alluvial projects**: use of explosives, drilling, anticipated, removal of unsuitable material, batter and embankment shaping, accommodation, equipment storage, sample storage, site office and access route.
- **Environmental control management**: strategies and procedures to protect the affected environment and rehabilitation strategies.
- **Rehabilitation plan:** reuse of topsoil, planting of native plants and seeding disturbed areas with native and cover crops species.
- **Safety Precautions:** Installation of safety signage, line marking and safety barriers in all phases of the project.

1.3 OBJECTIVES

The main focus is:

- To determine whether the alluvial occurrences are diamondiferous.
- To establish the economic potential of the project.

1.4 STUDY METHODOLOGY

1.4.1 Methodology of EIA

The Environmental Impact assessment studies are conducted within the area and around the proposed site. Various steps involved in the study area are divided into three following phases.

- Identification of significant environmental parameters and assessing the status within the study area.
- Predictions of impacts foreseen due to proposed scheme on various environmental attributes.
- Evaluation of impacts after superimposing the predicated scenario over the baseline scenario to prepare Environmental Management Plan.

The EIA study was carried out in four stages, namely:

- Desktop study and planning
- Public consultation
- Baseline survey
- On-site investigations

1.4.2 Desktop study and planning

Desktop studies for the description of the baseline environment were undertaken by the Integrated Environmental Solutions (Pty) Ltd team, drawing in information generated by project specialists. Topics covered included background information about the area, including climate, baseline ecology, social, health and economic data among others. Documents reviewed included reports and peer reviewed publications among others.

1.4.3 Public consultation

The objectives of consulting different stakeholders were to;

- To inform and alert all the stakeholders about the proposed Alluvial Prospecting and the likely impacts it would have on the stakeholders,
- To document stakeholder's inputs and reactions to the proposed project and its impacts, and
- To establish the social, health and economic impacts of the project on the communities.

The consultant identified key stakeholders who were to be engaged in order to identify their concerns and values with respect to the project under consideration. In the process, key project-environment interactions that needed to be addressed before, during and after the project has commenced were identified. Methods used varied from focus group discussions, informal discussions, observations to formal letter writing depending on stakeholder.

1.4.4 Baseline survey

A baseline survey was conducted in order to establish a profile of the existing environments, against which an assessment of the various impacts brought about by the phases of the project could be made.

The baseline data that was collected included;

- The geology and hydrology of the study area
- Inventory and distribution of flora and fauna
- Soil types and characteristics
- Climate (rainfall and temperature) data
- Land use patterns in the study area
- Prevailing socio-economic and health conditions

1.4.5 On-site investigations

After gathering data from readily available sources, the EIA study team visited the project site for the following purposes:

- Ensuring that potential impacts identified during the scoping exercise as being most significant for the project were adequately addressed.
- Predicting and assessing the significance of environmental impacts, including impacts during operation of the project (Prospecting Alluvial Project).
- Evaluating institutional requirements and capabilities for effective impact mitigation, enhancement of positive impacts and environmental monitoring.
- Developing a plan to enable the on-going monitoring and evaluation of the project during both the operation phases.

The information gathered during the on-site investigations, in conjunction with data collected in the earlier phases, formed the basis for the environmental impact analysis and suggested mitigation and enhancement measures.

CHAPTER 2, POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

2.1 INTRODUCTION

Prospecting of alluvial is one of the project activities that requires legal approvals from the Government of Lesotho (GoL) with its different sectors in order to proceed with the operations. In a prerequisite to comply with the legal instruments governing Lesotho under execution of projects such as prospecting of alluvial, this document has outlined the laws and regulation of Lesotho, among others, the project has to observe the National Constitution of Lesotho, Environment Act (2008), Mines and Mineral Act of 2005, Environmental Policy, Water resources Acts of 2008, Land Act of 1979 and 2010, Public Health Order of 1970, Local Government Act 1997, Water resources Acts of 1978 and 2008, Road Act of 1969. The proposed project will be subject to all these pieces of legislation and other.

2.2 LOCAL LAWS, POLICIES AND REGULATIONS

- **Constitution of Lesotho, 1993**

Following the Earth Summit in 1992 in Rio de Janeiro, Lesotho amended its Constitution in 1993 to include protection and enhancement of environment as a fundamental principle on which the country must be governed. Section 36 of the Constitution of Lesotho requires the government to adopt policies to protect the natural environment to assure all citizens a safe environment adequate for health and wellbeing. In this regard, the Environmental Policy of 1998, which requires developers to undertake environmental impact assessment, was developed. In order to legalize this policy the Environment Act of 2001 was enacted by act of parliament. This act was amended in 2008.

- **Environmental Act 2008**

The Environmental Act No. 10 of 2008 provides for the management of the environment and all natural resources of Lesotho. Section 25 (1) of the Environmental Act 2008 specifies that no person shall operate execute or carry out a project or activity specified in the First Schedule without an Environmental Impact Assessment license issued by the Director. Due to the requirement of this statute, in this project, the Client is bound to receive a record of decision from the Department of the Environment prior to execution of the project.

Schedules of activities pertaining to the development of Alluvial Prospecting Project development for which the Environmental and Social Impact Assessment is required and that are included in the Act are;

- **Mines and Minerals Act N0 4 of 2005**

Mining Rights Act 43 of 1967- Provides for the rights to prospect and mine for minerals in Lesotho, it states that “no person may mine for minerals without a mining grant, a mining license or a lease”. The act also provides for the prescription of the general conditions controlling prospecting permits and mining permits and license. According to this Act, Part IV of it, Section 33. The Approval and issue of a mining lease; the Subsection states “The minister shall approve and issue a mining lease only if satisfied that”

I. (a) The proposed work programme ensures the efficient, beneficial and timely use of the mineral resources in question;

II. (g) The applicant has obtained an environmental impact assessment licence from the Authority.

Furthermore, the part viii-environmental obligations, Rehabilitation, Reclamation etc, section 58, subsection (1) states " The holder of a mineral right shall, in accordance with this Act or any other law in force and good mining industry practices, conduct his operations in such manner as to-

a) Preserve the natural environment;
b) Minimise and control waste or undue loss of or damage to natural and biological resources.
c) Prevent and where unavoidable, promptly treat pollution and contamination of the environment.

- **Land Act 2010**

The Land Act of 2010 as amended is the principal legislation through which land is managed in Lesotho. PART X Section 56 states in all cases in which the implementation of this Act results in compulsory acquisition of property, the person deprived of such property shall be entitled to compensation at market value. PART X Section 60 states Compensation shall, in all cases of compulsory acquisition, be made before conclusion of expropriation. The Developer is where relevant obligated by the provisions of this statute in the implementation of this project for land acquisition.

- **Water Act 2008**

The Water Act No. 15 of 2008 provides for protection of wetlands, natural springs and wells. The statute also stipulates that: **Section 20 (1)** - no person shall engage in an activity of using or abstracting water without a water use permit.

Section 21 (1) - no person shall engage in waterworks activities without a construction permit.

Section 27 (1) - a person who wishes to discharge effluent into water courses shall obtain a permit in accordance with the environmental Act 2008.

The Client and contractors are obligated by the provisions of this statute for the implementation of this project for abstraction of water, engage in water works and not to discharge effluent into water courses without a permit as stipulated in the Environmental Act 2008.

- **Local Government Act 1997**

The Local Government Act No. 6 of 1997 provides for the establishment of local authorities and for the purposes of local Government. Section 5 deals with the functions of the local authorities which, as contained in the First Schedule, list the relevant environmental protection considerations as follows:

I. Control of natural resources and environmental protection;
II. Public health pertaining to refuse collection and disposal.

- **Building Control Act 1995**

The Building Control Act No.8 of 1995 provides for the adherence to building standards to promote planned developments and enhance the country's beauty and to alleviate hazards. The Act prohibits the commencement of construction without a building permit.

- **Historical Monuments, Relics, Fauna and Flora Act 1967**

The Historical Monuments, Relics, Fauna and Flora Act of 1967 provides for the preservation and protection of natural and historical monuments, fauna and flora. It prohibits the destruction or removal of relics, monuments, fauna and flora.

- **Labour Code OrderNo.24 of 1992**

Stipulates the guidelines for ensuring safety at workplace for personnel, equipment, building structures, etc. Section 92 to 116 of the code and the sixth schedule provides a comprehensive health, safety and welfare framework to be observed by the employer and the employee.

- **Road Traffic Act 1981**

The Road Traffic Act No. 8 of 1981 provides for:

I. **Section 28 (1)** - Possession of a valid driving license for driving a motor vehicle of any class in respect of that class.
II. **Section 39 (1)** - motor vehicle certificate of fitness.
III. **Chapter VII** covers traffic signs and speed limits.
IV. **Chapter VIII** covers rules of the road.
V. **Chapter IX** covers accidents and accident reports.

The Client and contractors are obligated by the provisions of this statute for the implementation of this project for their staff to be in possession of valid driving licenses for driving their vehicles and plant on public roads, for putting up temporary road signs that meet Roads Directorate standards, for having their vehicle fitted with valid licenses and for obeying traffic rules.

- **Public Health Order 1970**

Public Health Order No. 12 of 1970 provides for among other things, requirements for human dwellings and operating in healthy housing and including issues of sanitation as a measure of disease prevention.

2.3 INTERNATIONAL POLICIES AND AGREEMENTS

- **International Environmental Agreements**

International response to protection is through establishment of international and regional conventions, protocols and agreements. These are aimed at fighting environmental concerns at global level. They therefore, at times, serve as the basis upon which parties to the agreement base their legislative frameworks to address environmental issue at natural level. International environmental agreements, thought to be relevant to this project, to which Lesotho is a party to, includes, but not confined to the following;

I. Convection concerning protection of workers against occupational hazards in the working environment due to air pollution, noise and vibrations.

- **Environmental Impact Guidelines 2010**

The guidelines are designed to facilitate integration of environmental concerns in economic development from the earliest stages of project as required in Environment Act 2008. They are applicable to all listed projects, whether initiated by the public sector (Government ministries) or the private sector.

- **Lesotho Vision 2020**

The Lesotho Vision 2020 development policy provides for the country's future development plans. Lesotho aspires for a well-managed environment by 2020. In order to achieve this vision, scheduled developments in the country are subjected to EIA.

- **Convention on Biological Diversity, 5 June 1992**

The objectives of this Convention are the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources. The Convention requires States to adopt measures for the recovery and rehabilitation of threatened species and for their reintroduction into their natural habitats under appropriate conditions. This has implications for the proposed Alluvial Prospecting and construction of access route with respect to the Red Data Book species residing in cliffs that will be affected by construction activities.

- **United Nations Convention to Combat Desertification in those Countries**

Experiencing Serious Drought and/or Desertification Particularly in Africa, Paris 1994

The convention emphasises the prevention of land degradation that may among other initiatives include the rehabilitation of degraded lands that are caused by human actions such as construction activities in development projects. The construction of access roads to the proposed site, campsite and prospecting of alluvial diamonds Project will cause land degradation that spoil and borrow areas requiring rehabilitation.

CHAPTER 3. PROJECT DESCRIPTION

3.1 THE ALLUVIAL DIAMOND PROSPECTING

The process of alluvial diamond prospecting involves digging and sifting through mud, sand and gravel. Typically, diamonds come from geologic rock formations called Kimberlite. Kimberlite rock formations that contain diamonds are eroded over time by Matsoku River and Qaqa River and can deposit diamonds in the sediments carried by those streams farther downstream from the original source rocks. These deposits are called alluvial diamond deposits. The locations of these alluvial diamond deposits are controlled by the surrounding topography, drainage patterns, and the location of the Kimberlite themselves.

Vegetation clearance takes place first from where stripping and stockpiling of topsoil. All topsoil (irrespective of depth) is stripped separately with an excavator and frond-end loader and stockpiled next to the first pit. The topsoil will be stored in such a way that the minimum runoff and erosion will emanate from it. The topsoil will be stored in a pile; around the pile surface runoff trenches will be constructed to divert any runoff around the pile. The topsoil will be used for final rehabilitation when prospecting has reached its end of life span. Concurrent rehabilitation will also be done.

3.2 PROSPECTING OPERATIONS

A single 5.5 meter rotary pan, scrubber, grizzly feeder, vibratory screens, diamond sorting jig, generator set, excavator, dump trucks and front end loader will be utilised during the time envisaged to complete the 10000 tonnes bulk sample, should take approximately 12 months. The excavated gravel would be treated onsite and concentrate will be bagged, marked and exported to a reputable geological laboratory for micro analyses. The excavate area would be made safe and coordinated with the National Environmental Secretariat, Principal Chief and local community. The excavated area would be rehabilitated to the original status with the backfill of already processed material.

3.3 PROJECT JUSTIFICATION

Alluvial prospecting requires a considerable amount of material (called the ‘over-burden’) to be removed first to get to the gravel bed underneath, where diamonds are found. Once the topsoil has been removed the overburden then stripped and placed adjacent the excavation. Once the overburden has been removed the exposed diamondiferous gravel is stripped with an excavator and stockpiled on the side on the excavation and from where frond-end loaders haul it to the mineral processing plant, as needed (different location than excavations).

At the plant the gravel is fed into the primary conveyer by frond-end loaders. The gravel is fed by the conveyer into the rotating pans. The wet waste tailings coming out of the pans is pumped to open excavations and slimes dam, from where excess water is re-cycled.

3.3.1 Detailed Operation Procedure: Processing of Material in 144m² Increments

1. Remove topsoil using 20t Excavator to stockpile within 20m radius of excavation.
2. Remove and stockpile boulder <150mm to stockpile within 20m radius of stockpile.
3. Using a TLB feed >150mm and diamond ferrous material into 10m³ Hopper fitted with grizzly bars and conveyor belt leading to 50t/hr Classifier.
4. Pump remaining material from bedrock and feed into 50t/hr Classifier.
5. Classify material into 4 sites, namely 10mm, 15mm, 20mm and 30mm, retained into 50kg bags.
6. Remove the bags from the river with a TLB and stockpile at 3t/hr Duplex jig in the campsite.
7. Process concentrate manually through 3t/hr Duplex jig.
8. Rehabilitate 144m²excavation by replacing all aggregate first, then spread topsoil stockpile over aggregate.

5.1 All pumped water used for the processing and washing of material will gravity feed back into the excavation

Figure 1: Other machinery to be used

3.4 LOCATION

The area is located in the Mokhotlong and Leribe area at an attitude of between 220m and 260m. The area applied for includes alluvial deposits in the Mokhotlong and Leribe Area. The area is sparsely populated and the areas applied for consists of mainly agricultural land and grazing. The various occurrences are situated in North and North eastern Lesotho. At present there are no prospecting activities on these areas and the areas have never been identified as diamondiferous. There is an existing access road but is not good condition. The water supply could be secured out of the Matsoku and Qaqa River therefore water permission will be applied for.

