Environmental and Social Impact Assessment for the South Dune Extension

Base Titanium Limited, Kwale Mineral Sands Operation

19 January 2021

Project No.: 0432113

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Environmental and Social Impact Assessment for the South Dune Extension

Base Titanium Limited, Kwale Mineral Sands Operation

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Acronyms and Abbreviations

Name	Description
ALARP	As Low As Reasonably Practicable
DOSHS	Directorate of Occupational Safety and Health Services
EDFS	Enhanced Definitive Feasibility Study
EHS	Environmental, Health and Safety
EIA	Environmental Impact Assessment
EMCA	Environmental Management and Co-ordination Act
ERM	Environmental Resources Management
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
GDP	Gross Domestic Product
GoK	Government of Kenya
HMC	Heavy Mineral Concentrate
IFC	International Finance Corporation
IUCN	International Union for Conservation of Nature
KISCOL	Kwale International Sugar Company
MCP	Mine Closure Plan
MLC	Msambweni Liaison Committee
MPLC	Mining Project Liaison Committee
MSP	Mineral Separation Plant
NEMA	National Environment Management Authority
NOx	Nitrous Oxides
OSHA	Directorate enforces Occupational Safety and Health Act
PAP	Project Affected People
PM	Particulate Matter
PPE	Personal Protective Equipment
RAF	Resettlement Action Framework
RAP	Resettlement Action Plan
RGS	River Gauging Station
SEP	Stakeholder Engagement Plan
SML	Special Mining Lease
SMU	Soil Management Units
SO2	Sulphur Oxides
SPL	Special Prospecting Licence
THM	Total Heavy Minerals
TSF	Tailings Storage Facility

VOCs	Volatile Organic Compounds
WCP	Wet Concentrator Plant
WRA	Water Resources Authority
WRMA	Water Resources Management Authority

EXECUTIVE SUMMARY

Introduction to the Project

The current mineral resource mined by Base Titanium comprises two dunes that contain economically viable concentrations of heavy minerals. These two dunes, known as the Central and South Dunes, are separated by the Mukurumudzi River, on which the Mukurumudzi Dam has been built, and are located in the Mwaweche and Kidiani adjudication sections, respectively. The current SML (SML 23), measuring 1,661 hectares, is located within the overall Kwale Exploration Prospecting License (EPL 173) area of 88km^2 and is located approximately 50km to the south of Mombasa, and 10km inland from the Indian Ocean.

The Operation's original mine life was set at 13 years, running up until 2025. However, the mine life was later reduced to 2023 due to higher mining rates and the expansion of the Wet Concentrator Plant (WCP). To address the reduced mine life, Base commenced an exploration programme in the area outside of their existing mining lease area, including around the South Dune, to identify additional resources that could be economically mined. Economically viable mineral resources in an extension to the south dune, but outside of the current Special Mining License (SML) were identified. If approved for mining, the projected mine life would shift to December 2023.

The location of the South Dune Extension deposit, relative to the Central and South Dunes deposits is shown in Figure 2.1.

Base intends to expand their current mining activities to the South Dune extension, which is outside of their current SML, but within the area covered by their current Exploration License. Mining activities within the South Dune Extension will involve the relocation of existing Hydraulic Mining Units (HMUs) and establishing satellite workshops and supporting infrastructure such as slurry pipelines, to enable mining, handling of the ore, and pumping of the slurry (ore with water) to the Wet Concentrator Plant, where the mined ore is processed. Tailings slimes will be disposed of in the TSF basin, while the sand tails will be backfilled into previously mined out areas, before this is covered with topsoil and suitably rehabilitated.

The existing haul road will be used to transport the saleable products from the processing plant to the point of shipping. The existing Likoni Ship loading Facility will continue to be used by Base for exporting its ilmenite and rutile products, while zircon will be containerised and trucked to existing container facilities in the Port of Mombasa.

Project Activities

Construction Phase

The first phase of the project will involve the clearance of vegetation, and the separation and stockpiling of topsoil for use in the rehabilitation process. Site roads will need to be created to allow for clearing, as well as provide access for mining equipment that will need to be established during the site preparation phase. In addition to the 3 x HMUs that will need to be moved to the South Dune Extension, power lines, pump stations, and piping for water and ore slurry will need to be established.

Operations Phase

During the Operational Phase, the mine will be operated continuously (7 days a week, 24 hours a day on a 12-hour shift system). Operations in the South Dune extension are expected to commence in as early as Dec 2021 once mining in the current South Dune is completed. As areas are mined, mined-out areas will be rehabilitated and the mined-out areas in-filled by coarse tailings from the Processing Plant

and stockpiled topsoil. The conceptual mine work plan will be refined throughout the process, taking into consideration the environmental, health and safety, social, and labour considerations.

Decommissioning Phase

Mined out areas will be rehabilitated concurrently as mining progresses. The proposed project extension will increase the life of mine by around 13 months; after which, all infrastructure will be dismantled and removed. Machinery, steel, and dismantled materials will be sold, recycled where possible, or disposed of at licensed disposal sites. The South Dune Extension will then be closed in conformance with Base's existing Mine Closure Plan, which has been prepared for the site as a whole.

Summary of the Physical Environmental, Biological and Socio-Economic Baselines for the area to be potentially affected by the South Dune Extension

The current physical, biological and social baseline conditions are described below for the area of the South Dune Extension. An understanding of the baseline is important, as it provides for the conditions pre-mining, and hence serves as a benchmark to measure and monitor potential impacts (both positive and negative) as a result of mining activities, and against which rehabilitation efforts can be measured.

Key Physical Sensitivities

- The climate is largely hot and dry from January to April/ May and coolest in the period from June to August. Rainfall in the County is bi-modal, with short rains experienced between October and December, and long rains between March and May. This has implications for rehabilitation and air quality.
- Climate change is causing an average increase in temperatures and a decrease in precipitation, but also years of extensive droughts and intense precipitation leading to floods. These climate extremes pose risks to the mining operations, especially during intense rainfall that may lead to floods and the associated increase in topsoil erosion, potential mine pit wall collapse etc.
- Wind predominantly blows from the southwest. However, there is also a smaller north-eastern component.
- Currently, soils in most sections of the South Dune Extension have vegetation cover. The soil surface layer in the western section of the Dune is made up of sands or sandy loams, while the eastern end of the Dune, which forms the greater proportion of mineral sands, is made up of silt and clays, and is generally well-structured. The deeper horizons consist mainly of sandy loams or sandy clay loams in both sections. Detailed analysis of the mine reserve soil types indicates that the surficial sections are highly erodible when left exposed due to their dispersive nature, especially after mechanical disturbance. However, when left undisturbed over time, they stabilise and become more resistant.
- Wind direction has implications for especially noise and nuisance dust impacts to surrounding communities.
- Soils are erodible, and hence need to be carefully managed to prevent soil erosion, crusting and formation of preferential seepage pathways.
- The Mukurumudzi River is an important source of water for key ecosystem services including maintaining aquatic life, recharge of shallow wells and aquifers, and a habitat for a variety of vegetation species. The river is also a source of water for residents both for drinking and other household and agricultural activities.
- Several small streams arising from seepage and spring flows occur within the South Dune extension and are an important source of water for the downstream environment.
- Groundwater is a very significant component in water supply in Kwale County. Groundwater is widely available across the study area in a variety of shallow unconfined and deep semi-confined aquifers.
- Groundwater modelling shows that the aquifers are more sensitive to droughts than to over abstraction. However, modelling shows that these aquifers are quickly recharged by a good rainfall year.

Key Biodiversity Sensitivities

- Generally, the South Dune area falls within the East African Coastal Forests Biodiversity Hotspot zone, extending along the coastline from Somalia to Mozambique. Naturally, it supports various habitat types, but parts of it have historically been settled and as a result area fairly modified, thereby reducing its biodiversity.
- From a vegetation survey conducted in the South Dune extension, many vegetation species were found closer to the Buda Forest Reserve than other South Dune sections. Most of these species also represent a remnant patch of coastal forest. About 492 plant taxa were recorded, of which 34 were exotic, cultivated or naturalised species.
- Approximately 132 species of mammals have been recorded or are likely to occur in the general Kwale Mining Operations area. Most large mammals are, however, either no longer present within the project area or are confined to Shimba Hills. However, the area still supports a reasonable diversity of smaller mammals.
- From the biodiversity surveys, 207 bird species have been recorded within the greater Kwale region, including the protected forest reserves and areas surrounding the mine site. A total of 18 avifaunal species identified are on the IUCN Red List. From these, four species that are considered Near Threatened have been confirmed as present in the area, and a further three Endangered and two other Near Threatened species may potentially occur.
- Thirty-seven species of Amphibians are known from the broader area of the mine and its surroundings, and an extra four amphibian species from the northern coastal Tanzania are believed to occur in this area.
- Around 99 reptile species are known from the general area, including some from north-eastern Tanzania which may occur. Out of these, 41 species have been recorded on the mine site.

Key Socio-Economic Sensitivities

- The Kwale County population is young with 45% of all people in 2019 being aged 15 years and below, and 3.5% of the total population being above the age of 64 years. As such, just under half (49%) of the county population is considered to be economically inactive
- From the socio-economic data gathered during the Household Socio-economic Survey commissioned by Base, the demographic profile for the Project-affected households situated within the Mivumoni location is typically that of a developing country, in that it has a large base which narrows down with age, indicating high fertility rates and low life expectancy. This is partly due to the generally low health standards and standards of living, and high infant mortality rates
- Based on the Independent Socio-Economic Monitoring Report 2016, the percentage of males in all age groups is considered largely static across all the different surveys. On average there have not been any significant increases or decreases in the percentage of males in each age category. This strongly suggests that there has not been any major change in population trends related to resettlement.
- The average household size in the Mivomoni and Kinondo locations of the Msambweni sub-county as 8.1 persons per household. The average number of people per household has increased by one person per household, from the previous monitoring event.
- The RAP and 2011 monitoring survey included a count of all existing structures for each household. The pre-resettlement holdings are estimated at an average of 3.7 primary structures and 1.3 secondary structures per household. The 2011 monitoring survey shows a growth in both primary (30% increase) and secondary (25% increase) structures. This is generally attributed to the resettlement process and positive trends in the re-establishment, and likely further investment, in new household structures.
- The project area's main livelihood activity is subsistence and small-scale commercial agriculture. The products of such small-scale agriculture include: Poultry rearing, Cotton Planting, Bee Keeping and sorghum planting.
- Maximum adult education is an important indicator of community development and priorities. A review of the baseline surveys indicates that up until the 2016 monitoring survey it was reported that, on average, a third (30%) of all males have received no education, while the majority have only obtained primary level education. During the 2016 monitoring survey, it has been reported that between 10% and 12% of all males, aged 18 and above, have received no education, which is half the figure of the previous monitoring survey. It appears that this may be attributed to improved access to education, which is supported by the increase in percentage of males with some primary school education.
- The majority of the survey respondents indicated that malaria is the greatest health threat to their households, with most infections occurring between May and July. This fact was reasserted in the interviews at Msambweni Sub County Health Centre, which had the highest recorded malaria cases in the County, at these times. Typhoid, schistosomiasis (bilharzia), 'jiggers' (*Tunga penetrans* – sand fleas), and upper respiratory infections were some of the other illnesses reported during interviews. 'Jigger' infections, which are caused by sand flea larvae being deposited under toenails and in the feet' skin, are very common in the Project area, and cause much discomfort. There are several health facilities available within the area, including a health centre in Shimba Hills, a health centre in Kinondo, a dispensary in Mivumoni, and a district hospital in Msambweni. Most households in the Mivumoni location generally visit the Shimba Hills Health Centre, which provides a range of medical services, including family planning and childbirth, HIV/AIDs prevention and treatment, immunization, and general disease treatment. Staff at the Shimba Hills Health Centre confirmed that malaria prevalence was very high in the area and that STDs (including HIV/AIDS) infection rates are increasing significantly.
- In Msambweni district, about a quarter of the population has access to piped water schemes with an additional quarter relying on community boreholes and wells equipped with hand pumps. About a half of the district uses water from unclean sources and are exposed to the risk of contracting water-borne diseases.
- Households within the project area villages utilize a variety of water sources. Households located near the Mukurumudzi Dam collect water from the river and other natural water sources and government or NGO-donated boreholes. In most of the villages within which the South Dune and South Dune Extension falls, including Mivumoni, Magaoni, Mafisini, Zigira, Muhaka, Mwabungo, water is collected from ephemeral streams, natural springs, shallow wells, community boreholes or nearby swamps. Communities in these areas are therefore very vulnerable to water contamination. Water quality varies across the different areas, and while water drawn from boreholes generally does not require purification, several the natural springs and wells may need to be treated before consumption.
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Project Benefits

The Project will increase the current Life of Mine, thereby sustaining temporary and permanent jobs, the Corporate Social Responsibility (CSR) programmes Base has developed in the County of Kwale, and maintaining the indirect benefits to the economy through the procurement of local goods and services.

Project Impacts

The ESIA identified and assessed a range of potential impacts that would be attributed to the proposed mining operations at South Dune extension. The impacts including their nature and significance both prior and post-adoption of mitigation measures is presented in the *Tables* below.

Environmental Impact Summary

Impact Description	Significance of Impact	
	Pre-Mitigation	**Post-Mitigation**
Soils and Geology	Major	Moderate
Ambient Air Quality	Moderate	Minor
Hydrology, Geohydrology and Water Quality	Medium	water resources will be Medium and on water quality, Low
Noise and Vibration	Moderate	Low
Radiation	Low	Negligible
Floral and Faunal Diversity	Medium	Positive
Wetlands	High	Low

The EIA recommends a range of mitigation measures to avoid, reduce, or compensate for any predicted environmental impacts. It also provides several recommendations to enhance the likely environmental benefits of the Project. The recommendations are contained in the Environmental and Social Management Plan (ESMP, described in Chapter 9), which will function under Base's overarching Environmental and Social Management Plan.

Base will also be required to undertake regular environmental monitoring, and this will likely be an extension of the environmental monitoring already undertaken on the Central and South Dune mining operations. To support the monitoring, this EIA includes an Environmental Monitoring Plan which will function under the overarching Environmental and Social Monitoring Plan.

Socio-Economic Impact Summary

Impact Description	Significance of Impact	
	Pre-Mitigation	**Post-Mitigation**
Occupational Safety and Health	Critical	Low
Employment	Major Positive	Major Positive
Community Health and Safety	Moderate	Low
Physical Displacement of Persons	Critical	Low
Loss of Pasture	Major	Low
Loss of Agricultural Land	Major	Low
Community Access to Natural Resources	High	Medium
Cultural Heritage	Insignificant	Insignificant

The SIA recommends a range of mitigation measures to avoid, reduce, or compensate for any predicted social impacts. It also provides several recommendations to enhance the likely social and economic benefits of the Project. The recommendations are contained in the Environmental and Social Management Plan (ESMP, described in *Chapter 9*), which will function under Base's overarching Environmental and Social Management Plan.

Base will also be required to undertake regular social monitoring, and this will likely be an extension of the social monitoring already undertaken on the Central and South Dune mining operations. To support the monitoring, this SIA includes a Social Monitoring Plan which will function under the overarching Environmental and Social Monitoring Plan.

1. INTRODUCTION

1.1 Background to the Project

The Kwale Mineral Sands Operation (the Operation) was originally developed by Tiomin Resources Inc, with initial exploration and pre-feasibility work undertaken in the late 1990s. Feasibility studies continued into the mid-2000s, and resettlement from the planned mining areas was initiated in 2005 and completed in November 2008. After acquiring the Project in 2010, Base Titanium Limited, a wholly-owned Kenyan subsidiary of Base Resources Limited (Base), commenced a Project Enhanced Definitive Feasibility Study (EDFS), which was completed in 2012. Base Titanium secured financing, which allowed construction at the Kwale Operation to be completed at the end of 2013.

The Operation's original mine life was set at 13 years, running up until 2025. However, the mine life was later reduced to 2023 due to higher mining rates and the expansion of the Wet Concentrator Plant (WCP). To address the reduced mine life, Base commenced an exploration programme in the area outside of their existing mining lease area, including around the South Dune, to identify additional resources that could be economically mined. Economically viable mineral resources in an extension to the south dune, but outside of the current Special Mining License (SML) were identified. If approved for mining, the projected mine life would shift to December 2023. An Amendment ESIA study was conducted for the South Dune Extension and submitted as an attachment to the 2018 NEMA Annual Audit for the Kwale Mineral Sands Project. Upon the request of NEMA, this current ESIA being submitted, now serves as an update to the previous ESIA amendment with the most current up to date data, and is being submitted to NEMA as an EIA Project Report application.

1.2 Overview of the Project

The Kwale Operation is in the Mivumoni and Kinondo Locations of the Msambweni Sub-county (also known as the Msambweni Constituency), in Kwale County, in south-eastern Kenya. The Operation is located about 50km south of Mombasa, 50km north of Lunga Lunga and the Tanzanian border, and 8km inland from the Indian Ocean. The Operation holds a Special Mining Lease (SML No.23) measuring 1,661ha.

On 6th July 2004, through the Department of Mines and Geology, Kenya issued Tiomin Resources Inc. a Special Mining Lease No. 23 and an Exclusive Prospecting License (Special License No. 173) for the development of the Kwale Mineral Sands Project. Following the withdrawal of Tiomin from the Project in 2009, Base Titanium Limited acquired the Project in 2010. Under the requirements of Kenyan legislation, Special Mining Lease No. 23, originally issued to Tiomin Resources Inc., was assigned to Base Titanium Ltd on 15th July 2010 and Special License No. 173, originally issued to Tiomin Resources Inc. on 2nd April 1997, assigned to Base Titanium Ltd on 21st July 2010. On this basis, Base took ownership of the Kwale Mineral Sands Project.

Subsequently, SPL 173 was expanded to cover an area of 177km^2, In 2018 SPL 173 converted to Prospecting License 2018/0119, and was reduced in area to 88.7km^2. PL 2018/0119 is scheduled to be renewed again in May 2021, when a further reduction in area of 50% unless an exemption from area reduction is granted by the Cabinet Secretary for Petroleum and Mining.

The three main target minerals include:

- Ilmenite (titanium-iron oxide) which is a raw material for pigment and paint.
- Rutile (titanium oxide) which is a raw material for titanium sponge, titanium metal and pigment.
- Zircon (zirconium silicate) which is a raw material used in refractory and ceramics industries.

The target minerals are separated from the ore at a processing plant located within the SML area. Ilmenite and rutile are trucked to a dedicated ship loading facility at Likoni, approximately 50km north of the mine site and adjacent to Mombasa's existing Port. Zircon is containerised and trucked to existing

container facilities in the Port of Mombasa. The minerals are mainly exported to China, but some products are also exported to the United States and some parts of Europe.

1.3 Justification for the Proposed Extension

The Kwale Operation has a significant impact on the country's economy. Kenya has traditionally relied on agriculture, floriculture and tourism to drive economic activity and exports. As the first globally significant, large-scale mining project in Kenya, the Kwale Operation has opened up a new sector of the economy, propelling minerals into the top four export earners. The Kwale Operation is the flagship for Kenya's Vision 2030, but perhaps its most important impact is in the stimulus effect it has in awakening international investor interest in Kenya's mineral potential.

1.3.1 Direct and Indirect Economic Benefits

The following tables show the Operation's value to the local communities and at the national level from assessments done on the direct, indirect and induced economic and tax contribution of the mine (Table 1.1 and Table 1.2). Data presented is the most current (2018/2019 financial year) where available.

Table 1.1: Kwale Mineral Sands Operation's direct economic contribution to Kenya

Capital Investment	The total invested in the development of the Project was US$350 million. Of this, the direct spend in Kenya was about US$100 million on contractors, machinery and equipment, goods, support services and employment during the construction phase.
Export Value	At current mineral prices the export value from the Kwale Operation is US$208 million per annum. Kwale's contribution doubles the value of Kenya's other mineral exports. It elevates the sector to the fourth most important export commodity above coffee.
GDP Contribution	The Operation adds an estimated US$108 million to Kenya's GDP annually. It generates a total of US$186 million in economic output per year. Over the life of the mine, the contribution to GDP will be close to US$1 billion. Prolonging the mine life will increase the contribution to GDP.
Direct Taxation Contribution	Through royalties and direct taxation the estimated tax revenues to the government over the mine life is around US$225 million. Prolonging the mine life will increase the contributions to tax revenues.
Employment	865 people are currently employed directly by Base Titanium. Of these, 98% are Kenyan and 63% are from Kwale County. The total number of contractors hired by Base, is an additional (in addition to the 865 directly employed persons) 351 persons. The Project supports an additional 2,800 jobs through indirect (supply chain) and induced (consumer spending) activity.

Table 1.2: Indirect and induced economic contribution

Indirect Tax Contribution	Employees' income tax contributions amounted to approximately US$5 million in financial year 2016/2017, while indirect and induced tax revenue contributed a further US$5 million.
Local content	The mine depends heavily on local inputs, including spare parts, maintenance and operating consumables, transport, security and other outsourced supplies and services. This amounts to an estimated US$375 million over the life of mine or US$35 million per annum and represents 85% of non-labour operating costs. This supports the additional 2,800 indirect and induced jobs paying over US$14 million in wages annually.

Legacy Projects	Longer-term benefits derived from the mine will significantly influence the region's socioeconomic environment. On ultimate closure of the mine, infrastructure to be handed over to local authorities, valued at US$60 million, includes: ■ The Mukurumudzi Dam and Msambweni boreholes can contribute enormously to the region's irrigation and water supply requirements. ■ The 132kV transmission line and substation can enhance Kenya's rural electrification project's objectives. ■ The mine access road will assist with links from the current Mombasa – Tanzania highway to roads planned in the future further inland. ■ The ship loading facility is an important contributor to the industrial development of Likoni and the South Coast region.
Community Development	Base Titanium's Community Development Management Plan has been developed in consultation with affected communities through identification and prioritisation and is aligned with the Kwale County Integrated Development Plan. By September 2020 the company had invested roughly USD 17,794,500 in the local community, including community projects (livelihood investments), community education, community infrastructure (social). Community Health Programme, and Scholarships/ bursaries.
Post-mining Land Use	The Special Mining Lease specifies that the land will be rehabilitated on completion of mining. At this stage, Base will rehabilitate and revegetate land based on the outcome of scientific studies to hand over this land to the government who will decide on post mining land use.

1.3.2 Export Contribution

In calendar year 2019, the Kwale Operation alone accounted for greater that 50% of the combined value of Kenya's minerals output. As an export-oriented industry, the mining sector plays a significant role in generating foreign exchange. In financial year 2019 the Kwale Operation generated US$208 million in export revenue, which represented nearly 60% of Kenya's exports to China.

1.3.3 Importance of an Increased Mine Life

The Operation's original mine life was set at 13 years, running up until 2025. However, the mine life was later reduced to 2023 due to higher mining rates and the expansion of the Wet Concentrator Plant (WCP). To address the reduced mine life, Base commenced an exploration programme in the area outside of their existing mining lease area, including around the South Dune, to identify additional resources that could be economically mined. Economically viable mineral resources in an extension to the south dune, but outside of the current Special Mining License (SML) were identified. If approved for mining, the projected mine life would shift to December 2023.

This extension will extend those direct and indirect benefits listed in Table 1.1 and Table 1.2.

1.4 Legal Requirement Pertaining to the Operation

The mining of mineral resources in Kenya are regulated by the Mining Act (No. 12 of 2016). Environmental standards and compliance are regulated through the Environmental Management and Co-ordination (Amendment) Act 2015 (EMCA) and the Environmental (Impact Assessment and Audit) Regulations (2009).

The legal frameworks that affect the operations of Base have been covered during the last environmental audits submitted to the National Environmental Management Authority (NEMA), and are listed below:

- Mining Act, 2016.
- Climate Change Act, 2016.
- Energy (Energy Management) Regulations, 2012.
- Environmental Management and Co-ordination (Amended) Act, 2015.

- Environmental (Impact Assessment and Audit) Regulations, 2003.
- Environmental (Impact Assessment and Audit) (Amendment) Regulations, 2009.
- Environmental Management and Co-ordination (Water Quality) Regulations, 2006.
- Environmental Management and Co-ordination (Air Quality) Regulations, 2014.
- Environmental Management and Co-ordination (Waste Management) Regulations, 2006.
- Environmental Management and Co-ordination (Wetlands, River Banks, Lake Shores and Sea Shore Management) Regulations, 2009.
- Environmental Management and Co-ordination (Noise and Excessive Vibration Pollution) Regulations, 2009.
- Water Act (Cap. 8 of 2002).
- Water Resources Management Rules, 2007.
- Forests Act, 2005.
- Forests (Participation in Sustainable Forest Management) Rules, 2009.
- Kenyan Labour and Workplace Law.
- International Policies and Standards.

Base maintains a Legal Register to keep track of the various legal requirements and ensures that the register is continually updated.

1.5 Details of the Applicant and Environmental Assessment Practitioners

1.5.1 Applicant

The proposed Project's applicant is Base Titanium Ltd, a heavy mineral sands mining company, located in Kwale County. The contact details for the applicant are as follows:

BASE TITANIUM

Contact: Dr Nick Okello (Environment Manager)

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1.5.2 Environmental Assessment Practitioners

Base Titanium commissioned Environmental Resources Management East Africa (Pty) Ltd (ERM) to undertake the ESIA Update. ERM is a leading global provider of environmental, health, safety, risk, social consulting, and sustainability-related services. We have over 140 offices in 39 countries and territories employing approximately 5,000 people. The contact details for ERM are as follows:

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The team members who undertook the ESIA are listed in Table 1.3.

Table 1.3: The ESIA Project Team

Name	Designation	NEMA Reg. No
Michael Everett	EIA/EA Lead Expert (ERM)	7263 (See *Appendix A*)
Gideon Owaga	Associate Expert	10452
Alistair de Sousa	Assistant Project Manager (ERM)	
Specialists		
Marianne Strohbach	Biodiversity Lead (ERM)	
Mike Everett	Physical Environment Lead (ERM)	
Marco da Cunha	Social (Nomad Consulting)	
Gideon Owaga	Stakeholder Engagement and Kelly Horton (ERM)	
Quentin Luke	Flora (Independent)	
Patrick Malonza	Herpetofauna (National Museums of Kenya)	
Mike Lane	Ground Water (Rural Focus)	
Mike Thomas	Surface Water (Rural Focus)	

1.6 Objectives of the ESIA Process

The assessment aims to highlight potential environmental and social impacts of the South Dune Extension and establish an environmental management plan to mitigate the potential negative impacts.

Key specific objectives for the assessment are:

- To outline the objectives of the proposed project activities;
- To review the planning and implementation of the proposed project activities in line with environmental policies and procedures of the Government of Kenya and relevant International Operational Policies to be triggered by the proposed activities, for consideration in the planning and implementation of the project activities;
- To predict the main potential environmental and social impacts of planned project activities;

- To develop an environmental and social management plan with the recommended mitigation measures and strategies for addressing negative impacts in the course of project implementation and operation; and
- To recommend appropriate training for environmental planning and monitoring in type project activities.

1.7 Approach to the ESIA

The ESIA's overall approach was based on the study scope discussed with NEMA, the Kenyan Environment Management and Coordination Act requirements, the IFC Performance Standard requirements, and adherence to international best practice in ESIA studies. The approach to the study was conducted as follows:

1.7.1 Document Review

ERM project team members conducted a detailed review of Operation documentation to understand the significant elements and key sensitivities to be considered during this ESIA. Documents reviewed included those from the broader Kwale area, the mining area covered by the SPL, and more specifically for the South Dune and the South Dune extension area. The review was premised on the documents relating to the project description presented in Chapter 2 of this Report, and the baseline scenarios presented in Chapter 5 of this Report. The main documents reviewed are listed in Chapters 3 and 5 of this report, and include:

- The Kwale Mineral Sands Project ESIA Report and Addendums.
- Base Titanium Environmental and Social Management System.
- The Resettlement Framework for the Southern Extension.
- Feedback from stakeholder engagement exercises conducted in the South Dune Extension area.
- The Preliminary Hydrogeology of the South Dune Extension.
- Social Impact Assessment Report for the Kwale Mineral Sands Project.
- Specialist Faunal Assessment for Kwale Mineral Sands Project.
- Environmental Baseline Data Report for the Kwale Prospecting Area and Ship Loading Facility.
- Kwale Mineral Sands Soil Characterization Report, 2012.
- Base Titanium Air Quality Monitoring Review
- Environmental Monitoring Data collected for Central Dune, South Dune and South Dune extension, including data collected on the radiation baseline, noise and air quality baseline data.
- Specialist reports on herpetofauna, bird species, and selected wetlands; the latter identified through selected herpetofauna and invertebrates, used as bio-indicators of wetland systems.

1.7.2 Impact Assessment

After the document review, the ERM and Base teams made joint visits to various key locations in the South Dune Extension area to:

- Conduct fact-finding activities to understand the on-ground site status.
- Carry out a baseline assessment of environmental and social sensitivities related to the South Dune Extension's proposed activities.
- Predict likely impacts from South Dune Extension mining activities.

Whilst at the site, the ESIA team undertook targeted primary data collection as follows:

- Biological and Physical Baseline: Site walkovers to conduct a detailed analysis of identified sensitive receptors and take any requisite parameter measurements and sampling.
- Social Baseline: Consultations with the site and neighbouring communities and institutions, informal businesses, county administration and the regulatory authorities. These were done based on the list of stakeholders developed during the desktop document review.

From these activities, ERM obtained data for an adequate description of the environmental and social baseline conditions, specifically to:

- Identify the key environmental and social conditions in areas potentially affected by the South Dune Extension mining activities and highlight those that may be vulnerable to aspects of the activities.
- Describe, and where necessary, quantify their characteristics (nature, condition, quality, extent, etc.) now and in the future, during and after the mining operations.
- Provide adequate data to allow for the reassessment of impacts or identify new impacts, specifically from the South Dune extension.
- Inform judgments about the importance, value and sensitivity/ vulnerability of resources and receptors within the South Dune extension.

After obtaining information on the project description, environmental and social baseline conditions, resettlement and compensation, and stakeholder engagement activities, ERM undertook the impact assessment, using the impact assessment methodology described in Chapter 4.

An Environmental and Social Management Plan and Monitoring Plan was developed after the impact assessment process. These will be incorporated into Base's Environmental and Social Management System (ESMS) for the Operation.

1.8 Structure of the Report

The Structure and level of detain of this Report is guided by the objectives and scope of the assignment and EMCA requirements, and includes the following Chapters:

- **Chapter 1:** *Introduction*: Outlining the project background, objectives, scope, justification, and key participants.
- **Chapter 2:** *Project Description*: Presents the proposed project including the project site with respect to the surrounding areas, environmental and social aspects likely to be affected by the project, expected project activities, and project timelines.
- **Chapter 3:** *Legislative and International Good Practice Requirements*: Includes an in-depth analysis of legal and policy provisions relevant to the proposed project in relation to environmental, social, health and safety concerns.
- **Chapter 4:** *The ESIA Process*: Describes the ESIA Process to be followed for the proposed Mine.
- **Chapter 5.1- 5.3:** *Environmental Baseline*: Outlines the existing environmental conditions within the proposed project area and the immediate surroundings. This will act as a baseline while drawing up the environmental and social management plan. It will also be part of the benchmark for future monitoring of the project's environmental performance.
- **Chapter 5.4:** *Social and Economic Environment Baseline*: Outlines the existing socio-economic conditions within the proposed project area and the immediate surroundings. This will act as a baseline while drawing up the environmental and social management plan. It will also be part of the benchmark for future monitoring of the project's social performance.
- **Chapter 6:** *Stakeholder Engagement*: Provides information on the consultations held with Interested and Affected Parties.