Figure 2: Showing access road to the proposed prospecting site

Table 1: Description of the location

Name	District	Km from nearest town	latitude	Longitude
Qaqa River	Mokhotlong	23 approximately	$29^{0}03'24''S$	$28^{0}46'00''E$
Matsoku River	Leribe and Mokhotlong boundary	25km approximately	$29^{0}00'05''S$	$28^{0}46'03''E$
Campsite	Leribe	30 km	$29^{0}03'24''S$	$28^{0}46'00''E$

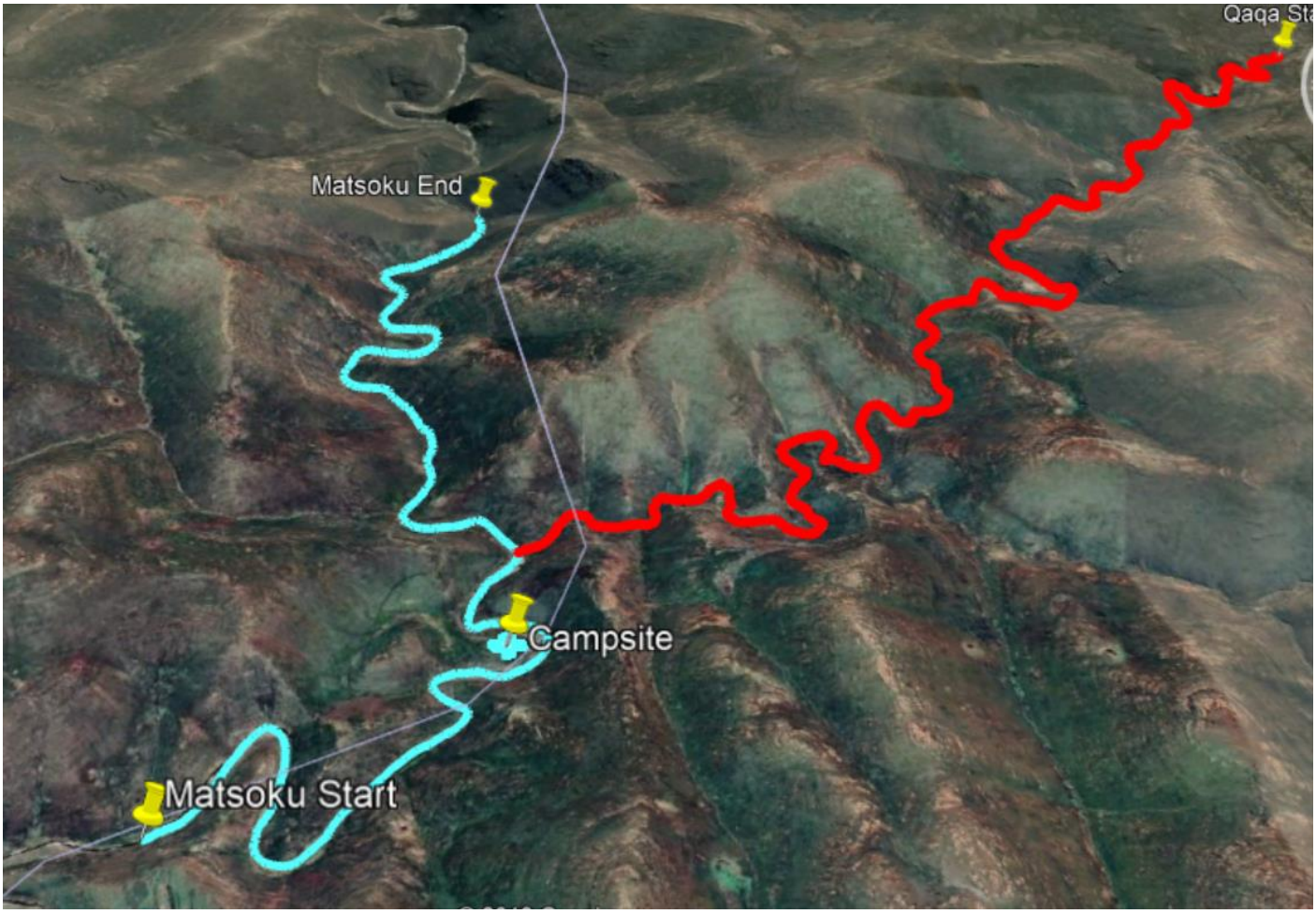

Figure 3: Project location

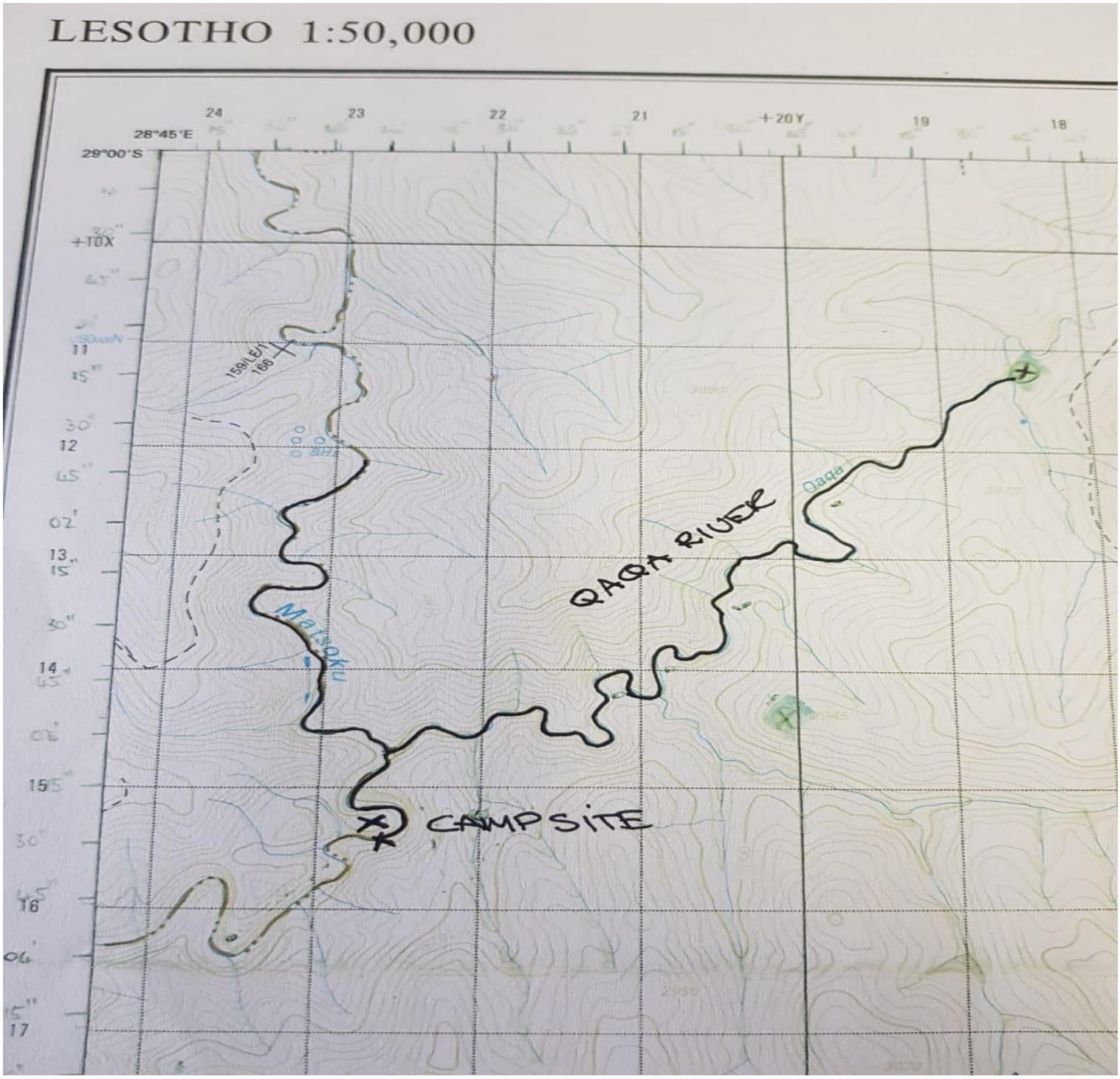

Figure 4: Map showing proposed area in Matsoku

Table 2: List of specified activities

Activity	Area of extend (attitude)
Prospecting : ✓ Trenching around 35m outside the river, ✓ site camp, accommodation, and equipment storage, sample storage, site office, ✓ Access road, ✓ Rehabilitation of excavated material will be reinstated weekly.	220m- 260m

3.4 PROSPECTING PROGRAM

The prospecting Program is done in two distinct phases: phase 1 and phase 2.

3.4.1 Phase 1

This phase is a reconnaissance, field inspection and grab sample exercise to determine if the alluvial deposits to be prospected are diamondiferous.

3.4.1a Reconnaissance

The status of land ownership with the local Chiefs and physical characterises of area was checked, e.g. farm land and or grazing. This data collection was done and analysed with the local community.
The speculation that any alluvial deposits exists was speculated by various entities but the exact location and whether the gravels are diamondiferous was only established by geophysical surveys and large scale prospecting activities. The geophysics was done by GYROLAG, which is used to determine the physical geology and data interpretation.

3.4.1b Field inspection;

(1) Photo geomorphology,
(2) Surface grab samples over all exposures of gravel,
(3) Few seismic cross section,
(4) Geo-botanical study to be done by the appointed EIA constant.

3.4.2 Phase 2

When targeted alluvial gravels proves to be diamondiferous an extended bulk sample of approximate 10 000 tonnes, will be processed. During this phase the objectives would be to determine the economic viability, extraction processes, cut-off sizes and ore body in-situ. A 3D Geo-Resistivity model would be done to

determine the exact position of high density gravels to minimise the disturbance, costs and disruption to the environment during the extraction of such gravels.

Infrastructure requirements phase 2
Prospecting plant
Office (with landline)
Accommodation
Workshop

Table 3: Other Proposed machinery and their description

Machinery	Description
Existing exposures	If existing exposures are available, they can be tested potentially valuable minerals by taking samples a grab sample and panning the sample. Advantages of taking samples from surface exposure are no need for clearing of top soil and the speed at which the samples can be taken.
Backhoe Trenches	Backhoes are a very versatile piece of equipment for sampling relatively shallow, up to about 6-m, (20-ft) deep deposits. Backhoes are mobile, fast, can dig hard ground, and are inexpensive compared to hand-dug excavations Once a trench is opened up, channel samples are taken by hand or by using the backhoe or bulk sample can be made with of the material from the excavation. Due to the time constraint in the prospecting phase of Big Blue Mining (PTY) ltd is recommended that this option be considered.

3.5 PROJECT POTENTIAL

In the financial Plan, incorporating projected cash flows for a period of 18 months the M/$ exchange rate was assumed to remain constant at M13.80/US$ over entire period.

A single 5.5 meter rotary pan, scrubber, grizzly feeder, vibratory screens, diamond sorting jig, generator set, excavator, dump trucks and front end loader will be utilised during the time envisaged to complete the 5 000/month tonnes bulk sample (total 50 000ton), and should take approximately and estimated 12 months.

If proven to contain economic viability, a program to establish the in situ value and estimated ore body of the alluvial deposit will be immediately engaged.

3.6 PERSONNEL STAGE

Table 4: Envisaged company human resources structure

JOB TITLES	YR 1	YR 2
Managers	1	2
Admin Staff	1	2
Artisans	5	6
Security personal	2	3
Production	6	6
Liaison officer	1	1
Total	16	20

CHAPTER 4, OVERVIEW OF THE EXISTING ENVIRONMENT

4.1 INTRODUCTION

The affected environment is considered and described in the context of Matsoku and Qaqa River surrounding areas' environment. The important and relevant environment for description is limited to social, health and physical constituents and aspects.

4.2 HYDROLOGY

Matsoku River is a stream (class H- hydrographic) in (Lesotho (general)), Lesotho (Africa) with the region font code of Africa /middle east. Lesotho Water Highlands Development (LHDA) has an ongoing water supply project with hydropower component, developed in partnership between the governments of Lesotho and South Africa. It involves rivers Malibamatso, Matsoku, Senqunyane and Senqu. Matsoku Diversion Weir and Tunnel downstream flows and Transfers to Katse dam, estimated inflows into the Matsoku Diversion Weir and Tunnel and River flows at Seshote Hydrometric Station for the period October 2005 to September 2006. The targeted flow volume, if the flow rate of 0.6 m3/s was constantly released downstream, amounts to 18.92 MCM for the period October 2005 to September 2006.

The actual recorded downstream flow volume amounts to 8.61 MCM whilst the estimated volume, as calculated from the computed inflow into the Matsoku Weir is 18.83 MCM. The targeted flow volume, if the flow rate of 0.6 m3/s was constantly released downstream, amounts to 18.92 MCM for the period October 2005 to September 2006. The actual recorded downstream flow volume amounts to 8.61 MCM whilst the estimated volume, as calculated from the computed inflow into the Matsoku Weir is 18.83 MCM. Therefore turbidity, flow and all other water parameters has to be monitored during the project.

Figure 5: Current water flow at Matsoku River

Table 5: Recorded and Estimated Monthly Flows at the Matsoku Weir.

Months Since October 2005 to September 2006	Estimated Volume Downstream Release (@ 0.6m3/s)	Actual recorded flow - Matsoku Weir Downstream Releases	Target Matsoku Weir Downstream Releases for IFR Requirements	Measured Transfers to Katse Dam	Estimated Transfers to Katse Dam	Actual Recorded at Matsoku River downstream of the Diversion Weir and Tunnel	Estimated Matsoku Weir Inflows
	MCM	MCM	MCM	MCM	MCM	MCM	MCM
Oct-05	1.55	0.00	1.61	0.00	4.42	6.64	5.98
Nov-05	1.56	0.00	1.56	0.00	2.34	4.32	3.89
Dec-05	1.61	2.28	1.61	7.60	2.78	4.88	4.39
Jan-06	1.61	1.03	1.61	12.72	3.60	5.79	5.21
Feb-06	1.45	0.98	1.45	30.89	21.67	25.69	23.12
Mar-06	1.61	1.11	1.61	27.68	7.49	10.11	9.10
Apr-06	1.56	0.88	1.56	13.71	3.14	5.22	4.70
May-06	1.61	1.00	1.61	3.32	2.31	4.35	3.92
Jun-06	1.56	0.00	1.56	0.00	0.47	2.25	2.03
Jul-06	1.57	0.00	1.61	0.00	0.14	1.90	1.71
Aug-06	1.61	0.59	1.61	0.00	1.96	3.96	3.56
Sep-06	1.56	0.75	1.56	0.00	1.53	3.43	3.08
Total for Year 2005/2006	**18.83**	**8.61**	**18.92**	**95.91**	**51.85**	**78.54**	**70.68**

4.3 GEOLOGY

Most of the sediments belong to the Burgerdorp Formation of the Beaufort Group which are the oldest rocks seen both here and elsewhere in Lesotho. These rocks have a maximum exposed thickness of 250 meters to the west of Mokhotlong and thinning eastwards to 150meters. These are composed predominantly of soft poly-coloured mudstones and siltstones. More competent often bench-forming fine- and medium-grained grey and buff sandstone occur at higher levels. The Beaufort Group is overlain by the Stromberg Group which includes the Molten, Elliot and Clarens formations. The rocks exposed in Lesotho are almost entirely of Triassic and Jurassic age, belonging to the Karoo Supergroup.

The Karoo sediments were largely deposited in continental environments. Large parts of Lesotho are made up of basalt flows of the Drakensberg Group. After the intrusion of the dolerites, a series of Kimberlite dykes, blows and pipes where emplaced in the Karoo sediments and incorporated intrusions. Deformation has been minimal and the sedimentary formations have been gently folded in a series of small domes and basins. The alluvial Kimberlite pipes and dykes occurring in northern Lesotho are lower Cretaceous age. The country has long been known as a source of diamonds, mostly from alluvial/ recent river gravels and Kimberlite deposits.

Figure 6: Geology in Matsoku and Qaqa River

Sediments of the overlying Elliot formation are seen only on the lower slopes of the Northern Maluti Mountain range and to south-east, near Oxbow, the estimated thickness is 175 meters. Mineral production, however, has not been a significant part of the economy and has contributed around 3% of the gross domestic product (GDP) between 1995 and 2001(International Monetary Fund, 2002) the Lesotho Geological Survey has identifies 33

Kimberlite deposits and 140 dykes, of which 24 are diamondiferous. Revival of the diamond industry is going ahead with major developments in the northern area.

The Middle Caledon Valley sub-region is the section of the Maloti Mountain foothills, of the western Lesotho. The basic rocks of this region belong to the Stormberg Group, which consist of the Lesotho Formation of the volcanic origin. Below this formation is the Clarens formation, of Aeolian origin or formation under desert conditions. This overlays the Elliot sandstone formation or the red beds and the Molteno sandstone formation below, both of which have formed under wet conditions. The Geology of the project area is composed of inter-layered thin deeply weathered unclassified mudstones, Elliot Formation (red beds) of the Lower Jurassic to Triassic age and crisscrossing thin dolerite dykes. Sandstone rock outcrops of the Clarens Formation are common.

4.4 TOPOGRAPHY

The general topography surrounding Matsoku and Qaqa River area consists of moderately steep to steep hills with slopes ranging from gentle, moderately steep and very steep slopes ranging from 10% to 45% and gullies. The landscape is heavily disturbed and eroded.

Figure 7: Topography around Matsoku River

4.5 VEGETATION

The area has been degraded by anthropogenic disturbances for example, over-harvesting, unsustainable land use practices and habitat degradation and destruction. However, there is generally great diversity of plant species along this Rivers.

Figure 8: Showing vegetation around the proposed campsite area

The area surrounding Matsoku and Qaqa River slopes area vegetation is composed of mixed shrubs/trees complex of Mofifi (*Rhumnus prinoides*), Cheche (*Leucosidea sericea*) Mohloare (*Olea sp*), Lelothoane (*Buddleja salviifolia*), Mabelebele (*Rhus dentata*), Molutu (*Celtis africana*) Ralikokotoana (*Euclea coriacea*), Kolit'sane (*Rhus pyroides*), Monokot'soai (*edible wild berries*), Sehalahala se setala (*chrysocoma sp*). Associated medicinal herb species compose of, Tsikitlane (*Gazaniakrebsiana*), Papetjoane (*Helichrysum trilineatum*) Lehlomane*(Senecio inornatus*), Phefo (*Helichrysum odoratissimum*), Moferefere (*Senecio asprulus*), Pohot'sehla (*Senecio asprulus*), Sesepa sa linoha (*Phytolacca heptandra*), Papasane (*Rorippa nudiuscula*), Mosisili (*Salvia stenophylla*), Qobo (*Gunnera perpensa*), Tsikitlane (*Gazania krebsiana*), Sehlehle (*Euphorbia clavioides*) Seletjane (*Hermania depressa*), Mokhotho/Mothokho (*Sorgum bicolor*), Sesepa-sa-Linoha (*Sutera pristisepala*) Papetjoane (*Helichysum*), Hloenya (*Dicoma anomal*), Phate ea ngaka (*Hermania depressa*), Sehlehle (*Euphorbia clavioides*) Morara (*Gulium rotundifolium*), *Asparagus sp, and ferns*. The associated grass species compose of, *Cymbopogon sp*, Molula/T'saane (*Eragrostis sp*), Lethepu (*Dierama robustum*) Moseea (*Merxmuellera macowanii*), Thitapoho (*Pennisetum sphacelatum*), Leloli (*Kniphofia hirsutal*).

The rocky areas host species of is important source for buildings and is always protected from grazing during the growing season until the thatch grass is removed in late winter. The above plants are of medicinal, food and thatching value. Most are protected by Historical Monuments, Relics, Fauna and Flora Act of 1967 law. Their removal by project activities staff is prohibited by law.

4.6 FAUNA

Detailed information on the animals of Lesotho is very scarce, and as such little is known about their abundance and distribution. There were sightings of small and large birds and small mammals in the study area. Interviews with local residents confirmed presence of many mammals known to exist in the area and are shown in table 4 below. There were limited sightings of large birds during the survey. However, from interviews with local residents there are more other species of birds. Reptiles are seasonally active, spending the harsher winter months in seclusion, usually in burrows, under rocks or in crevices emerging only under more suitable climatic conditions. There were no reptiles sighted in the area.

4.7 CULTURAL HERITAGE

At the time of the survey, there were no archaeological, paleontological or historical remains identified for the road and sites. However, these may surface during excavations.

4.8 LIVELIHOODS

A majority of the population upstream and downstream are not employed and those employed work in local shops and vending kiosk. Farming is a major source of employment to the local communities surrounding Matsoku and Qaqa River.

Figure 9: Farming as a local livelihood in communities down Matsoku River

4.9 Fauna reported by the locals

Table 5: Community Reported Fauna found in the local surrounding and in Matsoku River

Local (Sesotho) Name	Scientific Name	Common name (English)	Legally Protected	Red Data Book
Nakeli	*Ictonyx striatus*	Striped polecat	✓	✓
Tlholo	*Pronolagus crassicaudatus*	Rock rabbit		
Mutlanyana	*Lepus capensis*	Cape hare		
Setsetse	*Felis catus*	Feral domestic cat	✓	✓
Pela	*Procavia capensis*	Rock dassie	✓	
Letsa		Grey Rhebuck	✓	
Pela		Rock Rabbit/Dassie	✓	
Phokojoe		Black – backed Jackal	✓	
Qhibi			✓	
Senqanqana	*Rans sp*	Frog	✓	
Lekhala	*Cancer bellianus*	Crab	✓	
Thlapi	*Salmo trutta* *Oncorhynchus mykiss* *Labeobarbus aeneus*	Brown trout Rainbow trout Yellow fish	✓	

4.12 Birds reported by the locals

Table 6: Community Reported Birds

Local (Sesotho) Name	Scientific Name	Common Name	Legally Protected	Red Data Book
Leholi	*Spreo bicolor*	Pied starling		
Khoale	*Francolinus africanus*	Grey francolin		
Koekoe	*Coturnix coturnix*	Common quail		
Maborokoane	*Emberiza tahapisi*	Rock bunting		
Tsoere	*(Serinus sp)*	Canary		
Tsemeli	*Lanius collaris*	Fiscal shrike		
Letsoemila	*Onychognathus morio*	Redwinged starling		
Lethoele	*Macronyx capensis*	Orange breasted longclaw		
Lengangane	*Bostrychia hagdash*	Hadeda ibis	✓	
Sethoena-moru	*Cossypha caffra*	Cape robin		
Seotsanyane	*Falco tinnunculus*	Rock kestrel	✓	
Leeba	*Columba guinea*	Rock pigeon		
Mamotintinyane				
Serobele				
Mokotatsie		White Stork	✓	✓
Mokoroane		Black Stork	✓	
Mohakajane		Pied Crow		
Lekhoaba				
Lengangane		Hadeda ibis		
Letsibana	*Streptopelia capicola*	Dove		
Phakoe	*Falco biarmicus*	Lanner falcon	✓	✓
Molepe	Euplectes ardens	Longtailed Widow		
Leholosiane	*Egretta garzetta*	Cattle Egret		
Lehaqasi	*Apus apus*	European Swift		

CHAPTER 5.0 ENVIRONMENTAL IMPACTS ASSESSMENT

5.1 INTRODUCTION

The aim of the project is to prospect Alluvial Diamonds in Matsoku and Qaqa River. The potential environmental impacts that may result from the ongoing prospecting operations are discussed in this section, with the environmental management measures that have been developed to minimize or eliminate any measurable potential impacts.

5.2 POTENTIAL ENVIRONMENTAL IMPACTS

The potential impacts for Prospecting Alluvial Diamonds operations are well understood based on studies of similar Alluvial deposits elsewhere and the experts' sites visits. There will also be areas required for stockpile storage and access roads. The main prospecting activities will entail the following:

- Surface site preparation by soil removal and stockpiling;
- Rock removal by excavator;
- Stockpiling of processed material during prospecting activities;
- Equipment storage
- Access route to the location

These above mentioned factors are addressed in the following Sections, with other environmental factors which were not addressed in detail.

Checklist: The checklist consists of a list of structured questions related to the environmental parameters and specific human actions. They assist in ordering thinking, data collection, presentation and alert against the omission of possible impacts.

Matrix: The matrix analysis provides a holistic indication of the relationship and interaction between the various activities, development phases and the impact thereof on the environment. The method aims at providing a first order cause and effect relationship between the environment and the proposed activity. The matrix is designed to indicate the relationship between the different stressors and receptors which leads to specific impacts.

Checklist analysis

The purpose of the site visit is to ensure a proper analysis of the site specific characteristics of the study area. The table below provides a checklist, which is designed to stimulate thought regarding possible consequences of specific actions and so assist scoping of key issues. It consists of a list of structured questions related to the environmental parameters and specific human actions. They assist in ordering thinking, data collection,

presentation and alert against the omission of possible impacts. The table highlights certain issues, which are further analysed in matrix.

Table 7: Environmental Checklist

Questions	yes	No	Description
1. Are any of the following located on the site earmarked for the development?			
(a) A river, stream, dam or wetland	**X**		
(b) An area that is of cultural importance		**X**	There are no graves on the site, If anything of heritage significance is found relevant stakeholders will be consulted.
(c) Areas of outstanding natural beauty		**X**	None
(d) Highly productive agricultural land		**X**	None
2. Will the project potentially result in potential?			
(a) Removal of people		X	None
(b) Visual impacts	X		Visual impacts will be managed
(c) Noise pollution	X		The alluvial diamond mine will have low noise pollution and will only be operational Monday to Friday 7 AM to 5 PM and some Saturdays.
(d) Construction of an access road	X		During construction of access roads impacts like dust will be managed and its short term.
(e) Risk to human or valuable ecosystems due to explosion/fire/ discharge of waste into water or air	X		All the risks to the ecosystem will be managed
(f) Job creation	X		Employment opportunities will be created during the construction and operational phases.
(g) Soil erosion		X	None, soil has low erosion potential
(h) Traffic generation		X	Traffic generation will be minimal
(i) Installation of additional bulk telecommunication transmission lines or facilities		X	None

Table 8: Matrix analysis

Activity	Potential impacts		Significance and magnitude of potential impacts			Mitigation of potential impacts
	Receptor	Impact description	Minor	Major	Duration	
Site clearing and preparation: Areas earmarked for prospecting will need to be cleared, topsoil will be stockpiled separately.	Fauna and flora	Loss or fragmentation of indigenous natural vegetation. Loss of sensitive species. Loss or fragmentation of habitats	-		S	Yes
	Noise levels	The generation of noise as a result of operation, the use of machinery and people working on the site.	-		S	Yes
	Air	Air pollution due to the increase of traffic of construction vehicles.	-		S	Yes
	Soil	Soil degradation, including erosion, Loss of topsoil. Disturbance of soils and existing land use (soil compaction)		-	S	Yes
	Surface water	Increase in storm water run-off. Pollution of water sources due to soil erosion. Pollution of water to the residents down stream		-	L	Yes
	Ground water	Pollution due to prospecting equipment and vehicles.	-		S	Yes
	Local unemployment rate	Job creation. Business opportunities. Skills development.		+	L	-
	Visual landscape	Potential visual impact on residents of proposed facility.	-		S	Yes
	Health & Safety	Air/dust pollution. Safety. Increased risk of fires.	-		S	Yes
	Heritage resources	Removal of archaeological sites.	N/A	N/A	N/A	N/A

		Removal or destruction of buildings, structures, places and equipment of cultural significance.				
Roads: Construction of access roads will be needed. **Fencing**: For health, safety and security reasons, the facility will be required to be fenced off.	Fauna and flora	Fragmentation of habitats.	-		L	Yes
	Air quality	Air pollution due to the prospecting activity	N/A	N/A	N/A	N/A
	Soil	Soil degradation, including erosion. Disturbance of soils and existing land use.		-	L	Yes
	Ground water	Leakage of hazardous materials. The machinery on site require oils and fuel to function. Leakage of these oils and fuels can contaminate water supplies.	-		L	Yes
	Surface water	Increase in storm water runoff. The development will potentially result in an increase in storm water run-off that needs to be managed to prevent soil erosion. Leakage of hazardous materials. The machinery on site require oils and fuel to function. Leakage of these oils and fuels can contaminate water supplies.		-	L	Yes
	Noise Levels	The proposed development will result in noise pollution during the operational phase.	-		S	Yes
	Local unemployment rate	Job creation. Security guards will be required for 24 hours every day of the week and general labourers will also be required for the cleaning of the panels. Skills development.		+	L	Yes
	Tourism industry	Since there are no tourism facilities in close proximity to the site, the proposed activity will not have an impact on tourism in the area.	N/A	N/A	N/A	N/A

	Heritage resources	Removal of archaeological sites. Removal or destruction of buildings, structures, places and equipment of cultural significance.	N/A	N/A	N/A	N/A
	Visual landscape	Change in land-use/sense of place. The use of the area for the prospecting activity will result in the area not being used for livestock grazing anymore until rehabilitated.	-		L	Yes
	Health and Safety	Human safety and animal safety will be managed.		-	L	Yes
DECOMMISSIONING PHASE						
Prospecting closure: During the closure the Mine and its associated infrastructure will be dismantled. **Rehabilitation of biophysical Environment** The biophysical environment will be rehabilitated	Fauna & Flora	Re-vegetation of exposed soil surfaces to ensure no erosion in these areas.	+		S	Yes
	Ground water	Pollution due to construction vehicles.	-		S	Yes
	Surface water	Increase in storm water run-off. Pollution of water sources due to trenching besides the river Destruction of watercourses (wetlands & pans).	-		S	Yes
	Air quality	Air pollution due to the increase of traffic of construction vehicles.	-		L	Yes
	Soil	Backfilling of all voids Placing of topsoil on backfill	+		S	Yes
	Existing services infrastructure	Generation of waste that need to be managed. Generation of sewage that need to be accommodated by the municipal		-	L	N/A

		sewerage system and the local sewage plant. Increase in construction vehicles.				
	Local unemployment rate	Loss of employment		-	S	Yes
	Visual landscape	Potential visual impact on visual receptors in close proximity to proposed facility.	-		S	Yes
	Traffic volumes	Increase in construction vehicles	-		S	Yes
	Health & Safety	Air/dust pollution. Road safety. Increased crime levels. The presence of mine workers on the site may increase security risks associated with an increase in communicable diseases like HIV/AIDS and crime levels as a result of influx of people in the rural area.	-		S	Yes
	Heritage resources	It is not foreseen that the decommissioning phase will impact on any heritage resources.	N/A	N/A	N/A	N/A

N/A) No impact (+) Positive Impact (-) Negative Impact (S) Short Term (M) Medium Term (L) Long Term

SUMMARY OF MAJOR IMPACTS ANTICIPATED

5.3.1 Introduction

The aim of this project is to prospect alluvial diamond in Matsoku and Qaqa River in the identified area in Mokhotlong District. The potential environmental impacts that may result from the ongoing prospecting operations are discussed in this section, with the environmental management measures that have been developed to minimize or eliminate any measurable potential impacts.

5.3.2 Solid and Liquid Waste

Impact

The project will generate solid waste during the prospecting operations. Solid waste generated will be composed of mud, waste water and reinforcement waste, paper, plastic, beverage cans, other metal pieces, broken hand tools and so on.

Mitigation

- Solid waste generated and accumulated at prospecting site should be dumped at the community authorized solid waste disposal site;
- Sorting of recyclable materials (wire and reinforcement pieces, cans and paper) should be separated out for recycling;
- Selection of temporary spoil disposal sites is imperative for reducing visual impact of haphazard spoil dumping;
- During the process of trenching around the river if stones and gravels are encountered, the same should be used in construction work or can be used in construction of check dams, gully plugs, retaining walls etc. Apart from these if there is any generation of large quantity of soil then it should be stacked to height not exceeding 2m in designated area within the prospecting area.

Methods

Waste material should be end hauled and placed at a stable location. Rock pits, wide stable sections of roads, bridges, benches, and the inside edges of landings are typical locations where waste material can be stored. Sites judged to be of uncertain stability will be reviewed by a

geotechnical specialist before they are used. Those sites where emerging ground water, thick organic layers, unstable geology, or other instability factors are present could experience slope failure after loading and will not be used.

In most situations, end haul material is loaded directly into dump trucks by the excavator and hauled to the prospecting site, where it is spread in layers that can be reworked by a dozer. In some cases, dozers can economically carry (push) waste material to stable storage sites. The resulting waste pile at the storage site will generally conform to the local topography to provide for natural drainage, and will be mulched and planted with vegetation to control erosion.

- The Contractor should provide separate receptacles for collection of paper, cans and metal pieces solid waste on site for recycling;
- The other collected solid waste should be dumped at community designated dump site;
- Soil material spoiling should be at selected community dump sites;
- Landscaping and grassing is an integral part of spoiling.

Monitoring Action

- The Environmental Control Officer should control and enforce solid waste sorting, collection and disposal to designated community sites.
- All road drainage structures (ditches, out sloping, culverts, water bars, dips, etc.) should be in place as soon as possible during the construction of access road.
- Surface water drainage must also be provided for sites associated with access road construction such as waste areas, borrow areas and rock pits. All drainage water will be filtered through natural vegetation before it enters streams.

Before disposal the following metals will be monitored:

Concentration of Ag, Cd, Pb, Sb, Ti, and Zn

Some of the water will be recycled and be used again in the plant.

Domestic water will be treated in an approved septic tank & soak pits.

Mitigation Measures of Water Pollution

- The chemical analysis of water will be done to show any toxic substance, which can dissolve and pollute water quality.
- Contour trench of appropriate width and depth all along water purification dams;
- Systematic drainage system for diverting the surface run-off during rainy season.
- Regular monitoring and analysing the quality of water
- The quality and quantity of effluent streams discharged to the environment including storm water should be managed and treated to meet applicable effluent discharge guidelines.
- Discharge to surface water should not result in contaminant concentrations in excess of local ambient water quality criteria outside a scientifically established mixing zone.
- Efficient oil and grease traps or sumps should be installed and maintained at refuelling facilities, workshops, fuel storage depots, and containment areas and spill kits should be available with emergency response plans.
- Water must be reused, recycled or treated where possible.
- The site must be managed in order to prevent pollution of drains, downstream watercourses or groundwater, due to suspended solids and silt or chemical pollutants.
- Silt fences should be used to prevent any soil entering the storm water drains.
- Temporary cut off drains and berms may be required to capture storm water and promote infiltration.