- **Chapter 7:** *The Resettlement Process Followed to Date* (also refer to the RAP Framework (***Appendix B***) and Preliminary RAP (***Appendix C***).
- **Chapter 8:** *Assessment of Environmental and Social Impacts*: Evaluates the potential significant environmental, social, health and safety impacts anticipated from the proposed project in relation to the impacts previously identified for the Kwale Operation. Impacts are either re-assessed for their significance, are identified for the local context (for the South Dune extension specifically) and impacts are assessed cumulatively due to the South Dune extension. This chapter also presents mitigation measures to manage impacts across the project's life, for amendment or inclusion into the Mine Operation's ESMS.
- **Chapter 9:** *An Environmental and Social Management Plan*: Amendments to the current Kwale Mine's ESMP as described in each Annual Environmental and Social Monitoring Report are provided to specifically include the South Dune expansion.
- **Chapter 10:** *An Environmental and Social Monitoring Plan*: Amendment to the current Kwale Mine's Environmental and social plans. Monitoring aims to ensure those mitigation measures elaborated in the ESMP in Chapter 8, are being implemented and adequately managed, to ensure the residual impacts identified remain as low as possible, or that positive impacts are enhanced.
- **Chapter 11:** *Conclusions and Recommendations*: A summary of the main findings of the ESIA and the measures needed to manage the potential impacts.
- *References*: All sources of information referenced within the ESIA Report.
- *Appendices*: containing any supporting information. Appendices include
    - Appendix A- ERM East Africa NEMA Certificate
    - Appendix B- Resettlement Action Framework (RAF) and
    - Appendix C- Preliminary Resettlement Action Plan (RAP)

2. PROJECT DESCRIPTION

2.1 Project Location

The Kwale Mineral Sands Operation is located in Msambweni Sub-county, Kwale County. Msambweni is 3,267km^2 in size and lies between the Latitudes of 3° 3" and 4° 45" South and Longitudes 38° 31" and 39° 31" East, about 10km inland of the Indian Ocean, East of Shimba Hills Town. It is bordered by Taita-Taveta County to the West, Kilifi County to the North, Mombasa County, and the Indian Ocean to the East and the Republic of Tanzania to the South.

The current mineral deposit is divided into the Central Dune (Maumba area), and the South Dune (Nguluku area). The Mkurumudzi River separates the two large dunes. Base Titanium has completed mining activity in the Central Dune resource currently being back filled in preparation for rehabilitation. Mining in the South Dune is ongoing.

The Kwale Mineral Sands Operation location is shown in Figure 2.1 below. The South Dune Extension area is located to the Prospecting License's southern extreme.

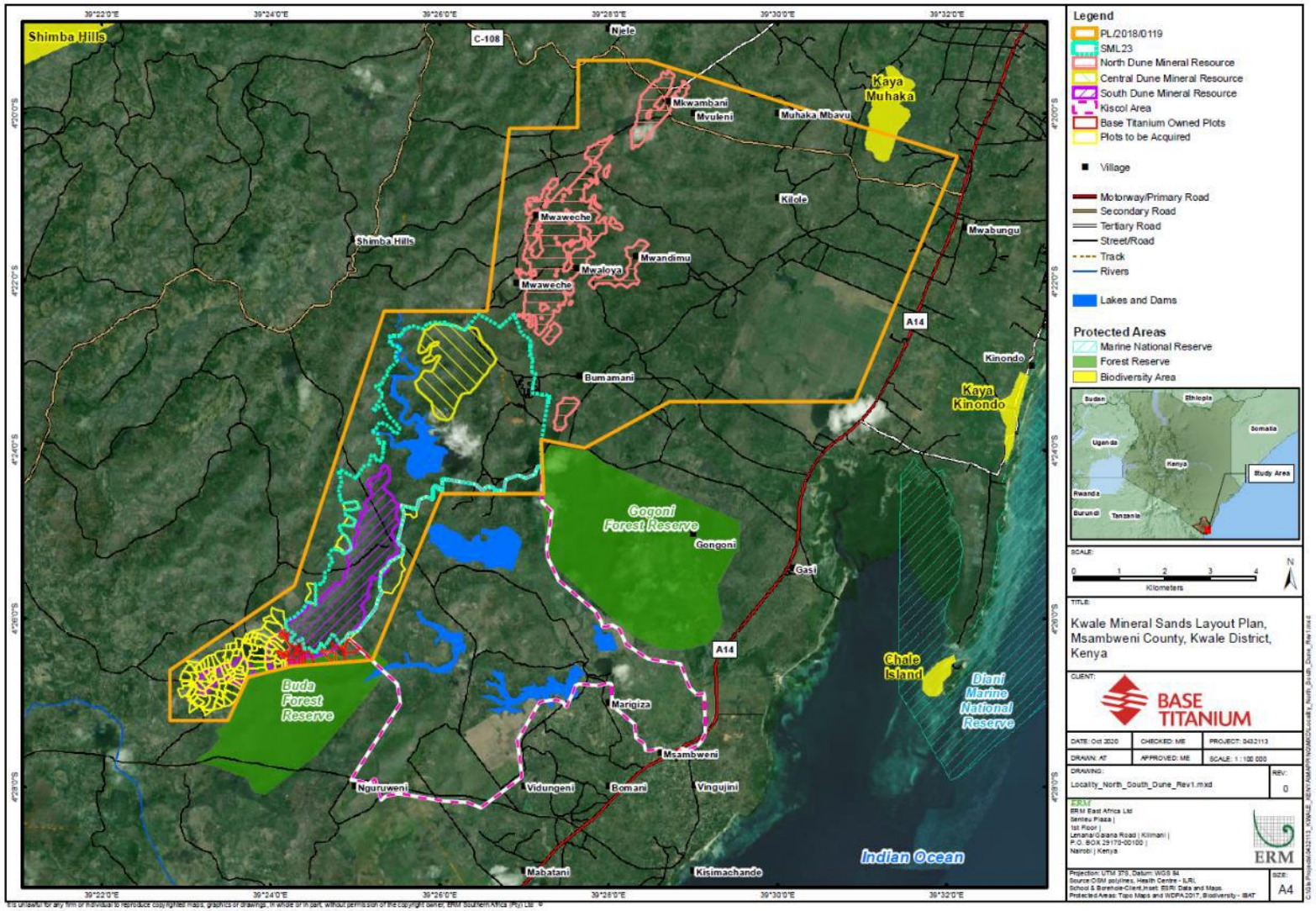

Figure 2.1: Location of the Kwale Mineral Sands Operation

2.2 Special Mining License and Exploration Prospecting License

On 6th July 2004, through the Department of Mines and Geology, Kenya issued Tiomin Resources Inc. a Special Mining Lease No. 23 and an Exclusive Prospecting License (Special License No. 173) for the development of the Kwale Mineral Sands Project. Following the withdrawal of Tiomin from the Project in 2009, Base Titanium Limited acquired the Project in 2010. Under the requirements of Kenyan legislation, Special Mining Lease No. 23, originally issued to Tiomin Resources Inc., was assigned to Base Titanium Ltd on 15th July 2010 and Special License No. 173, originally issued to Tiomin Resources Inc. on 2nd April 1997, assigned to Base Titanium Ltd on 21st July 2010. On this basis, Base took ownership of the Mining Block and began its operations.

Following a successful airborne geophysics programme conducted in 2015 that covered Kenya's south coast from Mombasa to the Tanzanian border, which identified a series of exploration targets, subsequent ground reconnaissance confirmed areas of interest. Base was granted exploration tenure over an expanded area surrounding the Operation. SPL 173, which is now the Prospecting License 2018/0119, was expanded to cover 177km^2.

After the original exploration drilling activities in the South Dune Extension, additional resources were discovered adjacent to the current reserve covered by the 2015 Prospecting License. Therefore, the Ministry of Petroleum and Mining recommended that Base applies for a boundary variation of the existing Special Mining Lease No. 23 to accommodate the mine plan's additional resources. This is due to the small size (the South Dune Extension covers an area of 393ha, compared to the area of the SML of 1,661ha, or 23% of the area of the current SML), low grade nature of these resources, which would make them not be economically viable if they are to be mine through a separate operation under a separate mining license. The application for variation has been made and is under review by the Ministry.

Resultantly, additional land will be acquired by Base. A total of 160 plots are affected in their entirety by the extension. Base has already conducted an initial Resettlement Action Plan for this extension (Appendix C). The households residing on these plots will be compensated appropriately or resettled to suitable locations of their own choice. Figure 2.2 below shows the South Dune Reserve within the SML, and the proposed reserve extension boundary.

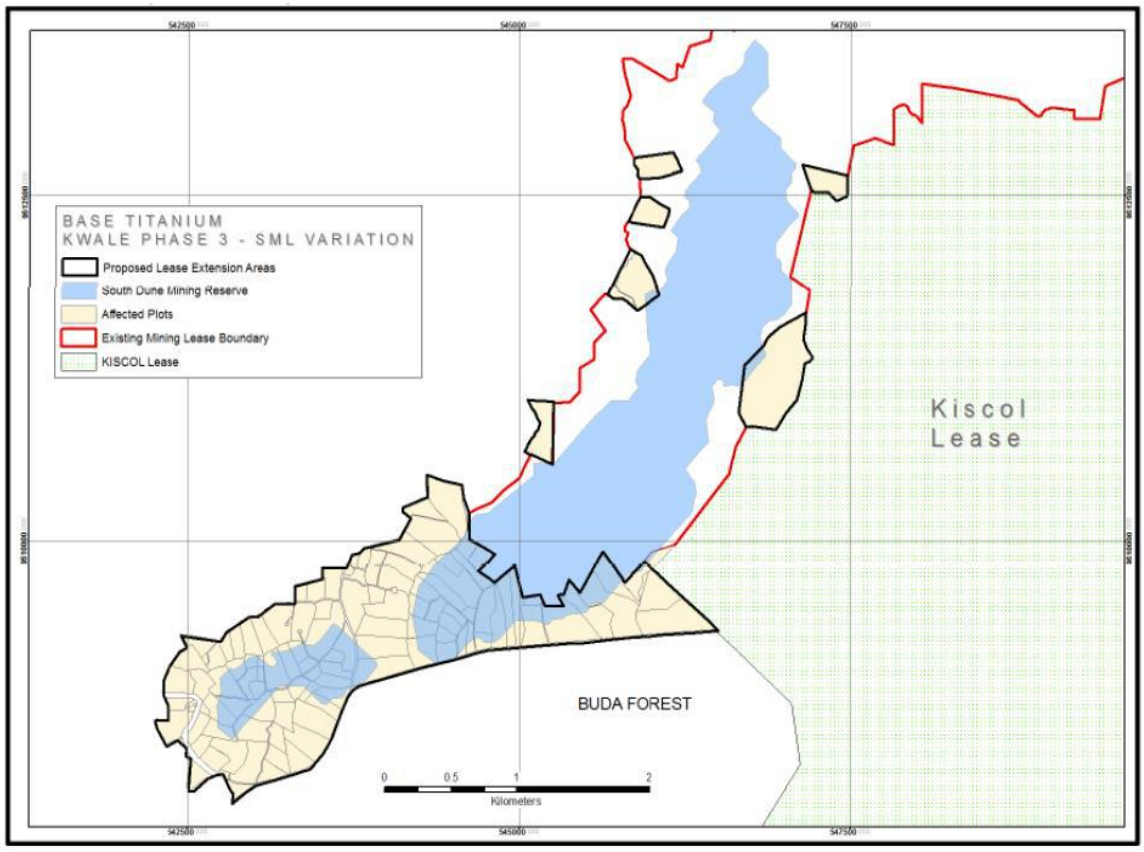

Figure 2.2: Location of the South Dune Reserve within the Special Mining License Area

(Source: Resettlement Framework – Southern Extension)

2.3 Exploration Activities

The South Dune Extension exploration activities began in 2015, after the issuance of the SPL/2015/0042. Exploration activities began with helicopter-borne magnetic and radiometric surveys covering the entire Kwale coastline and inland to the Jurassic boundary line, approximately 10km from the beach. After addressing identified anomalies potentially associated with mineralisation, a ground reconnaissance exercise followed to verify and refine potential interest areas from the survey. These reconnaissance activities informed the subsequent exploration drilling programme in June 2016. Drilling results show a substantial increase in the dimensions of the South Dune Deposit (950m at an average of 700m across strike) and the discovery of the Mafisini Deposit (1,240m and up to 480m in width), separated from the South Dune by a narrow alluvial lowland. Substantial edge definition drilling, along the eastern margins of the South Dune Deposit, has also indicated the potential for a significant extension of this Deposit.

The execution of the post-reconnaissance exploration drilling programme was undertaken, as shown in Table 2.1.

Table 2.1: The South Dune Extension Mineral Exploration Programme

(Source: Base Presentation – 2016 06 09 – Kwale Exploration Engagement)

Action	Objective	Timeframe

County leadership and community engagement	Sensitisation of all stakeholders to exploration plans	June 2016
Community engagement	Direct engagement with land owners affected by drill sites to ensure understanding and to obtain consent	July 2016
Recruitment of local workforce	Economic opportunities for impacted households	August 2016
Drilling programme	Hole drilled in target locations and immediately infilled. Landowners compensated for any damage.	August – December 2016
Analysis of drilling results	Determination of grade and mineralogy by subjecting drill samples to laboratory analysis	September 2016 – February 2017
Resource estimation	Modelling to establish 3-D resource profile and tonnages at various cut-off grades	April 2017
Economic Assessment	Financial modelling to establish economics of the resources	May 2017

2.4 South Dune Mineral Resources and Ore Reserves

The Central and South Dunes have a combined Mineral Resource of 135MT at 5.6% Total Heavy Minerals (THM) (as at 2016). The resource classified as "Measured" was 28% from the initial resource assessment before the entry of Base into the project. However, following a detailed mineralogical assessment, including more refined geo-metallurgical domaining, the resource was re-modelled and re-classified. With the benefit of the additional work undertaken, the proportion of the resource classified as "Measured" was increased from 28% to 59%.

The total ore reserve estimate for the South Dune (including the South Dune Extension) as at June 2016 is 61.6MT, based on a 1% THM cut-off, is indicated in Table 2.2.

Table 2.2: South Dune (including the South Dune Extension) Ore Reserve (2016)

(Source: Base Biennial Work Programme FY 2017-18 & 2018-19)

Deposit	Ore Reserve Category	Ore	In Situ HM	HM	Slime	Oversize	HM Assemblage		
							Ilmenite	Rutile	Zircon
		(Mt)	(Mt)	(%)	(%)	(%)	(%)	(%)	(%)
South Dune	Proved	38.9	1.56	4	27	1	59	14	6
	Probable	22.7	0.75	3.3	26	5	53	13	6
	Total	61.6	2.31	3.8	27	3	57	13	6

2.5 The South Dune Mine Plan

Following successful exploration activities, the South Dune Extension has been included into the South Dune Mine Plan which has been demarcated into mining blocks (Figure 2.3). As part of the South Dune Extension, the relevant mining blocks indicated in Figure 2.3 include blocks 1019, 1020, 1021 and 1022. All other blocks form part of the original South Dune, falling under the existing SML.

The South Dune Extension results in an increase of 393ha or 23% of the existing SML. It increases the South Dune's mining duration by 14 months.

Mining activities will be conducted systematically, moving from one block to another. Timelines for activities in each mining block have been estimated, and an estimated overall mining timeframe drawn out for the South Dune (which includes the South Dune Extension), running up till 2024. The Blocks will be mined using three hydraulic mining units each operating at a rate of 800t/h. The Mine Plan illustrating the Mining Blocks, including the proposed extension area, is shown in Figure 2.1. The South Dune mining sequence, including the South Dune extension, is indicated in Table 2.3 below. Hydraulic mining, as a mining method, is indicated in Figure 2.4.

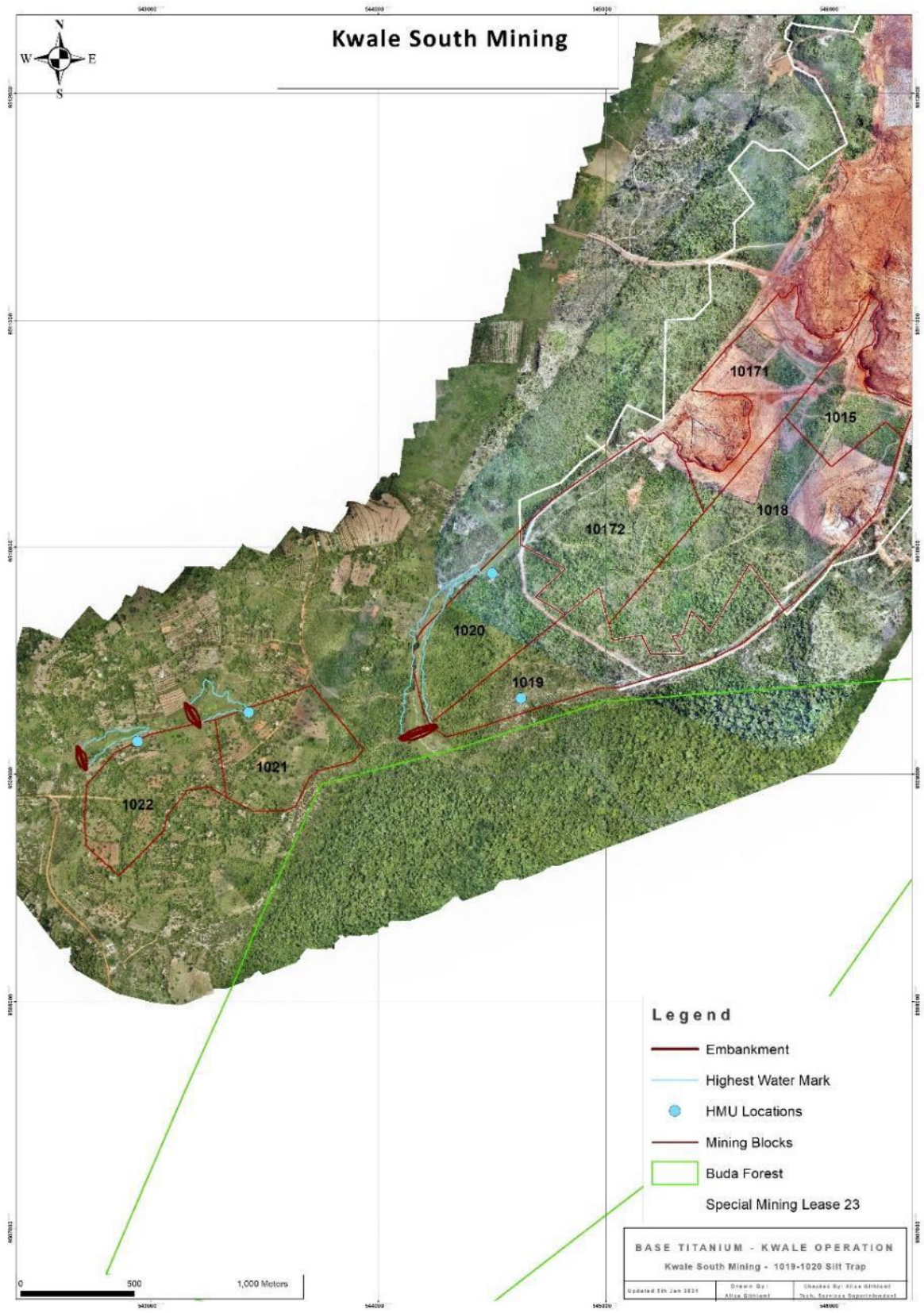

Figure 2.3: The South Dune and South Dune Extension Mining Blocks

(Source: Base Titanium Technical Services, 2021)

Table 2.3: South Dune Extension Mining Sequence (Tentative)

(Source: Base Titanium Technical Services, 2021)

Mining Block	HMU	Start Date	End Date	Comments
10172	4 – 355	11-Jul-21	26-Feb-23	South Dune
1018	1	25-Oct-20	04-Mar-23	South Dune
1019	2	14-Aug-21	10-Mar-23	South Dune Extension
1020	3	03-Mar-23	18-Jan-24	South Dune Extension
1021	1	09-Mar-23	25-Oct-23	South Dune Extension
1022	2	15-Mar-23	20-Sep-23	South Dune Extension

Figure 2.4: The Hydraulic Mining Unit

2.6 Main Operational Activities

The main activities as part of the South Dune mining reserve include the following:

- Mining Activity.

- Mineral Processing at the WCP and MCP, located adjacent to the Central Dune.
- Transportation and storage of the processed minerals at the Likoni Ship loading Facility.
- Shipment to Market.
- Rehabilitation of mined areas.

The ore mining operations will be carried out block-wise by using three hydraulic mining units, each with a 750t/h capacity. The units will shoot high powered jets of water onto the resource wall, breaking loose the ore.

A slurry pipeline will feed the ore to the existing Wet Concentrator Plant (WCP), where the slimes and sand tails will be removed to produce from the hydraulic mining units Heavy Mineral Concentrate (HMC). The HMC will then be delivered to the Mineral Separation Plant (MSP) to recover the three products – Ilmenite, Rutile, and Zircon.

Slime tails will be directed to 38-metre diameter thickeners, dosed with a suitable flocculant, separated into clear overflow water and thickened underflow slimes.

The three mineral products, Ilmenite, Rutile, and Zircon, will be trucked to the dedicated Likoni Ship loading Facility and the Mombasa Port where Rutile and Ilmenite products will be stored in an 80,000-tonne shed for bulk loading to ships via a conveyor transfer system. Zircon and some rutile will be bagged and containerized for export via the Mombasa Port Container Terminal.

The following describes some of the main components of the operation's activities in more detail.

2.6.1 Mining Method

The current process design is described below and detailed in Figure 2.5.

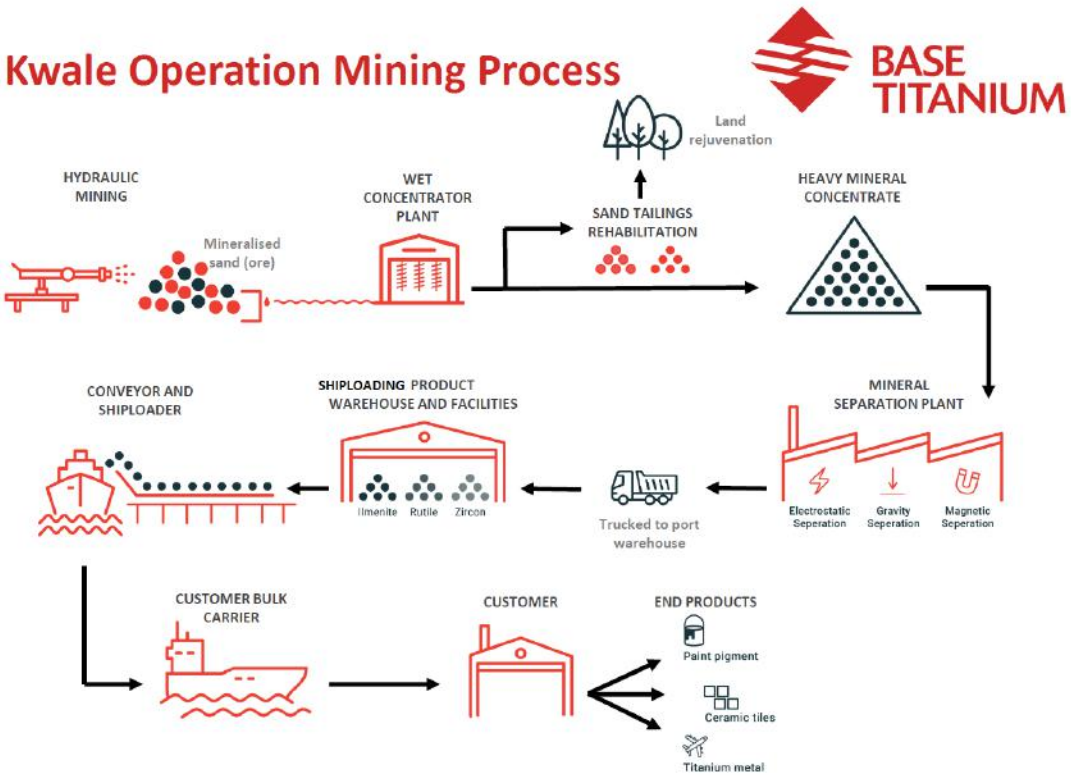

Figure 2.5: Schematic of the Kwale operation mining process.

2.6.1.1 Site Preparation Works

For each block to be mined, the trees and vegetation are cleared using a dozer and excavator to provide a cleared area ahead of the mining operations. As part of Base's Environmental Programme Department's Biodiversity and Conservation Programmes, before mining of any block, the following is undertaken within each block:

Tree species of conservation value are transplanted from areas being cleared and transplanted in the Kwale Mine Arboretum.

- Seeds are collected from any indigenous trees and grasses targeted for propagation in the Restoration Programme Indigenous Tree Nursery. Grass seeds are collected in the onsite seed bank.
- Environmentally protected areas within the current SML were identified at the start of clearing for mining in the Central and South Dune, and were demarcated with signboards. The same will be done within the South Dune Extension, including the demarcation and signing of areas such as the Kidongoweni System and wetland systems.
- Topsoil removed and stockpiled in designated areas for later use. The stockpiled topsoil provides a seed bank for the growth of floral species used in the Rehabilitation and Restoration Programme.

2.6.1.2 Mining

The ore is mined using Hydraulic Mining Unit (HMU) technology (Figure 2.6). In September 2016 Base commenced a pilot phase to assess the use of a Hydraulic Mining Unit (HMU) mining for the Kwale Mine operations. This method has now replaced the previous mining technology, the dozer mining unit (DMU). The mining philosophy behind hydraulic mining is based on high-pressure jets of water being directed and used to dislodge and move ore. The resulting slurry is gravitationally directed to a collecting sump from where it is pumped onwards to feed into the mine's active sump. It then joins the slurry feed to the processing plant.

Figure 2.6: Hydraulic Mining Unit

2.6.1.3 Processing Plant

The processing plant comprises two primary units, the Wet Concentrator Plant (WCP) and the Mineral Separation Plant (MSP).

Wet Concentration Plant (WCP)

The WCP comprising of the following components:

- Ore receiver and de-sliming circuit.
- Spiral plant to separate Heavy Mineral Concentrate (HMC) from coarse sands.
- Slimes thickeners.

The slurried ore is pumped from the HMU to the WCP (Figure 2.7). At the WCP the slurried ore passes through two primary screens, where the fraction >4mm in size is removed and conveyed to the primary screen oversize stockpile. The undersize material it processed through a single stage of cyclone de-sliming. This process removes clay and particles less than 45µm in size. Separation in the cyclones utilise centrifugal force to accelerate the settling of particles. The finer clay fraction reports to the cyclone overflow discharge pipe located at the cyclone's top. The larger and denser particles report to the cyclone underflow at the cyclone unit base. This underflow flows by gravity to an overflowing surge bin to which water is added.

The finer clay fraction or slime from the de-sliming unit is pumped to the thickeners. Flocculants prepared by an automated batch preparation plant is dosed independently into the thickener feed to achieve the required settling rates. The clarified water overflowing the thickener is returned to the process water reservoir. On the other hand, the thickener underflow is pumped to the TSF.

The surge bin's material passes into a four-stage spiral concentrator circuit comprising rougher spirals, scavenger spirals, cleaner spirals, and re-cleaner spirals, with the HMC from each spiral stage passing to the next stage for further concentration. The spiral concentrators consist of a double or triple helical trough wrapped around a central collection column with a concentrate channel and a series of concentrate removal ports placed at regular intervals along the spiral. Separation is achieved by stratifying material caused by a complex combined effect of centrifugal force, differential settling, and heavy particle migration through the bed to the inner part of the conduit.

The HMC from the spiral circuit is stockpiled. The sand tailings recovered from the spirals are currently disposed of to the Central Dune. After stacking, these dunes will be shaped to reflect the surrounding landforms, before rehabilitation.

Figure 2.7: The Kwale Mine's Wet Concentrator Plant (WCP)

Mineral Separation Plant (MSP)

The MSP design has been optimised with the basic methods of mineral separation being gravity, magnetic, and electrostatic separation.

The MSP (Figure 2.8) consists of five separate circuits to process the HMC into ilmenite, rutile, and zircon products. The five circuits are:

- Feed Preparation Circuit (FPC)
- Ilmenite circuit
- Rutile dry circuit
- Wet zircon circuit
- Dry zircon circuit

The FPC receives HMC from the HMC stockpile. The HMC is screened to remove coarse particles and other debris. The HMC is then passed into a four-cell attritioner to break up aggregates and remove coatings from mineral grains followed by classification in an up-current classifier to remove remaining slime, fine quartz and fine HMC. Up-current classifiers or hydrosizers separate particles based on size and specific gravity. They utilise a current of water, introduced across the classifier's bottom. The sand, mineral grains, and other particles classify themselves so that the coarse grains report to the bottom. They stay relatively close to each other with high water velocities flowing between them. The finer particles are dispersed to the higher levels where they stay in more open suspension and the water velocity between them will be lower.

The classifier overflow is recycled to the scavenger spirals in the WCP to recover any fine valuable mineral in this stream while the HMC is recovered from the classifier's base. The HMC is filtered by a horizontal belt filter and conveyed to the HMC dryer. Should further cleaning of the mineral's surface be necessary, provision is made for a second bank of attritioners in the plant layout.

The ilmenite circuit receives HMC from the up-current classifier and produces a magnetic ilmenite product and non-magnetic concentrate. HMC filter cake is then conveyed to the diesel-fuelled HMC fluid bed dryer. The unit is fitted with a dust cyclone and baghouse to collect any mineral blow-over before discharge to the atmosphere. The dried HMC is screened at 400µm to remove coarse material, predominantly quartz and non-valuable heavy mineral. The material less than 400µm in size is transferred by conveyor and bucket elevator to seven combination Low-Intensity Magnetic Separation (LIMS)/Rare Earth Drum (RED) magnets. The LIMS consists of a rotating drum within which a fixed permanent magnet is located. The feed is presented to the drum. Depending on the grains' magnetic susceptibility, it is either attracted by the magnetic field and held to the drum surface or discharged by gravity/centrifugal throw. As the drum rotates the magnetic grains leave the magnet field and are discharged separately, usually with a scraper or brush. The LIMS will remove highly-magnetic susceptible titanomagnetite, preventing it from reaching the high-intensity RED magnets and causing damage. RED magnets are used to separate weakly magnetic materials and to separate magnetic impurities present in low concentrations. The magnetic fraction from the LIMS/RED magnets is transferred to the ilmenite product storage bins via a bucket elevator and conveyors while the non-magnetic fraction gravitates to a non-magnetic surge bin.

The ilmenite circuit's non-magnetic surge bin feeds a rutile fluid bed reheater. The reheater heats the HMC to 110°C before treatment by a series of High Tension (HT) electrostatic separators that separate a conducting fraction suitable for processing in the rutile non-conducting fraction suitable for further processing in the zircon circuit. The conductive fraction from the HT separators is a crude rutile stream that is further processed to separate residual ilmenite from rutile using Rare Earth Roll Magnetic Separators (RERMS) which separates weakly magnetic materials. The non-magnetic fraction from the RERMS gravitates to the 250µm rutile screen while the magnetic fraction gravitates to a bucket elevator for transfer into the ilmenite product storage bins. The nonconductive material from the HT separators is fed to cleaner HT separator for further separation of the conductive and nonconductive fraction. The

non-conductive fraction is passed to the non-conductor RERMS while the conductive fraction is passed to the rutile RERMS magnet. The end products are rutile and material to feed the zircon circuit.

The non-conductor feed from the rutile circuit is processed by a three-stage spiral circuit comprising a Rougher Spiral (RS), Middling's Cleaner Spiral (MCS), and a Scavenger Spiral (SS). The RS reports concentrate to the primary classifier feed hopper from where it is pumped to the primary classifier via the primary classifier cyclone. The middling's from the RS reports to the MCS feed hopper from where it is pumped to the MCS. The RS report's tailings to the SS feed hopper from where it is pumped to the SS. The concentrate from the MCS also reports to the primary classifier feed hopper, while the middling's report to the MCS feed hopper and the tailings to the SS feed hopper. The SS report's concentration to the MCS hopper while the middling's report to the SS feed hopper.

The underflow and overflow streams from the primary classifier are processed through separate gravity circuits to generate a concentrate feed to the dry zircon circuit and a combined tailing. The overflow from the primary classifier is processed through a four-stage spiral circuit comprising a RS, middling spiral, cleaner spirals, and scavenger spirals followed by processing through a cleaner shaking table and a scavenger cleaner shaking table.

The underflow from the primary classifier is processed through a five-stage spiral circuit comprising three rougher spirals and two middling's spirals followed by processing through five double-deck cleaner shaking tables and recleaner shaking table.

The concentrate generated from the classifier underflow and overflow gravity circuits is pumped to a horizontal filter bed ahead of drying and processing in the zircon dry circuit.

The middling's and coarse tailings from the classifier underflow and overflow circuits are scavenged for misreporting zircon by a Kelsey Centrifugal Jig. The jig concentrate is treated by further classification, spiral, and wet table separation. The jig tailings are combined with the other MSP rejects.

The circuit receives the concentrate from the wet zircon circuit. The zircon concentrate hopper pumps to the zircon filter belt via a hydro-cyclone. A horizontal belt filter filters the feed. The filter belt discharges to a transfer conveyor which conveys filter cake to the zircon dryer feed bin. The feed bin discharges directly to a fluid bed dryer. The fluid bed dryer heats the feed material to approximately 100°C to achieve a feed temperature at the zircon rougher HT separator of 80°C. The dryer discharge is transferred to the zircon rougher HT separators via a bucket elevator. The dried zircon is treated by a series of HT separators and Induced Roll Magnetic Separators (IRMS) to produce zircon final product and a final tailings non-conductor magnetic stream conductor rejects stream for recirculation to the dry rutile circuit.

The final zircon product travels over a belt-weigher and is sampled for product analysis and operational statistics.

Figure 2.8: The Kwale Mineral Sands Mineral Separation Plant (MSP).

2.6.1.4 Tailings Management

The processing of the heavy mineral sands produces two distinct tailing streams:

- Fine tailings (slimes) containing a high proportion of clay-sized material (D50 ± 5µm).
- Coarse sand tailings (D50 ± 150µm).

The coarse sand tailings has been used to construct the main impoundment wall of the TSF. In 2018, coarse tailings moved from the TSF walls and is now directed to the Central Dune mine void, where it is used to provide backfill for Central Dune's rehabilitation while the fine tailings will undergo thickening before being impounded in the TSF and left to consolidate over time.

The TSF which will cover an area of approximately 280ha and is constructed to a maximum height of 46m is located to the South of the process plant. A 30m services corridor around the TSF downstream toe position includes an access road, a power line, and toe drains and pipelines from the silt traps to the Settling Ponds.

The TSF walls' construction has involved the pumping of the sand tailings stream from the wet plant to two mobile stacker cyclones located at each side of the TSF for dewatering. The stacker deposited the dewatered sand for the wall in two or more discrete piles allowed to drain (Figure 2.9). The impoundment wall was raised in discreet downstream lifts at 80mRL, 90mRL, and 100mRL to create storage volume for the fine tailings as mining progresses. A dozer moves the stacker cyclones forward after preparing the surface in front of it. In 2018, these stackers were moved from the TSF walls (which have now reached their maximum height), to the mining void left from mining the Central Dune, where dewatered sand will now be deposited and used in the rehabilitation of the Central Dune mined out area, after shaping.

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Figure 2.9: A mobile stacker cyclone depositing the dewatered sand to the Central Dune mined out area.

The fine tailings will be thickened in a thickener. Flocculant from the flocculant storage tank will be dosed in-line with the process water into each thickener feed to achieve the required settling rates. The thickened fine tailings will be deposited into the TSF via a 450mm diameter polyethylene deposition pipe running along the North West and North East (dune) side of the TSF, over a total distance of approximately 2,500m. Open ended take off pipes located at approximately 80m intervals will direct the tailings stream from the deposition pipe directly onto the deposition beach. On deposition, the fine tailings will spread out on the beach and deposit in a sheet with an advancing face that moves slowly down the beach. Each layer deposited in this manner will undergo densification through evaporation by sun drying. The deposition of the fine tailings will be undertaken from the North West side of the TSF (from the Central Dune side) and beaches towards the South East side, where the water decants are located.

The overflow water from the stacker cyclones will be channelled into the TSF via a pipe that discharges onto the fine tailings beach, from where it will report to the water decant system for return to the process water system. The cyclone underflow seepage water will discharge via the wall subsurface drains, which discharge to silt trap sumps on the wall's downstream side. Following the solids' settling, the water from the silt traps will be pumped to the Settling Ponds.

To facilitate drying of the fine tailings, excess water from the TSF will be returned to the plant. The excess water drains from the TSF via the decant system comprising two penstock towers located at the South East side of the TSF. The penstock towers deliver water to the Settling Ponds via underground pipes, from where it is pumped to the wet plant. The Settling Ponds are located in an isolated valley

South East of the TSF adjacent to the decant structures' wall. The Settling Ponds have a capacity of 143,500m^3. During high rainfall events, excess water is stored in the Settling Ponds or released to the Mukurumudzi River via a spillway, if the Settling Ponds are full.

2.6.1.5 Product Storage

Ilmenite product is stored in the existing two 450m^3 (1,170t) elevated product loadout bins. The elevated product bin is used to load 30t road transports to cart bulk ilmenite to the ship loading facility at Likoni. Rutile product is stored in a 450m^3 (1,125t) elevated product loadout bin and in a 100m^3 (250t) rutile bagging/container bin. The elevated product bin is used to load 30t road transports to cart bulk rutile to the Likoni Ship loading Facility. The bagging/container bin is used to load 2,000kg bulk bags or up to 27t containers. Zircon product is stored in a 100m^3 (260t) zircon bagging/container bin. The bagging/container bin is used to load 2,000kg bulk bags or 27t containers.

The rutile and zircon have separate container loading systems. Each system consists of the bagging/container bin and a suspended conveyor. The trucks carrying the containers reverse such that the conveyor protrudes into the open container. The conveyors are designed to load at 250t/h, to deliver a 27t load in less than seven minutes. Bollards guide the reversing trucks to prevent reversing into the conveyor.

Bagged rutile and zircon are stored in a 30m x 15m final product storage shed capable of holding 192 bags.

2.6.1.6 Access Road

Mine access is via the existing 8km access road which connects to the existing A14 highway. The road is surfaced with a 50mm layer of asphalt concrete. Each lane is 3m wide with a 1m shoulder giving the road a total width of 8m. The road reserve is 35m wide. All the required land title deeds have been registered and issued, and Base has done all paperwork and handed the road over to the Kenya Rural Roads Authority.

Grassing to control soil erosion on the shoulders of the road was done. Road signs were installed at various points on the road including 60kph speed limit sign, right and left turn signs. The road movement is closely managed for Base vehicles, including the use of beacon lights on the transportation trucks and light vehicles. Base has already handed over the road to the Kenya Rural Roads Authority (KeRRA) as required by law.

2.6.1.7 Water Supply

A broad water management strategy has been developed to provide sufficient water for the operations. More than half of the water required for the Kwale Mine operations comprises recycled water recovered through the TSF and associated settlement ponds with the shortfall coming primarily from the Mukurumudzi Dam. Groundwater abstraction from the mine's wellfield is used to provide potable water and water for the processing plant components that require clean water such as the fire suppression system.

A water treatment plant was installed and treats all water used for domestic purposes on site (e.g. drinking water, water for bathing and laundry, cooking, etc.). Domestic water demand for the mining staff and administrative offices are from the wellfield. The Likoni Ship loading Facility receives the potable water it requires from a commercial supplier.

2.6.1.8 Power Supply

The Operations requires a reliable power supply for the mine's operation and associated infrastructure. In March 2010, a 132kV transmission line from Rabai (near Mombasa) to a substation at Galu was completed. It can deliver approximately 100MW, while the entire South Coast demand is currently approximately 20-25MW. The transmission line has been handed over to the Kenya Power and Lighting Company (KPLC).

2.6.1.9 Likoni Ship loading Facility

The ilmenite and rutile products are transported from the mine site to the Likoni Ship loading Facility located at a site adjacent to the Kenya Ferry Services in Likoni. The site is located on the south bank of the Mombasa Creek within the Kilindini Harbour Zone. Zircon is containerised and trucked to existing container facilities in the Port of Mombasa. The ilmenite and rutile products are stored and then loaded onto bulk carriers for shipment to their final destinations. The Likoni Ship loading Facility consists of a covered shed for storing the products, a jetty that provides access to the ship loading wharf, and various support services such as offices, ablutions, workshops, etc.

Ilmenite and rutile loading systems are fitted with several dust control devices along its length. The system is also fully automated with a central computerised control center for monitoring and control and an elaborated alarm and safety measures. The Loading facility uses an onsite electricity generator during loading but not power from the main grid system because the latter is unreliable.

2.7 Land Take and Resettlement

Due to the South Dune extension where additional mineral resources have been identified, it is projected that the South Dune Extension mining activities will affect sections of the host communities both physically and economically, largely in Mchingirini, Mivumoni and Mafisini villages. In accordance with International Best Practice and the commitment by Base to being a responsible developer, the Company is committed to ensuring that its actions do not result in the affected households being worse off due to resettlement and compensation.

Most of the South Dune land already is leased to Base, after the initial transfer of the SPL from the government. However, a few additional pieces, including 160 pieces of land identified in the South Dune Extension, will be further affected in their entirety, and will be acquired to form the larger South Dune Mining reserve (Figure 2.10).

For these 160 households, Base has conducted a Resettlement Action Plan (RAP), in line with the Act, and the IFC Performance Standard 5. The households residing on these plots will be resettled to suitable locations of their own choice. Base has drafted a Resettlement Framework for the Southern Dune Extension[1].

During 2019, a total of 60 families were resettled. This was comprised of 52 households (physical displacement), and eight (8) farmers (economic displacement) were resettled. Of the 60 families, 23 were resettled due to isolation/accessibility issues, 29 due to operations upon the South Dune, and the eight (8) farmers due to water, noise and dust grievances associated with Project operations.

Every effort has been made and continues to inform stakeholders of the proposed mining operations and its resettlement component. The affected community has been informed about the southern extension right through the exploration phase identifying the mineral resource and the resulting resettlement.

An amended RAP has been developed, in line with the IFC Performance Standard requirements, for the South Dune Extension to address the displacement resulting from this additional land acquisition to future South Dune mining activities, and is provided in ***Appendix C*** following the framework laid out in the RAF document in ***Appendix B***.

[1] Forbes C, Wall S, Kassim P (2018) Resettlement Framework – Southern Extension Addendum, Kwale Mineral Sands Mine, Kenya.

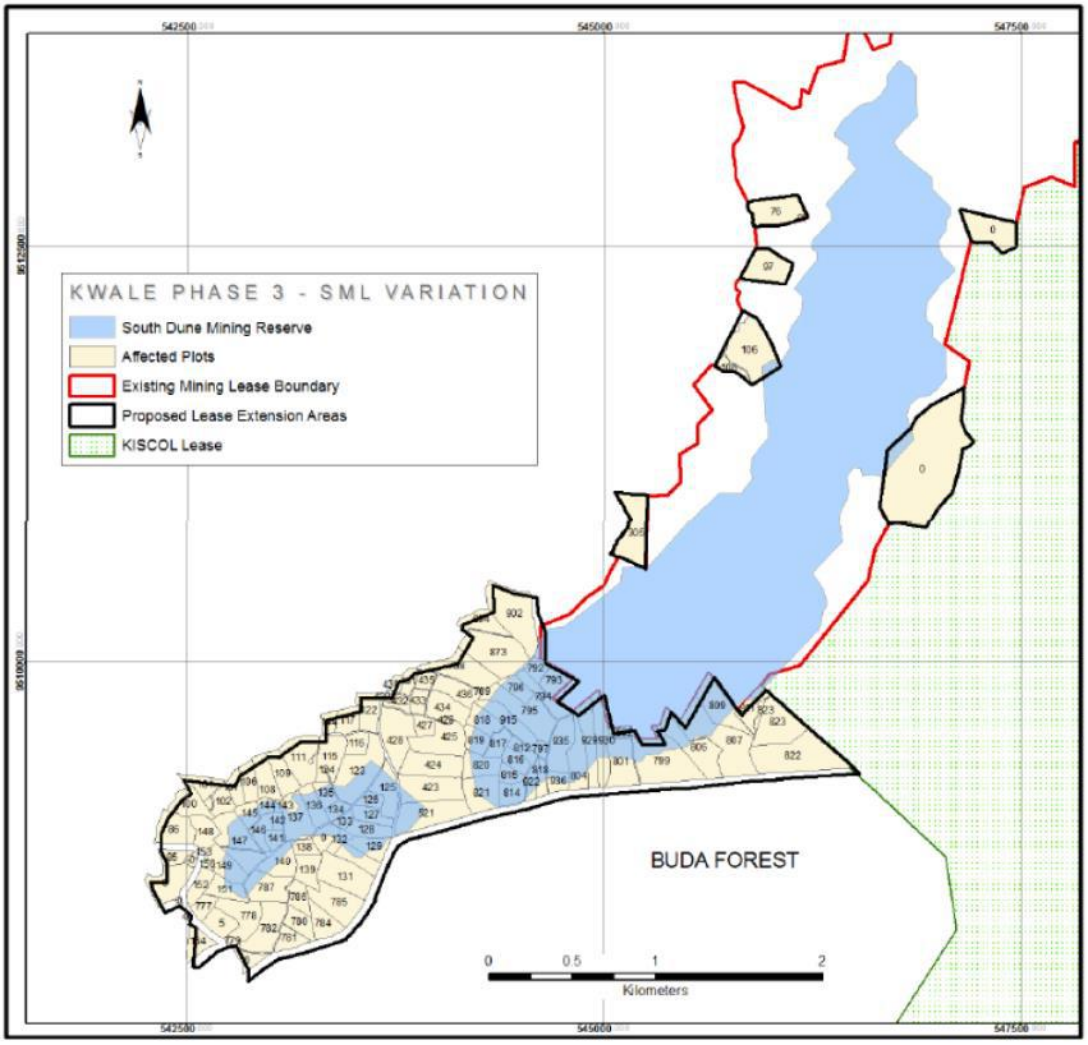


Figure 2.10: Affected Plots as a result of the South Dune Extension

(Source: Base Titanium Technical Services, 2021)

3. LEGISLATIVE REQUIREMENTS AND INTERNATIONAL GOOD PRACTICE

This *Section* details the key institutional arrangements, administrative structures and legal instruments that relate to various activities applicable to the South Dune mining extension. The relevant provisions in these frameworks are discussed and, where appropriate, the compliance status of the operation is indicated since 2005 when the Kwale operations started. Furthermore, international lending organisations' applicable standards are provided and their applicability discussed.

PLEASE NOTE:

Whilst this *Section* has been prepared with all due care by ERM, it does not constitute legal advice and should not be construed as such. Furthermore, the Kenyan regulatory environment may be subject to changes to both regulatory instruments and authorities during the projected Project life-cycle. It is therefore recommended that the regulatory framework is reviewed and assessed periodically.

The sourcing of legislation was limited to a desktop survey (ERM's HSE database and other available online sources) and reliance on in-country contacts.

3.1 Relevant Institutional Framework

Several government institutions regulate various activities conducted during mining operations. However, the main institutions with a direct oversight role to the South Dune extension mining operations are the following:

3.1.1 The Ministry of Petroleum and Mining

This is the parent ministry for all mining-related activities in Kenya. The ministry develops policy and oversees all mining activities in Kenya, through respective departments. The main departments that regulate and coordinate mining functions as outlined in the following sub-sections.

3.1.1.1 The State Department for Mining

This is the main department that coordinates various functions aimed at enhancing the growth of the mining sector in the country as guided by the executive order No. 2 of 2013, and has the following primary roles:

- Minerals exploration and mining policy and management.
- Inventory and mapping of mineral resources.
- Mining and minerals development.
- Policies on the management of quarrying and mining of rocks and industrial minerals.
- Management of health and safety in mines.
- Policy around the extractive industry.
- Resource Surveys and remote sensing.
- Maintenance of geological data (research, collection, collation, and analysis).

The Ministry has allocated the Kwale Mineral Sands Operations the Special Mineral Exploration and Mining Leases (Prospecting License 2018/0119 (formerly Exclusive Prospecting License No. 173) and Special Mining Lease No. 23) for the mining activities, based on which the exploration and mining is currently being undertaken.

3.1.1.2 Additional institutions under the Ministry of Petroleum and Mining

Additional institutions under the Ministry of Petroleum and Mining, with relevance to Base's mining operations, are illustrated in Table 3.1 below:

Table 3.1: Additional Institutions under the Ministry of Petroleum and Mining

Institution	Main Role	Relevance to the South Dune Extension
Directorate of Geological Survey	Consolidates GoKs efforts in collection and storage of geological data related to prospecting in a national repository	Participates in various geological surveys including geo-environmental studies. Facilitates promotion of private sector interest and investment in mineral exploration
Mineral Rights Board	Advises the Cabinet Secretary on grant, rejection, retention, renewal, suspension, revocation, variation, assignment, trading, tendering, or transfer of Mineral Rights Agreements.	Regulation of fees to be paid on different minerals. Will assess license application and make recommendation to Cabinet Secretary.
National Mining Corporation	Acts as the investment body on behalf of the national government in respect of minerals.	Can acquire shares or interest in any firm, company or other body of persons, whether corporate or unincorporated as long as they are engaged in mining activities
Minerals and Metal Commodity Exchange	Exchange will facilitate efficiency and security in mineral trade transactions	There will be an opportunity/option for Base to trade the country's minerals.

3.1.2 The National Environment Management Authority

The National Environment Management Authority (NEMA) is established under the Environmental Management and Co-ordination Act No. 8 of 1999 (EMCA) as the Government of Kenya's principal instrument for the implementation of all policies relating to the management of the environment. The main objective of the Authority is to ensure a clean, healthy, and sustainable environment in Kenya through supervision and coordination of all matters relating to the environment.

The most relevant of the Authority's list of mandates is its role to advise the Government on legislative and other measures to manage the environment or the implementation of relevant international conventions, treaties, and agreements.

Within this mandate, NEMA has gazetted several Regulations, most of which are relevant to the South Dune mining operations. These are discussed in Section 3.2.3 (EMCA 1999, rev 2015), including the EIA Regulations of 2003, which, in addition to others, requires an ESIA Report before the commencement of mining activities within the South Dune Extension.

3.1.3 The Water Resources Authority

The Water Resources Authority (WRA) is a state corporation established under Section 11 of the Water Act, 2016, as an Agent of the National Government responsible for regulating the management and use of water resources. The Water Act, 2016 makes extensive provisions on the Authority's role in regulating water resources use and management. Though the WRA was operationalised through Legal Notice No. 60 on the 21st of April 2017, the Authority has been in existence for 12 years following its establishment

under the Water Act, 2002 as Water Resources Management Authority (WRMA). The Authority has the following main roles:

- To sustainably and equitably allocate water resources among the various competing needs. WRA also requires that stakeholders are involved in the process and uses the "water use permit" tool to carry's out this function.
- To control pollution and improve water quality in the country's water bodies. This involves integrating land use activities and human activities into WRA water quality control programmes.
- To collect all information on water resources, analyse, store and disseminate it. This information is critical for water allocation, water resources investment decision making, and modelling to enact scenarios to better understand climate change's impact in the future.
- To undertake climate actions in terms of mitigation and adaptation towards minimizing the effects of global warming and climate change on water resources.

The WRA has permitted water abstraction from both groundwater and surface water by Base for the mining operations in the central and south dunes. The South Dune operations will utilize these water sources and will be required to comply with the permit conditions for the existing water sources, and to apply for permitting for any new sources. Potential water resource contamination sources from South Dune mining activities will also need to be checked to prevent water resources pollution and prevent any legal action by the Authority.

3.1.4 The Directorate of Occupational Health and Safety Service

The Directorate of Occupational Safety and Health Services (DOSHS) is one of the departments within the Ministry of Labour and East African Community Affairs, whose primary objective is to ensure all workers' safety, health, and welfare in all workplaces. The Directorate seeks to prevent unsafe and unhealthy work environment that often cause accidents, diseases, disasters and environmental pollution and occasion huge economic and social burdens to individuals and enterprises, thereby stifling economic and social growth.

The Directorate enforces the Occupational Safety and Health Act, 2007 (OSHA, 2007) with its subsidiary legislation, which aims to prevent accidents and diseases at work. It also administers the Work Injury Benefits Act, 2007 (WIBA, 2007) which provides for compensation of workers who have been injured or have suffered a disease out of and in the course of employment.

The South Dune Extension mining activities will require adherence to the Act enforced by DOSHS for all its activities requiring human labour, as was done for the Central and South Dune.

3.1.5 The Radiation Protection Board

The Radiation Protection Board is a statutory body established under the Act of parliament, the Radiation Protection Act, Cap 243, Laws of Kenya as the national competent authority with the responsibility for protecting people's health and safety and the environment from the harmful effects of ionizing radiation. It regulates the use of ionizing radiation, exportation, importation, distribution, and possession of radiation sources. The Board operates under two subsidiary legislations;

The Board oversees compliance with the Radiation Protection (Standards) Regulations, 1986 (Rev 2012), which affects the Kwale Mine operations since some of the processes/activities associated with mining and mineral processing may result in radiation exposure to workers and neighbouring communities.

3.2 Relevant Legal Framework to the Project

3.2.1 The Constitution of Kenya

The Constitution of Kenya, enacted in 2010, is the supreme law of the land. Various Articles of the constitution provide guidelines that affect the mineral extraction and mining operations in general. These include:

- Article 62 that affirms that all minerals are held in trust for the people of Kenya by the national government.
- Article 66 that grants authority to the Parliament of Kenya to enact legislation to ensure all investments benefit local communities and their economies.
- Article 69 that obliges the State to ensure sustainable development and management of natural resources and the environment, and equitable sharing of accruing benefits.
- Article 71 requires that the Parliament of Kenya ratify all mineral agreements.
- Article 232 that requires participation by people in policymaking, including the mining policy.

In compliance, Base has the legal authority to mine in Kwale, has signed mineral revenue sharing agreements with the Government of Kenya, submits annual compliance audit reports to NEMA to comply with the requirement for sustainable management of the natural resources and the environment, and works with the local/host communities through community programmes to ensure they are included in the operations, and benefit from it.

3.2.2 The Mining Act, 2016

This Act of Parliament gives effect to Articles 60, 62 (1) (f), 66 (2), 69, and 71 of the Constitution in so far as they apply to minerals. It provides for prospecting, mining, processing, refining, treatment, transport, and any dealings in minerals and related purposes in Kenya. The main sections of the Act relevant to the South Dune extension mining operations are as follows:

Mineral Rights

Section 10: Restrictions on the acquisition of mineral rights, provides that a person shall not search for, prospect or mine any mineral, mineral deposit or tailings in Kenya unless that person has been granted a permit or license under this Act.

For large scale mining operations like the Kwale Mineral Sands Project, Section 32(3) of the Act provides that the following licenses and permits may be granted for a mineral right under this Act to authorise a mineral right holder to engage in mining operations:

- A reconnaissance license.
- A prospecting license.
- A retention license.
- A mining license.

The Kwale Mineral Sands operations already hold the mineral rights to the Central and South Dune mining operations by acquiring Exploration and Mining Leases, a Special Mining Lease No. 23 and a Prospecting License 2018/0119 (formerly SPL173). (Figure 2.1).

Employment preferences

On local employment, Section 47(1) required the holder of a mineral right to give employment preference to members of the host community and citizens of Kenya. Further, sub-section 2 requires that in the case of a large scale operation, like the Kwale Mine, the holder of a mineral right shall:

- Conduct training programmes for the benefit of employees.

- Undertake capacity building for the employees.
- Only engage non-citizen technical experts under such local standards for registration as prescribed in the relevant law.
- Work towards replacing technical non-citizen employees with Kenyans, within such reasonable period as may be prescribed by the Cabinet Secretary.
- Provide linkage with the universities for purposes of research and environmental management.
- Where applicable and necessary to facilitate and carry out socially responsible investment for the local communities.
- Implement a community development agreement as may be prescribed in Regulations.

Base has developed the Employment Policy and the Communities Policy that provide the framework within which the employment and labour management at the Kwale Mineral Sands operations is done. Policies are premised on the Company's commitments that employment is based on the principles of consistency, transparency, fairness, and equal access to employment opportunities. These aim to achieve maximum numbers of local people employed on the Project, therefore optimizsing benefits for local communities.

The Base Employment Policy also commits the company to continuous training and capacity building of the employees, while the Communities Policy commits the company to continuous, transparent, and honest engagement with communities and participation in relevant community development programmes.

The Company also partners with research institutions, universities, and NGOs in various development and research programmes. Some of the partners include the Kenya Wildlife Service, The World Wide Fund for Nature, the National Museums of Kenya, the Kenya Forest Service, and a host of academic institutions through the company scholarships programme.

Procurement of goods and services

Section 50 of the Act requires that the holder of a mineral right shall, in the conduct of prospecting, mining, processing, refining and treatment operations, transport or any other dealings in minerals give preference to the maximum extent possible to materials and products made in Kenya, to services offered by members of the community and Kenyan citizens and to companies or businesses owned by Kenyan citizens.

Though most of the South Dune Extension's key activities will be technical, Base has and will continue to source basic goods and services from the host community as a priority. Food, raw materials for the nurseries, and cleaning services are some of the local community's services, which will still be offered during operations at the South Dune Extension.

Environment, Safety and Health obligations under the Act

Sections 176 to 178 of the Act requires that a mining license is only granted to an entity that has obtained an environmental impact assessment license, conducted social heritage assessment, and where the environmental management plan has been approved. Such a mining license holder is not exempt from complying with any law concerning the protection of the environment, compliance with the provisions of the Water Act, 2016 concerning the right to the use of water from any water resource and compliance with the provisions of the Occupational Health and Safety Act, 2007 concerning the safety of workers and mine operations.

Base was already granted the EIA license for the mineral operations in both the Central and South Dune. However, due to the identification of additional resources beyond the South Dune mining licence boundary, Base is further required to conduct an ESIA to include the environment and social risks posed by the extension area. This report is the outcome of the additional studies for the South Dune extension.

Land Use and Restoration

The holder of a mining license has the responsibility for sustainable use of the land upon which resources are mined. Section 179 of the Act requires the holder of a permit or license to use the land under the terms of the permit or license and to ensure:

- The sustainable use of land ensures the appropriate restoration of abandoned mines and quarries.
- That the seepage of toxic wastes into streams, rivers, lakes, and wetlands is avoided and that disposal of any toxic waste is done in the approved areas only.
- That blasting and all works that cause massive vibration is properly carried out and muffled to keep such vibrations and blasts to reasonable and permissible levels in conformity with the
- Environmental Management and Coordination Act.
- That upon completion of prospecting or mining, the land in question shall be restored to its original status or to an acceptable and reasonable condition as close as possible to its original state.

In addition to the above, Section 180, prospecting, retention, or mining licenses shall not be granted unless the applicant has submitted site mitigation and rehabilitation or mine-closure plans for approval, as set by the Department of mining.

Base commissioned this study to understand and mitigate potential additional and/or cumulative impacts resulting from mining the South Dune Extension to the environment, including noise, water quality, and waste management. The ESIA recommendations, especially the ESMP, will be implemented to maintain compliance with this provision. Base also has an Environment Monitoring Programme Management Plan to manage the use of environmental resources, including land and water, and has set up a Mine Closure Plan and a Tailings Management Plan to manage site rehabilitation and restoration activities. Based on these plans, Base has conducted different land rehabilitation and restoration trials, whose outcomes have been positive.

Environmental Protection Bond

An applicant for a prospecting license, a retention license or a mining license is required under Section 181(1) to provide a bond or some other form of financial security called an environmental protection bond sufficient to cover the costs associated with the implementation of the environmental and rehabilitation obligations of the holder under this Act.

Base made an Interim Rehabilitation Deposit Bond for the Kwale Operation of USD 527,267 with NEMA. Following a site visit by NEMA in June 2017, the authority was satisfied that Base had demonstrated sound environmental management systems, practices, and compliance, and granted a cessation of paying additional interim deposit bonds. Conditional to this is that Base shall continue with the rehabilitation works, especially in the areas where mining has been completed and shall submit remediation reports as part of Annual Environmental Audit Reports.

Various pieces of Regulations have been developed to effectively implement the above provisions in the Mining Act, 2016. These are discussed below, in brief.

3.2.2.1 The Mining (License and Permit) Regulations, 2017

These Regulations were gazetted in May 2017 to regulate the issuance and use of all licenses and permits for mineral rights and dealings in minerals in Kenya.

The main elements of the Regulations that affect the South Dune Extension include:

- Section 11(1) requires applying a mineral right to submitted by a registered user by completing the prescribed form, uploading the required documents, and payment of the prescribed fee. This is to be done by Base for applying a new mining license.
- Section 13 requires any applicant for a mineral right to comply with the Environmental Management and Coordination Act requirements and any regulations or guidelines made thereunder before any mineral right is granted. As part of the application for variation of the SML area, base has

commissioned additional studies and has produced this Report towards the variation of the existing EIA License to accommodate the changes brought about by the mineral reserve extension.

- Section 27 of the Regulations requires the holder of a mineral right to report the discovery of any cultural, historic or archaeological relics found within the mineral right area to the Cabinet Secretary within seven days of the discovery.

3.2.2.2 The Mining (Use of Assets) Regulations, 2017

These Regulations, gazetted in May 2017, were developed to oversee the declaration, management, and transfer of all movable and immovable assets, to verify actual assets in hand and value and ensure the accuracy of related financial records by a mining license holder.

Section 4(1) requires a mining license holder to maintain a complete, up to date and accurate register of all movable and immovable assets under their ownership. Base keeps a register of all assets owned, for both company audit interest and in compliance with this Law.

3.2.2.3 The Mining (Use of Local Goods and Services) Regulations, 2017

These Regulations were developed to ensure that there is a value added to or created in the Kenya economy by a systematic development of capacity and capabilities through the deliberate utilization of Kenyan human and material resources and services rendered in the mining industry value chain.

The main purposes of these Regulations are to:

- Promote job creation through the use of local expertise, goods and services, businesses, and financing in the mining industry value chain and their retention in the country.
- Achieve the minimum local level and in-country spend to provide the goods and services in the mining industry value chain.
- Increase the capability and international competitiveness of domestic businesses.
- Create mining and mineral related support industries that will provide jobs and sustain economic development.
- Achieve and maintain a degree of participation for Kenyans or companies incorporated in Kenya to supply goods and the provision of services and services.

Section 2 of the Regulations require a mining license holder to have a procurement plan that indicated the particulars of the goods and services they intend to procure in Kenya to undertake its operations or activity, the proposed expenditure that will be incurred under the plan, particulars on gender and a timeframe for such a plan.

As a holder of the pre-existing mining license, Base shall also be required to include, in the procurement plan, targets for local procurement including at least the items specified in the procurement list as provided or made available by the Director of Mines and (b) specific support to local providers or suppliers as well as other measures to develop the supply of local goods and services including broadening access to opportunities and technical support.

Through Base's Procurement Policy, local content is highly emphasized. Though procurement advertisements are made in public, suppliers from the host community are given priority, then the county of Kwale, before looking nationally. This ensures that, where the right quality and quantity of goods or services can be obtained locally, the local community benefits wholly from such advertisements.

Through the Community Department, Base also has worked with the local communities to develop their business, agriculture, and technical capacity at various levels. These are reported annually through the Annual Environmental and Social Reports, submitted to NEMA and the Ministry of Petroleum and Mining.

3.2.2.4 The Mining (Employment and Training) Regulations, 2017

These Regulations were developed to promote job creation through the use of local expertise in the mining industry, the entire mining value chain and to retain the requisite skills within the country, develop local capacities in the mining industry value chain through education, skills, and technology transfer, research and development, and to achieve the minimum local employment level and spend in the country and across the entire mining industry value chain.

Section 6(1) of the Regulations require every holder of a mining license to, within ninety days of the coming into force of these Regulations, submit employment, training and succession plan which corresponds with the work programme or programme of mining operations that accompanied the application made by the holder for the grant of the license, and, not later than eighteen months, update its employment and training plan to comply with these Regulations.

On annual reporting, Section 10(1) of the Regulations require a holder of a mining license to, not later than thirty days after Reporting the end of the year, submit to the Director of Mines, a performance report covering all the activities related to employment, training, research, and development.

Base submits employment, training, and succession data and plans to the Department of Mines. Further, Base also submits annual performance reports to the Ministry of Petroleum and Mining as required by these Regulations.

3.2.2.5 The Mining (Community Development Agreement) Regulations, 2017

These Regulations have been developed to provide a legal basis on which mining operations and mining related activities are conducted in a manner that, for the life of the mine:

- Benefits of the mining operations or activities are shared between the holder and affected community.
- Mining operations are consistent with the community's continuing economic, social and cultural viability.
- Mining operations significantly contribute to the community's improved economic, cultural social welfare and its members.

The Regulations are also meant to ensure accountability and transparency in mining-related community development and define when Community Development Agreements are required and provide a framework for such agreements.