5.3.3 Generation of Dust and Particulate Matter

The main risk of dust emanating from the from prospecting site will come from the following;

- Truck movements at the plant.

The source of highest risk of airborne dust from the site area is from the construction of access road, vehicle movements. Dust can cause a nuisance to neighbours and also prospecting employees and contractors. Dust expected to be generated from movements of vehicles to and from the site and construction of access.

Mitigation

Operators, those exposed directly to such conditions will be provided with such protective equipment like mask, ear plug, and helmet.

5.3.4 Impacts on Fauna and Vegetation

The survey revealed that the wildlife population in the study area is almost negligible. The removal of vegetation, though minimal in the preliminary stage, noise from the movement of vehicles and human sound is likely to disturb the movement and feeding pattern of few birds identified. The possibility of some animals

protecting their territories resulting in injuries can also not be ruled out e.g. snakes (though none seen in the field survey).

Some of the impacts on vegetation are unavoidable. However, it is essential to protect riverine vegetation. Where trenching is used, we recommend that this be carried out during the day to avoid disrupting the normal life of any fauna that may be in the area and well as surrounding communities.

Mitigation

Limit movement to existing tracks as much as possible and also use vehicles that are less noisy. Precautions should be taken against dangerous animals.

5.3.5 Noise and Vibrations from the operations

This has been identified as one of the main environmental impacts from prospecting operations. On the major noise sources from the operations, the noise pollution is most likely to emanate from the trench, and onsite use of ancillary equipment; excavators, loader and truck movements.

Blasting and drilling are not required in this project.

Mitigations

Generation of noise during operations shall be controlled by right personnel to supervise operations. Protective devices shall be provided for use of persons employed in the vicinity. Wherever the noise level is found in excess of the stipulated limits (75db), necessary protective devices like ear plugs will be provided to the employees exposed to such conditions.

Monitoring data doesn't show any abnormal values in the buffer zone villages. Due to increase in production of the proposed project, the traffic on the road due to movement of trucks may contribute to some extent to the ambient noise. In order to protect the workers and nearby population from excessive noise levels, if any, the following control measures are proposed to deal with control of noise pollution both at source, during transmission and at receiver's end.

- Innovative approaches of using improvised plant and machinery designs with in-built mechanism to reduce noise emission.
- Providing PPE (Personal Protective Equipment) to the personnel who are exposed continuously to the high noise zone/ operation area i.e., to drillers and compressor operator etc.
- Display of sign boards at high noise generation zones.
- Corrective & preventive maintenance of Vehicle & machinery including transport vehicles.
- Providing rubber lining at screening decks to reduce noise generation.

Vibration

The vibration levels pattern are expected to be well below the permissible limits. The following mitigation measures shall be adopted.

Mitigation Measures for Vibration

- Peck particle velocity or ground vibrations for safety of nearby structures and residential building should be well within 12.5 mm/sec.
- Charge weight used per hole will not exceed 300 gm.

CHAPTER 6; SOCIAL AND HEALTH IMPACT ASSESSMENT

6.1 INTRODUCTION

The impacts during drilling and excavation phase are more visible than those of the previous phase. Some of them are permanent. Both positive and negative impacts will be experienced. Positive social benefits are likely to include employment generation, increased business activities including vending. The socioeconomic and health impacts will be caused by the following activities

6.2 COMMUNITY PARTICIPATION

6.2.1 Methodology

Institutional Consultation

We conducted institutional information dissemination meetings as follows:

Consultations

We conducted institutional information dissemination to inform the affected GoL and private institutions

Table 9: Community concerns raised at the community gathering

Organization/Affected Party	Environmental Issue	Identified Environmental and Social Impact/Benefit	Mitigation /Enhancement
Villagers interviewed downstream Matsoku river at Manyakane on the 09/09/2019 	**Labour recruitment**	Recruitment of labour is not organised properly	• Recruit unskilled from locally and avoid hiring foreign labour. • It is not encouraged to recruit labours in accordance with their political affiliations. • The participants voted and the consensus was that a Register system would be used to recruit workers. • Workers would be recruited from all villages along up and downstream Matsoku and Qaqa River.
	Health and safety at prospecting sites	Health and Safety	The consultations with the Manyakane, Mahateng ha Letsielo, Liramong and Linokong Matsoku community suggested that the construction workers be provided with safety equipment such as ear plugs, goggles and boots when on duty; and mobile toilets for sanitation.
	Affected community properties	Some properties will be affected At the prospecting sites eg. fields	Compensate affected properties like fields, gardens, trees e.t.c
	Landscaping and rehabilitation of prospecting area	Untidy borrow pits left open after the departure of the contractor at the end of the contract.	After completion of the work the contractor is required to re-shape and landscape the site accordingly and rehabilitate it by planting indigenous grass species on the camp site.

Organization/Affected Party	Environmental Issue	Identified Environmental and Social Impact/Benefit	Mitigation /Enhancement
Ha Manyakane, Mahateng ha Letsielo, Liramong and Linokong Matsoku community interviewed on the 09/09/2019 	**Demarcation of affected individual and community properties.**	Affected individual and community properties not clearly marked (croplands, houses, trees and grave yards)	Affected individual and community properties must be clearly marked (croplands, houses, trees and grave yards) for making community aware of their affected properties.
	Dust during construction of access road: Who compensates dust effect to worker if are affected by dust emissions during construction of access road?	Dust particulates will affect both workers and community in populated areas.	Contractor should spray access road prone sites with water.
	Contractor hiring on his own disregarding community leadership and structures in Place	Contractor hires construction staff on his own disregarding community leadership and structures in place	The contractor should be made aware that there are community leadership structures charged with responsibility to guide staff hiring and he must observe that and seek guidance.

Organization/Affected Party	Environmental Issue	Identified Environmental and Social Impact/Benefit	Mitigation /Enhancement
Ha Manyakane, Mahateng ha Letsielo, Liramong and Linokong Matsoku community interviewed on the 09/09/2019 	**Access road**	The Community will benefit on the access road since there is no road to the villages.	Employ local communities on construction to avoid conflicts.
	Heritage sites protection	Heritage sites if encountered along prospecting sites are affected, not protected	Community or national heritage site either being unique rock outcrops or rock paintings must be protected but currently there are no heritage sites
	Employment avoiding nepotism.	Contractor should avoid favoritism for local staff hiring	Contractor should avoid nepotism and political inclination for local staff hiring
	Affected land rehabilitation	The contractor should rehabilitate affected land during closure of prospecting.	The contractor should rehabilitate the affected environment
	Skill register at villages	No skill register at villages for contractor's staff sourcing.	Each village must have skill register for contractor's staff sourcing during road construction. Hire equal staff from all the villages involved.
	Community properties at construction sites	Community properties (croplands, businesses, kraals, gardens houses fences etc.) affected by prospecting activities.	Community properties (croplands, businesses, kraals, gardens houses fences etc.) affected by construction and prospecting activities should be compensated, but none will be affected.
	Grave yards	Graveyards are threatened by construction activities	Where graveyards are threatened by construction activities, they either be avoided or exhumed to designated areas
	Natural land resources (wetlands, Springs etc.)	Access road construction threatening natural land resource (wetlands, Springs etc.).	Affected natural resources must be avoided by all means.

Organization/Affected Party	Environmental Issue	Identified Environmental and Social Impact/Benefit	Mitigation /Enhancement
Ha Manyakane, Mahateng ha Letsielo, Liramong and Linokong Matsoku community interviewed on the 09/09/2019	**Drains storm-water**	Homesteads thereby affecting them.	Homesteads, croplands and gardens.
	Equipment and or vehicles speed control	No prospecting vehicles speed control at camp or prospecting sites	The contractor must effect prospecting vehicles speed control at every site of the project.
	**Noise at prospecting sites**	Contractor's vehicles making deliberate noises when passing and villages or work at night.	Contractor's vehicles should stop making deliberate noises when passing schools and villages or should not work at night.
	Toilets provision at the site	No provision of toilets at prospecting sites	The Contractor should provide portable toilets at work sites.
	Prospecting garbage	No provision of garbage collection bins/receptacles at the prospecting and camp site	The Contractor should provide portable garbage receptacles for garbage collection to council designated site.
	Medicinal and protected plants	Contractor's staff harvesting medicinal plants and protected plats	The Contractor should warn his staff to refrain from harvesting medicinal and protected plants at site and periphery.
	Wild life protection	Contractor's staff hunting wildlife	The Contractor should warn his staff to refrain from hunting wild life at prospecting site and periphery.
	STI and HIV/AIDS control at prospecting sites	Poor HIV/AIDS management at the camp and prospecting site	Contractor should implement Training on HIV/AIDS regularly in collaboration with district Health centers and NGOs.

CHAPTER 7; ANALYSIS OF ALTERNATIVES

7.1 Introduction

Big Blue Mining Pty ltd will be granted a prospecting licence for Alluvial Prospecting Project in the district of Mokhotlong and Leribe at Matsoku River and Qaqa River in kingdom of Lesotho.

Since the prospecting activity is site specific and it depends on occurrence of minerals, therefore, alternate sites are not analysed with respect to this project.

CHAPTER 8; ENVVIRONMENTAL MANAGEMENT PLAN

8.1 INTRODUCTION

In order to reduce the negative impacts and enhance the benefits of the project it is necessary to mitigate the identified impacts. The Developer and stakeholders must be fully committed to ensuring that the project is environmentally friendly and sustainable. This chapter covers how the environment will be managed during prospecting of alluvial diamonds. The mitigation measures suggested in this report, and any that may be developed during the course of the project, must be strictly adhered to. From the onset, a site management plan taking into account foreseen and unforeseen events must be prepared by the developer.

The major objective and benefit of utilizing Environmental Impact Assessment in project planning stage itself, is to prevent avoidable losses of environmental resources and conservation of the same to the maximum extent and values as a result of Environmental Management. The Environmental Management includes protection/mitigation/enhancement measures to be adopted by the project proponents, as well as suggests revision of project site or operation to avoid adverse impacts or often additional project operations may have to be incorporated in the conventional operation.

The Management Action plan aims at controlling pollution at the source level to the possible extent with the available and affordable technology followed by treatment measures before they are discharged.

8.1.1 Legislative and legal aspects.

Project developer should ensure that all those involved in this project are aware of the regulations governing the activities taking place in the area. The information can be disseminated through pamphlets, group discussions and other means deemed necessary.

8.1.2 Environmental monitoring programme

The Environmental monitoring is the primary tool for assessing the prevailing quality of air, water, noise, land etc. It helps in suggesting and taking mid-course corrections, if found negatively impacted. Monitoring of various environmental parameters for Ambient Air
Quality, Water Quality, Noise Levels will be carried out on a regular basis in and around the prospecting area and buffer villages to ascertain the following

- Pollution caused due to operations within the prospecting area.
- Change in environmental quality within and outside the prospecting area
- Evaluate the efficiency of pollution control systems installed.
- To assess environmental impacts

This monitoring shall be periodic and comply with Lesotho guidelines. Frequent advice sought from appropriate authorities, will go long way in improving the environment. The frequency of monitoring of various environmental components and frequency to be monitored frequency is given in this chapter.

8.1.3 Health, Safety and Environmental -SHE Officer

The **SHE Officer** is the person responsible for the monitoring and the implementation of the environmental management plan. The SHE Officer will also be responsible for liaison with and reporting to the environmental/social coordinators of all relevant stakeholders.

This person will have adequate environmental knowledge to understand and implement this management plan. SHE Officer will be under direct employment of the contractor; and should ideally report to all relevant stakeholder.

8.1.4 Environmental Completion Statement

An Environmental Completion Statement is a report by SHE officer to the relevant authorities stating completion of the project and compliance with the EMP and conditions. This statement will be prepared after the final audit which occurs after the operation phase.

8.1.5 Record Keeping

All records related to the implementation of this management plan (e.g. site instruction book method statements) must be kept together in an office where it is safe and can be retrieved easily. These records should be kept for a minimum of two years and should at any time be available for scrutiny by any relevant authorities.

It is recommended that photographs are taken of the site prior to, during and immediately after prospecting as a visual reference. These photographs should be stored with other records related to this EMP.

8.1.6 Monitoring and Evaluation of the EMP implementation

The contractor will be responsible for the day to day implementation of the EMP, which will be overseen by the SHE officer who will be answerable to the Steering Committee. The SHE officer will also be responsible for implementation of the environmental monitoring program.

8.1.7 Environmental Monitoring

This section details that needs to be monitored in terms of this EMP, detailing monitoring frequency and reporting requirements.

8.1.8 Monitoring Plan for prospecting phase

This section presents a monitoring and evaluation plan to ensure that the mitigation measures outlined in this EMP report are accounted for in an acceptable manner. The plan outlines specific issues to be monitored during the prospecting phase of the project.

The impacts to the environment, which should be monitored, include:

- Excavations from the proposed sites
- Movement of heavy equipment,
- Threat to water bodies, terrestrial and aquatic life,
- Waste handling at the site
- Damage to vegetation,
- Threat to bird life,
- Effects of noise, vibration and dust,
- Socio-economic and health values.

These impacts will need to be monitored during all the operational phases of the project.

8.2 AREAS TO BE MONITORED

8.2.1 Soils

It will be necessary to monitor the degradation of soils in project area. It will be very important for BIG BLUE MINING Pty ltd and the Community Councils around Matsoku and Qaqa River to ensure that no degradation develop in the prospecting area or rills from prospecting and camp sites and access. This can be avoided by taking measures such as construction of embankments along the stream passing through the area and designing drainage along road works. The absence of gullies and rills will be used as a measure of the success of the control measures.

8.2.2 Vegetation

The vegetation must be conserved especially that along the proposed prospecting sites and all sites sensitive to any form of degradation. The contractor must be monitored to ensure compliance.

8.2.3 Noise and Vibrations

It will be important to routinely monitor noise levels from the machinery to ensure that it conforms to the limits recommended for noise levels.

8.2.4 Socio-Cultural Issues

It will be important to monitor employment levels and origins of employees. Regular health checks of the work force are a way to monitor disease patterns of employees and other members of the community to ensure that no new strains of diseases are being introduced. Archaeological and cultural heritage sites should **STRICTLY BE PROTECTED AT ALL COSTS** during prospecting phases.

8.2.5 Water

Water quality monitoring is carried-out to characterize water and identify the changes or trends in water quality over time. The monitoring also helps to identify specific existing or emerging water quality problems and gather information to design specific pollution prevention or remediation programs.

The water is an important natural resource which is required for wellbeing of the mankind and also for survival of Lease Area & animal life on the earth. It is also necessary to use the available water judiciously to conserve the natural potable water. Hence it is necessary to assess the baseline data of different water sources available in the study area. It not only helps to use the water in an economic way, but also gives the changes in the water quality, if any, after the implementation of the project. The assessment of baseline data on water quality includes;

- Identification of surface water sources
- .Identification of ground water sources.
- Collection of water samples.
- Analysing water samples collected for Physio-Chemical and Biological parameters.

The water samples have to be collected from the river water and analysed to assess the quality of water and any impacts on the quality of water due to the proposed project.

8.3 ENVIRONMENTAL MANAGEMENT PLAN OUTLINE

The EMP presented herein has been formulated to realize the mitigation measures indicated in the tables showing summary of impacts. The goal of the mitigation and management measures indicated is to reduce the environmental risk associated with the prospecting of alluvial diamonds; ensure compliance with acceptable environmental objectives and legislation; and align the environmental management with the standard environmental and social clauses prescribed in the Company's contract. As previously indicated, clauses binding the contractor the requirements of the EMP must be included in the contract, thereby legally binding them to the implementation of the approved EMP.