The mining license holder, according to Section 5(1) of the Regulations, as part of the Environmental Social Impact Assessment and with the approval of the National Environmental and Management Authority, shall assess potential community impacts of its proposed operations and identify one or more communities with which it proposes preparation of a Community Development Agreement. Among the various parameters, conditions, and implementation regimes of such community development agreements, is the requirement that such agreements take into account any unique circumstances of the mining operations and the affected mine community and the issues to be addressed in the agreement and community development programme.

A community development programme should contain the following:

- Objectives
- Time-based milestones
- Implementation timetable
- Schedule of anticipated expenditures
- Metrics and indicators by which to measure progress
- Periodic reporting including actual expenditures.

- How the plan works in coordination with County Government plans, services, infrastructure and activities provided to or affecting the community.
- How the holder's provision of any service to the community will be terminated or transferred to the community.
- How and when the plan will be periodically updated.
- How the affected community will ratify the plan and amendments to the plan.
- Such other content as may be mutually agreed by the affected mine community and the holder.

The Regulations also require that where a holder of a mining lease or special mining lease has entered into a Community Development Agreement or has started some community development initiative, scheme or social development programme before the coming into force of these regulations, the holder shall ensure that such a scheme, initiative, programme, agreement or howsoever described shall comply with the requirements of these regulations within eighteen months after coming into force of these regulations.

Base conducts different community support programmes on health, agriculture, capacity building, awareness creation and education. Land is temporarily required for any of these activities. Base has always signed land use agreements with the land owners.

A community development programme is developed to improve livelihoods in specific villages. Base holds sensitization meetings. Their inputs are documented and agreements reached that accommodate these inputs. All this is undertaken through the Community Programmes Department, specifically in place for such.

3.2.3 Environmental Management and Coordination Act, 1999 (Revised 2015)

This is the primary Act developed to establish an appropriate legal and institutional framework for the management of the environment and matters connected therewith and incidental thereto in Kenya.

The Act provided for the formation of NEMA and outlined the Authority's mandate in regulating environment management in Kenya as the principal instrument of Government in implementing all policies relating to the environment. Further, the Act provides a wider framework for establishing Regulations on impact assessments, audits, environmental monitoring, water and air quality, noise and vibration, liquid and solid waste management and sets limits on fines and other punitive actions in cases of non-conformity.

To implement the provisions of the EMCA, the following Regulations, relevant to the South Dune Extension mining operations, were established.

3.2.3.1 The Environmental (Impact Assessment and Audit) Regulations, 2003

These Regulations have been developed to regulate the environmental permitting process and provides requisite conditions for conducting impact assessments, project EIA licensing, environmental audit requirements and related technical and compliance requirements.

The Regulations require every proponent who implements a project that is likely to have a negative environmental impact or for which an environmental impact assessment is required under the EMCA Act to conduct the environmental impact assessment and obtain the EIA License under these Regulations. Subsequently, the licensed proponents must conduct annual environmental audits in the manner stipulated in the Regulations, and submit reports to the Authority for compliance monitoring.

The original Kwale Mine Project EIA License was issued on 30th June 2005 to Tiomin Inc. However, upon acquiring the operations by Base, Certificate of Transfer of Environmental Impact License, certifying that the Environmental Impact Assessment License No. 0000048 issued to Tiomin Kenya Limited has been transferred to Base Titanium Limited was issued on 20th July 2010.

Due to the variation in the mining lease area after discovering additional resources in the South Dune, Base had conducted this ESIA study to accommodate the increased project area and new or revised cumulative impacts. Base will conduct the annual audits for the South Dune operations (now including the South Dune Extension), as has been the case with the Central Dune operations since 2011.

3.2.3.2 The Environmental Management and Coordination (Water Quality) Regulations, 2006

The Regulations apply to drinking water, water used for industrial purposes, water used for agricultural purposes, water used for recreational purposes, water used for fisheries and wildlife, and water used for any other purposes. Guideline standards for water quality management of, amongst others, sources of domestic water and effluent discharges into the environment are provided in these regulations' schedules.

In Section 6, the Regulations prohibit anyone from:

- Discharging any effluent from sewage treatment works, industry or other point sources into the aquatic environment without a valid effluent discharge license issued under the Act's provisions.
- Abstracting groundwater or carry out any activity near any lakes, rivers, streams, springs and wells that is likely to have any adverse impact on the quantity and quality of the water, without an Environmental Impact Assessment license issued under the provisions of the Act.
- Cultivating or undertaking any development activity within a minimum of six meters and a maximum of thirty meters from the highest ever recorded flood level, on either side of a river or stream, and as may be determined by the Authority from time to time.

The Regulations require that any entity discharges or applies any poison, toxic, noxious or obstructing matter, radioactive waste, or other pollutants or permitting any person to dump or discharge such matter into the aquatic terrestrial environment has to obtain requisite permits.

Base has obtained the related permits, and renews then upon expiry (Table 3.2)

Table 3.2: Permits obtained, Licence numbers and dates of issue

License Required	License Number	Date Issued
WRMA – Groundwater Abstraction Permit	BH1/WRA/66/MSA/3K/10564/G	17/01/2014
WRMA – Groundwater Abstraction Permit	BH3/WRA/30/MSA/3K/10564/G	17/01/2014
WRMA – Groundwater Abstraction Permit	BH5/WRA/30/MSA/3K/10564/G	17/01/2014
WRMA – Groundwater Abstraction Permit	BH6/WRA/66/MSA/3K/10229/G	02/03/2011
WRMA – Groundwater Abstraction Permit	BH7/WRA/66/MSA/3K/10472/G	28/02/2014
WRMA – Surface Water Abstraction Permit (from the Mukurumudzi Dam)	WRMA/30/MSA/3K/10084/S	03/03/2014
Mukurumudzi Dam statutory inspection		08/2017
Effluent Discharge License	NEMA/WQ/EDL/3458	13/06/2017

3.2.3.3 The Environmental Management and Coordination (Noise and Excessive Vibration Pollution Control) Regulations, 2009

These regulations provide for the control of noise and excessive vibrations in Kenya. They set out permitting and limit guidelines to ensure that no person makes or causes to be made any loud, unreasonable, unnecessary or unusual noise which annoys, disturbs, injures or endangers the comfort, repose, health or safety of others and the environment.

The Regulations require any person intending to carry out construction, demolition, mining or quarrying work, during the Environmental Impact Assessment studies, to identify natural resources, land uses or activities which may be affected by noise or excessive vibrations from the construction, demolition, mining or quarrying, determine the measures which are needed in the plans and specifications to minimize or eliminate adverse construction, demolition, mining or quarrying noise or vibration impacts, and incorporate the needed abatement measures in the plans and specifications.

In compliance, Base has an Operational Health and Safety Management Plan for Kwale Mine operations. To establish workers' exposure to nuisance noise levels, comprehensive occupational noise management, and monitoring programme has been developed and under implementation. Appropriate PPE is provided and worn by employees in areas with high noise levels, and appropriate signage is erected as required. Noise monitoring covers various noise generating areas on the mine site and Likoni Ship loading Facility.

3.2.3.4 The Environmental Management and Co-ordination (Air Quality) Regulations, 2014

These Regulations provide for the prevention, control and abatement of air pollution to ensure clean and healthy ambient air.

The Regulations prohibit any entity from causing or allowing emission of the priority air pollutants prescribed in the Second Schedule to cause the ambient air quality limits prescribed in the First Schedule of the Regulations to be exceeded. They also provide emission management requirements, including monitoring and reporting requirements. Special reference is made to particulate matter and exhaust emissions into the atmosphere from any facility listed under the Fourth Schedule above the Third Schedule's limits. Mining operations is one of such.

Base currently has an Emissions Management Plan for the mine operation and will be extended to cover the South Dune Extension operations. This covers both ambient and occupational air quality parameters, and are reported daily. This plan's performance is presented in the annual environmental audit reports submitted to NEMA.

3.2.3.5 Environmental Management and Co-ordination (Waste Management) Regulations, 2006.

These Regulations apply to the handling, transportation and disposal of all waste categories in Kenya.

The Regulations require that anyone generating waste must minimize it by adopting cleaner production methods. This may be done by improving the production process by conserving raw materials and energy, eliminating toxic raw materials and reducing toxic emissions and wastes. Other methods would be to monitor the product cycle by identifying and eliminating the product's potential negative impacts, recovering and reusing the product where possible, and reclaiming and recycling it.

As provided for in the Regulations, every industrial undertaking must mitigate pollution by installing at its premises anti-pollution equipment for treating the waste it generates. Discharge or disposal of any waste in any form into the environment is not permitted without prior treatment.

Anyone intending to engage in any activity likely to generate hazardous waste must obtain an Environmental Impact Assessment license and contract licensed waste management entities if the waste is carried off-site.

The Base operations generate a variety of wastes. These wastes are being managed in line with the Base Waste Management Plan developed in line with these Regulations. Four wastes streams are currently associated with the operations, which are broken down into a process and non-process wastes. Process wastes associated with mining activities consist of tailings. All tailings are directed to the TSF for disposal and recovery of slurry water and the 'non-conductor mags' are monitored and discussed under the radiation impacts section. Non-process solid waste is divided into hazardous and non-hazardous waste.

At the mine site, non-hazardous wastes are segregated from hazardous waste at source and all wastes are carefully stored on-site in dedicated areas before safe disposal by NEMA licenced waste disposal practitioners.

3.2.3.6 Environmental Management and Co-ordination (Wetlands, River Banks, Lake Shores and Sea Shore Management) Regulations, 2009.

These Regulations provide for the sustainable use of wetlands for ecological and aesthetic purposes and seek to prevent and control pollution and siltation and other activities that may degrade the environment. All wetland resources must be used in a sustainable manner compatible with the continued presence of wetlands and their hydrological, ecological, social and economic functions and services. Some permitted uses of wetlands include cultivation, fishing (subject to the Fisheries Act), small-scale fish farming, and domestic consumption, grazing, and hunting (subject to the Wildlife (Conservation and Management) Act.

The Regulations provide that areas that have national significance may be declared to be protected wetlands due to their biological diversity, ecological importance, natural heritage, aesthetic value or landscape. Environmental Restoration orders may be given to allow a wetland, riverbank or lakeshore that has been degraded to regenerate.

These Regulations apply to the wetlands already identified in areas proximal to the South Dune boundary, including riparian areas and the network of ephemeral streams around the Dune. These, by extension, will safeguard the quality of the mangroves downstream of the Mukurumudzi River.

Through the Environmental Monitoring Programme Management Plan, Base has a regular monitoring programme for the identified wetlands within the mining reserve area. Through the programme, Base ensures that no hazardous or contaminated wastes/effluents are discharged from the Project, monitors the condition of the wetlands to ensure that they are not adversely impacted by waste and effluents from the mining activities, as well as the drought conditions that occasionally prevail in the County. Base conducts regular Herpetofauna and macroinvertebrate monitoring in these wetlands, as one indicator of wetland health.

3.2.3.7 The Environmental Management Co-ordination (Fossil Fuel Emission Control) Regulations, 2006

These Regulations are developed to provide guidelines for any engines that cause air pollution from the use of any fossil fuel where the constituent properties are not properly combusted in an internal combustion engine and are emitted out as toxic carbon gases and particulates matter.

The Regulations provide standard limits for various fossil fuel emission sources and prohibit internal combustion engines that emit smoke or other pollutants above the emission standards, without prior permission from NEMA. The Authority may approve any substance to be used as a fuel catalyst if it improves fuel economy, enhances combustion and reduces harmful emissions that adversely affect human, animal and plant health and degrade the environment. The "polluter pays principle" is upheld in these Regulations. The polluter bears the cost of clearing the pollution through fuel emission.

These Regulations relate to vehicular exhaust emissions that could be potentially harmful to the South Dune operation crew and other persons in the neighbouring communities. It includes all other equipment that emits fumes. In the Emissions Management Plan, Base implements appropriate measures to

minimize toxic gas and dust emissions to the environment, including the use of hydraulic mining which is a wet process, regular equipment monitoring and reporting, timely maintenance, replacement of work out engine parts, regulating the age of hired vehicles and training to personnel.

3.2.3.8 The Environmental Management and Co-ordination (Conservation of Biological Diversity and Resources, Access to Genetic Resources and Benefit-Sharing) Regulations, 2016

These Regulations apply to the conservation of all biological resources in Kenya, whether or not they are found in their natural environment, access to genetic resources, and the sharing of benefits derived from those resources.

In Section 4, the Regulations provide that no person shall engage in any activity that may harm any ecosystem or lead to the unsustainable use of natural resources. The conservation of biological diversity applies to any area of land, lake or river that the government has declared to be a protected natural environment system to promote and preserve biological diversity in accordance with section 54 of the EMCA, 1999.

These Regulations relate to disturbance of flora and fauna, vegetation disturbance and removal, and soil disturbance, surface and groundwater at the South Dune mining reserve and the areas proximal to the Dune. In compliance, under the Environmental Monitoring Programme Management Plan, Base is implementing a biodiversity and conservation programme that provides for vegetation and reptile and amphibian monitoring and surveys, conservation of forests and forest patches that constitute the Coastal Forests of Eastern Africa biodiversity hotspot, comprising small fragmented forest remnants containing significant levels of biodiversity and regular data collection on number and locations of species of conservation significance. The Programme also involves establishing indigenous tree nurseries and continuous engagement with host communities through training and afforestation activities to preserve the identified biodiversity hotspots.

3.2.3.9 The Environmental Management and Coordination (Deposit Bonds) Regulations, 2017

The Mining Act 2016 requires that the holder of a permit or license shall ensure that on completion of mining, the land is restored to its original status or to an acceptable and reasonable condition, as close as possible to its original state.

Further to this, an environmental protection bond sufficient to cover the costs associated with implementing the environmental and rehabilitation obligations as required under the provisions of EMCA is required.

By correspondence NEMA/SEA/5/2/001 of 17th July 2017, following a site visit by a team of NEMA Environmental Inspectors in June 2017, NEMA advised that the team was satisfied that Base had demonstrated sound environmental management systems, practices and compliance and that as such they have granted a cessation of paying additional interim deposit bonds awaiting gazettement of the Deposit Bond Regulations. Conditional to this, is that Base shall continue with the rehabilitation works, especially in the areas where mining has been completed and shall submit remediation reports as part of Annual Environmental Audit Reports.

Base has prepared a Mine Closure Plan [2] to ensure that the social, environmental and economic impacts associated with the decommissioning and closure of the Kwale Operations are addressed responsibly, meeting both Base's commitments and maximises net benefits from the operations. Through the Rare and Threatened Flora Propagation Research Programme, Base targets species of conservation interest to identify suitable species and techniques that may be used for the rehabilitation and revegetation of mining-impacted areas during closure. As part of this initiative, Base has established a Restoration Programme Indigenous Tree Nursery in which indigenous trees are

[2] Base Titanium (2014) Closure Plan. Kwale Mineral Sands Project, Kenya

propagated. Trees grown in the nursery are used for planting in areas impacted by the operation and will be used during mine closure to rehabilitate the mine site.

Base has also been carrying out rehabilitation trials on mined areas to simulate the conditions that will be presented post-mining rehabilitation of the South Dune, to ensure the successful closure of the Kwale Operations and the opportunity to present a legacy of successful mine rehabilitation for future reference.

3.2.4 The Occupational Safety and Health Act, 2007

This is the parent Act that regulates health and safety at the workplace. The Act was developed to secure the safety, health, and welfare of persons at work and protect persons other than persons at work against risks to safety and health arising out of, or in connection with, persons' activities at work.

This Act applies to all workplaces, and every occupier must ensure the health, safety and welfare at work of all the people working in his workplace and protect other people from risks to safety and health occasioned by the activities of his workers. The occupier's duty to ensure the safety, health and welfare of all persons at work in his premises includes providing a working environment and work procedures that are safe.

The Act prohibits the emission of poisonous, harmful, or offensive substances into the atmosphere. Where such incidents occur, they must be rendered harmless and inoffensive. Machinery, protective gear, and tools used in all workplaces have to comply with the prescribed safety and health standards. Dust, fumes or impurity must not be allowed to enter the atmosphere without appropriate treatment to prevent air pollution or harm of any kind to life and property. Highly inflammable substances must be kept safely outside any occupied building. Where dangerous fumes are liable to be present, there must be a means of exit and suitable breathing apparatus made available. Means for extinguishing fire must be available and easily accessible, and evacuation procedures tested regularly (Sections 6, 21, 47, 55, 64, 78, 79, 81, and 82).

This Act covers all activities in the mine's operations that may be a hazard to workers and visitors' health and safety to this area. Base is implementing the Kwale Mine Operational Health and Safety Management Plan. As required in the Plan, Base conducts regular safety inductions, toolbox talks, environmental and social risk information sharing meetings and security briefings and drills. Base carries out employee medical examinations, provides adequate working spaces and safety gear, and has clear procedures for each type of work.

3.3 Summary of Other Applicable Legislation

3.3.1 The Water Act, 2016

This Act provides for the regulation, management and development of water resources and water and sewerage services in line with the Constitution.

Through the Act, the Water Resources Authority is formed with the mandate to:

- Formulate and enforce standards, procedures, and regulations for managing and using water resources and flood mitigation.
- Regulate the management and use of water resources.
- Enforce Regulations made under this Act.
- Receive water permit applications for water abstraction, water use and recharge and determine, issue, vary water permits; and enforce the conditions of those permits; collect water permit fees and water use charges; determine and set permits and water use fees.
- Provide information and advice to the Cabinet Secretary to formulate policy on national water resource management, water storage and flood control strategies.

- Coordinate with other regional, national and international bodies to better regulate the management and use of water resources.
- Advise the Cabinet Secretary generally on the management and use of water resources.

The Water Resources Authority has developed Regulations, the Water Resource Management Regulations, to guide the above functions' implementation. *Base has complied with the Regulations' relevant requirements and obtained necessary permits and licenses from the Authority.*

3.3.1.1 The Water Resources Management Rules, 2007.

These Rules implement provisions of the Water Act, 2016. They apply to all policies, plans, programmes, and activities to which the Act applies. Matters covered by these Rules include: public notification and consultation; the protection of the water resources monitoring network; Water Resource Users

Associations; the register of water bodies; approvals, authorizations and permits; declaration of a watercourse or a wetland for water resources management by the Water Resources Authority.

The Rules prohibit anyone from discharging any toxic or obstructing matter, radioactive waste or other pollutants into any water resource unless the discharge has been treated to permissible levels. Discharge of effluent into a water resource also requires a valid discharge permit.

In compliance with the Rules, Base has integrated measures to safeguard water resources in the Waste Management Plan and Water Management Plan (that provides for water quality and flow monitoring). These will still be applicable in the South Dune mining activities.

3.3.2 The Radiation Protection Act (Cap. 243)

This is the only legislation in Kenya remotely dealing with nuclear resources. It provides for the protection of the public and radiation workers from the dangers of the use of devices or material capable of producing ionizing radiation. Irradiating devices or radioactive material may not be imported without a license.

The Project Environmental Monitoring Programme Management Plan provides for occupational radiation monitoring that comprises area monitoring (gamma surveys) and personal exposure measurements collected on individual employees. To quantify radioactivity levels on and around the mine site, measurement of gamma radiation levels, and environmental radiation monitoring in water and sediment samples are regularly undertaken both during mining operations.

3.3.3 The Forests Act, 2005.

This is an Act of Parliament enacted to provide for the establishment, development, and sustainable management, including conservation and rational utilization of forest resources for the country's socio-economic development.

The Act recognises that forests play a vital role in the stabilisation of soils and groundwater thereby supporting the conduct of reliable agricultural activity, provide the main locus of Kenya's biological diversity and a major habitat for wildlife, act as the main source of domestic fuel wood for the Kenyan people, provide essential raw materials for wood-based industries and a variety of non-wood forest products, and that they play a crucial role in protecting water catchments in Kenya and moderating climate by absorbing greenhouse gases.

*Two main forests. The Gongoni and Buda Forests (*Figure 2.1*) have been identified in proximity to the South Dune operations, and Base, through the Biodiversity and Conservation Programme, developed under the Ecological Management Plan, is working with the communities to protect these forests, and replenish them with indigenous tree species.*

3.3.4 The Climate Change Act, 2016.

This Act of Parliament was developed to provide a regulatory framework for enhanced response to climate change and provide for a mechanism and measures to achieve low carbon climate development.

The Act requires Base to monitor compliance with levels of greenhouse gas emissions set out in the relevant Regulations. It also provides for NEMA to, by notice in the Gazette, at any time, to require Base to prepare reports on the status of its performance of the climate change duties and prescribe the period for reporting, with those duties.

As part of its ongoing environmental programme, Base assessed the Greenhouse Gas (GHG) impact of the Kwale Mineral Sands Operation in 2019. In conjunction with this, an estimation of potential mitigation projects was also undertaken, to add to a report on energy management and energy monitoring provided by an external service provider (report dated August-September 2018[3]), which included sections on energy monitoring, power quality, and Energy Conservation Measures (ECMs).

3.3.5 The Protection and Assistance to Internally Displaced Persons and Affected Communities Act, 2012

The Act provides for the prevention, protection and provision of assistance to internally displaced persons and affected communities by development projects in Kenya.

For the Project's proposed South Dune extension, 160 plots will be affected in their entirety. For these, Base has conducted a Resettlement Action Plan (RAP), in line with the Act, and the IFC Performance Standard 5. The households residing on these plots will be resettled to suitable locations of their own choice. Base has drafted a Resettlement Framework for the Southern Dune Extension[4].

During 2019, a total of 60 families were resettled. This was comprised of 52 households (physical displacement), and eight (8) farmers (economic displacement) were resettled. Of the 60 families, 23 were resettled due to isolation/accessibility issues, 29 due to operations upon the South Dune, and the eight (8) farmers due to water, noise and dust grievances associated with Project operations.

Every effort has been made and continues to be made to inform stakeholders of the proposed mining operations and its resettlement component. The affected community has been informed about the southern extension right through the exploration phase identifying the mineral resource and the resulting resettlement.

The resettlement process will ensure the prevention of inhumane displacement and protection of the rights of the affected members of the community.

3.3.6 The Land Act, 2012

This Act of Parliament intended to give effect to Article 68 of the Constitution, revise, consolidate and rationalise land laws, provide for the sustainable administration and management of land and land-based resources, and connect purposes.

Article 5 of this Act, lists forms of land tenure: Freehold; leasehold; such forms of partial interest as may be defined under this Act and other law, including but not limited to easements; and customary land rights, where consistent with the Constitution.

Section 7 of this Act focusses on the methods of acquiring a land title as:

- Allocation;
- Land adjudication process;

[3] Report by Entumo Base Limited – Investment Grade Energy Audit for Base Titanium

[4] Forbes C, Wall S, Kassim P (2018) Resettlement Framework – Southern Extension Addendum, Kwale Mineral Sands Mine, Kenya.

- Compulsory acquisition;
- Prescription;
- Settlement programs;
- Transmissions;
- Transfers;
- Long term leases exceeding twenty one years created out of Private land; or
- Any other manner prescribed in an Act of Parliament.

The Act is the primary legislation on public land, governing its management (including leasing) and acquisition. Part VIII provides the procedures for compulsory acquisition.

Article 111 requires NLC to make rules to regulate the assessment of just compensation.

Based on the Preliminary RAP Report's findings for the South Dune Extension, the area affected is owned by individual landowners under freehold title deeds. During the RAP implementation phase, requisite national and international guidelines will be followed to evaluate land claimed by affected households. Ultimately the calculation of the land compensation packages and resettlement timelines will be undertaken by Base, in conformance with this Act.

3.4 International Conventions, Protocols and Agreements

Kenya is a signatory to several international conventions and agreements relating to environmental and social matters (refer to Table 3.3). In certain cases, these have influenced domestic policy, guidelines and regulations.

Although not all treaties/ conventions listed below have been enacted into domestic legislation; good practice would require that each treaty's ethos be taken into consideration during the South Dune operation.

Table 3.3: Summary of International Conventions

International Convention	Objective
United Nations Convention on Biological Diversity (CBD)	The three goals of the CBD are to promote the conservation of biodiversity, the sustainable use of its components, and the fair and equitable sharing of benefits arising from the use of genetic resources.
United Nations Framework for Convention on Climate Change (UNFCCC)	Its main objective is to achieve the stabilisation of greenhouse gas concentrations in the atmosphere at a level that prevents dangerous anthropogenic interference with climate systems and within a specific timeframe which will allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed sustainably.
Bamako Convention, 1991	This convention focusses on the import of import into Africa and the control of transboundary movement and management of hazardous waste within Africa.
Basel Convention, 1989	Transboundary transportation and disposal of hazardous wastes. Its objective is to protect human health and the environment against hazardous waste's adverse effects.
Bonn Convention, 1979	This convention focusses on the conservation of migratory species of wild animals. It aims to conserve terrestrial, marine and avian migratory species throughout their range.

World Heritage Convention, 1972	This convention requires each State Party to recognise the duty of ensuring the identification, protection, conservation, presentation and transmission to future generations of the cultural and natural heritage.
Convention for the safeguarding of the intangible cultural heritage, 2003	The objectives of this convention include to: safeguard the intangible cultural heritage; ensure respect for the intangible cultural heritage of the communities, groups and individuals concerned and raise awareness at the local, national and international levels of the importance of the intangible cultural heritage, and of ensuring mutual appreciation thereof.
Ramsar Convention on Wetlands of International Importance, 1971	The Ramsar Convention's broad aims are to halt the worldwide loss of wetlands and to conserve, through wise use and management, those that remain. This requires international cooperation, policy making, capacity building and technology transfer. The Ramsar Convention encourages the designation of sites containing representative, rare or unique wetlands, or wetlands that are important for conserving biological diversity.
African convention on the conservation of nature and natural resources, 1968	This convention requires contracting states to adopt the measures to ensure conservation, utilisation and development of soil, water, flora, and faunal resources under scientific principles and due to the best interests of the people.

3.5 International Standards

3.5.1 The International Finance Corporation

The International Finance Corporation (IFC), a division of the World Bank Group that lends to private investors, has released a Sustainability Policy and set of Performance Standards (PSs) on Social and Environmental Sustainability (January 2012). These Standards replace the previous July 2006 safeguard policies and evaluate any project seeking funding through the IFC. It should be noted that even for Projects that do not anticipate seeking financing from the IFC; the IFC PSs are typically applied as a benchmark of international good practice.

The PSs are directed towards guiding how to identify risks and impacts, and are designed to help avoid, mitigate and, manage risks and impacts as a way of doing business sustainably, including stakeholder engagement and disclosure obligations of the client in relation to project-level activities. In the case of direct investments for the IFC (including project and corporate finance provided through financial intermediaries), the IFC requires that its clients apply the PSs to manage environmental and social risks and impacts so that development opportunities are enhanced (IFC, 2012).

The IFC PSs are outlined in Figure 3.1below:

Figure 3.1 International Finance Corporation (IFC) Performance Standards

PS 1: Assessment and Management of Environmental and Social Risks and Impacts.

PS 2. Labour and Working Conditions

PS 3. Resources Efficiency and Pollution Prevention

PS 4. Community, Health, Safety and Security

PS 5. Land Acquisition and Involuntary Resettlement

PS 6. Biodiversity Conservation and Sustainable Management of Living Natural Resources

PS 7. Indigenous Peoples

PS 8. Cultural Heritage

PSs are directed towards guiding how to identify risks and impacts, and are designed to help avoid, mitigate and, manage risks and impacts as a way of doing business sustainably, including stakeholder engagement and disclosure obligations of the client in relation to project-level activities. In the case of direct investments for the IFC (including project and corporate finance provided through financial intermediaries), the IFC requires that its clients apply the Performance Standards to manage environmental and social risks and impacts so that development opportunities are enhanced (IFC, 2012).

The requirements of each of the eight IFC PSs, and their relevance to the proposed Mine, are presented in Table 3.4.

Table 3.4: International Finance Corporation (IFC) Performance Standards

Performance Standards	Key Requirement
IFC PS1: Assessment and Management of Environmental and Social Risks and Impacts	This PS relates to integrating and managing environmental and social performance throughout a project's life in line with national regulations and international standards. The standard requires developing an Environmental and Social Management System (ESMS) that entails a structured approach to managing environmental and social risks and impacts.
IFC PS2: Labour and Working Conditions	This standard aims to ensure that the client establishes, maintains and improves a worker-management relationship that promotes fair treatment, non-discrimination and equal opportunity of workers, and compliance with national labour and employment laws and international standards (as defined by the International Labour Organisation (ILO). In particular, PS2 addresses child labour and forced labour, promotes safe and healthy working conditions, and protects and promotes workers' health by recognising the role of employees.
IFC PS3: Resource Efficiency and Pollution Preventions	This PS aims to abate pollution to air, water, and land that may threaten people and the environment at the local, regional, and global levels. This Performance Standard promotes private sector companies' ability to adopt such technologies and practices where feasible.
IFC PS4: Community, Health, Safety and Security	This PS's role is to anticipate and avoid adverse impacts on the health and safety of the affected communities throughout the life of the project as a result of routine and none-routine events. The PS also requires an assessment of how the project's use of security to safeguard personnel and property could impact community security, taking into account considerations of human rights.
IFC PS5: Land Acquisition and Involuntary Resettlement	PS5 aims to anticipate and avoid physical and economic resettlement or, where avoidance is not possible, to minimise adverse social and economic impacts.

IFC PS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	This PS aims to protect and conserve biodiversity based on the Convention on Biological Diversity. It divides habitat into three categories, modified, natural, and critical. For projects in natural habitat, mitigation measures should be designed to achieve no net loss of biodiversity where feasible. For projects in critical habitats, the project's mitigation strategy should be described in a Biodiversity Action Plan and be designed to achieve net gains of those biodiversity values for which the critical habitat was designated.
IFC PS7: Indigenous Peoples	This PS deals with safeguarding Indigenous Peoples. This PS aims to protect the interests of Indigenous Peoples during project implementation. On a broader scale, it requires project implementation to avoid adverse impacts on Indigenous Peoples and ensure their participation and consent.
IFC PS8: Cultural Heritage	Cultural heritage, according to this PS, refers to tangible forms of cultural heritage, such as tangible movable or immovable objects, property, sites, structures, or groups of structures, having archaeological (prehistoric), paleontological, historical, cultural, artistic, and religious values; unique natural features or tangible objects that embody cultural values, such as sacred groves, rocks, lakes, and waterfalls; and certain instances of intangible forms of culture that are proposed to be used for commercial purposes, such as cultural knowledge, innovations, and practices of communities embodying traditional lifestyles.

3.5.2 IFC Environmental, Health and Safety Guidelines

The Environmental, Health and Safety (EHS) Guidelines are technical reference documents that address IFC's expectations regarding its projects' pollution management performance. They are designed to assist managers and decision-makers with relevant industry background and technical information. This information supports actions aimed at avoiding, minimising, and controlling EHS impacts during the construction, operation, and decommissioning phase of a project or facility. The EHS Guidelines serve as a technical reference source to support the IFC Performance Standards implementation.

General EHS Guidelines exist which contain information on cross-cutting environmental, health, and safety issues potentially applicable to all industry sectors; these are listed in *Figure 3.2* below:

Figure 3.2 IFC General EHS Guidelines;

General EHS Guidelines

1. Environmental

1.1 Air Emissions and Ambient Air Quality
1.2 Energy Conservation
1.3 Wastewater and Ambient Water Quality
1.4 Water Conservation
1.5 Hazardous Materials Management
1.6 Waste Management
1.7 Noise
1.8 Contaminated Land

2. Occupational Health and Safety

2.1 General Facility Design and Operation
2.2 Communication and Training
2.3 Physical Hazards
2.4 Chemical Hazards
2.5 Biological Hazards
2.6 Radiological Hazards
2.7 Personal Protective Equipment (PPE)
2.8 Special Hazard Environments
2.9 Monitoring

3. Community Health and Safety

3.1 Water Quality and Availability
3.2 Structural Safety of Project Infrastructure
3.3 Life and Fire Safety (L&FS)
3.4 Traffic Safety
3.5 Transport of Hazardous Materials
3.6 Disease Prevention
3.7 Emergency Preparedness and Response

4. Construction and Decommissioning

4.1 Environment
4.2 Occupational Health and Safety
4.3 Community Health and Safety

The above-mentioned EHS Guidelines will be applied to the proposed Project.

3.5.3 Industry Specific EHS Guidelines

In addition to those EHS Guidelines presented above, further industry specific EHS guidelines applicable to the proposed Project exist.