Initial Earthworks and Platforms

- The construction of access roads and platform for the contractor's camp, as well as the platform for the materials storage area must be appropriately planned.
- We will take appropriate and active measures to prevent erosion resulting from this works, operations and activities as well as storm water control measures to the satisfaction of consultant and client. Restoration costs will be for the contractor's account, should these measures not be reasonably implemented. Aspects normally covered in construction contracts in terms of "protection of works" are standard and are not to be billed or confused with any details covered under environmental requirements.
- During prospecting we will protect areas susceptible to erosion by installing all the necessary temporary and permanent drainage works as soon as possible.
- Measures can include cut off trenches, straw stabilizing, brush packing etc.

Service Areas

- All vehicle and plant shall be maintained or serviced at the designated areas to ensure that there are no oil or fuel leakages.
- Soil contaminated by oil, fuel or chemicals shall be removed and disposed of at a permitted landfill site.
- The contractor will educate workers on the appropriate methods for workshop maintenance and fuel points to prevent fuel and oil being washed out of containment areas.
- Toxins and oil recovered must be stored in sealed drums in a banded area and later given to an authorized petroleum recycling company/agent.

Personnel

- Normal Working hours should be observed, any deviations should be done in consultation with the relevant labour authorities
- Warning signs must be placed on and around the site as per the occupational health and safety requirements.
- No fires shall be permitted, unless a specifically designated area has been identified and set aside for that purpose.
- Where there is a particular fire hazard at any point in the earthworks works the contractor will ensure that his employees are properly trained in the use of the appropriate firefighting equipment and that such equipment is on hand at all times.
- We will refrain from harming or clearing trees, timber and shrubs to any extent other than that indicated for the execution of the contract.

- The contractor will take all measures necessary to prevent workers from hunting, capturing or killing animals and birds in the locality of the site and prospecting phase activities.
- We will take all necessary precautions against trespassing on adjoining properties and shall take care that all livestock, game or crops are not interfered with.
- The contractor will comply with all safety regulations regarding the electricity supply and he shall take every precaution to ensure the safety of all the people on site.
- We will ensure that as far as practical it is reasonable that suitable arrangements are made on the site for the maintenance of health, the prevention and overcoming of outbreaks of disease. Adequate equipped first AID kits should be available on site.
- The contractor will ensure that suitable safety regulations and precautions are established and brought to the attention of the personnel. Approved safety helmets and other protective clothing shall be worn where deemed necessary.
- The contractor will cover costs required to provide for a constant supply of potable water for human consumption to the sites and other domestic use on site.
- The contractor will be responsible for the behavior and discipline of all personnel while they are present on the site and shall exercise strict supervision over them at all times.

Personnel Education

- The contractor will ensure that our personnel are educated and informed as to the requirements of the EMP.
- The contractor will ensure that his personnel have a clear understanding of the Health and Occupational Safety aspects of the contract works.
- The contractor will ensure that our staff complies with the EMP requirements for best practice as described by this document.

Works affecting planted fields or Private Property

- Compensation for loss of cultivated fields or property will be done according to the Land Act 1979 as amended.

Water use and water quality

- Any activity which brings about the run-off of sediments into any watercourse shall be forbidden
- Any activity which adversely affects aquatic fauna and flora shall be forbidden
- No activity shall be allowed which shall, in any way, create unnecessary disturbance of any river embankment due to the extreme sensitivity of these zones.
- The quality and quantity of effluent streams discharged to the environment including storm water should be managed and treated to meet applicable effluent discharge guidelines.

- Discharge to surface water should not result in contaminant concentrations in excess of local ambient water quality criteria outside a scientifically established mixing zone.
- Efficient oil and grease traps or sumps should be installed and maintained at refueling facilities, workshops, fuel storage depots, and containment areas and spill kits should be available with emergency response plans.

Fauna and Flora

- Natural vegetation not on the proposed sites shall be kept in as undisturbed a state as possible. Special attention shall be paid to preserve trees and plant communities such as wetlands, sponges, forest of any sort and riparian vegetation.
- All incidents of harm to any animal or natural vegetation (apart from the agreed areas) must be reported to the relevant ministries by the SHE Officer.

Monitoring

Monitoring will be done by the SHE who will report to the relevant ministries such as minister of Environment and others. Audits will be done by Environment and Social Unit.

8.4 SUMMARY FOR ENVIRONMENTAL MANAGEMENT

Table 10: Summary for Environmental Management

Element	Negative impacts	Mitigatory measure(s)	Residual impacts	Responsible authority	Implementation schedule
Soils	Soil degradation (operation phase)	Topsoil is going to be handled once during stripping and stockpiling, and secondly to replace, level, shape and replant. Topsoil will not be compacted, nor any objects be placed or stockpiled upon it Run-off will be diverted away from stockpiles Earth berms will be constructed at the lower edges of big stockpiles to restrict soil being washed away Where project activities have potential to accelerate erosion SHE Officer will advise on the best way to carry out the activity.	Soil degradation minimized	BIG BLUE MINING PTY LTD	Construction of access roads and prospecting activities
Vegetation	Loss of vegetation when making access roads	The Developer must identify individual mature trees to be felled with the agreement of the Engineer, to ensure that unnecessary felling of trees is avoided. Areas of bush scrub to be cleared must be agreed in advance by all stakeholders. Limit reeds removal to only necessary points Environmental awareness campaigns	Reduction in vegetation to be removed Minimise illegal vegetation removal	BIG BLUE MINING PTY LTD	Construction of access roads and operation phase
Water resources	Indiscriminate litter disposal	Notices prohibiting the dumping of litter to be put up.	Water pollution	BIG BLUE MINING PTY LTD	Prospecting phase
	Chemical pollution from plant and vehicles Oil spills in water	All chemicals (oil, petrol etc.) to be kept in securely bounded areas Concrete batching plant to be located away from the river banks. Oil interceptors to be used, and oil wastes tinkered to suitable disposal sites. Emergency procedures to be clearly spelled out	Groundwater pollution Waterborne toxicants	BIG BLUE MINING PTY LTD	Prospecting phase
	Contamination of water in the river	Spill kits will be always available to treat oil spills immediately. Every effluent to be neutralized prior to disposal (in line the standard health guidelines	Accidental Overflows	BIG BLUE MINING PTY LTD	Operation phase
Fire Control	Destruction of property;	Fires will be included in the procedures to be developed to deal with emergencies	Unexpected wild fires	All stakeholders involved	All stages

	endanger people's lives	Firefighting equipment such as extinguishing mats or fire extinguishers will be readily available; all vehicles will be fitted with a fire extinguisher. Drivers will be cautioned to obey speed limit at all times			
Public Protection and Regard	Sour relations between the public and the Contractor	The employees will be properly inducted to ensure that they know how to carry themselves to avoid conflicts with the public and other Contractors on site. A complaints register will be kept on site office to record all grievances from communities and other Contractors on site. PRO will facilitate for resolution of disputes in collaboration with the Employer. Liaison Officer will regulate relations be the contractor and the community. An information board will be erected to let the public know of the prospecting activities.	Local community fights	Contractor (SHE Officer/PRO) Contractor (PRO)	Ongoing At the start of the project
Air Environment	Dust and hazardous gases from vehicles	Ban smoking‟ vehicles and plant from the parks area water roads in dry weather.	Exhaust fumes and dust cannot be completely eliminated	BIG BLUE MINING PTY LTD	Prospecting phase
Small animals and reptiles	Being run over by moving vehicles	Prohibit killing of small animals in both near environment and in water.	Accidental killing minimized	BIG BLUE MINING PTY LTD	Operational phase
Birds and Insects	Interference with, and loss of habitat during operation	Keep people away from nestling sites and established habitats by up notices around such areas	Birds will move away or become semi-tame localized	BIG BLUE MINING PTY LTD	All project phases

			ecosystems disrupted		
Safety, Health and Environmental (SHE) Compliance					
SHE Compliance	Accidents/ incidents/ Injuries/ property damages	The Contractor will comply with the standards set out in the Labour Code Order No 12 1992. Workers will be provided with appropriate Personal Protection Equipment (PPE). Work will be carried out during normal working hours (8hrs) unless prior arrangements have been made All work to be carried out under strict supervision and according to best practice. Material stockpiles or stacks must be stable and well secured to prevent collapse of the stockpile and possible injury to workers or local residents. First aid equipment will be provided and at least an employee who has been trained on how to administer first aid on site will be appointed. Record of injuries on site will be kept and the Client informed. Incident forms Proposed equipment will be kept in proper working order and operated by competent personnel. The contact details of the police and ambulance services will be available on site.		Big blue mining PTY ltd	Throughout the project

Socio-economic Impacts					
Employment rates	Overloading of existing health infrastructure	Provision of adequate sanitary facilities for workers Upgrading local health facilities	Job seekers at site will distort official man-to-facility ratios	BIG BLUE MINING PTY LTD	Prospecting phase
	Increase in STI's	Health education to local community and labourers Employment of local manpower Provision of family accommodation	Risk of transmission reduced	BIG BLUE MINING PTY LTD	Prospecting phase
	Spread of Infectious Diseases.	Community provision of on-site health facilities	Reduced	BIG BLUE MINING PTY LTD (CLO)	All stages
	Promiscuity	Employment of local manpower sex education age restriction	Promiscuity cannot be entirely eradicated	BIG BLUE MINING PTY LTD (CLO)	All stages
Noise	Noise and vibration during prospecting phase generating excessive noise; Birds and other small mammals	Limit the working hours to daylight hours The noise from these activities must be minimised.	Noise nuisance reduced and controlled	BIG BLUE MINING PTY LTD	All stages

	might end up migrating in search of new habitat due to being scared away.				
Pollution of air.	Emissions from machinery, dust generation (like loader trucks etc.)	Dust generating activities will be scheduled such that they do not happen simultaneously to avoid excessive dust Dust will be suppressed by spraying dusty areas with water frequently (frequency will depend on the weather of each day) Vehicles and machinery will be service to avoid excessive emissions from them.	Potential Acute and Chronic impacts.	BIG BLUE MINING PTY LTD	All stages

8.4.1 Summary of impacts and proposed mitigations

Table 11: Summary of impacts and proposed mitigations

Description of Activity	**Environmental Aspect**	**Potential impact**	**Mitigation**
Clearing of vegetation on the campsite	Land use	Loss of grazing	• Compensation to be provided for loss of resources and land.
	Vegetation	Loss of biodiversity	• Vegetation removal only within surveyed area • The implementation of the recommended mitigation measures will result in the minimisation of impacts to acceptable standards, thereby ensuring compliance with Lesotho Environmental standards. • Erosion control (temporary or permanent) to be installed as part of borrow pit construction
Trenching 35m around the river	Ground vibrations Noise pollution.	Destruction on land owners properties Disturbance of the locals, animals and other wild species	• Trenching should be carried out during the day, between 6 AM and 5 AM. • The competent, qualified and licensed trenching machines should be selected and should strictly adhere to the Health and Safety precautions.
	Noise levels	Increased noise generation	• Vehicles to be well maintained and fitted with correct muffler systems • Normal working hours to be followed (06:00 to 18:00)
Prospecting	Socio-Economic	Health and safety of workers	Workers to way protective clothing and respiratory masks whilst spraying

Prospecting closure	-	Health and safety of surrounding communities	• All damaged areas shall be rehabilitated upon completion of the contract • . Re-vegetation of the disturbed site is aimed at approximating as near as possible the natural vegetative conditions prevailing prior to construction. • All natural areas impacted during prospecting must be rehabilitated with locally indigenous grasses typical of the representative botanical unit. • Rehabilitation must take place in a phased approach as soon as possible. • Rehabilitation process must make use of species indigenous to the area. Seeds from surrounding seed banks can be used for re-seeding. • Rehabilitation must be executed in such a manner that surface run-off will not cause erosion of disturbed areas. • Planting of indigenous tree species in areas not to be cultivated or built on must be encouraged.

Table 12: Scoring System for Determining Rating of Impacts

Variable	Ratings				
Duration	**Short-term:** Limited to Preparation (site clearing) phase of the project	**Medium-term:** Extend to post prospecting but limited to rehabilitation period of the project and within the contractor's liability period	**Long-term:** Last for the duration of the project.	**Permanent:** Lasts for beyond the project	
	1	3	4	5	
Scale (Area extent)	**Site/immediate surroundings**	**Catchments** Extents to catchments level	**Regional** Extents to regional level	**National** Extents to national level	**International**
	1	2	3	4	5
Severity/Intensity	**Low/Minor**	**Moderate/Medium**	**High/Major**	**Very High**	
	1	2	3	4	
Certainty/Probability	**Possible/Improbable** Low possibility due to design or historic Experience	**Probable** Distinct possible to occur	**Highly probable** Most likely to occur	**Definite** Will occur regardless of prevention	
	1	2	3	4	
Affected Parties	**No influence**	**Neutral**	**Indifferent**	**Negative influence**	
	1	2	3	4	
Legal conformance	**Yes**	**No**			
	0	4			
Impact Significance	Low ≤7	Medium 7-11	High 12-18		

In the following table we assess the significance of the identified benefits using the developed criteria. The criteria for assessing, determining significance and rating of positive impacts are in table 11 above.

Table 13: Environmental Aspect Register, Mitigation Measures and Significance Rating of Impacts

	ACTIVITY	ASPECT	IMPACT	MEDIUM	MITIGATION MEA	RISK IF NO MITIGATION	SIGNIFICANCE RATING							
ENVIRONMENTAL, HEALTH AND SOCIAL IMPACT ASSESSMENT							**Duration**	**Scale/Exte**	**Severity/**	**Certainty**	**Legal**	**Affected parties**	**Score/valu**	**Rating**
1	Earth works: excavation, clearing and grubbing sites. Construction of access roads	Grubbing, clearing and Spoiling Soil erosion sediment load of river system downstream of construction works	Water pollution from road construction run-off water of river system Water pollution in Matsoku River Soil erosion sediment load of river system downstream from operations of prospecting in the river.	Water quality, Humans and animals affected by dirty water	Contractor to implement construction practices that reduce soil erosion should not leave loosened soil and spoil for too long and exposed to rain and storm-water.	Stream and river bed sediment load and low river flow Polluted water to humans and animals, diseases can occur on site and downstream.	1	2	2	3	YES	4	12	H
2	Remove topsoil using 20t Excavator to stockpile within 20m radius of excavation.	Noise	Damage to Community Property.	Humans and Large Birds	A contractor should initiate Controlled drilling	Community complains Increase	1	1	3	4	YES	4	13	H

3	Excavation work (grubbing and clearing site) and foundation for camp site	Archaeological materials surfacing from excavation works	Loss of archaeological materials and history tracer	Archaeology materials;	Contractor/s reporting of archaeological find and removal by an Archaeology Specialist to national	Loss of human history tracer	4	2	3	3	YES	4	16	H
4	Special risk, and transportation operations	Safety Operations	Working staff injuries Properties damages from construction of access roads.	• Human • Travelers' Residents' properties	• Hire a Safety Officer • Provide and enforce staff to wear protective equipment and clothing; • Staff risk of fire must be carefully planned and implemented	Loss human life from accidents Residents' properties loss	1	1	4	4	YES	4	14	H
5	Security on site	Security during prospecting	• No security guards at prospecting and camp site	• Humans	• Provide high security	Increased theft	4	1	2	3	YES	4	14	H

8.5 CONCLUSION

There are potential negative impacts as discussed in the ESMP but these are all going to be of low impact as the EMP provisions will be adhered to. Serious environmental degradation is likely to be soil, water, and flora and fauna pollution/damage, from oil/fuel spillages. Fire can also cause havoc to property, employees and the public if precautionary measures are not employed. All non-conformances identified during inspections will be recorded and site instruction book/forms will be used to outline the corrective measures to be employed, responsible persons, resources required and timeframe. Progress on implantation of corrective measures will be discussed during morning meetings. These will also be highlighted in the monthly reports.

The positive impacts of the establishment are more prominent considering that level of employment is low and poverty levels are on the rise. The contractor is therefore committed to working hand in hand with all relevant stakeholders to make this project a success.

CHAPTER 9; MONITORING PLAN OUTLINE

9.1 INTRODUCTION

Monitoring the environmental effects and the success of mitigation measures is a very important part of managing the impacts of the project. This is usually the task of the contractor with the help of relevant authorities. An independent team is required to monitor the implementation of the recommendations of this report. This team will consist of experts from all spheres of the environment that may be affected.

Based on the investigations carried out, the review of background as well as public participation carried out with respect to Alluvial Prospecting Project alignment, it is concluded that this project is associated with few significant negative impacts. All negative impacts identified will be mitigated through institution of corrective management practices.