3.5.3.1 IFC EHS Guidelines for Mining, 2007

The EHS Guidelines for Mining apply to open-pit mining and includes guidance on:

- Industry-specific Impacts and management
- Performance indicators and monitoring

Industry-Specific Impacts and Management

This section of the Mining EHS Guidelines provides a summary of EHS issues associated with mining activities (and including ore processing facilities) which may occur during the exploration, development and construction, operation, closure and decommissioning, and post-closure phases, along with. Recommendations for their management are further detailed in the ESIA report.

Environmental

Potential environmental issues associated with mining activities may include managing the below aspects.

- Water use and quality
- Wastes
- Hazardous materials
- Land use and biodiversity
- Air quality
- Noise and vibrations
- Energy Use
- Visual Impacts

Occupational Health and Safety

Mining activities should seek to provide an operation where people can work without being injured and where the workforce's health is promoted. Facility –specific occupational health and safety hazards should be identified based on job safety analysis or comprehensive hazard or risk assessment using established methodologies such as a hazard identification study [HAZID], hazard and operability study [HAZOP], or a quantitative risk assessment [QRA].

Occupational health and safety issues occur during all phases of the mining cycle and can be classified according to the below categories. The IFC recommended strategies to manage these issues will continue to be applied to the Project.

- General workplace health and safety
- Hazardous substances
- Electrical safety and isolation
- Physical hazards
- Ionizing radiation
- Fitness for work
- Travel and remote site health
- Thermal stress
- Noise and vibration

Community Health and Safety

Community health and safety issues that may be associated with mining activities include transport safety along access corridors, transport and handling of dangerous goods, impacts to water quality and quantity, inadvertent development of new vector breeding sites, and potential for transmission of communicable diseases, e.g., respiratory and sexually transmitted infections resulting from the influx of project labour. Besides, significant household and community level effects on the social determinants

of health, e.g., drug, alcohol, gender violence, and other psychosocial effects, are associated with the rapid influx of labour during construction and operational phases. The rapid influx of labour and their associated extended family members may also significantly burden existing community health facilities and resources. Finally, because of their large and generally positive economic impacts, large mining developments can rapidly move local communities from a pattern of infectious diseases, e.g., malaria, respiratory and gastrointestinal infections, to a pattern of non-communicable diseases, e.g., hypertension, diabetes, obesity and cardiovascular disorders. The medical infrastructure in many developing countries is often poorly equipped or experienced in dealing with non-communicable diseases.

Recommendations for managing these issues will be followed as described in the General EHS Guidelines.

Additional concerns specific to mining activities, community health and safety implications, and broader EHS implications will also be taken into account from these IFC EHS Mining Guidelines. These include:

- Tailings Storage Facility Safety
- Water Storage Dams
- Emergency Preparedness and Response
- Communicable Diseases
- Specific Vector Control and Prevention Strategies

Performance Indicators and Monitoring

Environment

Guidelines of emissions and effluents are presented in this section and recommendations to environmental monitoring programmes. These will continue to be practiced at the South Dune operations.

Occupational Health and Safety

Relevant mining-related recommendations are provided including Occupational Health and Safety Guidelines, Accident and Fatality Rates, and Occupational Health and Safety Monitoring, which will continue to be practiced at the South Dune operations.

3.5.4 Equator Principles

The Equator Principles (EPs) are a risk management framework, adopted by financial institutions, to determine, assess, and manage environmental and social risk in projects and are primarily intended to provide a minimum standard for due diligence to support responsible risk decision-making. Equator Principle Financial Institutions (EPFIs) (including the United Kingdom Export Finance [UKEF]) commit to implementing the EPs in their internal environmental and social policies, procedures and standards for financing projects and will not provide Project Finance or Project-Related Corporate Loans to projects where the client will not, or is unable to, comply with the EPs.

To facilitate potential access to funding for project development potential borrowing organisations need to consider the EPs and environmental and social risk management as part of the ESIA process.

These EPs, shown in Figure 3.3 require that Projects comply with the IFC Performance Standards on Environmental and Social Sustainability (IFC PSs). The requirements of the IFC PSs are discussed in Section 3.5.1.

The EPs are adopted by approximately 79 financial institutions and were updated to version three in 2013.

Figure 3.3 The Equator Principles

1.
2. Review and categorisation
3. Social and environmental assessment
4. Applicable environmental and social standards
5. Environmental and Social Management System and Equator Principles Action Plan
6. Stakeholder Engagement
7. Grievance mechanism
8. Independent review
9. Covenants
10. Independent monitoring and reporting
11. Reporting and Transparency

4. THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) PROCESS

4.1 Introduction

The ESIA process has be undertaken in compliance with the Kenyan legislative requirements of the Environmental Management and Co-ordination Act of 1999 & Environmental (Impact Assessment and Audit) Regulations, June 2003. In addition to the applicable regulations and norms of the government of Kenya, the proposed Project has committed to comply with the requirements of the IFC.

The purpose of the ESIA will be to examine how the proposed mine will lead to a measurable difference in the quality of the environment and the quality of life of impacted individuals and communities. Over the past decades, environmental impact assessments have expanded to include social impact assessments as well as public consultation/stakeholder engagement in the planning and decision-making process to avoid, reduce, or mitigate adverse impacts and to maximise the benefits of the project proposed. More recently, the emphasis has moved to the ESIA producing robust social and environmental management plans which can effectively implement the recommended mitigation measures (developed in partnership with the proponent) identified in the ESIA during the life of the project.

The key stages for this ESIA are:

- Scoping;
- Stakeholder Engagement;
- Baseline data collection;
- Assessment of impacts and mitigation;
- Support during the ESIA approval process;
- Interaction with design and decision-making processes;
- Management system integration; and
- Uncertainty and change management.

It must be noted that these key stages do not follow a linear process, but several stages are carried out in parallel. Many assumptions are revisited and modified as data becomes available and as the Project and ESIA progresses.

4.2 Existing approved ESIA

The Kwale Mineral Sands Operation was originally developed by Tiomin Resources Inc. (later Vaaldiam), with exploration and pre-feasibility work undertaken since the 1990s. Following the initial conclusion of the initial feasibility studies and the confirmation of economically viable mineral reserves, Tiomin decided to proceed with actual on-ground activities. In 1999, Kenya enacted the first environmental law, the Environment Coordination and Management Act. This Act of Parliament required all projects with potential negative impacts to the environment to undertake environmental impact assessments. In compliance, Tiomin contracted environmental experts, Coastal Environmental Services Ltd, to conduct the project's first Environmental Impact Assessment. The impact assessment, including specialist studies, began in 1999 and was completed in 2001. The EIA Report was then submitted to NEMA, and the Project Environmental Impact Assessment (EIA) License issued on 30th June 2005.

Base Resources, through its Kenyan subsidiary, Base Titanium, acquired the Project in 2010. As required by the EIA Regulations, a proponent change should trigger application for Variation of the respective EIA License. Base followed this process, and was issued with a Certificate of Transfer of Environmental Impact License, No. 0000048, on 20th July 2010.

The EIA License covered both Central and South Dunes. However, after discovering additional mineral resources beyond the South Dune area covered by the license, NEMA advised to conduct additional studies in the new reserve area. This ESIA scoping document covers the South Dune Extension. It aims to identify new impacts or the impacts of further cumulative impacts resulting from this extension that need to be incorporated into Base's existing Environmental and Social Management System (ESMS).

4.3 Kenyan Legislative Process

The Kenyan legislative ESIA process is illustrated in Figure 4.1. The ESIA Approach and Stakeholder Engagement Process detailed in this Section and Section 6 respectively are in conformance with these legislative requirements.

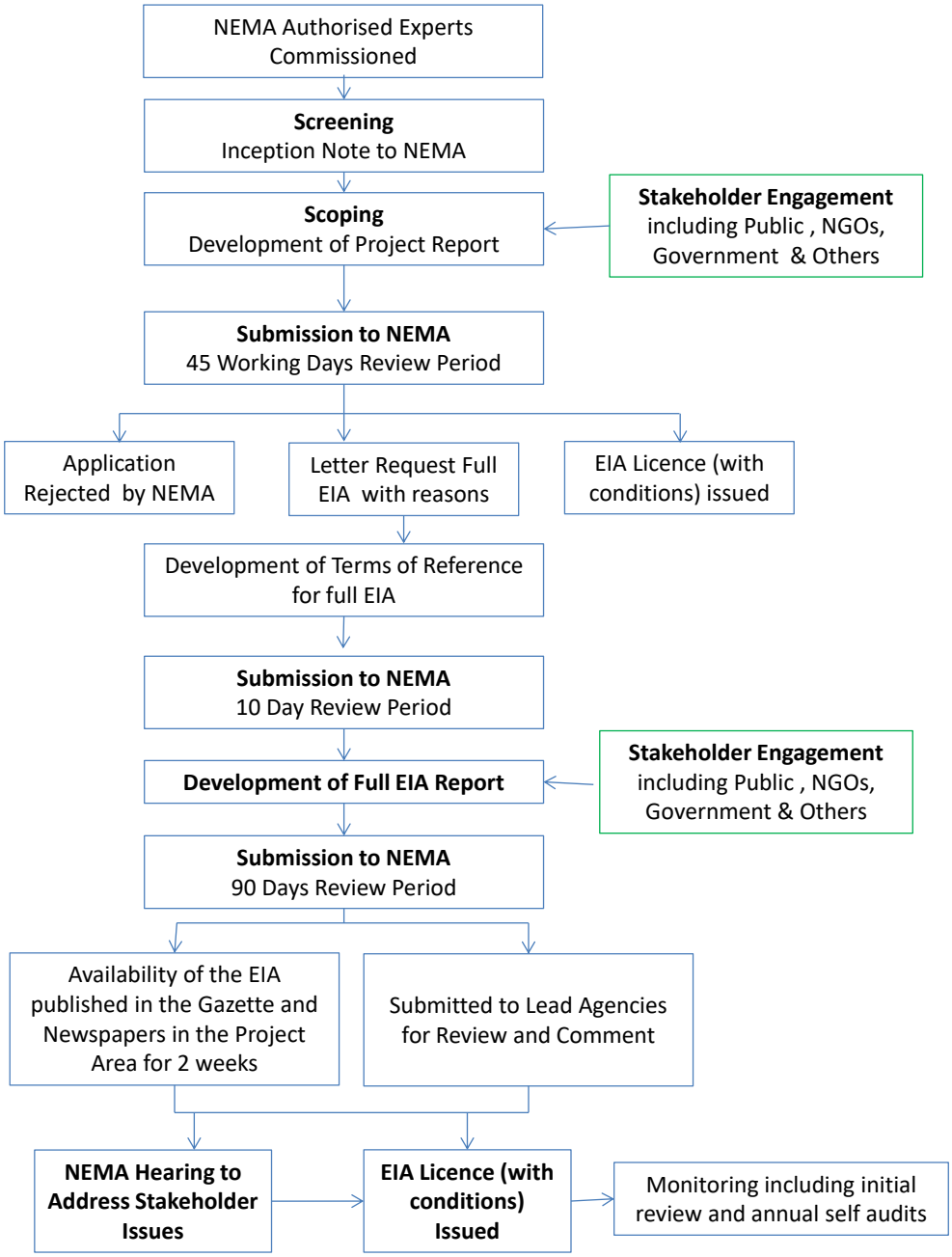


Figure 4.1: Kenyan ESIA Process

PLEASE NOTE:

On 19 August 2016, the Government of Kenya published a special issue gazette (Kenya Gazette Supplement No. 137), which replaces the Second Schedule of the Environmental Management and Coordination Act (No. 8 of 1999) with low, medium and high risk projects that require an Environmental and Impact Assessment (EIA). It is now mandatory that all new major projects require that an EIA be conducted, and therefore a **Screening Inception Note to the NEMA** and **Preliminary Project Report** is no longer required. As such, the compilation and submission of such a report to the Kenyan National Environment Management Authority (NEMA) has not been included in this ESIA Execution Plan. ToR reports for Phase 2 and Phase 3 are still however a requirement by the NEMA, and submission of these reports to NEMA for Project registration purposes will be prioritised.

4.4 Initial Document Review

The ERM project team conducted an initial review of Operation documentation to obtain an adequate understanding of the significant elements and key sensitivities to be considered during the South Dune Extension study. The review was premised on the documents relating to the South Dune Extension description as presented in Section 2 of this Report.

4.5 Scoping

4.5.1 Approach

The purpose of the scoping stage is to identify key sensitivities and those activities with the potential to contribute to, or cause, potentially significant impacts to environmental and socio-economic receptors and resources, and to evaluate siting, layout and alternatives for the proposed Project. The key objectives of scoping are to:

- Identify the potentially most significant impacts;
- Obtain stakeholder views through consultation; and
- Develop the ToR for the ESIA through consultation to ensure that the ESIA process and associated reporting output are focused on the key issues.

The ESIA process will focus on these key issues through the collection of information on existing environmental and social conditions; engagement with stakeholders; understanding the impacts to the physical, biophysical and social environment; and developing the measures to avoid/control and monitor these impacts.

The ToR for the ESIA forms the basis of the EISA.

4.5.2 Scoping Site Visit

4.5.2.1 *Introduction*

A series of site visits have been conducted by ERM and various specialist over time, within the South Dune and south dune extension resource area. These visits and specialist studies have been conducted from a period prior to the Preliminary RAP development (2018) till present. The objective of the site visits and studies have been to understand the biophysical and social environment of the area and to build up on baselines that would later be used to develop annual audits, Project Reports, the Preliminary RAP and this current South Dune Extension ESIA. More recent site visits were conducted to validate sensitivities identified during an initial review of secondary data.

4.5.2.2 *Social*

During the prior visits to site, direct observations were undertaken to identify land use, the presence of settlements, livelihood activities and other potentially sensitive sites within the resource area.

4.5.2.3 *Biodiversity*

During the prior visits to site, direct observations were undertaken to investigate major landscapes, sites of potential ecological sensitivity and drainage lines within the resource area.

4.5.3 Scoping Stakeholder Engagement

Detailed stakeholder engagement has been ongoing throughout the mining operations, designed by Base, together with various stakeholders' cohorts.

4.6 Stakeholder Engagement

Detailed stakeholder engagement has been ongoing throughout the mining operations, designed by Base, together with various stakeholders' cohorts, as outlined in Section 6 of this Report. ERM obtained the records and findings from the series of stakeholder engagement meetings for review. The aim of this was to ensure that the individuals, groups or organisations who could be directly affected by mining of the South Dune Extension, and those individuals or organisations who, although not directly affected by the proposed extension, represent those affected or have a regulatory duty, an interest, influence or secondary involvement in the operation, are adequately consulted. The review was also conducted to ensure that stakeholder concerns are addressed in the assessment and that sources of existing information and expertise are identified.

These documents were collected for further review during baseline studies and impact analysis phases of the ESIA.

4.7 Baseline Data Collection

One of the main objectives of the ESIA process is to collect suitable data on the physical, biophysical and social environment, to understand what receptors and resources have the potential to be significantly affected by the proposed Mine extension. Baseline data also describes the conditions that have been used to assess both social and environmental impacts. The description of the baseline will be aimed at providing sufficient detail to meet the following objectives:

- Identify the key conditions and sensitivities in areas potentially affected by the proposed Mine;
- Provide a basis for extrapolation of the current situation, and development of future scenarios without the proposed Mine;
- Provide data to aid in the prediction and evaluation of possible impacts of the proposed Mine;
- Understand stakeholder concerns, perceptions and expectations regarding the proposed Mine;
- Allow the proposed Mine to develop appropriate mitigation measures later in the ESIA process; and
- Provide a benchmark to assess future changes and to assess the effectiveness of mitigation measures.

As detailed in Chapter 5 of this Report, Base has programmes and plans for collecting baseline data measurements and documentation of environmental and social parameters of interest to the mining operations. ERM collected this data and reports for review and analysis. The main documents reviewed include:

- The Kwale Mineral Sands Project ESIA Report and Addendums.
- Environmental and Social Management System
- Ecological Monitoring, Noise, Air quality, water monitoring Procedures
- Specialist Biodiversity assessment reports
  - Faunal Assessment for Kwale Mineral Sands Project.

- Ecosystem Services reports
- Flora Report Gongoni and Buda Forests
- Herpetofauna and Invertebrate (used as bio-indicators of wetland systems) Reports
- Bird Species reports

- Environmental Baseline Data Report for the Kwale Prospecting Area and Ship Loading Facility.
- Kwale Mineral Sands Soil Characterization Report, 2012.
- Base Titanium Air Quality Monitoring Review
- Environmental Monitoring Data collected for the mining site includes data collected on the radiation baseline, noise and air quality baseline data.
- Social Impact Assessment Report for the Kwale Mineral Sands Project.
- The Resettlement Framework for the Southern Extension.
- Feedback from stakeholder engagement exercises that had been conducted in the area of the South Dune Extension.
- Community Grievance Reports
- Community Programmes Reports
- Community Health reports
- Community infrastructure reports
- Stakeholder Engagement Plan, 2011

ERM conducted a detailed analysis of these documents, among others as a basis of assessment of both social and environmental impacts (the impact assessments are presented in Chapter 8) from the extension of the mining activities to the South Dune Extension.

All documents referenced are also provided in Chapter 12.

4.8 Assessment of Impacts and Mitigation

4.8.1 Introduction

The main objectives of the impact assessment were to:

- Analyse stakeholder and community views on identified key potential risks and opportunities from the extension of mining activities to the South Dune Extension through consultations.
- Analyse the specialist studies' findings to ensure that the ESIA process and associated reporting output are focused on all the key issues.
- Identify and analyse, from the above activities, the potentially most significant impacts related to the South Dune Extension mineral reserve that may alter the baseline environment and social parameters of interest.

The impact assessment process comprises several steps that collectively assess how the proposed Mine will interact with elements of the physical, biological, cultural, or human environment to produce impacts on resources/receptors. The steps involved in the impact assessment stage are described in greater detail below.

4.8.2 Impact Characterisation

The impact characteristic terminology used is summarised in Table 4.1.

Table 4.1: Impact Characteristic Terminology

Characteristic	Definition	Designations
Type	A descriptor indicating the relationship of the project's impact (in terms of cause and effect).	Direct Indirect Induced
Extent	The "reach" of the impact (e.g., confined to a small area around the Project Footprint, projected for several kilometres, etc.).	Local Regional International
Duration	The period over which a resource/receptor is affected.	Temporary Short-term Long-term Permanent
Scale	The size of the impact (e.g., the size of the area damaged or impacted, the fraction of a resource that is lost or affected, etc.)	[no fixed designations; intended to be a numerical value]
Frequency	A measure of the constancy or periodicity of the impact.	[no fixed designations; intended to be a numerical value]

4.8.3 Impact Types

In the case of ***type***, the designations are defined universally (i.e., the same definitions apply to all resources/receptors and associated impacts). Note that impact type may be either positive or negative.

For these universally defined designations, the definitions are provided in Table 4.2.

Table 4.2: Impact Types

Designation	Definition
Direct	Impacts result from a direct interaction between the mining activity and a resource/receptor (e.g., between the occupation of a plot of land and the habitats affected).
Indirect	Impacts that follow on from the direct interactions between the mining activity and its natural and human environment as a result of subsequent interactions within the natural and human environment (e.g. viability of a species population resulting from loss of part of habitat as a result of the mining activity occupying a plot of land).
Cumulative	Impacts that result from the incremental impact, on areas or resources used or directly impacted by the mining activity, from other existing, planned or reasonably defined developments at the time the risks and impacts identification process is conducted (e.g. incremental contribution of gaseous emissions, reduction of water flows in a watershed due to multiple withdrawals)
Perceived	Changes that may be unconnected to, but blamed on, the mining activity. These are identified and assessed through stakeholder engagement and consultation.

4.8.4 Impact Significance

The evaluation of the significance of impacts is based on a calculation matrix that combines the magnitude of the potential impacts (project pressures) against the sensitivity of the receptors/resources. Impact's significance is ranked as either positive or negative in the following 4 classes: Low, Medium, High and Critical, as shown in the below matrix (Table 4.3*).*

Table 4.3: Evaluating the significance of impacts

		Sensitivity/Vulnerability/Importance of Resource/Receptor		
		Low	Medium	High
Magnitude of Impact	**Negative Impacts**			
	Negligible	Negligible	Negligible	Minor
	Small	Negligible	Minor	Moderate
	Medium	Minor	Moderate	Major
	Large	Moderate	Major	Critical
	Positive Impacts			
	Positive	Minor	Moderate	High

The negative impact significance classes are described below.

- **Low**: An impact significance is low/ minor when the magnitude of the impact is negligible or the magnitude of the impact is small and the resource/receptor sensitivity is low.
- **Medium**: An impact significance is medium/ moderate when the effect on a resource/receptor is evident, but the magnitude of the impact is respectively small/medium and the sensitivity of resource receptor is respectively medium/low, or the magnitude of impact should be well within applicable standards.
- **High**: An impact significance is high/ major when the magnitude of the impact is respectively small/medium/large and the sensitivity of resource/receptor is respectively high/medium/low, or when the magnitude of the impact is generally within the officially recognized limit or standard, however, there may be occasional exceedances.
- **Critical**: An impact significance is critical when the magnitude of the impact is respectively medium/large and the resource/receptor sensitivity is respectively high/medium, or when an officially recognized limit or standard may be regularly exceeded.

In case a resource/receptor (including people) is essentially not affected or the effect is indistinguishable from natural background variations, no potential impact is expected therefore it doesn't need to be reported.

Generally, the assessment of impacts potentially generated by the mining activity is site-specific and project component-specific. The designation of both the magnitude of impacts and the sensitivity of resources/receptors vary on the specific component basis and shall be done based on professional judgment and topic-specific Technical Guidelines

The evaluation needs to be carried out on a case-by-case basis, as the significance of an impact heavily relies on the values of the affected society, the site-specific human and natural context, the nature of the exploration activity and any specific conditions of the Study Area.

4.8.5 Impact Magnitude

The magnitude describes the change that the impact of mining activity is likely to impart upon the resource/ receptor. The designation of magnitude is a function of the following evaluation criteria, described in detail in Table 4.4:

- Duration

- Extent
- Scale

Table 4.4: Magnitude of impact evaluation criteria

Criteria	Description
Duration (defined on a component-specific basis)	The period over which the impact is expected to last before resource/receptor recovery. It refers to the duration of the impact and not the duration of the activity causing the impact. It should be: ■ **Temporary**. The effect is limited in time, resulting in temporary, not continuous changes in the resource/receptor quality/quantity status. The resource/receptor can return quickly to its previous conditions. If no other tools are available for defining the timeframe, consider the temporary duration of the impact a period approximately equal to less than 1 year. ■ **Short-term**. The effect is limited in time and the resource/receptor can return to its previous conditions within a short timeframe (defined by the expert judgment on a component-specific basis). If no other tools are available for exactly defining the timeframe, consider as short-term duration of the impact a period approximately between 1 and 5 years. ■ **Long-term**. The effect is limited in time and the resource/receptor can return to its previous conditions within a long timeframe (defined by the expert judgment on a component-specific basis). If no other tools are available for exactly defining the timeframe, consider as the long-term duration of the impact a period approximately between 5 and 25 years. ■ **Permanent**. The effect is not limited in time, the resource/receptor is not able to return to its previous conditions and/or the damage/variation is irreversible. ■ If no other tools are available for defining the timeframe, consider the permanent duration of the impact a period approximately over 25 years.
Extent (defined on a component-specific basis)	The spatial scale of the impact, the full area over which the impact occurs. It should be: ■ **Local**. Local impacts are confined to a small area (it varies on specific component basis) that generally covers a few towns/villages. ■ **Regional**. Regional impacts are related to an area that can be extended from ■ several villages (county-level) to a wider area with the same geographical and ■ morphological characteristics (it can't correspond with administrative borders); ■ **National**. National impacts are related to more than one region and are confined within national borders. ■ **Transboundary**. Transboundary impacts extend to multiple countries beyond the Exploration activity's host country. Examples include air pollution extending to multiple countries, use or pollution of international waterways, and trans-boundary epidemic disease transmission.
Scale (defined on a component-specific basis)	The scale of the impact is the degree of change in the qualitative and quantitative conditions of resource/receptor from its ante-operam baseline status: ■ **Not distinguishable** or hardly measurable change from the baseline conditions or impacts affect a limited amount of the specific component or impacts are likely to be well within statutory limits1 or ambient/seasonal range. ■ **Distinguishable** change from baseline conditions or impacts affect a small portion of a specific component or impacts are expected to be within/close to statutory limits or ambient seasonal range. ■ **Evident** difference from baseline conditions or impacts affect a substantial portion of a specific component or impacts are likely to result in occasional exceedances of statutory limits or ambient seasonal range (over limited periods). ■ **Major** change compared to baseline conditions or impacts that affect the entire or significant portion of a specific component or impacts is likely to result in routinely exceedances of statutory limits or ambient seasonal range (over extended periods).

As mentioned above, the magnitude of the impact is a combination of duration, extent and scale and it is ranked in the following four classes: Negligible, Small, Medium and Large. The calculation of impact magnitude is described in Table 4.5.

Table 4.5: Ranking of impacts magnitude evaluation criteria

Ranking	Evaluation Criteria			Magnitude
	Duration of the impact	Extent of the impact	Scale of the impact	
1	Temporary (1)	Local (1)	Not distinguishable (1)	(ranging from 3 to 12)
2	Short-term (2)	Regional (2)	Distinguishable (2)	
3	Long-term (3)	National (3)	Evident (3)	
4	Permanent (4)	Transboundary (4)	Major (4)	
Score	(1;2;3;4)	(1; 2; 3; 4)	(1; 2; 3; 4)	

Table 4.6: Ranking of impacts magnitude

Ranking	Magnitude Level
3-4	Negligible
5-7	Small
8-10	Medium
11-12	Large

4.8.6 Resource/Receptor Sensitivity

The resource/receptor sensitivity is a function of the baseline context where the mining activity will be located, of its quality status and, where applicable, of its ecological importance and protection status, based on the existing pressures, before the activity construction and operation.

Table 4.7 describes the resource/receptor sensitivity evaluation criteria.

Table 4.7: Resource/receptor sensitivity evaluation criteria

Criteria	Description
Importance/value	The importance/value of a resource/receptor is generally evaluated based on the legal protection (defined on national and/or international requirements), the government policy, ecological value, historical or cultural value, stakeholder views and economic value
Vulnerability/resilience of the resource/ receptor	The resource/receptor can adapt to changes brought by the mining activity and/or to recover its original status. With regards to environmental receptors, vulnerability can be identified based on: ■ A comparison with quality standards1 and baseline conditions assessed. ■ The role it plays/the services/uses it provides in the ecosystem (e.g. the soil capacity for water retention or role in carbon sequestration, the soil and water capacity to support the development of flora, and fauna species, mangroves offer flood and erosion mitigation and protection, etc.) and in the community (e.g. water use for drinking purposes or sanitary services, soil used for cultivation and livestock, fish species for the subsistence of a coastal village, etc.).

	■ Its availability and/or the presence of an alternative resource/receptor of comparable quality/use (e.g. a suitable technically or an economically feasible alternative for water supply for the community, a suitable alternative for a specific habitat that supports the development of specific flora/fauna species, etc.). ■ The possibility to easily adapt to a new condition, move or replace it. With regards to social and human receptors, their vulnerability and thus their ability to adapt to changes is a function of the level of livelihoods assets (such as health or education) or of the type and level of access to services, infrastructures structures and process to protect or improve their livelihoods.

As mentioned above, the resource/impacts sensitivity is a combination of importance/value and vulnerability/resilience and it is ranked in the following 3 classes: Low, Medium and High. The sensitivity is assigned to each specific resource/receptor by the judgment of the expert and thus, for its calculation.

4.8.7 Mitigation of Impacts

Once the significance of a given impact has been characterised using the above-mentioned methodology, the next step is to evaluate what mitigation measures are warranted. In keeping with the Mitigation Hierarchy, the priority in mitigation is to first apply mitigation measures to the source of the impact (i.e., to avoid or reduce the magnitude of the impact from the associated project activity), and then to address the resultant effect to the resource/receptor via abatement or compensatory measures or offsets (i.e., to reduce the significance of the effect once all reasonably practicable mitigations have been applied to reduce the impact magnitude).

It is important to have a solid basis for recommending mitigation measures. The role of any given ESIA is to develop an acceptable project, and to help responsibly develop the project. Impact assessment is about identifying the aspects of a project that need to be managed, and demonstrating how these have been appropriately dealt with. As key influencers in the decision-making process, the role of the impact assessment is not to stop development or propose every possible mitigation or compensatory measure imaginable, but rather to make balanced judgments as to what is warranted, informed by a high quality evidence base.

Additional mitigation measures should not be declared for impacts rated as not significant unless the associated activity is related to conformance with an 'end of pipe' applicable requirement. Further, it is important to note that it is not an absolute necessity that all impacts be mitigated to a not significant level; rather the objective is to mitigate impacts to an ***as low as reasonably practicable*** (ALARP) level.

Embedded controls (i.e., physical or procedural controls that are planned as part of the project design and are not added in response to an impact significance assignment), are considered as part of the project (before entering the impact assessment stage of the impact assessment process).

4.8.8 Residual Impact Assessment

Once mitigation measures are declared, the next step in the impact assessment process is to assign residual impact significance. This is essentially a repeat of the impact assessment steps discussed above, considering the assumed implementation of the additional declared mitigation measures.

4.8.9 Cumulative Impacts / Effects

Cumulative impacts and effects are those that arise as a result of an impact and effect from the Project interacting with those from another activity to create an additional impact and effect. These are termed cumulative impacts and effects.

The impact assessment process will predict cumulative impacts/effects to which the proposed Project may contribute. The approach for assessing cumulative impacts and effects resulting from the proposed Mine and another activity affecting the same resource/receptor is based on a consideration of the

approval/existence status of the 'other' activity and the nature of information available to aid in predicting the magnitude of impact from the other activity.

4.9 Interaction with Design and Decision-making Process

The interaction between the ESIA team and the design and decision-making process is one of the key areas in which an ESIA can influence how a project develops. It includes involvement in defining the project and identifying those activities with the potential to cause environmental and social impacts (e.g. physical presence, identification of water sources and uses, noise, workforce, traffic, local employment, procurement). Project planning, decision-making and refinement of the Project description continue throughout the assessment process as a result of the development of the proposed Mine, and in response to the identified impacts.

4.10 Management System Integration

Stakeholders and external decision-makers for the proposed mine will rely on the findings of the ESIA (e.g. the significance of residual impacts) in formulating their ultimate views to the proposed Project. As an ESIA is based on predictions made in advance of an activity taking place, it effectively makes assumptions that the project will implement certain controls and mitigation measures. If the controls do not happen, then the ESIA is undermined as a tool for stakeholders and external decision-makers. It is important, therefore, that these 'assumptions', i.e. the mitigation/management measure recommendations are translated into commitments that will be implemented through their integration into the existing Environmental and Social Management System (ESMS) for the Project.

It is also important that, over the life of the proposed mine, the vehicle by which the commitments as set out in the ESMMP are turned into specific actions, are implemented through the existing Environmental and Social Management System (ESMS). The implementation of such a system should ensure that any unforeseen impact or issues that may arise will be dealt with effectively under the relevant laws and regulations of Kenya and the international Performance Standards & Environmental, Health and Safety Guidelines. In this way, stakeholders and external decision-makers should have confidence in the ESIA as a tool to aid in their decision-making on the proposed Project.

4.11 Uncertainty and Change Management

Even with a final design and an unchanging environment, impacts are difficult to predict with certainty. Uncertainty stemming from on-going development of the Project design is inevitable, and the social and biophysical environment is typically variable from season to season and year to year. Similarly, the organisational structure and roles and responsibilities may also change as the Project progresses. Where such uncertainties are material to ESIA findings, they will be clearly stated and conservatively approached ('the precautionary approach') to identify the broadest range of likely residual impacts and necessary mitigation measures.

The ESIA process does not stop with the submission of the Final ESIA report. Therefore, the ESMMP will require a mechanism to manage change. At times these changes may be material, potentially influencing the original findings of the ESIA, and hence, the basis for its approval. Such a mechanism to manage change, or a change management system, must ensure that changes to the scope of the proposed Project are subjected to a robust social and environmental assessment process.

Any changes to Project scope or new substantive E&S findings through ongoing monitoring will be evaluated for their degree of significance, and will be incorporated into the appropriate Project documentation as follows:

- Minor changes will be reflected in updates to the applicable Management Plans included in the overall ESMMP; and
- Substantive design changes that might potentially alter the ESIA findings (i.e. those that result in changes to the predicted significance of environmental and social impacts) will be subject to re-

assessment, further stakeholder consultation, supplementary reporting and revision of the Project's ESMMP. Typically, such substantive changes will be submitted as an addendum to this ESIA.

5. ENVIRONMENTAL AND SOCIAL BASELINE

5.1 Introduction

It is important to understand the receiving physical, biophysical and social attributes of the area in which the mine is proposed, and its surroundings. This section focuses on the environmental and social aspects that have been considered and addressed in the ESIA process.

The description of the baseline environment is essential because it represents the conditions of the environment before construction and operation of the proposed Mining operation. Therefore, the description of the baseline environment provides a description of the current or status quo environment against which social and environmental impacts of the proposed Project can be assessed and future changes monitored.

The information presented in this section has been collected from desktop studies (including the use of remote sensing techniques to map out the major landcover and land use attributes in the Study Area), data provided by the client of the current operation, and site visits and baseline studies conducted in the proposed Study Area. Detailed descriptions of the baseline physical, biological and social environments are provided in this Chapter below.

This *Chapter* is organised as follows:

- Physical Environment:
  - Climate;
  - Geology and Soils
  - Surface and Groundwater Resources
  - Ambient Air Quality;
  - Ambient Noise; and
  - Radiation
- Biological Environment:
  - Flora
  - Fauna
  - Biodiversity Monitoring
  - Wetlands
- Socioeconomic Environment:
  - Administrative Context
  - Demographics
  - Household Size
  - Household structures
  - Livelihoods and economic activities
  - Education
  - Health
  - Employment
  - Water and Sanitation
  - Land Tenure

5.2 Physical Environment

5.2.1 Climate

Kwale County has a monsoon type of climate, largely hot and dry from January to April/May and coolest in June to August. Rainfall in the County is bi-modal, with short rains experienced between October and December, and long rains between March and May (Possible to extend to July)[5]. The annual mean precipitation varies from 750mm to 1,500mm per annum along the coastline (including the Msambweni area where the Operation lies), and from 500mm to 675mm per annum further inland.

The County's mean annual temperatures range from 25°C to 27°C in the coastal lowlands (but extends to Shimba Hills), and 23°C to 25°C.

Historically, the county has experienced an average increase in temperatures and decreased precipitation. However, there have been interfaces between years of extensive droughts and intense precipitation leading to floods, especially in the central to eastern parts of the County, where the Operation falls[6].

These climate extremes pose risks to the mining operations, especially during intense rainfall that may lead to floods and the associated increase in topsoil erosion, potential mine pit wall collapse, inhibition of movement, surface water quality degradation and challenges to the management of loose soil and new vegetation during mine rehabilitation. Climate change and related impacts in Kwale County, especially the operational area, should be factored in during the entire period of mining activities to reduce likely additional costs and manage the potential negative impacts effectively.

5.2.2 Geology and Soils

5.2.2.1 Geology

The general geology of the Kwale area, including Msambweni Sub-County where the South Dune falls, comprises rocks of sedimentary origin, ranging in age from Upper Carboniferous (350 - 300 million years ago) to Recent (1,000 years to present). These rocks are dominated by the Cenozoic rocks, the Upper Mesozoic rocks (not exposed on the area) and the Duruma Sandstone Series. The Duruma Sandstone Series give rise to the most dominant topographical feature of the area, the Shimba Hills[7].

The sands deposit in the South Dune, similar to the Central Dune, is hosted within the Magarini Sands Formation, which are derived from the Duruma Sandstones Series, and were deposited during the late Pliocene age (5-2 million years ago). These sands consist primarily of riverine gravels and Aeolian sands that were eroded from the western Shimba Hills, and deposited onto the underlying Triassic Sandstones of the Mazeras Formation (251-200 million years ago).

The South Dune geology is essentially the same as that of the Central Dune. The Pliocene dunal sands (mostly red) directly and unconformably overlie the Mazeras formations (made up of grit or sandstones). These Pliocene sandstones, believe to be eroded off the Shimba Hills as loose sand+loam+clayey particles, are the main mineral ores in both Dunes. The 1997 mineral exploration drilling programme identified mineral reserves at a mean depth of 30m above the basement sandstone. However, following the 2010 Enhanced Definitive Feasibility Study (EDFS), the South Dune mineral reserve depth was revised to 19m.

[5] County Government of Kwale. First County Integrated Development Plan, 2013.

[6] MoALF (2016) Climate Risk Profile for Kwale County. Kenya County Climate Risk Profile Series. The Ministry of Agriculture, Livestock and Fisheries (MoALF), Nairobi, Kenya.

[7] HSEDCO (1998) Environmental Baseline Data Report for the Kwale Prospecting Area and Ship Loading Facility. Unpublished Report for Tiomin Resources Incorporated, Toronto, Canada.

5.2.2.2 Soils

Throughout the SML area, the soils show a defined east to west depositional sequence, with an increasing finer soil fraction (silt and clay) to the west. The soils have been divided into four distinct categories, the Soil Management Units (SMUs), for ease of reference[8]. SMU 1 and 2 were identified beneath the mineral deposit areas in the Central and South Dunes, while SMU 3 and 4 cover the current TSF area. Figure 5.1 below illustrates the distinct soil classes (SMUs) identified in the Central and South Dunes from the soil assessments done in 2012.

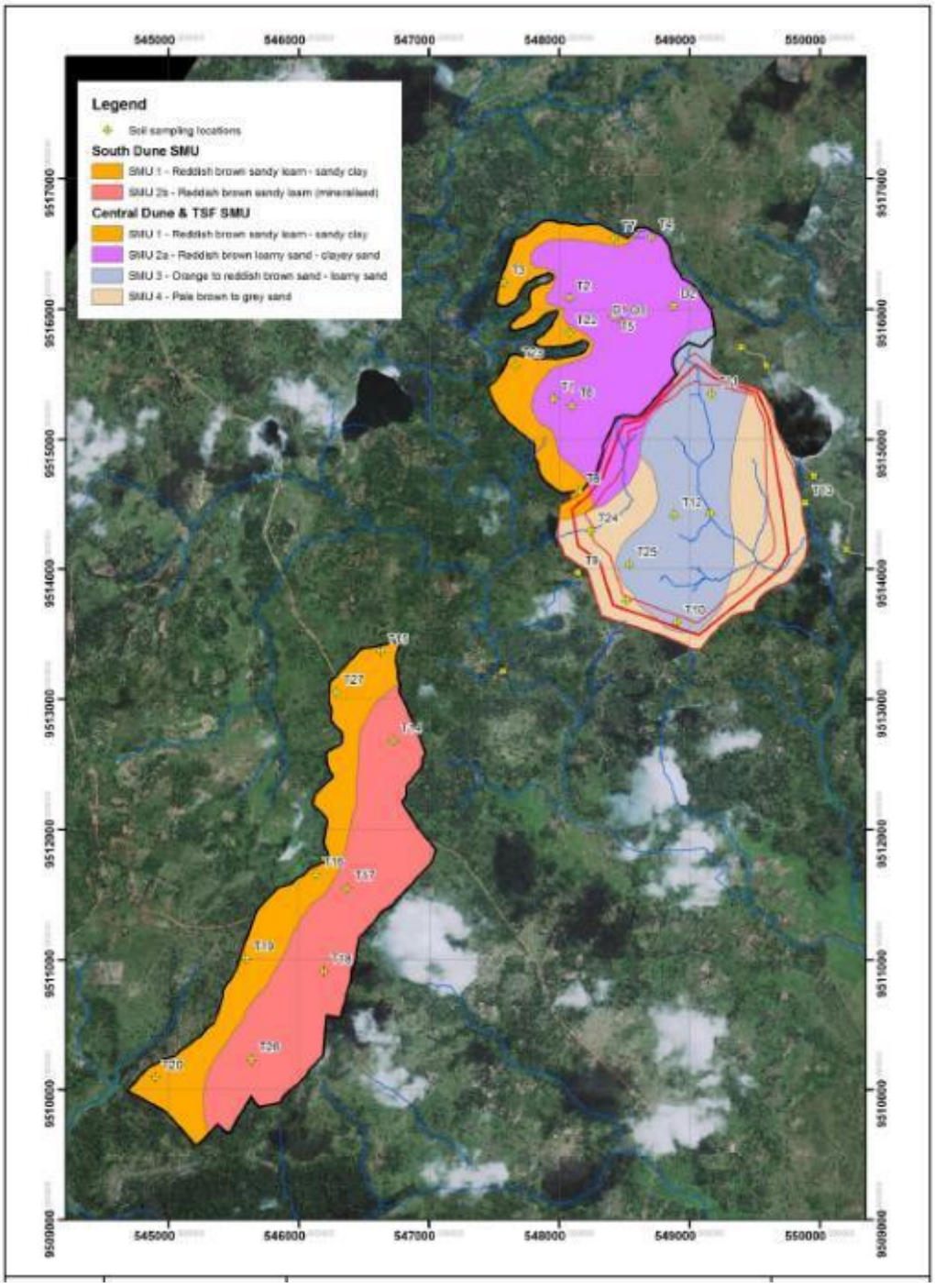


Figure 5.1: The Soil Management Units in Central and South Dune

[8] Kwale Mineral Sands Soil Characterization Report, 2012. Prepared by Soilwater Consultants.

From the illustration, the South Dune and South Dune Extension area appears to contain a higher silt and clay content, and falls under *SMU 1: Reddish brown sandy loam-sandy clay* and *SMU 2b: Reddish brown sandy loam-sandy clay loam*.

The SMU 1 soil type occurs along the western margin of the deposit, on which mining block 1017 falls. The surface layers (0-10cm) are generally characterised as sands or sandy loams, whilst the deeper horizons are considered sandy loams or sandy clay loams. The clay content in the surface 0-20cm of the profile varies from 5-15%, with corresponding 84-94% sand contents. Clay contents at depths greater than 30 cm are higher, in the range of 14-35%, with corresponding sand contents of 62-85%. Silt content is low, at < 5%, throughout the profile. All soils under SMU 1 are considered well structured, and roots occur throughout the top 2m of the profile, easily accessing the soil matrix given its low soil strength. In terms of chemical properties, the top layers of the soil (i.e. 0-20cm depth) have negligible phosphorus quantities, Potassium and Sulphur. However, Nitrate concentration is very high (i.e. > 100mg/kg) in the upper 10cm of the soil Unit, but decreases rapidly with depth through the profile, and is considered deficient (i.e. < 20mg/kg) beyond 20cm depth.

The SMU 2b soil type has a significant silt and clay content, resulting in a generally well-structured formation, and forms the primary ore body within the South Dune. Mining block 1018 falls this soil type. The surface layers (0-10cm) are generally characterised as sands or sandy loams, whilst the deeper horizons are considered sandy loams or sandy-clay-loams. The clay content in the top 0-20cm of the profile varies from 5-12%, with corresponding sand contents of 87-95%. Clay content at depths greater than 30cm is higher, in the range of 10-22%, with corresponding sand contents of 75-90%. Silt content is low, ranging from 0.2-3.3% in the topsoil, and 0.2- 6.6% deeper in the profile. All soils in this Unit, same as in SMU 1, are considered well structured, and plant roots occur throughout the top 2m of the profile. In terms of chemical properties, the top layers of the soil (i.e. 0-20cm depth) have negligible quantities of Phosphorus, Potassium and Sulphur, with low to moderate Nitrates levels.

From the illustration, the South Dune area appears to contain a higher silt and clay content and falls under SMU 1: Reddish-brown sandy loam-sandy clay and SMU 2b: Reddish-brown sandy loam-sandy clay loam.

Detailed analysis of the mine reserve soil types indicates that the surficial sections are highly erodible when left exposed due to their dispersive nature, especially after mechanical disturbance. However, when left undisturbed over time, they stabilise and become more resistant. The SMU 1 Soil type is more suitable for crops and vegetative growth, and is generally low on potentially toxic compounds, compared to the SMU 2a type, which is more sandy and has low moisture retention capacity.

Therefore, it is key to note that during surface soil stripping, the stockpiled topsoil should be vegetated to reduce erosion impact from rainfall during wet seasons.

Further, mine site rehabilitation, in general, will achieve the best results in dry periods due to low disturbance and erosion from rainfall or surface runoff. The SMU 1 soils which form the western side of the Dune can therefore be effectively used as surface cover during mine rehabilitation, to increase chances of natural vegetative regrowth where needed. They can also be utilised in cases of offsite biodiversity compensation activities, or in the propagation of seedlings of species of conservation value, for replanting[9].

5.2.3 Surface and Groundwater Resources

5.2.3.1 Surface Hydrology

The South Dune and South Dune Extension have a simple surface hydrological orientation. Discharge from various springs feeds ephemeral streams that radiate dendritically from the Dune. The most significant discharge occurs from the southeastern corner of the Dune, where springs feed the streams

[9] Kwale Mineral Sands Soil Characterisation, 2012. SoilWater Consultants.

that converge on the nascent upper Koromojo River, which in turn feeds the Upper and Lower Koromojo Dams[10].

The greater discharge to the South Dune's south-eastern corner is due to the higher gradient surface of the Magarini sands formation, which slopes towards the low-gradient south East, causing the majority of flow through the Pliocene sands to be in that direction. The locations of the main streams around the South Dune and South Dune extension, which are fed by these springs, is shown in Figure 5.2 below. One significant stream within the Project Area, the Mkurumudzi River, dissects the mineral sands deposits and flows toward the south east. The River drains the south eastern quadrant of the Shimba Hills and has a total catchment area of approximately 180km^2.

Figure 5.2: Locations of the Main Streams around the South Dune and South Dune Extension

Base flow from the numerous phreatic bankside aquifers is important in maintaining dry weather flows in the Mkurumudzi River, an important source of water for key ecosystem services, including maintaining aquatic life and recharge of shallow wells and aquifers, and a habitat for a variety of vegetation species. The river is also a water source for drinking and other household and agricultural activities. From the river gauging station (RGS 3KD06) located east of the Shimba Hills trading center, the River drains approximately 91km2 with a mean annual flow of 0.8142m^3/s. The River's month - on - month flows are, however highly variable. This can be largely attributed to the recorded historical variation in the amount and timing of precipitation in the general Kwale County, including occasional extended periods of low or no rainfall.

Additional surface hydrology elements include several small streams from seepage and spring flows from the north and north east side of the South Dune. The closest of these is the Kidongoweni stream and its tributaries. The Kidongoweni flows from the north east, through Majikuko and Fihoni villages

[10] Preliminary Hydrogeology of the South Dune Deposit, Base Titanium, Kwale County. Rural Focus Ltd

located north of the Buda Forest Reserve. It is an important source of drinking water to residents of these villages. This stream is not currently gauged.

Flows in the small streams north and east of the mine site are ephemeral and are likely to be maintained by wet season rain percolation and discharge into and from the Pliocene and Pleistocene sands. However, their flows disappear entirely within a few hundred meters of reaching limestone outcrops in all but the wettest periods.

Mining activities, especially vegetation clearance and topsoil stripping, will likely cause significant alteration of surface drainage patterns, thereby affecting the main streams serving host communities, wildlife in the area and nearby wetlands. There is also potential for their quality to be degraded from eroded sediments from ground clearance activities. As discussed in Section 8.2.3 (Impacts), adequate precautionary measures will need to be in place to avert or reduce any significant alteration of these streams' quality degradation and the wetlands benefiting from them.

5.2.3.2 Hydrogeology

From the hydrogeological and soil studies done since 2012 by Rural Focus and Soil Water Consultants[11], four major geological domains affect groundwater dynamics in the South Dune. These include the Triassic sandstones, Pliocene sands, Pleistocene sands and Pleistocene limestones. These geological domains affect groundwater as follows:

The Triassic Mazeras Formation slopes westwards and carries groundwater recharge in the South Dune area further to significant depths beneath the Shimba Hills and largely beyond boreholes' practical reach. Permeability within this formation is variable and unpredictable but is higher at the top of the succession than it is towards the bottom. The formation provides the recharge and storage for the Marere Springs, a significant source of piped water for the north eastern part of Kwale County, providing approximately 9 million litres a day. The actual depth to groundwater in the South Dune area is unknown but is likely to be considerably deep. A successful Mazeras Sandstone borehole are rarely less than 50m deep from previous findings.

The Pliocene sands form a gently dissected landform and are of hydrogeological importance because of their role in taking up rainwater as recharge, storing and then discharging it as base flow to the Mkurumudzi River, Koromojo and Kidongoweni streams, and several springs. It is also considered an important source of lateral or allogenic recharge to the lower Pleistocene sands lying to the east, within which the important Gongoni Forest aquifer system falls. The Pliocene sands are not of direct significance as a human water source within the study area, although Mivumoni Primary and Secondary Schools (west of the South Dune) exploit deeper groundwater from boreholes within this formation. The Pliocene sands are considered relatively vulnerable to contamination because of their high vertical permeability and high recharge rates.

The Pleistocene sands underlie subdued relief areas in the north east and east of the South Dune and are the most important aquifer within and immediately adjacent to the area. They comprise fine to medium sands and host a near surface aquifer across much of their range. Shallow well depths here range from two 2-6m, and water levels vary seasonally. The Pleistocene sands recharge is direct, in that much of the rainfall falling at the ground surface infiltrates into the groundwater store. These sands are important sources of base flow to the Kidongoweni surface water flow system and may be a significant water source for the Gongoni Forest ecosystem. Waters from the Pleistocene sand aquifer are typically of good quality but are considered at risk of contamination by wastes left at ground surface or leached from pit latrines[12]. They are at risk of salinization at the eastern edge of their range, just before reaching the Pleistocene limestones.

[11] *Kwale Mineral Sands Soil Characterisation, 2012*. SoilWater Consultants; and *Preliminary Hydrogeology of the South Dune Deposit, Base Titanium, Kwale County*. Rural Focus Ltd.

[12] Tole MP (1997) *Pollution of groundwater in the coastal Kwale District, Kenya. Sustainability of Water Resources under Increasing Uncertainty* (Proc. Rabat Symposium S1, April 1997), IAHS Publ. no. 240, 1997.

The Pleistocene limestones underlie the South Dune areas, adjacent to the Sea and extending 1-3km inland from the Sea shore. Streams flowing from the west (Pleistocene sands) extend a limited distance eastward into the limestones, which are karstified and consequently highly permeable, easing surface water into the ground. The groundwater resource in the Pleistocene limestone typically lies at a depth of between 6-8 m throughout most of its range, and water levels vary seasonally. This aquifer is brackish to saline through most of its range, and more often than not contaminated by *E. coli.*

In addition to the springs draining the regional contact aquifer, numerous often smaller and seasonal springs emerge from the Magarini Sands. This second group receives water from relatively transmissive layers within the generally poorly permeable, clayey sands. These shallow water-bearing zones, or "perched aquifers", are believed to play an important role in the dune's drainage. Where impermeable strata are present at depth, infiltrating rainwater is prevented from downward percolation and thus drained laterally over the flow barrier. A considerable volume of recharge into the aquifers of the Coastal Plain is probably obtained through this mechanism. Springs occur where the topography intercepts the perched aquifers.

The spring zones occur along the tributaries of Mukurumudzi River, and at the boundary of the Foot Plateau and the Coastal Plain In the area of the South dune, springs are more common than in the surroundings of the Central and Northern dune. This is probably related to the greater depth of the underlying Mazeras sandstones and the higher transmissivity of the Kilindini Sands in the northern part of the Coastal Plain (GSK 1999b). This allows uninterrupted south-eastward groundwater drainage from the Foot Plateau towards the Pleistocene aquifers

As reported in the original EIA for the mine, perennial springs are probably the most important water source for the local community, yields vary from 0.15 to 6.8m^3/hr, with an average of 2.4m^3/hr. The social importance of the local springs is considerably greater than their relevance for the area's hydrogeological system dynamics. Although Mukurumudzi receives considerable amounts of spring flow, most of the important sources are found in the Upper Catchment area.

5.2.3.3 Water Quality

Base has monitored water levels and quality at a variety of sites within and adjacent to the South Dune, since March 2018. This exercise has been progressively conducted to develop a baseline of data on the location of sources of domestic water, to obtain water quality data from sites within Base's Water Management Plan, to help the residents know their water quality status and to understand and address any potential impacts from the Project during mining. Figure 5.3 below shows a network of water monitoring points around the South Dune.

Surface water quality is monitored at points S18, S3 (environmental water release), S19 and S17 along the Mkurumudzi River, primarily to track water quality changes through the dam and downstream. These sites are located to the north of the South Dune, starting at the dam which bisects the two dunes, and heading east.

Another monitoring station, S31, is located on an ephemeral stream draining the South Dune's southeast corner. This site is located between the South Dune and the Buda Forest. This ephemeral stream is fed partially by spring seepage/ base flow originating from the South Dune mining blocks and its surrounding environment. Water quality is monitored monthly for basic parameters (Physico-chemical parameters, major cations and anions, and trace constituents). Figure 5.2 and Figure 5.4 shows the location of S31. Figure 5.4 is a photo taken of S31 in 2017, representing the baseline conditions of the project's surface water downstream prior to mining.

There are six shallow groundwater quality monitoring sites located around the South Dune periphery. These are:

- GS50 (dug seep)
- GS51 (dug seep)
- GS52 (dug seep)

- GS53 (dug seep)
- GS54 (dug seep)
- GS55 (protected spring)

Water quality monitoring at these sites commenced in March 2018. A 12- month period of water quality data for these sites is presented in Table 5.1.

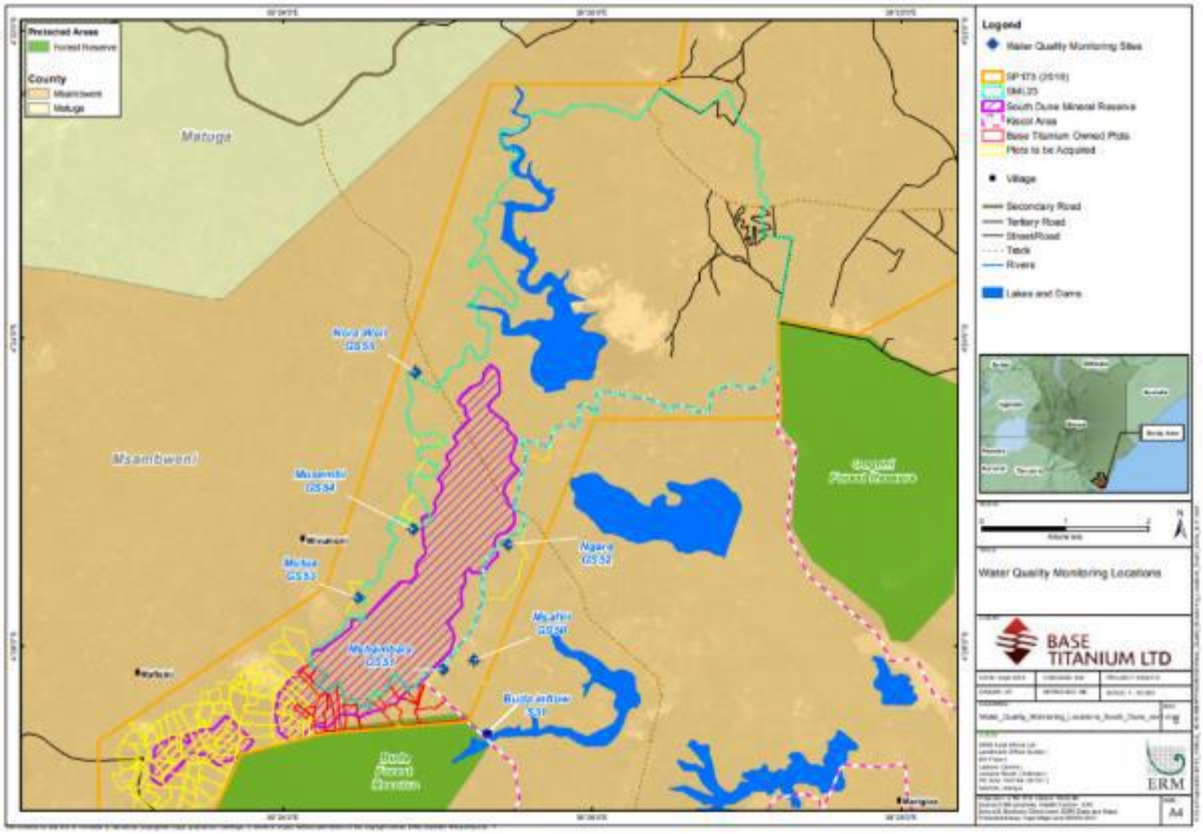


Figure 5.3: South Dune Water Quality Monitoring Points

Figure 5.4: S31 Monitoring Site

Baseline water monitoring site GS53 is located at the currently operational mining block 1017, while GS54 and GS55 monitoring sites are located upstream of block 1017.

Site G51 is located along the footprint of where the mining block 1018 main silt trap (1018_D_1) has been constructed. This monitoring location was once a hand-dug water seepage water source for the community before this community was resettled. Site GS50 is located to the northeast of the silt traps and would not be affected by flows originating from the mining block 1018.

Table 5.1 below presents the summary water quality data for the seven monitoring sites (six shallow groundwater points and one surface water point) over 12 months between March 2018 and March 2019.

There is one deep groundwater monitoring point in the South Dune area. GD20 was monitored from early 2013 to mid-2016; it is a 2012-constructed water supply borehole screened in Mazeras Sandstones. Water quality and water levels were collected weekly when monitoring commenced, and later, as the baseline data collected was determined to be sufficient to characterise the south dune baseline water characteristics, monitoring shifted to a bi-monthly basis. The borehole is located approximately 1km west of the South Dune's western edge. Water quality data for GD20 from 2013 – 2016 is presented in Table 5.2.

Table 5.1: Summary of Baseline Water Quality Data, South Dune Monitoring Points (March 2018 – March 2019)

Parameter	Unit	GS50	GS51	GS52	GS53	GS54	GS55	S31	GK Guideline (or Water Services Regulatory Board of Kenya)
pH range		5.53 - 7.14	5.44 - 6.34	5.70 - 6.41	5.56 - 6.90	5.46 - 5.99	5.42 - 6.34	5.99 - 6.80	6.5-8.5
EC range	mS cm -1	0.04 - 0.14	0.04 - 0.06	0.07 - 0.14	0.08 - 0.15	0.07 - 0.12	0.09 - 0.13	0.091 - 0.15	0.5
NH_4 range	ppm	< 0.01 - 0.11	< 0.01 - 0.14	< 0.01 - 0.28	< 0.01 - 0.20	< 0.01 - 0.08	< 0.01 - 0.13	< 0.01 - 13.80	-
Ca range	ppm	0.96 - 26.30	0.53 - 8.41	1.45 - 14.80	2.16 - 23.70	1.59 - 8.89	1.14 - 11.70	0.95 - 10.80	250
Mg range	ppm	0.27 - 0.98	0.14 - 0.96	1.06 - 2.41	0.79 - 1.96	0.52 - 2.18	2.01 - 3.47	0.88 - 2.84	100
K range	ppm	0.25 - 1.71	0.26 - 2.06	< 0.12 - 2.04	< 0.12 - 1.68	< 0.12 - 2.12	0.17 - 3.89	< 0.12 - 2.90	50
Na range	ppm	4.07- 8.62	4.03 - 9.84	8.23 - 15.10	5.82 - 10	8.05 - 14.50	12.40 - 18.20	14.2 - 22.20	200
NO_3N range	ppm	< 0.01 - 0.27	0.02 - 0.23	< 0.01 - 0.26	< 0.01 - 1.25	< 0.01 - 0.24	< 0.01 - 0.33	< 0.01 - 1.24	-
NO_3 range	ppm	< 0.01 - 1.20	0.10 - 1.02	< 0.01 - 1.15	< 0.01 - 5.53	< 0.01 - 1.06	< 0.01 - 1.46	< 0.01 - 5.49	10
P range	ppm	< 0.01 - 0.13	0.02 - 0.12	< 0.01 - 0.15	< 0.01 - 0.22	< 0.01 - 0.18	< 0.01 - 0.11	< 0.01 - 0.24	2
Fe range	ppm	0.48 - 2.11	0.13 - 1.14	0.04 - 1.01	0.023 - 0.37	0.07 - 1.21	< 0.01 - 0.10	0.71 - 2.69	0.3
Mn range	ppm	< 0.01 - 0.03	< 0.01	< 0.01 - 0.02	< 0.01 - 0.02	< 0.01 - 0.03	< 0.01 - 0.03	< 0.01 - 0.077	0.1
Zn range	ppm	< 0.01 - 0.03	< 0.01 - 0.04	< 0.01 - 0.01	< 0.01 - 0.02	< 0.01 - 0.07	< 0.01 - 0.02	< 0.01 - 0.021	0.5
Cu range	ppm	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	1
B range	ppm	0.02 - 0.03	0.03 - 0.05	0.04 - 0.08	0.04 - 0.07	0.05 - 0.08	0.05 - 0.07	0.055 - 0.11	1
Cl range	ppm	5 - 8.50	6.61 - 9.68	11.80 - 17.20	9.87 - 14	8.68 - 17.20	7.74 - 13.10	22.20 - 34.20	250
HCO_3 range	ppm	10.5 - 111	6.62 - 34.40	19.50 - 54.70	12.2 - 67.7	10.60 - 43.50	22.40 - 51.40	15.1 0- 30.70	-
Fl range	ppm	0.10 - 0.26	0.04 - 0.22	0.06 - 0.27	0.07 - 0.19	0.08 - 0.30	< 0.03 - 0.16	0.15 - 0.46	-
Col range	H.U	10 - > 90	< 10 - 20	< 10 - 20	10 - 20	10.00 - 20.00	< 10.0 - 10	10 - 40	15
S range	ppm	< 0.05 - 3.96	0.35 - 4.95	0.70 - 6.41	0.41 - 5.29	1.68 - 6.02	1.67 - 3.68	0.33 - 6.89	-
SO_4 range	ppm	< 0.05 - 11.90	1.05 - 14.80	2.10 - 19.20	1.23 - 15.8	5.03 - 18	5 - 11	0.99 - 20.60	400
$CaCO_3$ range	ppm	4.02 - 69.80	1.9 - 25.00	8.17 - 43.80	8.64 - 67.3	7.21 - 28.40	11.50 - 43.50	6.83 - 34.70	500

TDS range	ppm	22 - 84	22 - 36	44 - 82	50 - 94	42.00 - 78.00	56 - 86	58 - 92	1,200
CO_3 range	ppm	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	-
Si range	ppm	8.61 - 18.70	8.46 - 15.20	9.69 -21.80	9.18 - 14	10.80 - 15.60	20.50 - 29	12.80 - 19.20	-
TSS range	ppm	14 - 38	18 - 50	8 - 40	4 - 48	7.00 - 36.00	1 - 7	14 - 27	30
TUB range	NTU	29.40 - 57.20	21 - 98.30	7.24 - 51.50	7.27 - 19.4	7.37 - 39.80	1.59 - 6.35	18.1 0- 45.40	50
Charge Bal range	%	-38.9 - 3.56	-55.4 - 9.59	-31.90 - 5.78	-32.2 - 2.57	-34.80 - 9.17	-9.74 - 13.6	-24 - 8.06	-

Table 5.2: Summary of Baseline Water Quality Data from groundwater site GD20

Parameter	Unit	2013	2014	2015	2016	GK Guideline (or Water Services Regulatory Board of Kenya)
pH range		5.78 - 6.56	5.83 - 6.52	5.81 - 6.2	5.98- 6.5	6.5-8.5
EC range	uS/cm	140 - 210	140 - 220	160 - 210	200 - 280	500
NH_4 range	ppm	0.01 - 0.15	0.01 - 0.43	0.01 - 0.08	0.01 - 0.25	-
Ca range	ppm	0.03 - 2.07	1.03 - 1.79	1.43 - 4.98	1.76 - 13.9	250
Mg range	ppm	1.3 - 3.68	2.04 - 3.31	2.58 - 3.82	3.49 - 4.23	100
K range	ppm	0.06 - 2.75	0.55 - 3.07	1.56 - 2.95	1.81 - 4.12	50
Na range	ppm	23.7 - 43.3	20.6 - 38.7	24.8 - 35.4	29.6 - 37.5	200
NO_3N range	ppm	0.7 - 1.94	0.8 - 3.47	1.63 - 3.84	2.17 - 3.62	-
NO_3 range	ppm	3.12 - 8.6	3.54 - 15.3	7.25 - 17	9.61 - 16	-

P range	ppm	5 - 34	5 - 82	5 - 61	5 - 67	2
Fe range	ppm	5 - 260	5 - 68	5 - 66	21 - 77	0.3
Mn range	ppm	36 - 140	37 - 110	56 - 95	72 - 100	0.1
Zn range	ppm	12 - 690	20-Oct	13 - 71	5 - 190	0.5
Cu range	ppm	5 - 10	5 - 10	5 - 17	5 - 54	1
B range	ppm	83 - 110	73 - 100	89 - 100	94 - 100	1
Cl range	ppm	15.9 - 39.5	16.1 - 22	16.8 - 25.6	21.1 - 23.1	250
HCO_3 range	ppm	28.4 - 76.7	39.6 - 78	24.2 - 52.6	34.6 - 90.2	-
Col range	H.U	5.00	5	5	5	15
S range	ppm	4.2 - 9.34	3.94 - 8.41	4.56 - 9.18	5.77 - 8.11	-
SO_4 range	ppm	12.5 - 27.8	11.8 - 25.1	13.7 - 27.5	17.3 - 24.3	400
$CaCO_3$ range	ppm	6.05 - 20.2	10.9 - 18	14.2 - 27.1	19.5 - 52.1	500
TDS range	ppm	84 - 164	84 - 132	96 - 200	124 - 188	1,200
CO_3 range	ppm	0.01	0.01 - 0.01	0.01 - 0.05	0.01	-
Si range	ppm	22 - 36.7	19.6 - 30.6	22.5 - 30	24.8 - 30.4	-
TSS range	ppm	0 - 239	0.03 - 28	0.25 - 8	1- 12	30
TUB range	NTU	0.00	0.18 - 8.67	0.39 - 1.39	0.57 - 1.92	50
Charge Bal range	%	-21.9 - 8.09	-23 - 2.95	1.88 - 11.6	-5.35 - 4.62	-
F	ppm	0.02 - 0.37	0.02 - 0.51	0.02 - 0.13	0.06- 0.1	1.5

From the results indicated in Table 5.1 above, most of the tested parameters lie within the Government of Kenya (GoK) recommended levels, including TSS values, apart from pH and the iron (Fe) component in the samples. This indicates that water from these sources is all acidic, soft to moderately hard and poorly buffered and results from the surrounding geology. The acidity partly explains the relatively high dissolved iron, a pattern observed in historical samples from monitoring sites in the North and Central Dunes' Pliocene sands.