This section presents a monitoring and evaluation plan to ensure that the mitigation measures outlined in this EIA report are accounted for in an acceptable manner. The plan outlines specific issues to be monitored during the construction and operational phase of the project.

The impacts to the environment, which should be monitored, include:

- Excavations for access roads and crusher plant
- Movement of heavy prospecting equipment,
- Threat to water bodies, terrestrial and aquatic life,
- Waste handling at the prospecting plant and camp site
- Damage to vegetation,
- Threat to bird life,
- Socio-economic and health values.

9.3 THE MONITORING TEAM

Table 14: Outlines the Monitoring Team

ORGANISATION	AREAS OF CONCERN	RESPOSIBILITY
Ministry of Transport	Roads and servitudes	Enough clearance either sides of the roads. Distance of constructions from roads centre line and stream. Any other recommendations from the roads engineer
Ministry of Mines	Prospecting services	Regulate supply of rough diamonds
Mines Manager .	Prospecting site	Over all planning, execution and management of environmental protective measures and monitoring of parameters and various Socio-economic measures, disaster management measures and training programs regularly
Safety officer	Prospecting site	To ensure the activities are carried out as per the OSHAS standard and all the employed given safety a primary importance while working at the Lease Area
Manager- Environment	Prospecting site	Overall in-charge of Monitoring of Environmental parameters and effectiveness of environmental protective measures taken and decide about the additional protective measures in safeguarding the overall ecology and environment. Monitoring should be undertaken for duration of operations. Internal audits should be undertaken at least every 6 months. External audit should be undertaken by a suitably qualified auditor on an annual basis. Reports should be made available to the competent authority if required.
Department of Water Affairs Department of Environment	Watercourses and impoundments	Recommended distances from watercourses

Mokhotlong and Leribe District Ministry of Health	Social Aspects, Health issues	Adhering to recommended health standards
Department of Environment and urban and Community Councils	Natural resources	Clearing of the project site and disturbance of animals
Mokhotlong and Leribe District Ministry of Health	Public health	Waste management at the camp site and project area. Disease outbreak due to contamination of sources of water
LEC	Electricity	LEC lines
Big Blue Mining Pty ltd and Local Community Council	All issues	All the above

Monitoring plan

Table 15: Monitoring plan

Issue	Method of monitoring	Positive indicator
Soils	The contractor should make a daily inspection of earth works, and ensure that slopes are suitably graded. Once earthworks are complete the Engineer should monitor the restoration measures implemented by the Contractor, such as re-vegetation	Absence of rills, gullies or other erosion features
Water		
Vegetation	The developer should ensure excessive clearance of vegetation is avoided. The Contractor must seek the approval of the Developer prior to clearance.	Area of vegetation cleared minimized
Animals	The Developer, and Department of Environment staff should carry out regular inspections of the area and check that animal access to the water points is maintained.	Bird's access to habitat points is maintained /not disrupted. Reduced, human, animal conflict.
Birds	Interference with nesting sites	Reproductive patterns of birds undisturbed
Health	The Developer and Ministry of Health must ensure that health awareness issues are addressed	Reduction in number of AIDS/STD related diseases recorded at hospital and medical clinic
Roads and roads safety	The Developer and Ministry of Transport should monitor the conditions of trucks arriving at the site and should ensure that during road construction, a minimum number of detour roads are opened.	No road accidents associated with the project. Night driving kept to a minimum. Vegetation clearing and soil erosion minimized.
Noise	Noise monitoring should be carried out on an ad-hoc basis by the contractor to establish noise levels in the work areas.	Noise levels at the nearest sensitive receiver would be kept to a minimum
Energy	The Developer must inspect the provisions made by the Contractor to supply energy to the workforce, and ensure that fuel wood is not being collected. Department of Environment should enforce legislation which prohibits vegetation destruction.	Energy supplied by electric generator or other suitable source. Deforestation and resultant erosion controlled/reduced

Air pollution	Observations should be made on the level of dust generated during construction activities by the Department of Environment and Developer.	Deposition of dust on surfaces should decrease with increased dampening
Ground water quality	Department of Water should regularly check water quality in the area to ascertain the pollution levels	Pollution of water resources monitored/detected early and remedial measures taken on time
Landscape	The Developer should make visual inspection of earth works to ensure that excessive excavation is not being carried out. Temporary screening may be appropriate in some cases.	Landscape alteration reduced to a minimum
Complaints	The Developer should inspect the record of complaints made by local residents, to be kept by the Contractor, and should check that action is taken quickly and that the number of complaints does not rise significantly.	Number of complaints decreases

9.4, DECOMMISIONING PHASE (PROSPECTING CLOSURE AND REHABILITATION)

Direct impacts: Typically, the major social impacts associated with the decommissioning phase are linked to the loss of jobs and associated income. This has implications for the households who are directly affected, the communities within which they live. If infrastructures are removed after a 3/5 year period, the site will be returned to its natural state.

- **Rehabilitation of the physical environment** – The physical environment will benefit from the closure of the mine since the site will be restored to its natural state.
- **Loss of employment** - Given the relatively large number of people employed during the operational phase, the decommissioning of the facility has the potential to have a negative social impact on the local community.

Indirect impacts: No indirect impacts are anticipated from the decommissioning phase of the proposed development.

The following mitigation measures are recommended:

All structures and infrastructure associated with the proposed facility should be dismantled and transported off-site on decommissioning;

- All damaged areas shall be rehabilitated upon completion of the contract.
- Re-vegetation of the disturbed site is aimed at approximating as near as possible the natural vegetative conditions prevailing prior to construction.
- All natural areas impacted during prospecting must be rehabilitated with locally indigenous grasses typical of the representative botanical unit.
- Rehabilitation must take place in a phased approach as soon as possible.
- Rehabilitation process must make use of species indigenous to the area. Seeds from surrounding seed banks can be used for re-seeding.
- Rehabilitation must be executed in such a manner that surface run-off will not cause erosion of disturbed areas.
- Planting of indigenous tree species in areas not to be cultivated or built on must be encouraged.

Demarcation of prospecting area

- All plants not interfering with prospecting operations shall be left undisturbed clearly marked and indicated on the site plan.
- The prospecting area must be well demarcated and no construction activities must be allowed outside of this demarcated footprint.

- Vegetation removal must be phased in order to reduce impact of construction.
- Site office and laydown areas must be clearly demarcated and no encroachment must occur beyond demarcated areas.
- Strict and regular auditing of prospecting process to ensure containment of the prospecting and laydown areas.
- Soils must be kept free of petrochemical solutions that may be kept on site during prospecting spillage can result in a loss of soil functionality thus limiting the re-establishment of flora.

9.5 CONCLUSION

There are potential negative impacts as discussed in the ESMP but these are all going to be of low impact as the EMP provisions will be adhered to. Serious environmental degradation is likely to be soil, water, and flora and fauna pollution/damage, from oil/fuel spillages. Fire can also cause havoc to property, employees and the public if precautionary measures are not employed. All non-conformances identified during inspections will be recorded and site instruction book/forms will be used to outline the corrective measures to be employed, responsible persons, resources required and timeframe. Progress on implantation of corrective measures will be discussed during morning meetings. These will also be highlighted in the monthly reports.

The positive impacts of the establishment are more prominent considering that level of employment is low and poverty levels are on the rise. Moreover, the water demands are constantly increasing due to influx of people from rural areas to urban areas to seek for employment. The contractor is therefore committed to working hand in hand with all relevant stakeholders to make this project a success.

CHAPTER 10; EMERGENCY RESPONSE ACTION PLAN

10.1 INTRODUCTION

This chapter describes the purpose of this Emergency Response Action Plan (ERAP). It describes the extent of alluvial prospecting, hazard area, identifies those responsible at the plant operation and implementation of the ERAP as well as describing the procedures for training staff, reviewing, testing and updating the plan. The purpose of this ERAP is primarily to safeguard lives and secondarily to reduce property damage of local communities who live in the area surrounding Matsoku and Qaqa River.

10.1.1 Alluvial Prospecting Hazard Area

For purposes of this report, hazard area is that area that would suddenly get affected negatively if there is failure in operation activities. Field surveys coupled with pre-failure analysis were performed to determine the extent of alluvial prospecting in an event that drilling or any other activity fails. This exercise revealed that the proposed area is far away from the villagers. Therefore, the probability of activities causing harm to the villagers is very low. For employees Protective equipment will always be available to reduce harm.

10.1.2 Responsibility and Authority

The operations manager employed by the Big Blue Mining Pty ltd will be the ERAP Coordinator and will have an overall responsibility for implementing the ERAP plans for alluvial prospecting including training staff and periodic reviewing, testing and updating of the plan. A designated mobile telephone number for the operation manager will be provided as an emergency contact telephone number and circulated to all staff and the public by displaying at strategic places including notice boards. The operation manager will regularly observe the alluvial prospecting plant and camp sites. Inspections and routine maintenance would be done three times a year.

Operation manager will be on 24hrs call. Specifically, the operation manager will be responsible for the following:

- Ensure the ERAP is reviewed and updated annually and copies of the revised ERAP are distributed to all concern.
- Serving as the primary contact person responsible for coordination of all emergency actions.
- Preparing emergency management personnel for possible evacuations when required.
- Determining the emergency level as soon as an emergency event is observed or reported.
- Notifying the District Disaster Management Authority
- Providing updates of the situation to the relevant authorities in making timely and accurate decisions regarding warnings and evacuation.

10.1.3 IDENTIFICATION OF EMERGENCY

Identification of an emergency involves events or conditions that indicate an emergency. This is followed by defining the levels of emergency and deciding how staff and the general public will be notified in the event of an emergency. Identification of danger zone based on an assessment of the risks, is prepared by explosive supervisor for each shot-firing operation at the plant and camp site to ensure that, so far it is reasonably practicably, when such shot-firing occurs it will not give rise to danger.

The operation manager and his team shall pay particular attention to; indicators of a potential drilling failure which include:

- Excessive vibrations
- Excessive air blast
- Excessive noise

10.4 NOTIFICATION GUIDELINES

The responsibility for notification of staff, the public and relevant authorities will lay with the operation manager.

10.4.1 Emergency preparedness and respond procedures

The Contractor`s ECO (Environmental Control Officer) will keep the record of all the responses to emergency situations. This records are important for tracking the contractor`s preparedness in addressing all types of emergencies on site.

10.4.2 Site inspection report

The record of all site inspections is kept for assisting management to track performance on this issue. Site inspection are undertaken by ECO and the EM. Site inspections are taken daily otherwise at frequency to be agreed with the engineer depending on the level of compliance. The site inspection record are kept in the field note books or completed checklist enlisting environmental components and status by dates.

The site inspection reports are requisite for preparation of monthly report, where required, photographs should enhance site inspections.

10.4.3 Environmental Control Officer Report

Environmental Control Officer Report are a record of what ESMP specifications were attended to on monthly basis.

10.4.4 Auditing reports

The project manager will decide on the frequency of environmental audit and who should take it. It is proposed to undertake take environmental audits at the end of the project component. The internal audits are taken by the Engineer`s Environmental Monitored (EM). The external audit is undertaken by independent Environmental Expect.

10.5 TERMINATION

Whenever the ERAP has been activated, an emergency level has been declared, all ERAP actions have been completed, and the emergency is over, the ERAP operations will eventually have to be terminated. The operation manager, in liaison with District Disaster Management Authority will be responsible for terminating ERAP operations and relaying this decision to local authorities.

CHAPTER 11; CONCLUSIONS AND RECOMMENDATIONS

11.1 INTRODUCTION

The Environmental and Social Impact Assessment is a key to management of environmental impacts to the receiving environment at camp and prospecting site. Conclusions and recommendations are drawn from this ESIA and ESMP preparation and identification of key issues and are shown below.

11.2 CONCLUSIONS

Conclusions drawn from the ESIA and EMP preparation are:

- Likely Negative project impacts to be realized at the prospecting site will cause serious environmental effects if are not addressed;
- Project likely accrued benefits will enhance project viability;
- The Environmental Control Officer of the prospecting site is essential for ensuring compliance to ESMP specifications/guidelines;
- Adherence to ESMP implementation by the contractor/s ensures prevention of environmental degradation at prospecting site and peripheral environment;
- In order to ensure compliance to ESMP, the services of the Environmental Control Officer and Community Liaison Officer are essential;
- In order to ensure compliance to health and safety aspects in the ESMP, the services of the Health and Safety Office are essential.
- Environmental Officer will ensure that water is treated before it is discharged into the Environment

11.3 RECOMMENDATIONS

The specific recommendations for the successful ESMP compliance for Alluvial Prospecting Project Development are:

- Reduction and control of noise levels to minimize any disruption to the living conditions of birds.
- Environmental control at the prospecting plant is an essential and an integral part of ESMP compliance and it is recommended that the contractor/s should adhere to its specifications and guidelines for ensuring development is in harmony with the existing environment;
- It is important that stakeholder such as local communities are consulted and kept informed of implementation progress.
- All environmental issues should be attended to and be addressed without any delay.
- Enforcement of ESMP compliance by the Engineer and Contractor is recommended;
- It is recommend the Contractor hires an Environmental Control Officer and Community Liaison Officer for ensuring compliance to ESMP compliance at both plant and camp site and monitor water up and down the stream to ensure clean and safe water disposal.

- We recommend the Contractor hires a Health and Safety Officer for ensuring accidents prevention at the prospecting plant and camp site;

We recommend inclusion of Environmental and Social Impact Assessment clauses or the ESMP in all contracts for compliance to ESMP.

CHAPTER 12; LIST OF ENVIRONMENTAL IMPACT ASSESSMENT REPORT PREPARERS

For this assignment, a multi-disciplinary, responsive and effective Project Consultancy Team comprised of the following team.

Project Consultancy Team

NAME	DESIGNATION	TASK/RESPONSIBILITY
SELLOANE SEPHOKO	ENVIRONMENTAL AND HYDROLOGIST SPECIALIST	Environmental and Hydrological Impacts Assessment
DAVID BORMANN	MINING SPECIALIST	Specialist in mine and rock Engineering
-	SURVEYOR	Field studies including land use planning, changes and impacts, and mapping.
DIRK VENTER	GEOLOGIST	-

REFERENCES

Government of Lesotho (2007). Lesotho Water and Sanitation Policy, 2007 and IWRM Strategy. Prepared by L. Molapo for the Government of Lesotho.

Government of Lesotho (2001) http://www.ecs.co.sz/env_leg_lesothoenvpolicy.htm
Government of Lesotho. 2008. Environment Act No 10 of 2008, Government Printer, Maseru

Lesotho Government Printers. 2010. The Land Act 2010

Government of Lesotho. 2008. Environment Act No 10 of 2008, Government Printer, Maseru

National Environment Secretariat. 2000. Biological Diversity in Lesotho.

BASIC ASSESSMENT REPORT AND ENVIRONMENTAL MANAGEMENT PROGGRAMME REPORT THE PROPOSED DIAMONDS ALLUVIAL AND DIAMONDS GENERAL MINING PERMIT NEAR WINDSORTON ON A CERTAIN PORTION OF 5 HECTARES ON PORTION 7 (OSKAMP) OF THE FARM SLYPKLIP SOUTH ESTATE 36; REGISTRATION DIVISION: KIMBERLEY, NORTHERN CAPE PROVINCE. 2006. NC30/5/1/3/2/10529MP

LESOTHO HIGHLAND DEVELOPMENT AUTHORITY. 2007. Annual Flow Releases In stream Flow Requirement (IRF) Implementation and Monitoring. Report no.7

UNDP Reports:

DP/UN/ LES- 73-021/1

DP/UN/LES- 71- 503/8

DP/UN/LES- 73-021/9

Annexes

Chief approval letter

Public gathering registration list

Geological map

Cvs of report preparers

Company documents

Mabitso a sechaba se hlolang pitsong

51	Kente	Lesesa	-
52	Lebamang	Mathaba	56723188
53	Ntiga	phosa	-
54	Sekete	Tsoen	57061655
55	L'thoko	Ramosito	57332208
56	Motlatsi	Tlatho	
57	Molemoli	Rakoboboa	57326253
58	Sekoba	Khaoli	51600271
59	Seabata	Thatho	-
60	Leoma	Malimabe	57179860
61	Malebaleba	Mathaba	58466067
62	Sello	Ramosito	-
63	Ekefsang	Mathaba	59131611
64	Khotso	phosa	-
65	Kapoko	phosa	59789033
66	Tebello	Mapalane	59441020
67	phoka	Mathaba	57910714
68	Malitse	Mapalane	56609946
69	Jeremane	Makhalanyane	51898643
70	Lefa	lesiea	53526441
71	sehloho	Tlolotlolo	57101485
72	Ntjapeli	lesesa	59185715
73	Limpho	Berang	57079024
74	Busang	Tsoen	-
75	Mangaka	Tsoen	56068713
76	Malekiba	lesesa	50183606
77	Domozonke	Tsoen	56090416
78	Matsitso	Tsoen	56276981
79	Makhethang	Malimabe	59518575
80	Matsebang	Letsiela	59558541
81	Makatleho	Pofane	-

09/09/2019

Pitso Ha Manyakane le Mahateng ha Letsielo, Ha Liramong le Lonokong Matsoku (Mokhotlong le Leribe)

Batlileng Pitsong

1. Lebamang Mathaba Morena Hamanyakane
2. Mohlabi Mapalong Morena Ha Letsielo
3. Kente Lesesa Morena Ha Liramong
4. Sebetoane Kobeli Morena Linokong
5. Montoeli Bereng ED ea phepheng Seate J01 Councilor
6. 'Maemeli Makhalanyane ED ea mahateng le Lonokong Matsoku C01 (Leribe)

	Mabitso a sechaba se teng Pitsong	Lisuomoro tsa mehala
1	Mohlabi Mapalane	57774140
2	Maemeli Makhalanyane (mocanselara C01)	59987518
3	Tsohleho Ramosito	-
4	Chokotsa Mokoma	-
5	Thabonyana Mathaba	57330306
6	Ramosito Ramosito	50107756
7	Thulang Lehlakametsa	56093391
8	Matamo Mathaba	56145426
9	Chamani Mapalane	-
10	Makholela Mathaba	57559007
11	Mothusi Mapokoane	59498638
12	Malisebo Malimabe	-
13	Paballo Letsielo	-
14	Ntabijane Sekesa	-
15	Moroma Pofane	57220724
16	Mofeli Letsoso	53398733
17	Masoai Moshela	53308280
18	Bothata Lesesa	53308280

MOTSE OA MAHATENG
HA MANYAKANE
2019-09-09
MAPHOLANENG
TLOKOENG - MOKHOTLONG

	Mabitso a sechaba		Lenomoro tsa mohala
19	Masithembiso	Tsoeu	56120384
20	Mathiokomelo	Mathaba	57172128
21	Maatang	Thatho	57336036
22	Malitaboho	Mathaba	
23	Marelabohile	Mathaba	
24	Leato	Tsoeu	53648717
25	Moahetsi	Tsoeu	56841819
26	Thuso	Lesasa	57651849
27	Thabang	Tsoeu	57222929
28	Mozamo	Hlakahane	57402510
29	Teme	Lesesa	
30	Napo	Ramositso	59406324
31	Tseki	Nkhotho	56127764
32	Montse	Lehlakametsa	—
33	Tsokolo	Tsoeu	58660587
34	Lekhoela	Tsoeu	56347917
35	Rolebohile	Tsoeu	58663391
36	Leato	Mathaba	—
37	Mosutuoa	malimabe	
38	Mohau	Ramositso	59342860
39	Lehlohonolo	Sodane	53011489
40	Tsebalatso	Mathaba	57330328
41	Motseki	Motseki	—
42	Shoalane	Taolana	57193959
43	Mosehle	Lesasa	50935969
44	Relithunya	Tsoeu	59103805
45	Khosi	Tsoeu	58718800
46	Tankiso	Tsoeu	56038494
47	Tsepo	Tsoeu	50906947
48	Ekhabang	Thatho	57933360
49	Kuyane	Mosefane	57880074

	Mabitso a sechaba	Linomoro tsa mohala
50	Moosa Mohammed	50715785

RAMOTSE OA MAHATENG
HA MANYAKANE
Lebamang Mathaba
2019 -09- 09
MAPHOLANENG
TLOKOENG - MOKHOTLONG

Ofising ea morena oa
Sehlooho Malingoaneng

Khotso morena kalengolo lena keo tsibisa hore baeti bane baneng ba Tlilo epa Pitso baile ba Teng ba atlehile hoetsoara Mona Moreneng Ha Manyakane kahona ba Buisane le Sechaba Sesengata haholo

Kea Leboha
L. Mathaba

KINGDOM OF LESOTHO

THE COMPANIES ACT 2011

CERTIFICATE OF INCORPORATION

Reg Number. **66903**
TIN Number. **200087822-9**

I hereby certify that:

BIG BLUE MINING (PTY) LTD

was incorporated under the Companies Act 2011 as a private company on **09 April 2019** and that the liability of the shareholders thereof is limited.

REGISTRAR OF COMPANIES LESOTHO

Registrar of Companies

10 April 2019

The validation code for this certificate is LESOTHO-86620284. To check the validity of this certificate, go to http://www.companies.org.ls/lesotho-companies-br/service/create.html?service=verifyDocumentCode and enter the validation code.

Dustin Chase Elliott

Rivermead Manor
ID 8502055274085
Kokstad, 4700
phone: (039) 7271976
cell: 0833042730
concrete@dorningcrushers.co.za

PERSONAL

Date of Birth: February 5, 1985
Place of Birth: Port Shepstone, Kwa Zulu Natal, South Africa
Citizenship: South African

SKILLS/ Interests

Language - Fluent in English, intermediate Xhosa and Zulu

Personal Interests – Motocross(Dirt biking), Aviation, Politics, Food

EMPLOYMENT

First Company, Alliance Group
2006 -2008

Business Development Manager

- Commercial and Industrial Property Sales
- Leasing
- Property Auction
- Online Advertising and Sales

Second Corporation, Jorgensen Turner (London UK)
2009(One year Working Visa)

Property Broker

- Property Sales and Leasing

Third Company, EG Elliott
2009-2012

Commercial and Industrial Property Broker

- Property Sales and Leasing

Forth Company, Dorning Crushers
2012-Present

Mine Manager (Current)

- Performance monitoring and measuring
- Mining production management
- Examine and sign off all daily and weekly operational reports
- Liaise with the Department of Minerals and Resources
- Maintain safe working environment for employees
- Implementing health, safety and environmental policy
- Manage Readymix operation
- Manage Hot asphalt operation

EDUCATION

IMM Graduate School of Marketing
Diploma in Marketing
2008 Academic year

Real Estate NQF4
Full status Estate Agent
February 2011

Mining Qualification Authority
Competent person A, The examination, making safe and declaring safe of surface mines, quarries dumps and stock piles.

P O Box 649
Umtentweni
4235

039-6950654 (W)
082 444 6883 (C)

David Bormann

Objective

Quality has always been my objective

Experience

August 2017 - Current Pondo Civils (Pty) Ltd Port Shepstone

Consulting Services

- Consult on company's active projects

June 2004 - Current Pondo Plant & Civils Port Shepstone

Contracts Manager

- Oversee the company's active projects
- Daily site visits and quality control
- Estimating
- Quantity Surveying
- Procurement of Work
- Attending Site Meetings and Inspections
- Compiling Progress Reports and Updates
- Compiling Cash Flow Forecasts and Updates
- Adherence to Project Specifications
- Adherence to GCC
- Adhering to Occupational Health & Safety Act on site

Aug 2003 – Jun 2004 Mgazi Plant & Civils
Umtentweni

Contracts Manager

- Oversee the company's active projects
- Daily site visits and quality control
- Estimating
- Quantity Surveying
- Procurement of Work
- Attending Site Meetings and Inspections
- Compiling Progress Reports and Updates
- Compiling Cash Flow Forecasts and Updates
- Adherence to Project Specifications
- Adherence to GCC
- Adhering to Occupational Health & Safety Act on site

Jan 2002 – Jul 2003 Westcon Plant & Civils Port Shepstone

Contracts Manager

- Oversee the company's active projects
- Daily site visits and quality control
- Estimating
- Quantity Surveying
- Procurement of Work
- Attending Site Meetings and Inspections
- Compiling Progress Reports and Updates

- Compiling Cash Flow Forecasts and Updates
- Adherence to Project Specifications
- Adherence to GCC
- Adhering to Occupational Health & Safety Act on site

Jan 1999 – Dec 2001 Elliott Plant Hire Marburg

Contracts Manager

- Oversee the company's active projects
- Daily site visits and quality control
- Estimating
- Quantity Surveying
- Procurement of Work
- Attending Site Meetings and Inspections
- Compiling Progress Reports and Updates
- Compiling Cash Flow Forecasts and Updates
- Adherence to Project Specifications
- Adherence to GCC
- Adhering to Occupational Health & Safety Act on site

Jan 1998 – Dec 1998 MR Technical Services Port Shepstone

Site Administrator

In the construction of 6 Sports Fields, 4 Schools, 5 Access Roads, and 5 Community Halls duties carried out included

- Setting up programmes for emerging contractors and assisting them to adhere to the project of works
- Setting up building lines and levels according to supplied drawings
- Quality control
- Cash flows and adhering to set budgets
- Measurements and payment certification
- Daily site visits and inspections
- Stock control

Education

1989–1993 Port Shepstone High School Port Shepstone
Matriculated

Computer Literate

Have a good working knowledge of MS Excel, MS Word, and e-mail

References

Available Upon Request

PROJECTS COMPLETED UNDER THE SUPERVISION OF Mr. DE BORMANN

No	Contract Name	Work Completed	Employer	Consulting Engineer	Nature of Work	Contract Value
1	Bontrand to Mt Horeb	2003	Alfred Nzo District Municipality	Masuku Dube Tifflin	Access Road	R 1,872,000.00
2	Luphongolo Access Road	2003	Umzimkulu Local Municipality	Umzimkulu Local Municipality	Access Road	R 1,100,000.00
3	Madwakazana Access Road	2004	OR Tambo District Municipality	Loyiso Consultants	Access Road	R 2,950,000.00
4	Xhukula Access Road	2004	OR Tambo District Municipality	Loyiso Consultants	Access Road	R 1,515,000.00
5	Mandluntsha Access Road	2005	Mbhashe Municipality	Loyiso Consultants	Access Road	R 615,000.00
6	Ntabankulu Internal Roads	2005	Ntabankulu Local Municipality	Ntabankulu Local Municipality	Concrete Lined Trapezoidal Drain	R 850,000.00
7	Dambeni Access Road	2005	OR Tambo District Municipality	Loyiso Consultants	Portal Culvert with Concrete Wing Walls	R 150,000.00
8	Makhenkesi Access Road	2005	KSD Municipality	Loyiso Consultants	Access Road	R 1,150,000.00
9	Malubelube Access Road	2006	Alfred Nzo District Municipality	Africon	Access Road	R 2,005,000.00
10	Mazizini Access Road & Drainage	2006	Alfred Nzo District Municipality	Africon	Access Road	R 3,450,000.00
11	Langkloof Gravel Roads	2007	Alfred Nzo District Municipality	Masuku Dube Tifflin	Access Road	R 5,700,000.00
12	Mt Ayliff Hospital Access Road	2007	Alfred Nzo District Municipality	Jean Kotze & Associates	Access Road	R 2,450,000.00
13	Regravelling of DR08067	2008	Department of Roads & Transport	UWP Consulting	Access Road	R 6,192,000.00
14	Horse Shoe Road	2008	Greater Kokstad Municipality	Enacu / Scientific Roets JV	Access Road	R 5,084,525.00
15	Upgrade of Shayamoya Taxi Route	2009	Greater Kokstad Municipality	MDT / Eyethu Engineers JV	Access Road	R 10,057,670.94
16	Rehabilitation of Kokstad Rds - Phase 3	2011	Greater Kokstad Municipality	Eyethu Engineers	Access Road	R 15,744,938.30
17	Qoboshane Bridge & Approach Roads	2011	Emalahleni Local Municipality	Eyethu Engineers	Bridge & Access Roads	R 5,686,315.44
18	Cedarville Internal Streets & Stormwater	2011	Matatiele Local Municipality	Jean Kotze & Associates	Access Road	R 5,333,658.28
19	Provision of Infrastructure to Home 2010 in Bhongweni	2012	Greater Kokstad Municipality	Eyethu Engineers	Access Road	R 1,470,598.29
20	Bhewula Access Road	2013	Vulamehlo Local Municipality	Impande Engineers (PTY) Ltd	Access Road	R 900,000.00
21	Cimeni Access Road	2013	Umzumbe Municipality	Vuba Imagineers	Access Road	R 3,900,000.00
22	Shayamoya Landfill Site - Closure & Rehabilitation	2014	Greater Kokstad Municipality	TGC Engineers	Landfill	R 5,643,537.27
23	Gqolweni Roads	2014	Umdoni Municipality	SSI Engineers	Access Road	R 8,904,735.57
24	Rehabilitation of Kokstad Rds - Phase 5	2015	Greater Kokstad Municipality	Enacu / Scientific Roets JV	Access Road	R 15,740,060.07
25	UGU Disaster Management Centre - Phase 1	2016	UGU District Municipality	VHB & Associates	External works	R 2,197,071.00
26	Albert Road Bridge	2016	Ray Nkonyeni Municipality	Kantey & Templar	Bridge & Access Roads	R 2,076,000.00
27	Oatlands Landfill Site	2017	Leomat Construction	JG Afrika	Emergency Liner & Associated Works	R 1,338,005.47
28	Lower Illovo Business Park	2018	Industry International		Roads Upgrade, Concrete Walkways	R 2,437,412.94
29	Rehabilitation of Shoprite Parking Idutywa	Current	Willkru Construction (Pty) Ltd	Cousins Steel International	Rehabilitation of Shoprite Parking	R 1,724,602.81

METSOTSO EA KOPANO

LETSATSI La 09 –Loetse – 2019

NAKO: 13:15

SEBAKA SAKA SA PITSO: MOTSENG HA `Manyakane

LENANE LA BA NKILENG KAROLO: 105

Ba etelletseng pele pitso ke ba hlahang Big Blue Mining (Pty) Ltd le Integrated Environmental Solutions (Pty) Ltd; mme ke ba latelang:

1. Selloane Sephoko: setsibi sa Bophelo le Tikoloho e bolokehileng
2. Kananelo Ntabejana: ea hlophisang li kopano le ho tataisa mokonteraka
3. Lebamang Mathaba: Morena Ha Manyakane
4. Mohlabi Mapalang: Morena Ha Letsielo
5. Kente Lesesa: Morena Liramong
6. Mantoeli Bereng: "Mocanselara" ED Phepheng Seate J01
7. 'Maemeli Makhalanyane: "Moncanselara" ED ea Mahateng le Linokong Matsoku C01

Integrated Environmental Solutions (Pty) Ltd ke 'company' e thusang mokonteraka ho fumana litokelo tsa lirafshoa mme tsona li tlo sebelisoa lithlathlobong tsa ho hlahloba/rafa taemane. Mme ho latela melao ea Lesotho, ho lateloa metati ea ho tsebisa ba nang le kobo ea bohali morerong ona.

Sepheo oa kopano

Sepheo sa kopane ena ke ho kopana le sechaba se hloailoeng se ka angoa ke tsebetso ena, ba busi ba puso ea libaka le borena; hoba tsebisa ka morero oa ho rafshoa hoa taemane e fumanehang hona sebakeng seo sa Mokhotlong le Leribe. Sepheo se seng ke ho shebisana le babusi ka sebaka se hloauoeng se na le lirafshoa tse hlokahalang ho nyollla moruo oa Lesotho.

Liteboho ka morena oa sebaka (Lebamang Matheba), ho qala pitso ka thapelo, le ho hlahisa/ hlalosa baeti sechabeng.

NTLHA-KHOLO EA PELE

- Selelekela ka "company" ea Big Blue Mining, le merero ea bona sebakeng seo sa Matsoku

- Lekhotla la puso ea libaka le sechaba li tsebisoe ka morero oa ho hlahloba mo bo teng ba taemane ka hara noka ea Matsoku le bohlokoa ba ho nka karolo ele ba nang le kobo ea bohali.

NTLHA-KHOLO EA BOBELI

- Ho tsebisa sechaba le lekhotla la puso ea sechaba le borena ka limpe le li ntle tse ka tlisoang ke hlahlobo eo sechabeng le tikolohong eo se phelang ho oona.