The general quality of water from these sources is similar to the quality of water from sites monitored before mining operations, in the North Dune (at Barcelona) and the north edge of the Central Dune (north of the potato/cotton trial plots). Therefore, it is believed that the quality of water from the sampled sources is not as a result of the mining activities in the Central Dune and should not be of significant concern as the activities begin in the South Dune and move towards the South Dune Extension.

It must be noted that the mining activities utilised by Base, are mechanical, and no chemicals are used in the mining process. The only water quality parameters affected by mining activities downstream of the silt traps would include those values indicative of sedimentation of ephemeral streams and wetlands, indicated by Total Suspended Solids (TSS), provided in Figure 5.5 below.

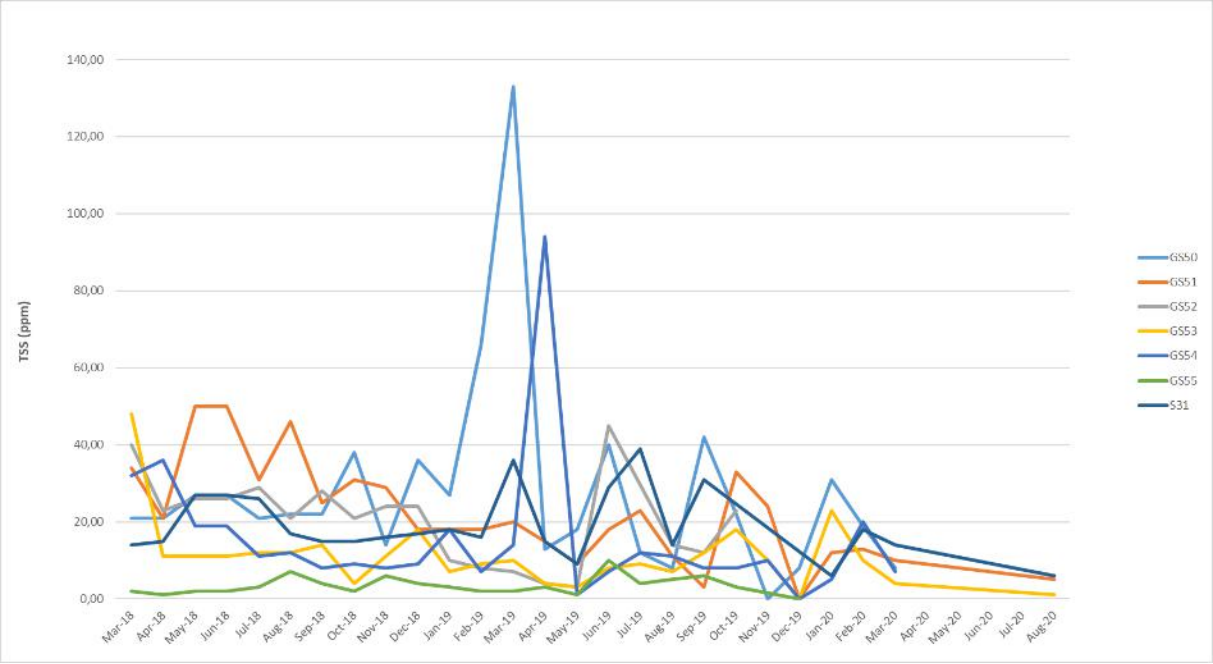


Figure 5.5 South Dune Water Quality – Total Suspended Solids (2018 to 2020)

Total Suspended Solids are generally below the Kenyan water quality guideline of 30ppm TSS for the discharge of treated effluent into the environment (EMCA Water Quality Regulations, 3rd Schedule) and for sources of domestic water (EMCA Water Quality Regulations, 2nd Schedule), and are well below the South African Water Quality guideline provided for aquatic ecosystems of < 100ppm at all monitoring sites. Also, to note is the general downward trend in TSS from 2018 to 2020. It must be noted that another significant contributor of TSS for surface water features is livestock and not only runoff from the mine.

5.2.4 Ambient Air Quality

The South Dune and South Dune Extension is located in a generally rural environment comprising predominantly rural homesteads, thickets, forests and agricultural lands. The only large-scale operations in the area are the Central Dune mining operations to the North, and Kwale International Sugar Company (KISCOL) operations to the East and South East.

Base identified two primary dust monitoring sites around the South Dune, namely D14 and D18. These sites have been used to monitor directional fallout dust from July 2016 to September 2020. Figure 5.6 below shows the specific locations of the Base ambient air quality monitoring programme across the entire mineral reserve area, as well as the locations of monitoring points D14 and D18.

Fallout dust is the residual dust that settles back onto surfaces, following release into the atmosphere by a given activity. Open mines involve a lot of earth material break-down and movement, and in the case of Base, mining coarse dune sands can be a significant source of ambient nuisance dust, if not adequately managed, hence the need to check if the mining operations contribute significantly to elevated nuisance dust, and to take the necessary measures to mitigate this, if applicable. Therefore, the Southern Dune location's baseline dust monitoring is based on this premise and will be used as a benchmark for impact monitoring during mining activities in this area.

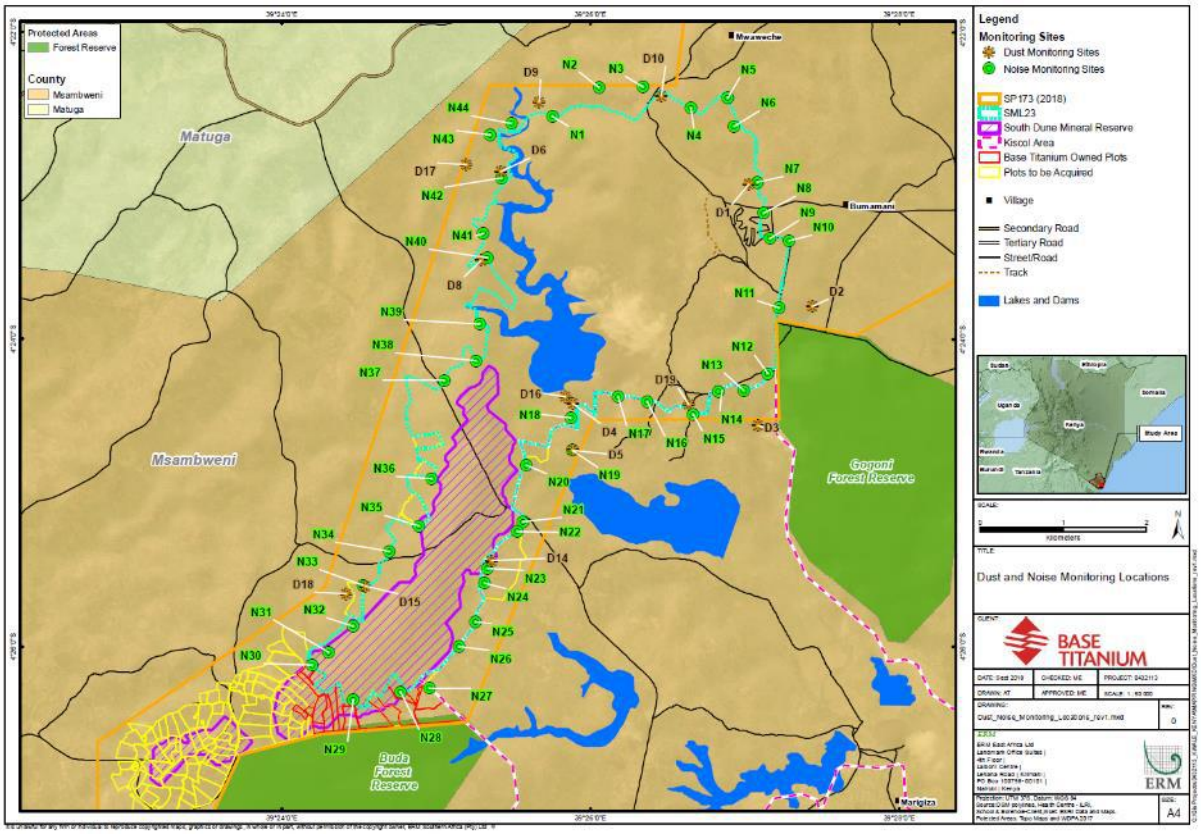


Figure 5.6: The Operation's Air Quality and Noise Monitoring Sites

The data from monitoring points D14 and D18 at the southern end of the South Dune are considered a reasonable indication of the baseline, given the distance to the current mining activities.

Figure 5.7 shows the baseline dust deposition data collected at monitoring sites D14 and D18 located at the southern end of South Dune. These data show a clear profile echoing the dry season in February and March and the second drier period in August and September. Dust Deposition is lower during May and June during the wet season. These data show a clear seasonal variation in baseline dust deposition.

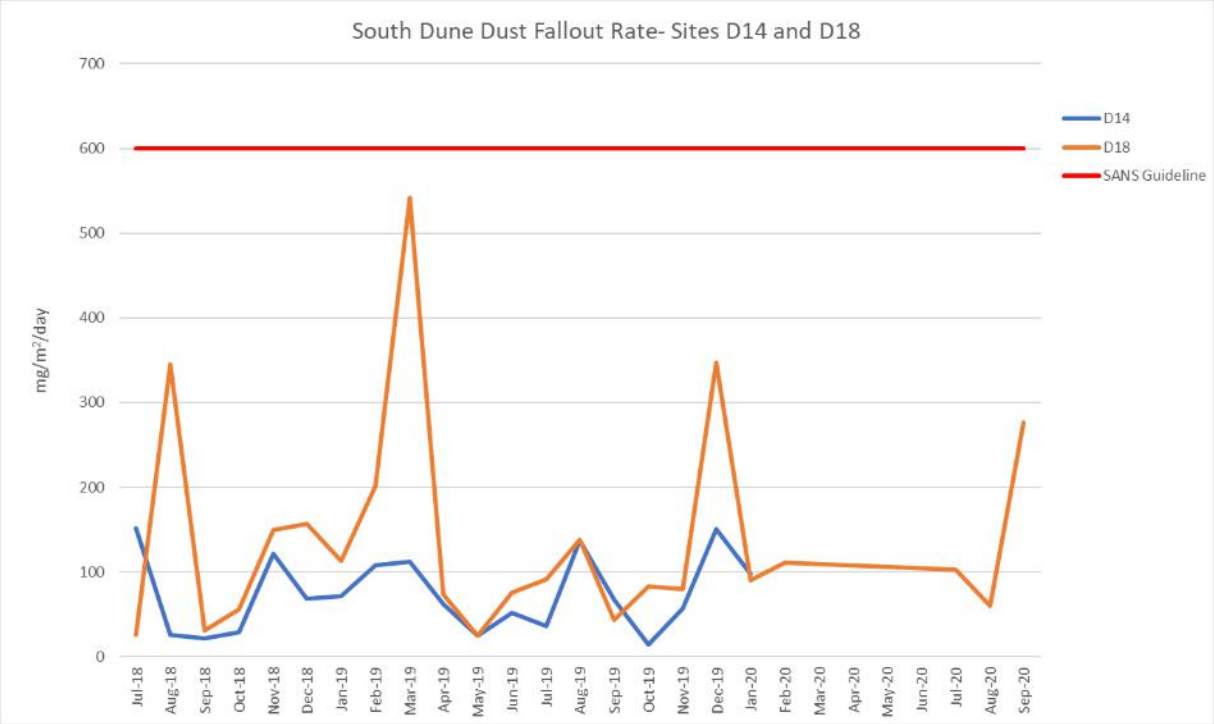


Figure 5.7: Baseline Dust deposition for Sites D14 and D18

From all the dust sampling sites indicated in Figure 5.6, it must be noted that the highest single dust deposition is at D14 (Figure 5.7), which is >2.5km from the TSF and is considered representative of the baseline. This indicates other more significant local sources of dust to the south.

Observations from the site identified several sources of dust that will contribute to the baseline, which are not associated with mining operations. These include:

- The open ground in villages;
- Small scale agriculture, during ploughing and harvesting activities;
- Crop burning to clear fields after harvesting;
- The use of unpaved roads; and
- Charcoal burning.

Dust emissions from these sources are seasonally variable in line with the dry and wet seasons, leading to localised dust peaks. During February and March dry winds blow from Arabia bringing dust from the Arabian Desert. This has an influence on the underlying dust deposition rate in the region.

Monitoring these baseline dust levels is essential as mining in the South Dune begins since they will be the basis of impact monitoring throughout the mining operations. It is important to note that the variation in dust levels will have to be related to the specific causes, and seasons, and not generally attributed to the mining operations. Continued monitoring will need to indicate any significant weather variations and nearby human activities to make the findings more effective. As such, dust fall out monitoring at the other dust fall out monitoring sites to the north of the mining operations and in the vicinity of the plant and TSF, as well as Sites D14 and D18 will need to continue to understand the contributions of dust fall-out from the Southern Dune mining operations, if any. These data should also be compared directly with the dust depositions guideline of 600 mg/m2/day used in South Africa. This guideline is considered the most directly comparable guideline to the Kenyan and site context.

5.2.5 Ambient Noise

The baseline ambient noise trends were generated through noise monitoring undertaken as part of the baseline studies done during the South Dune Extension exploration activities since 2014. The noise monitoring locations were spread around the South Dune to ensure as much spatial coverage as possible, and also since this entire area will be mined, raising the potential for noise impacts surrounding this future mining area.

Figure 5.6 in Section 5.2.4 above shows the specific noise monitoring locations across the entire mining area.

The noise measurements for the South Dune were taken using sound level meters since March 2014, and the resulting data analysed to calculate hourly LA_{eq} parameters. For each selected day of measurement, the noise equipment was left in place to measure the ambient noise periods of 10 minutes at each noise monitoring site.

From the findings in Table 5.3 and Table 5.4 below, reflecting noise levels measured between March 2014 to January 2016, daytime noise levels often did exceed both Kenyan and IFC noise guidelines, for both residential and industrial thresholds. The Kenyan EMCA (Noise Regulations, 2009) sets permissible limits for mixed residential (with some commercial and places of entertainment) areas of 55dBA (daytime) and 35dBA (night time). The IFC Environmental, Health, and Safety (EHS) Guidelines, specify noise limits for residential, institutional and educational areas of 55dBA (daytime) and 45dBA (night time).

Noise measurements since April 2016 indicate that daytime noise levels have largely been within guideline levels, apart from a few instances, in Dec 2017, March 2018, May 2019, August 2019 and October 2019, where the noise levels were above the Kenyan mixed residential and IFC residential levels; and 24 instances where the levels were just slightly above Kenyan residential guideline levels. The night time noise levels were almost always above the Kenyan guide.

However, it is important to note that wind patterns and wind strength significantly contributed to the variations in noise measured during noise monitoring. It is therefore possible to conclude that the sources of above-threshold noise were largely from wind and rustling vegetation, birds, insects and small mammals within the Dune area, as well as other activities at settlements. A few of the sites recorded noise related to DMU operations, and dumper truck movement at the Central Dune, but the long term data presented in Table 5.3 and Table 5.4 is representative of noise baseline data and should be used as the basis of future noise monitoring once mining activities in the South Dune commence, to establish any noise contributions over and above these baseline data values as a result of mining activities in the Southern Dune.

From the baseline findings, non-mining related noise sources exist in the area, and will need to be adequately factored in during mining phase noise impact monitoring. Where mining activities are close to settlements or schools, adequate measures, as recommended in Section 0 of this Report, shall be implemented.

Table 5.3: Daytime Trends in Ambient Noise (2014-2020) – these represent pre-mining baseline data

MONITORING SITES	MAR'14	APR'14	SEPT'14	2014 Average	JAN'15	JUN'15	OCT'15	2015 Average	JAN'16	APR'16	JUN'16	SEP'16	DEC'16	2016 Average	MAR'17	JUN'17	SEP'17	DEC'17	2017 Average
N23	38.8	44.8	44.3	43.3	43.4	47.1	40.9	44.5	50.4	49.1	47.5	48.5	43.6	48.3	33.8	41.3	45.9	47.6	44.5
N24	45.1	44.6	44.3	44.7	46.9	43.5	33.5	43.9	47.7	41.7	44.1	46.7	39.3	44.9	31.0	40.7	44.5	38.4	40.8
N25	44.4	50.0	42.9	46.9	45.8	50.9	48.2	48.8	51.1	42.7	46.7	39.0	44.0	46.6	31.0	42.1	37.2	40.4	39.3
N26	40.9	38.4	43.3	41.3	47.7	49.2	46.7	48.0	53.1	41.5	47.5	40.9	43.8	47.9	35.8	45.8	44.3	37.2	42.7
N27	44.2	40.9	45.7	44.0	50.2	50.5	40.8	48.8	52.8	47.5	43.3	34.1	39.6	47.5	35.4	40.3	30.8	40.0	38.0
N28	55.1	48.5	44.7	51.5	46.7	49.7	41.7	47.1	52.3	43.8	45.4	35.2	45.1	47.2	39.6	41.9	42.9	40.6	41.4
N29	32.5	55.0	39.7	50.4	49.7	42.1	45.5	46.8	55.2	45.4	44.3	32.1	30.8	49.0	40.2	39.3	32.7	38.5	38.4
N30	42.0	51.5	39.6	47.4	50.8	42.7	46.9	48.0	56.5	53.3	47.2	43.5	37.2	51.7	37.5	45.1	40.2	50.1	45.8
N31	39.1	58.6	35.8	53.9	45.0	57.6	47.8	53.5	54.9	37.9	42.7	37.7	32.6	48.3	35.6	44.7	41.7	39.1	41.5
N32	52.2	45.9	39.6	48.5	49.8	51.0	48.2	49.8	55.1	34.3	47.0	38.2	33.6	48.9	42.7	44.4	40.1	43.0	42.8
N33	42.2	53.5	44.1	49.5	37.2	51.5	51.0	49.6	56.5	38	50.3	39.8	36.3	50.6	42.8	49.7	43.9	40.2	45.7
N34	55.8	52.9	42.0	52.9	50.5	45.6	44.2	47.7	54.1	46.5	45.9	43.6	39.6	48.7	41.1	50.4	49.5	45.4	47.9
N35	41.8	47.6	47.4	46.3	39.9	43.4	41.1	41.7	51.6	46.3	38.2	42.3	38.9	46.4	37.8	45.8	40.2	56.1	50.6
N36	38.8	60.9	44.9	56.3	36.4	46.9	47.5	45.6	51.3	46.1	45.8	42.2	40.7	46.8	44.6	42.1	41.1	44.3	43.3
				50.3				**48.3**						**48.4**					**44.6**

MONITORING SITES	MAR'18	JUN'18	SEP'18	DEC'18	2018 Average	MAR'19	APR'19	MAY'19	JUN'19	JUL'19	AUG'19	SEP'19	OCT'19	NOV'19	DEC'19	2019 Average	JAN'20	FEB'20	JUL'20	2020 Average
N23	56.9	51.8	40.2	36.8	52.2	47.3	50.4	46	49.8	42.0	46.1	48.0	46.0			47.6				
N24	35.5	37.3	39.2	44.5	40.6	41.8	48.2	39	45.7	43.6	48.8	45.0	49.9			46.5				
N25	42.0	44.3	45.8	36.5	43.3	46.2	41.0	46.1	46.5	44.9	41.9	39.7	46.5	40.8	45.0	44.5	42.2	49.5	50.0	48.4
N26	57.6	46.7	47.1	40.3	52.3	40.7	41.2	44.2	48.0	41.0	45.1	39.3	46.5	43.7	42.3	44.0	39.5	44.9	44	43.4
N27	43.4	42.3	41.7	35.9	41.6	33.2	35.9	46.1	46.6	43.9	39.9	39.4	52.2			45.8				
N28	41.0	46.0	41.3	38.4	42.6	37.0	38.2	40.1	46.1	38.1	40.2	36.6	48.3			42.8				
N29	39.4	42.5	51.7	33.5	46.5	38.8	40.5	44.3	47.5	42.1	48.0	34.7	52.1			46.4				
N30	46.9	47.0	40.5	44.9	45.5	53.5	46	55.3	48.1	48.0	41.3	43.1		44.6	52.7	50.4	41.0	44.9	52.8	48.9
N31	46.3	47.2	46.4	49.8	47.7	48.7	46.1	51.8	47.6	40.8	57.9	45.2				51.5				
N32	43.6	39.7	37.6	43.8	41.9	47.1	41.5	44.8	41.7	37.0	36.6	39.8				42.7				
N33	40.8	39.8	44.2	46.2	43.5	51.7	43.6	43.9	45.3	41.0	39.2	46.4	45.2	43.9	48.9	46.3	42.7	54.3	51.5	51.6
N34	44.6	41.3	47.2	46.6	45.5	50.7	49.5	51.1	53.8	46.5	40.4	44.0	42.9			49.3				
N35	38.6	39.5	44.2	34.3	40.5	49.9	43.1	39.1	47.8	40.3	48.8	39.1	43.3	44.0	51.5	46.7	49.8	42.4	52.9	50.1
N36	37.6	39.1	38.9	37.0	38.2	47.0	49.4	47.3	46	52.6	43.8	50.8	57.4			51.4				
					46.5											**47.8**				**49.2**

LEGEND

DAYTIME MARKINGS	
	Above 70 - IFA industrial guideline
	Above 60 - Kenyan commercial
	Above 55 - Kenyan mixed residential, IFC residential
	Above 50 - Kenyan residential

Table 5.4: Night Time Trends in Ambient Noise (Aug 2017 – July 2020) – these represent pre-mining baseline data

MONITORING SITES	AUG'17	SEP'17	NOV'17	DEC'17	2017 Average	JAN'18	FEB'18	MAR'18	APR'18	MAY'18	JUN'18	JUL'18	AUG'18	SEP'18	OCT'18	NOV'18	DEC'18	2018 Average
N23	46.8	44.6	45.9	49.9	47.3	44.4	40.3	43.8	43.9	44.1	57.7	36.7	36.4	40.1	39.8	48.7	47.8	48.6
N33	53.6	43.7	47.4	50.7	50.3	47.8	41.9	39.3	45.8	52.9	49.3	44.6	45.5	45.1	40.8	42.4	44.7	46.7
N36	42.3	44.5	47.7	45.5	45.4	36.8	36.2	40.2	40.9	40.6	45.1	57.7	40.7	43.1	43.2	43.2	45	48.1
					48.1													**47.8**

MONITORING SITES	JAN'19	FEB'19	MAR'19	APR'19	MAY'19	JUN'19	JUL'19	AUG'19	SEP'19	NOV'19	DEC'19	2019 Average	FEB'20	JUL'20	2020 Average
N23	46.0	46	48.8	43.4	43.7	44.6	44.9	42.9	45.2	50.1	51.5	47.0			
N33	37.2	47	50.1	46.2	44.9	45.5	40.5	43.9	46.7	51.8	50.2	47.4	42.4	40.3	41.5
N36	46.9	48.6	47.3	40.9	36.7	37.2	46.2	44.8	41.4		44.5	44.5			
												46.5			**41.5**

LEGEND

NIGHTIME MARKINGS	
	Above 70 - IFA industrial guideline
	Above 45 - IFC residential
	Above 35 - Kenyan for all areas

5.2.6 Radiation

Generally, heavy mineral sands are radioactive due to the radioactive element Thorium. Thorium is present in Monazite (a source of rare earth metals), Zircon, and the minor heavy minerals (Xenotime and Leucoxene). As such, Base has undertaken an extensive baseline radiation survey of the South Dune (including extension) resource area to determine the baseline radiation before mining.

To establish the potential exposure of communities living close to the South Dune extension to harmful Levels of radiation, the following was undertaken:

In the South Dune area, Base has conducted baseline Gamma radiation surveys in a total of 694 locations, considered to be sufficient for the establishment of background levels to the required degree of accuracy. During the surveys, Gamma readings were taken both along the established tracks and trails and 'cutting across' areas without tracks. The measurements were typically taken at 50-70m intervals and were made by holding the detector one meter above ground level and taking a reading averaged over 30-40 seconds, wherever possible.

Figure 5.8 below summarises the density of radiation monitoring sites within the South Dune mineral reserve.

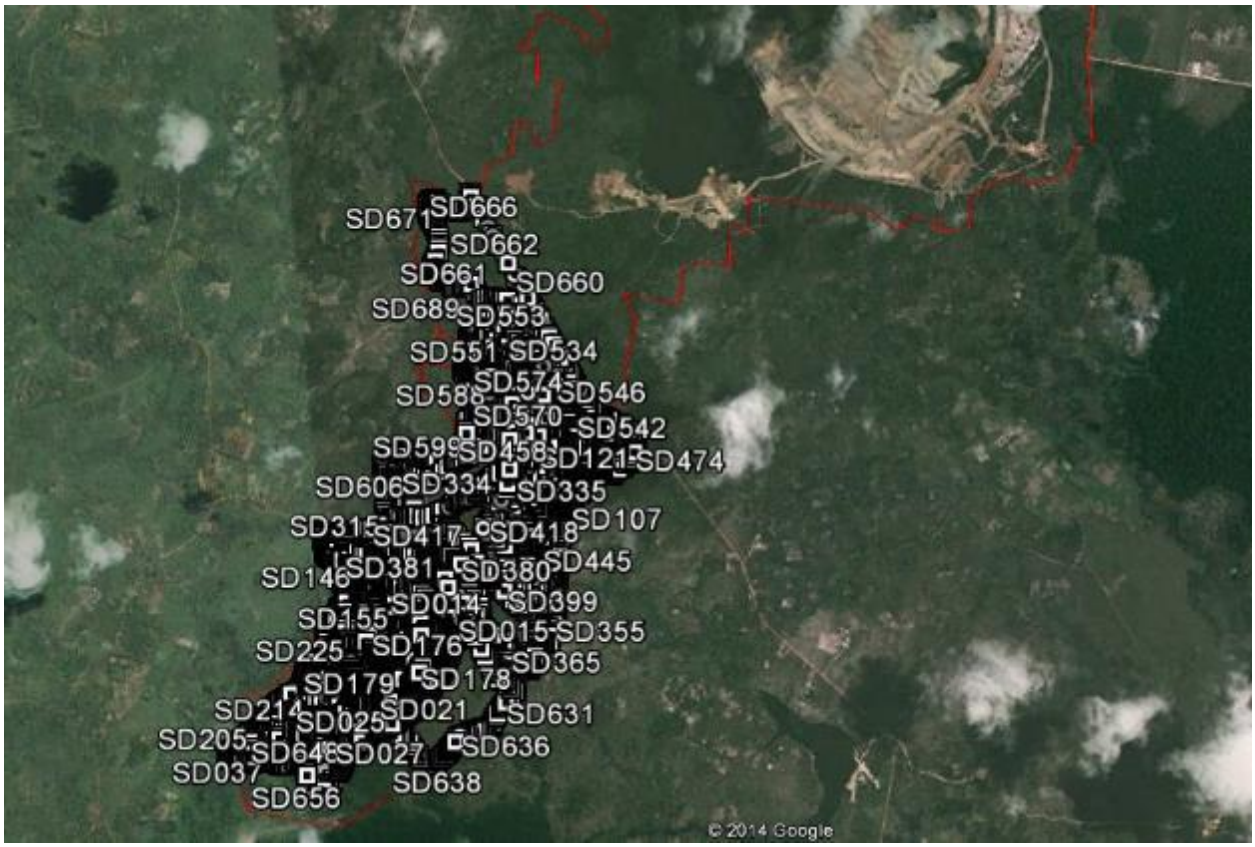


Figure 5.8: South Dune Radiation Monitoring Sites

Table 5.5 below illustrates background gamma radiation for the South Dune area compared to further baseline gamma readings for the Central Dune from 2011 to 2013.

Table 5.5: The summary of Gamma-Radiation Monitoring Results

Survey area	No. of measurements	Range (µSv/h)	Average (µSv/h)
South Dune area (incl. South Dune Extension)	694	0.04 – 0.32	0.15 ± 0.05
Central Dune (2011-2013)	729	0.06 – 0.43	0.18 ± 0.07

Further to this baseline, subsequent monitoring activities have been conducted in the locations representing the South Dune and South Dune Extension ore bodies. As shown in Figure 5.9 below, the radiation levels have been well below the 2014 average indicated in Table 5.5.

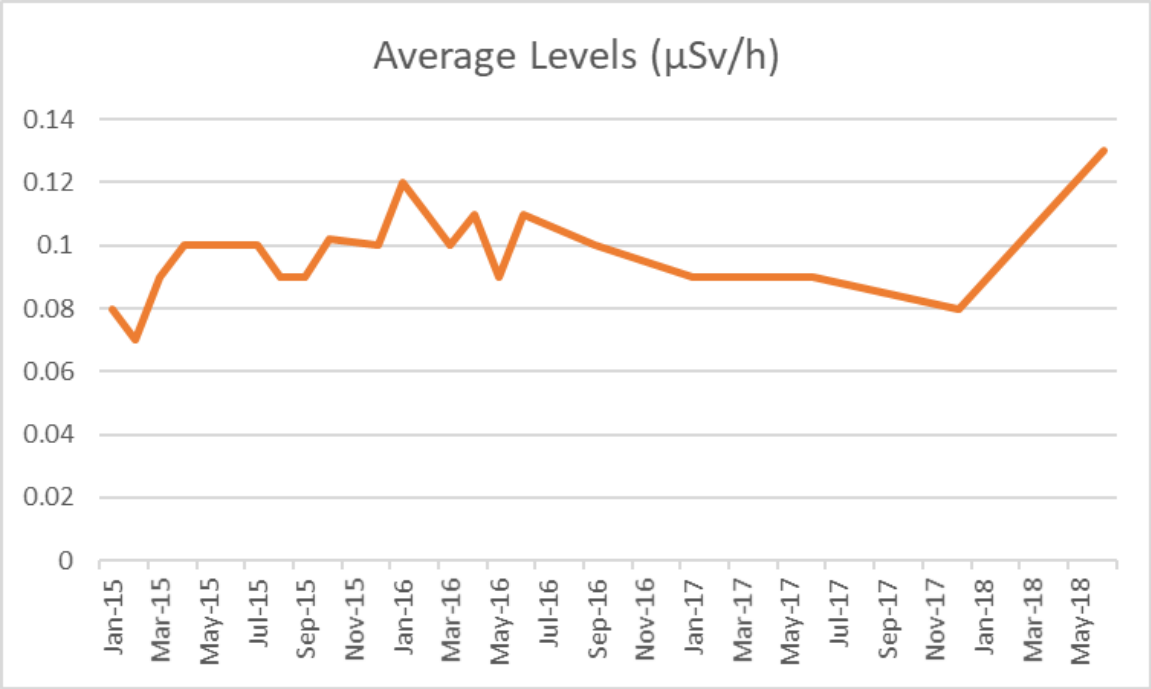


Figure 5.9: Radiation Levels at the South Dune

A baseline average of 0.15 (± 0.05) µSv/h was set for the South Dune and South Dune Extension from radiation baseline monitoring findings. Based on these baseline findings, Base will conduct regular impact monitoring during South Dune mining activities, and identified risks or radiation impacts addressed as recommended in Section 9.3.6 of this Report.