NTLHA-KHOLO EA BORARO

- Ho tsebisa sechaba le lekhotla la puso ea libaka le borena ka ho thusa mokonteraka ho fumana litokelo tsa lirafshoa ho lekala le ikarabellang eleng la Merafo mmoho le la Tikiloho, Bochaba le Bohahlauli.

LIPOTSO TSE HLAHILENG KOPANONG

EA BOTSITSENG: Ramosito Ramosito, noka ee ea Matsoku le tlo sebetsa kahara oona? Le tlo sebelisa mechine efeng?

Sechaba sa moo u se etsetsang? Lithloko tsa sechaba ke tsela le “network”

Tebello Mapalane: mokonteraka o tla ntsetsa tsela pele kapa o tlo fella moo a tlo sebetsa feela?

Lefulesele: re le sechaba sa mona re kopa le phethahatse tsebetso, mme le hire sechaba sa metse ena aka amehang ke tsebetso?

Moo mokonteraka u tlo lula teng bo mme ba metse en aba teng hob a phehela le hob a hloekisetsa matlo a bona.

Bothata Lesesa: Re kopa mokonteraka a sebetse le sechaba sena sa mona.

Likarabo ka Knanelo Ntabejane e le ea emetseng mokonteraka

O ile a hlalosa hore ba batlo sebelitsa mabopong a noka eseng ka hare ho noka. Tsela ke thloko ea pele le ho mokonteraka hore thepa ea hae e tle e fihle moo a lo sebelletsa teng, ka mantsoe ana taba ea tsela ke thloko ho sechaba le ho mokonteraka.

Mokonterata o tlo hira sechaba sa metseng mme batho bohle ekaba ba nang le litsebo tse itseng le ba senang litsebo bat le ba ingolise mareneng a bona hobane mokonterata ha a hira o tlo qala hara metse ena pele mme ha a sa fumane litsebo tseo a li hlokang ke hona aka shebang nqa tse ling.

Kananelo Ntabejana o ile a hlalosetsa sechaba ho latela methati e nepahetseng ha mmoho le sechaba ho fumana katleho qetellong, mme ba tsepisa sechaba ho sebetsa ha mmoho le Big Blue Mining ho phethahatsa tsebetso eo.

Selloane sephoko (ea phethahatsang paballo ea tikoloho le paballo ea sechaba ha mokonteraka a etsa tsebetso)

Mme ena o ile a bua le sechaba sebakeng sa tikoloho e bolokehileng, mme a bua le sechaba le ho se kopa hore ha mmoho le mokonteraka ba baballe tikoloho le lihlololiloeng. O ille a ba botsa aka limela tse teng le liphoofolo tse hlokang ho baballoa mme tse ka amehang ke morero ona.

O ile a boetse a bolella sechaba ka li mpe le lintle tse ka tlisoang ke tsebetso ena sechabeng le tikolohong

Mme sechaba se ile sa li bolela liphoofolo tse teng ka hara noka ea Matsoku mme ba lumela hore lithlatlobo li tsoele pele.

Big Blue Mining (Pty) ltd e tsepisitse ho sebetsa mmoho le sechaba ho baballa tikoloho.

Thlakiso ka Morena oa sebaka

Ha eba hona le masimi a ka amehang, beng ba on aba tle ba tselisoe ka toka.

Rea le lamella ka tsebetso ena mme re kopa le seke la re lukela metsi

Likopo tsa sechaba

1. Tsela
2. Litora tsa “network”
3. Ho hira bo mme ba hloekisang le ho pheha
4. Ho hiroe sechaba sena sa mona

Morena ao sebaka o ile a kopa thapelo mme a qhala pitso ka hora ea bone ha e fetile ka metsotso e mashome a mane (16:40).

Curriculum Vitae

PERSONAL DETAILS	
Name:	Ms Sephoko Selloane
Gender:	Female
Nationality:	Mosotho
Date of birth:	24 April 1991
Passport number:	RB 162348
Language:	Sesotho and English
Contact details:	
Phone:	+266 59747771 / +266 68864138
Email:	sephoko4@gmail.com

BACKGROUND

The CO-Founder and Managing Director at Integrated Environmental Solutions (Pty)(Ltd). Previously graduated at The National University of Lesotho in Bachelor of Science in Environmental Health which has given me skills **on Environmental and Occupational Health and Safety, Waste management, Water quality Control, Air quality control, Industrial effluent management and food hygiene.**

As an Environmental Health, Safety and Quality Officer I:

- Understand Environmental Legislation, Environmental Management Plans (EMPs), National Water Act, international environmental act and all other environmental legislations including international legislations like ISO 140001.
- Have knowledge on accident investigation and risk analysis.

- Have Good knowledge in writing Environmental Impacts Assessment reports, Basic Assessment reports, Water Use licenses, Hazardous and General Waste management, Environmental remediation programs, EMPs and Procedures
- Have Good knowledge in Environmental Auditing and Controls.
- Knowledge of Occupational Health and Safety
- Good knowledge of Environmental Health including food hygiene, air quality, communicable disease, and industrial occupational hygiene management

Professional focus: Environmental Health / Environmental Management/ Public Health

- Environmental Impact Assessment
- Environmental Toxicology
- Environmental Policy
- Occupational Health and Safety
- Solid & Hazardous waste management
- Environmental Management Plans
- Good knowledge of Environmental Health including food hygiene, air quality, communicable disease, and industrial hygiene
- Water Supply & Sanitation
- Environmental Hazards & Disasters
- Disaster Risk Reduction occupational hygiene management

EDUCATION		
Year	Qualification	Institution
2010	COSC	Paray High School
2017	Bsc. Environmental Health	National University of Lesotho

Trainings and work experience

Year	Work details	Name of institution
May- August 2015	↙ Environmental and Occupational Health and Safety ↙ Environmental Impact Assessment and Social Impact Assessment ↙ Waste management ↙ Water quality Control ↙ Air quality control ↙ Industrial effluent management ↙ Food hygiene	Minister of Health (Thaba tseka District Health Management Team)
June 2015	Sanitation in Thaba Tseka primary schools ensuring compliance of in food standards	World Food Program
June 2017	Environmental Impact Assessment and Environmental Management Plans (EMPs) of different organizations and individuals.	Integrated Environmental Solutions Pty Ltd
April 2018	Environmental officer	Kholo development Pty Ltd
January 2019- present	Environmentalist	Keleli (Pty) Ltd

1. **Countries of work experience**

Country	dates ended
Lesotho	01/08/2015

2. **Languages (Scale of 1-5: 1= excellent, 5 = poor)**

Language	Speaking	Reading	Writing
Sesotho	1	1	1
English	1	1	1

ADDITIONAL SKILLS

Proficient in Microsoft word, Excel, power point

Working under pressure and meeting deadlines

Good interpersonal skills and management skills

Ability to achieve cultural change

PROFESSIONAL ACHIEVEMENTS

1. Occupational health and safety
2. Control of communicable diseases
3. Research project management
4. Environmental impact Assessment
5. Drainage system and Liquid waste management

References

Names	Occupation	Contacts

Professor Patrick Gwimbi	Lecture (N.U.L) and project manager at Integrated Environmental Solutions Pty Ltd	+266 63311012
Mrs T'saletseng Siimane	Lecture (N.U.L)	+266 58062546
Mr Phello Phera	Environmental Health Practitioner at Thaba tseka DHMT	+266 59589511
James Lesibana Lamola	Chairman kholo development	+27 659 365 839
Ts`eliso Ntabe	Managing director- Keleli Pty Ltd	+266 5888 8079

Certification

I, the undersigned, certify that to the best of my knowledge and belief, this CV correctly describes me, my qualifications, and my experience.

Furthermore, I understand that any willful misstatement described herein may lead to my disqualification or dismissal, if engaged.

Finally, I hereby confirm my availability to commence work as soon as I am needed.

Name of Candidate: Sephoko Sel1oane	
Signature 	**Date: 24 May 2018**

Dirk Venter

Profession:	Rock Engineering.
Education:	Matric Advanced Rock Engineering Certificate, University of the Witwatersrand 1991 Graduate Diploma in Engineering, University of the Witwatersrand 2000
Registrations/ Affiliations:	SANIRE

Specialisation: Rock Engineering, Support designs – Training of Strata Control and Support Crews. Managing Rock Engineering services Hazard identification, Risk Assessments, Underground as well as Open Pit Consulting, Designing training modules MQA Assessments and Moderations.

Expertise

I have been involved in the Mining and Rock Engineering field for the past 42 years. Some of the projects that I have been involved in during this time include the following.

Design and implementation of support systems on various mines.

Design of pillar system for the undermining of important surface structures for instance the Sappi and Carlton paper factories in the Springs area.

Was a member of the Industry working group at SRK Consulting to design and implement fibre re- enforced shotcrete on the mines.

Training and managing support crews on Oryx Mine whist still managing the Rock Engineering department.

Rock Engineering consulting on various hard rock mines.

Risk Assessments for the extraction of shaft pillars and the mining of high risk working places

Recommendations regarding mining of haulage pillars and shaft pillars when closing down.

I have been used as an outside Rock Engineering specialist after serious fatal accidents.

Training of mine personnel in Strata Control and basic Rock Engineering. (Anglo Mines – Koponang Great Noligwa and Tau Lekoa all Armgold/Freegold/Harmony Shafts.)

Training of mine personnel on "Fall of Ground" Unit Standards relative to their occupations as prescribed by the MQA.

Projects on Shaft Pillar Extractions (Leslie Mine, Bracken Mine, Orkney 2, 4, 5 and 3 Incline shafts and various Marievale and Grootvlei shafts.) I also assisted in a project on the proposed Nyala Shaft pillar extraction.

Assessment of candidates on Rock Related Unit standards. (MQA)

I have written training manuals for The Rock Strata training in Unit standard MnH-G 078 to be used on all the Harmony shafts. – I have also trained all their assessors to assess in this unit standard. – I have successfully presented these courses in Fanakalo to some crews where they had difficulty in understanding English.

Qualified MQA Assessor and MQA Moderator

Writer of Rock Engineering learning guides and Assessment guides for the MQA.

Member of TRG 3 (Rock Engineering) at the MQA.

Written Most of the New QCTO training Material for the MQA.

Appointed Rock Engineering Consultant for Kalgold Open pit mines, whilst being employed as Technical Coordinator (Manager for the group. As technical Coordinator I did all the open pit work as well as the geotechnical input for all the new exploration and new projects and mine designs.

I have trained Geotechnical Engineers in Turkey and Greece on open pits and underground mines in 2013.

Rock Engineering Consulting and drafting of COP's at various Open pit mines and quarries.

The open pit mines where I am doing consulting and are drafting their COP are:

Ixopo Quarries

Edendale Quarries

Dorning Crushers

Highveld Crusher

Crushco Crushers

Kalgold Mine mining Banded Ironstone formations.

Begane Quarry.

Ballito Chrushers

Blurock Quarry

Midmar Quarry

Raumix Quarries (Willows Rosslyn and Rossway)

Diamond Mines COP that I have drafted are:

West End Diamond mine

Triangle mining

De Kalk WHS

NDC New Diamond Corporation 7 Operations

DF Visser Delwery

Elhoeh

Fourie Diamonds

Nicus Delwery

Note: On most of these mines listed above I am doing the Slope instability COP training and well as most of the open pit mines slope stability training for instance the Unit Standard dealing with the identification and treatment of hazardous conditions on open pit mines.

I have also written most of the Open pits training material for the MQA where I currently serve as the facilitator for Rock Engineering and Strata Control

Employment Record

Current – Director – ROCK SSS Rock Engineering Consulting and Training Services.
Nov 2005 - 2010 Technical Coordinator (Technical Manager) for Harmony Group Mines
Was Appointed Rock Engineer for the Harmony open pit mine at Kalgold during this period.
2003 - 2005 ROCK SSS Training Consultant for Harmony Mines and Anglogold Ashanti.

1999 – 2003 SRK Consulting Engineers and Scientists – Principal Rock Engineer, and Rock Engineering Training Consultant.

1991 - 1999 Oryx Mine - Rock Engineering Consultant (D4 Post)

1985 - 1991 Grootvlei Mine - Rock Mechanics Officer to Rock Engineering Consultant.

1975- 1985 Kinross Mine. Leaner Official to Mine Overseer.

Publications: Application of Fibre re-enforced shotcrete on Oryx Mine – South African Institute of Mining and Metallurgy, which was subsequently published in May/ June 1998 edition of the Institutes Journal

Paper on the introduction of Intensive Care units on ARM - SANIRE Symposium 2002

AMM Paper on Pillar extraction 2 and 4 Shafts Harmony Mines

AMM Paper on the use of animations in Rock Strata Training of competent persons A & B

Languages: English, Afrikaans, Fanakalo

Key Experience: Rock Engineering

Rock Engineering Consulting work to Grootvlei, Marievale, West Rand Cons, Fairveiw Three Sisters and the old Samancor chrome mines in Steelpoort and Harmony's Kalgold open pit mine.

15 years Experience in Mines Rescue work. (Two Bravery Awards)

Manager in charge of Rock Engineering services and Support operations on various mines.

Numerical modelling techniques as used in Rock Engineering.

Classification of geotechnical areas, and strategies to reduce Rockfall and Rockburst in such areas.

Support design for underground workings.

Completed various Mandatory slope stability codes of practices codes for various open pit mines. (See list above)

I am currently doing open pit consulting work for the open pit mines listed in the previous bullet.

I have assisted in training Rock Engineers and Geotechnical Engineers in Turkey and Greece.

Hazard identification and Risk assessments.

Strata Control and basic Rock Engineering training to Mine personnel with special reference to the new Unit standards as prescribed by the MQA.

Rock Engineering related training of Managers and Mine Overseers in Harmony and Anglogold Ashanti Mines Impala Platinum, Cooke Operations and Northam Platinum Mines..

Open Pit Consulting work for Longi Mines in Sambia and the Congo

Open pit Consulting at Kalgold and Various other open pit mines.

Writing of all Kalgold's open pit rock related training Manuals as well as assisted many open pit mines with training manuals.

I have written to date 85 Rock Engineering learning packs for the MQA of which 9 are open pit related.

I have made training animations currently used at Harmony and Anglogold Ashanti mines, to assist in competent A & B training.

Assisted in Advanced Miners, Shift boss and Mine Overseers training at Harmony Mines.

I assisted with the new open pit QCTO qualifications in both underground and open pit mines.

I have assisted with the new QCTO training qualifications for the Strata Control Observer and Strata Control Officer.

Key Experience: Costing Projects

Controlling support contractor's work.

Support cost calculations.

Project Management and costing exercises for various new mining areas.

Open Pit Consulting and drafting of open pit mines slope stability COP's

Managing new mining projects.

Qualifications:

I have the following mining related qualifications:

Blasting certificate (No. S16275 –11 December 1978)

Mine Overseers Certificate (No. 9640 02 Nov 1981)

Rock Mechanics Practitioners Course 1986

Certificate in Rock Mechanics (No 157 21 April 1986)

Advanced Rock Engineering Certificate (No 6 18 Nov.1991)

Graduate diploma in Engineering (GDE) Wits University (1999)

Planning to convert GDE to MSc.

Three subjects passed on Coal Mines Rock Engineering certificate – outstanding 1 subject.

Certificate and Advanced Certificate in Mines Rescue

MQA Assessor MQA Registration No 111843 ETDP Registration No.– 581-PA-190402-0018

MQA Moderator – Registration No. 111843

Various Risk Assessment and Risk Management certificates

Awards

2 Bravery awards in mines rescue.

South African institute of Rock Engineers – Practitioners award in 2000

References: Manager at quarries where I currently consult plus DMR inspectors.

20TH September 2019

DIRECTOR

Department of Environment

Maseru 100

Lesotho

Dear Sir

RE: SUBMISSION OF ESIA STUDY REPORT ***FOR THE PROPOSED ALLUVIAL PROSPECTING PROJECT IN THE DISTRICT OF MOKHOTLONG AND LERIBE AT MATSOKU AND QAQA RIVER*** **MOKHOTLONG**

Integrated Environmental Solutions (Pty) Ltd hereby submit the above report on behalf of BIG BLUE MINING PTY ltd (proponent) for your consideration and approval. We confirm that this report has been done in accordance with relevant Environmental legislative provisions in Lesotho.

Yours Sincerely,

……

Selloane Sephoko

Integrated Environmental Solutions (Pty) Ltd