5.3 Biophysical Environment

A biodiversity and vegetation mapping survey was conducted for the South Dune and South Dune extension in August 2016. The area depicted in Figure 5.14 was mapped and is separately described in each sub-section below.

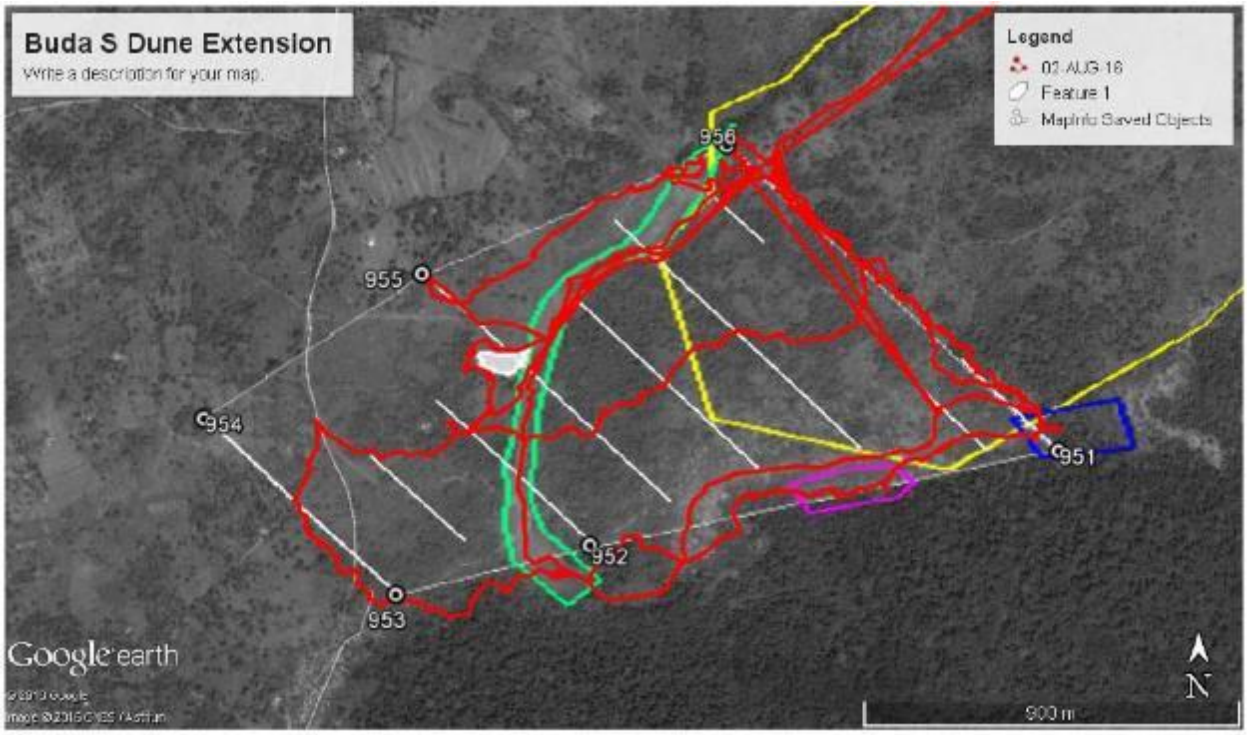


Figure 5.10: Vegetation and Biodiversity mapping for the South Dune and South Dune extension

5.3.1 Flora

Generally, the South Dune area falls within the East African Coastal Forests Biodiversity Hotspot zone, extending along the coastline from Somalia to Mozambique[13]. Naturally, it supports various habitat types, but parts of it have historically been settled and as a result area fairly modified, thereby reducing its biodiversity. Currently, the South Dune area supports the following broad habitat types for fauna:

- Cultivated areas trees
- Grassland on former cultivated areas
- Cashew Plantations with regenerating natural vegetation – in some places almost closed canopy
- Wetland/swamp – in most cases heavily grazed by livestock
- Hyphaene scrub on white sand

From the vegetation survey conducted in the South Dune extension[14], many vegetation species were found closer to the Buda Forest Reserve than other South Dune sections. Most of these species also represent a remnant patch of coastal forest, depicted by the blue block in Figure 5.10. About 492 plant taxa were recorded, of which 34 were exotic, cultivated or naturalized species. The plants recorded that are of conservation significance; that is those with IUCN Red List categories of CR, EN, VU, or not yet assessed but on the 'potlist', are listed in Table 5.6 below.

[13] Clarke GP (2000) Defining the east African coastal forests. In: Burgess, N.D. & G.P. Clarke. Eds. 2000. Coastal Forests of Eastern Africa. IUCN, Cambridge.

[14] *Vegetation Survey Report: Buda/South Dune Extension. August 2016*. Base Titanium

Table 5.6: South Dune Plant Taxa Classified in the IUCN Red List

No	Species	Family	IUCN
28	*Basananthe zanzibarica* (Mast.) W. J. de Wilde	Passifloraceae	VU B2ab(iii)
38	*Synaptolepis kirkii* Oliv.	Thymelaeaceae	potlist
43	*Psydrax faulknerae* Bridson	Rubiaceae	VU B1+2b
59	*Psychotria amboniana* K. Schum. *var. amboniana*	Rubiaceae	potlist
131	*Grewia capitellata* Bojer	Tiliaceae	potlist
143	*Grewia plagiophylla* K. Schum.	Tiliaceae	potlist
175	*Chytranthus obliquinervis* Engl.	Sapindaceae	VU B1+2c
224	*Afrocanthium pseudoverticillatum* (S. Moore) Lantz	Rubiaceae	lc; VU B1+2c
230	*Sterculia schliebenii* Mildbr.	Sterculiaceae	VU D2
233	*Ochna apetala* Verdc.	Ochnaceae	vu B2ab(iii)
255	*Memecylon verruculosum* Brenan	Melastomataceae	VU B2ab(iii)
261	*Synsepalum subverticillatum* (E.A. Bruce) T.D. Penn.	Sapotaceae	EN B1+2c
262	*Mkilua fragrans* Verdc.	Annonaceae	VU B1ab(iii)
265	*Drypetes natalensis* (Harv.) Hutch. var. leiogyna Brenan	Putranjivaceae	VU B1+2b; lc
269	Diospyros greenwayi F. White	Ebenaceae	VU B1 + 2c; nt
272	Julbernardia magnistipulata (Harms) Troupin	Caesalpiniaceae (Leguminosae)	VU B1+2b; vu A4ac
281	Afrocanthium kilifiense (Bridson) Lantz	Rubiaceae	en B2ab(iii); VU B1+2c
284	Vangueria randii S. Moore ssp. acuminata Verdc.	Rubiaceae	potlist
286	Cola pseudoclavata Cheek	Sterculiaceae	potlist
287	Landolphia watsoniana Romburgh	Apocynaceae	vu B2ab(iii)
301	Syzygium cordatum Krauss ssp. shimbaensis Verdc.	Myrtaceae	EN B2ab(iii)
302	Indigofera zanzibarica J.B. Gillett	Papilionaceae (Leguminosae)	vu B2ab(iii)
322	Eragrostis perbella K. Schum.	Poaceae	vu B2 ab(iii)
326	Ipomoea garckeana Vatke	Convolvulaceae	vu B2ab(iii)
355	Ficus faulkneriana C.C. Berg	Moraceae	VU B1ab(iii) + B2ab(iii)
369	Cyperus grandis C.B. Clarke	Cyperaceae	vu B2ab(iii)
377	Nesaea pedicellata Hiern?	Lythraceae	VU B2 ab(iii)
459	Hibiscus greenwayi Baker f.	Malvaceae	VU B2ab(iii)
462	Zanthoxylum holtzianum (Engl.) P.G. Waterman ssp. Holtzianum	Rutaceae	VU B1+2d; potlist
472	Coffea sessiliflora Bridson ssp. sessiliflora	Rubiaceae	vu B1ab(ii,iii,iv)+2ab(ii,iiii,iv)
477	Cryptolepis hypoglauca K. Schum.	Apocynaceae	potlist
479	Ormocarpum sennoides (Willd.) DC. ssp. zanzibaricum Brenan & J.B. Gillett	Papilionaceae (Leguminosae)	VU B1+2b

Currently, Base collects seeds and other plants of conservation significance (also from the Buda Forest Reserve indicated in Figure 5.10), for propagation at designated locations[15]. These species are essential to the rehabilitation and revegetation of operation-impacted areas, and for redistribution to the general project area of impact, this to increase their chances of survival. As part of this initiative, Base has established a Restoration Programme Indigenous Tree Nursery in which indigenous trees, and others falling in the IUCN Red List are propagated. Some are already distributed to the communities, while others are being used in rehabilitation and Base's Biodiversity Corridor. This programme will be applied in rehabilitation and reinstatement methods in the South Dune extension post mining activities.

5.3.2 Fauna

A baseline survey on the status and diversity of faunal life in the South Dune and South Dune Extension areas was done in 2012[16], but also focused on the mine site and surrounding region (loosely defined as south-east Kenya, south of Mombasa and east of but including Shimba Hills), with an emphasis on rare and threatened species, as classified in the IUCN Red List.

5.3.2.1 Avifauna

From the biodiversity surveys, 207 bird species have been recorded within the greater Kwale region, including the protected forest reserves and areas surrounding the mine site. However, it is likely that the true species richness of birds regularly inhabiting the study area is close to 250. This is a reasonable diversity and may be due to the diversity of habitats present, and overall large size of the study area.

A total of 18 avifaunal species identified are on the IUCN Red List. From these, four species that are considered Near Threatened have been confirmed as present in the area, and a further three Endangered and two other Near Threatened species may potentially occur. Nine other notable species, which have fairly to highly localized distributions and are mostly habitat specialists, have been recorded within the mine's broader region. Most are either partially or completely reliant on forested areas and remnants on site, particularly Buda and Gongoni Forests (which will not be mined), but also in portions of the current TSF and along the Mukurumudzi River and its tributaries. These identified species, their detailed description and their distribution within the study area are presented in Table 5.7.

15 *The Kwale Mine Rare and Threatened Flora Propagation Research Programme.*

16 *Specialist Faunal Assessment for Kwale Mineral Sands Project, 2012.* James Harvey.

Table 5.7: Bird Species within the Project Area and Categorized in the IUCN Red List

English Name	RD Status	Summary	Distribution within the study area
Amani Sunbird *Anthreptes pallidigaster*	Endangered	Highly localised, endemic, confine to very few fragmented forest patches in southern Kenya and northern Tanzania. Highly threatened by habitat loss.	If present, would be confined to Gongoni and Buda Forests.
Sokoke Pipit *Anthus sokokensis*	Endangered	Highly localised, endemic, confine to fragmented forest patches in southern Kenya and northern Tanzania. Highly threatened by habitat loss. Recorded from Shimba Hills.	If present on site only likely to occur in Gongoni Forest.
Malagasay Pond Heron *Ardeola idae*	Endangered	A wetland species that breeds in Madagascar and migrates to East Africa. Under severe pressure in Madagascar due to habitat loss and disturbance of nesting colonies; threats less urgent in mainland Africa.	Small numbers may occasionally utilize some of the wetland areas in the study area e.g. wetland on the southern edge of Gongoni Forest, as a non-breeding winter migrant.
Spotted Ground-Thrush *Zoothera guttatus*	Endangered	Has a very small, highly fragmented and patchy distribution down the east coast of Africa. Highly threatened by degradation and loss of its habitat, coastal forest.	Likely to occur in Gongoni Forest and possibly in Buda. Will not occur elsewhere in the study area.
Southern Banded Snake-Eagle *Circaetus fasciolatus*	Near Threatened	An uncommon species that occurs primarily within 20km of the eastern Africa coast, from Somalia to northern South Africa. A forest specialist, threatened by habitat destruction.	Recorded in Gongoni and Buda Forests and along the Mukurumudzi River. Likely to be largely restricted to the vicinity of areas that support forest remnants or stands of big trees, but will hunt in these areas'
Sooty Falcon *Falco concolor*	Near Threatened	A species that breeds in north Africa and the Middle East and migrates to East Africa and (primarily) Madagascar, where it occurs in wooded habitats, often near water. Considered to have a small, declining population, but threats are more urgent within its breeding range than in East Africa.	Recorded at Gongoni Forest and may occur in small numbers elsewhere on the site, as a non-breeding migrant.
European Roller *Coracias garrulus*	Near Threatened	Has a large global range and is a summer migrant from Europe to much of Africa where it utilises a variety of savanna-type habitats. It is undergoing a continuous population decline, but factors responsible are primarily active in Europe.	May occur in savanna areas of the site.
Martial Eagle *Polemaetus bellicosus*	Near Threatened	This species has a fairly wide distribution across sub Saharan Africa, and is found in various natural habitats. It occurs at low densities and appears to be declining across much of it range.	Has been recorded at Gongoni Forest and on Southern Dune. Requires large tress for nesting but may forage widely over the area.
East Coast Akalat *Sheppardia gunningii*	Near Threatened	A localised species with a fragmented range, occurring in three small disjunct areas of northern Mozambique, Malawi and southern Kenya-Northern Tanzania. Confined to coastal forest and threatened by habitat destruction.	May occur in Gongoni Forest and Buda Forest and will not occur elsewhere in the study area.

Fischer's Turaco	Near Threatened	A localised coastal endemic, from northern Tanzania to southern Somalia. It is largely restricted to coastal forest and woodland but can use degraded habitats where some natural habitat is also available.	Recorded in Gongoni and Buda Forests, along the Mukurumudzi River, within the TSF and adjacent to Central Dune. Appears to occur fairly widely on site where denser, semi-natural – natural vegetation is present.
Mombasa Woodpecker *Campethera mombassica*	-	A localised endemic and forest specialist, confined to coastal Eastern Africa	Recorded in Gongoni and Buda Forests. Likely to be mostly confined to the Forests on site.
Uluguru Violet- backed Sunbird *Anthreptes neglectus*	-	A localised endemic and forest specialist, confined to coastal Eastern Africa	Recorded in Buda and Gongoni Forests, and likely to be confined to these areas on site.
East Coast Boubou *Laniarius sublacteus*	-	A fairly localised endemic, recently recognised as a distinct species from Tropical Boubou *Laniarius major*, confined to coastal Eastern Africa where it occurs in densely vegetated habitats	Recorded in Gongoni Forest, close to the TSF and along the Mukurumudzi River. Likely to occur fairly widely in the denser vegetated areas.
Green Barbet *Stactolaema olivacea*	-	Patchily distributed, forest specialist in eastern Africa.	Recorded along the Mukrumudzi River, in Gongoni Forest and areas between Gongoni and the TSF. Will be confined to areas with at least remnants of natural forest.
Green Tinkerbird *Pogoniulus simplex*	-	Patchy, uncommon forest specialist in eastern Africa.	Recorded in Gongoni and Buda Forests – likely to be confined to these on site.
Tiny Greenbul *Phyllestrephus debilis*	-	A patchily distributed and localised species, confined to low land forest in Eastern Africa.	Recorded from Gongoni and Buda Forests; likely to be restricted to these areas on site.
Little Yellow Flycatcher *Erythrocercus holochlorus*	-	A localised endemic and forest specialist, confined to coastal Eastern Africa.	Recorded in Gongoni and Buda Forests could occur in remnant patches of forest on the Mukurumudzi River tributaries.

5.3.2.2 Amphibians

Thirty-seven species of Amphibians are known from the broader area of the mine and its surroundings, and an extra four amphibian species from the northern coastal Tanzania are believed to occur in this area.

Several threatened species and other sensitive species were recorded from the study area, and are listed in the IUCN Red List. Eight of these may be considered forest specialists and rely on some degree of closed, wooded habitats for their survival. Six may be considered coastal endemics and two of these appear to be localized endemics, restricted to the southern Kenya coast. Four species have been listed as endemic, while another *Callulina* sp., may well be, when its status is adequately assessed. Two endangered species and four other sensitive species have been confirmed on site. There is a reasonable chance that others may occur. Most of these are largely confined to forested or formerly forested areas. However, the endangered Shimba Hill Reed Frog and Forest Leaf-folding Frog may move widely between suitable habitat patches. These IUCN Red-Listed species, their detailed description and their distribution within the broader area of the mine and its surroundings are presented in Table 5.8.

Table 5.8 Amphibian Species within the Project Area and Categorized in the IUCN Red List

Species	RD Status	Summary	Distribution
Warty Frog sp. *Callulina* sp.	Endangered	Known from a single specimen from an unknown locality in Kwale County (possibly Shimba Hills). It is likely a new species and expected to qualify as highly threatened. It is likely to occur in forest, as do other known genus species.	If present, would be confined to Gongoni and Buda Forest and maybe patches of forest in Mukurumudz River tributaries. Routine monitoring undertaken as part Herpetofaunal Monitoring Programme has yet to find any specimens.
Forest Leaf-folding Frog *Afrixalus sylvaticus*	Endangered	Confined to a small area from the central Tanzanian coast north to Shimba Hills in Kenya. Sometimes treated as a subspecies *Afrixalus stuhlmanni sylvaticus* but distinct and often treated as a valid species. It appears to be restricted to forest or strongly regenerating wooded habitats and therefore patchily distributed.	It was only recorded in forest on a tributary of the Mukurumudzi River and a wetland on Gongoni Forest's northwestern edge. In more open situations it was replaced by the widespread *Afrixalus delicatus*. It is like to be mostly restricted to portions of tributaries that still support forest vegetation and Gongoni and probably Buda Forests.
Shimba Hills Reed Frog *Hyperolius rubrovermiculatus*	Endangered	Globally confined to southern Kenya and poorly known, it was only known from three localities: the Shimba Hills, nearby at Kwale and from a record near Malindi. It is closely related to *Hyperolius mitchelli* and has been treated as a subspecies of that, but currently is considered a valid species by most authorities. It appears to be partially reliant on forest and breeds in or close to forest in heavily vegetated wetlands; it is listed as Endangered given the small range, very few known locations, and forest decline within its range (IUCN 2011).	It was recorded breeding at two sites, a densely vegetated wetland adjacent to Gongoni Forest and another one in a drainage line within the Central Dune TSF. It was not found in several other wetland areas across the study area and from this initial survey work. It does not appear to be as common or widely distributed as other related species. It seems likely that it does not use riverine or other open water habitats for breeding. In the study area. Two were recorded adjacent to the Mukurumudzi River and two within the Gongoni Forest; it seems likely that these are non-breeding individuals. This species likely occurs patchily wherever forest and formerly forested wetlands and drainage lines are present, and utilizes habitats surrounding these when not breeding
Unjuga Puddle Frog *Phrynobatrachus unjugae*	Endangered	Recently described and confined to patches of forest in coastal Kenya and on Zanzibar, however it may be the same species as *P. ukingensis*. Considered to be threatened given habitat loss and highly restricted and fragmented distribution.	Would be confined to Gongoni and Buda Forests if present.
Chamgamwe Caecilian *Boulengerula chamgamwensis*	Data Deficient	Known from very few records in southern coastal Kenya and then again from a specimen at Mt Mulanje, Malawi, representing a separate species.	Restricted to areas with damp soils and a buildup of organic materials – like forest patches, and possibly drainage lines and adjacent to tributaries of the Mukurumudzi River.

Dwarf Squeaker *Arthroleptis xenodactyloides*	Data Deficient	A forest specialist	Recorded in Gongoni Forest and along the stream at Pitfall Array 8, east of the Central Dune. Will be confined to Gongoni and Buda Forests and close to streamlines that maintain some forest cover
Yellow-spotted Tree Frog *Leptopelis flavomaculatus*	Data Deficient	Largely confined to forest	Recorded in wetlands near Gongoni, a wetland in the TSF, and near the Mukurumudzi River bridge. Will be mostly confined to wetland in or close to forest fragments
Loveridge's Snouted Toad *Mertensophryne microanotis*	Data Deficient	Forest specialist; fairly restricted range	Recorded in Gongoni and Buda Forests. Likely to be largely confined to these areas within the study area.
Mary's Reed Frog *Hyperolius mariae*	Data Deficient	Restricted endemic	Found in various wetlands near Gongoni Forest, Mukurumudzi River bridge and the main road to the mine site. Expected to occur in and around wetlands widely across the site.

5.3.2.3 Reptiles

Around 99 reptile species are known from the general area, including some from north-eastern Tanzania which may occur. Out of these, 41 species have been recorded on the mine site. However, given the cryptic nature of reptiles and the habitats available, it is suspected that actual species richness is in the vicinity of 60 species. The area supports mostly species that are habitat generalists or coastal species, but there are some links with Eastern Arc Montane fauna. Species such *Elapsoidea nigra* and *Kinyongia tenuis* are largely confined to the Eastern Arc but are recorded from Shimba Hills, while some other 'montane' species in northern Tanzania reach the lowlands and may also extend into coastal Kenya. Many of the species recorded are typical of the coastal matrix, but several forest specialists were also recorded in the remaining forest patches. In terms of richness, the savannah and forest areas are the most diverse, while for the most part, the areas under old cashew and oil palm plantations are generally less diverse.

There is no up to date data on reptiles on the IUCN Red List, but ten species identified during the study are likely to be classified as falling into the Threatened or Near Threatened categories. The majority of the listed species would be partially reliant on densely wooded habitats.

5.3.2.4 Mammals

Approximately 132 species of mammals have been recorded or are likely to occur in the general area. As with other species, coastal Kenya is poorly surveyed and most work has taken place in Shimba Hills and the Arabuko-Sokoke Forest. Most large mammal fauna are either no longer present within the study area or confined to Shimba Hills, however the area still supports a reasonable diversity of smaller mammals. Forty-three species were recorded in the study area and the total species present may be as high as seventy species.

Several notable species in the IUCN Red List have been recorded on site. Of particularly interest are the Black and Rufous Elephant Shrew and a Sokoke Dog Mongoose, in the Gongoni and Buda Forests. Several notable bats are known from the region. However, several are specialized cave roosters and are not expected to roost at the mine site, except for the East African Little Collared Fruit bat, which is also expected to be strongly reliant on forest areas.

5.3.3 Biodiversity Monitoring

Through the Environmental Monitoring Programme and the Biodiversity and Conservation Programmes, Base conducts herpetofaunal monitoring regularly, and from the series of findings, these indicate healthy populations of the endangered reed frog species, the Shimba Hills Reed Frog (*Hyperolius rubrovermiculatus*), the Shimba Spiny Reed Frog (*Leptopelis flavomaculatus*) and the Endangered Changamwe Caecilian (*Boulengerula changamwensis*) in the fringing vegetation of the Mukurumudzi Dam. The first Kenyan record of the Ribbon/Banded Caecilian (*Scolecomorphus vittatus*), Broadley's Dwarf Gecko (*Lygodactylus broadleyi*), the banded Shovel-snout Snake (*Prosymna semifasciata*) and the Vulnerable Large-headed / Amani Tree Frog (*Leptopelis grandiceps*) have been recorded through Base's Environmental Monitoring Programme. This monitoring has also resulted in new species range extension on the Kenyan coast of several species, including the fringing vegetation of the Mukurumudzi Dam.

5.3.4 Wetlands

The primary wetlands within the broader area of the mine and its surroundings fall in the category of inland wetlands (in the Ramsar Convention classification) and, based on hydro-geomorphology and vegetation characteristics, are predominantly riverine (rivers and wetlands along rivers and streams) and palustrine (marshes, swamps and bogs).

The main wetlands within and around the South Dune and the South Dune Extension include:

- *Mafisini –Buda Wetlands:* This wetland sit between Mafisini Shopping Centre and Buda Forest, and comprise Mafisini stream, Buda Forest edge stream and Mwabada swamp.
- *Vanga Wetlands:* In Vanga area, and comprise Kiwegu market, Kiwegu swamp, Lake Mae and Majoreni swamp.
- *Ramisi Wetlands:* Close to Ramisi Shopping Centre, and comprise Kandarasi swamp, Mwachande pond, Mukungugu stream, Ndoda stream and Darigube spring.
- *Magaoni-Majikuko Wetlands:* Near Magaoni, and comprise Mafula nguo pond, Majikuko Mosque swamp, Fioni-majikuko swamp Mazde swamp, among others.

Figure 5.11 below illustrates the network of wetlands identified within and around the South Dune mine reserve and South Dune extension. In this area, wetlands were also depicted in Figure 5.10, depicted in green, purple and white. .

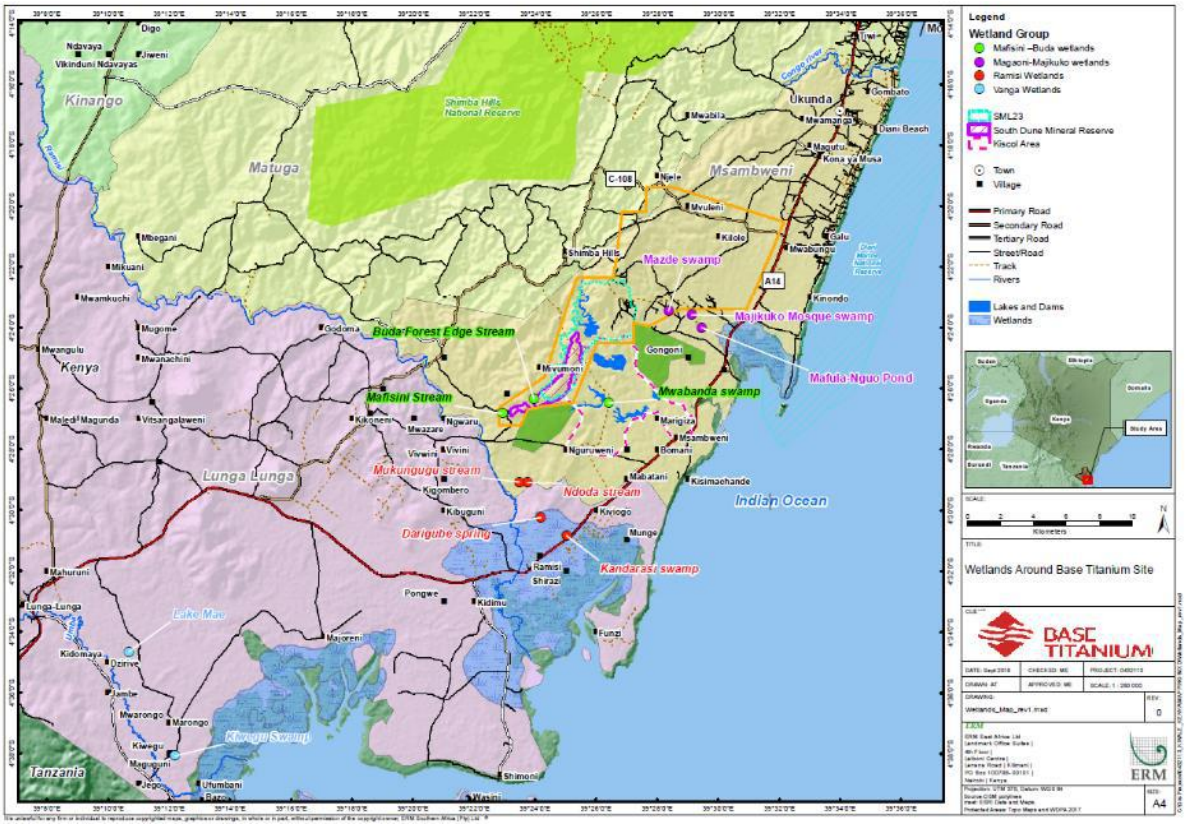


Figure 5.11: Wetlands in the Proximity of the South Dune Mineral Reserve Area and South Dune Extension (based on hydro-geomorphology and vegetation characteristics)

The majority of the wetlands identified are mainly in stream valleys and are mostly used for rice farming. In addition, those wetlands near community villages and shopping centers, such as the Kiwegu and Darigube areas, are used mainly to source domestic water for drinking, washing, and watering of livestock.

The above wetlands are inhabited by a wide range of herpetofaunal species, with a high abundance of certain frog species. Ridged/grass/rocket frogs (*Ptychadena* species) were some of the most abundant species recorded in most wetlands. The other species identified include puddle frogs (*Phrynobatrachus* species) and the fully aquatic clawed frog (*Xenopus muelleri*). Occasionally some reptiles were also found in or near the wetlands. Notable ones include Eastern stripe-bellied sand snake (*Psammophis orientalis*) in Mafisini, Nile Monitor Lizard (*Varanus niloticus*) in Majikuko, Speckle-lipped skink (*Trachylepis maculilabris*) in Ndoda stream (Ramisi and Mafisini) and Striped Skink (*Trachylepis striata*)

in Kiwegu, Vanga area. Though not recorded, the habitat of Mukuguku stream in Magoma village, upper Ramisi area was found to have good micro-habitat for the IUCN endangered Shimba Hills reed frog (*Hyperolius rubrovermiculatus*) and Shimba Hills spiny reed frog (*Afrixalus sylvaticus*).

As a result of the species richness of the wetlands with micro-invertebrate species, Base has a Macro-invertebrate Monitoring Programme, aimed at the periodic estimation of their species in the identified wetlands, as an indicator of any potential water quality impacts stemming from the mining operations. No significant population shifts have been recorded so far.

5.3.5 Summary of the Project Area Biodiversity

Overall, the South Dune and South Dune Extension area includes habitats that vary from low-very high regarding their faunal biodiversity importance. These are summarised below.

Gongoni and Buda Forests

Undoubtedly, these areas are the most important areas within the study site. Very few remaining decent-sized coastal forest areas in southern Kenya and forest patches continue to be reduced in extent and increasingly fragmented. This study shows that several notable faunal species across all groups assessed have been confirmed to occur in and utilize both of these forests and that several others are likely to do so. Many of these will not occur elsewhere in the study area and are rare and patchily distributed elsewhere in their respective ranges. As a result, both of these forests should be considered very high faunal biodiversity importance. It is important to note that future planned mining in the South Dune and South Dune extension area will not impact the Gongoni and Buda Forests, and mining will not encroach into the boundaries of these forests.

Areas adjacent to Gongoni and Buda Forests

For the most part, the areas surrounding the forests are a mixed of wooded savannah. There are also wetlands in these areas. The areas around these forests are also of considerable importance as they will support many otherwise confined species to the forest. Furthermore, the area acts as a buffer to the forest against any land use activity that can potentially impact the forests. Although there is no absolute rule on the buffer's value, it is suggested that a buffer around these sites would be the most important area given the reasons above, similar to the Biodiversity Corridor established between Base's TSF and associated infrastructure operations and the Gongoni Forest Reserve. As a result, it is suggested that areas surrounding these forests should be considered of very high faunal biodiversity importance. The area depicted in blue in Figure 5.10is one area applicable that should be conserved during mining activities, and should be included in the ongoing efforts by Base with respect to establishing a biodiversity corridor between the two remnant forest patches of Gongoni and Buda.

Drainage lines and streams with remnant or degraded forest patches

Areas that support remnant forest particularly along drainage lines and streams occur within and close to the main development footprint, including the Mukurumudzi River and (particularly) its tributaries and the fringes of the Mukurumudzi Dam, which provide habitat for two Endangered Frogs, the Shimba Hills Reed Frog and Forest Leaf-folding Frog, as well as breeding habitat and non-breeding movement corridors for other amphibians, besides these areas support some forest birds and possibly some notable reptiles and roosting and foraging sites for some bats. They are therefore considered of high importance for faunal biodiversity.

Wooded grassland/savannah areas

Although these areas do not provide primary habitat for many sensitive species, they support a fair diversity of fauna across the groups examined, including good numbers of hole-nesting birds, some of which may be undergoing local declines elsewhere in coastal Kenya where collection of firewood reduces foraging and nesting opportunities. A small number of sensitive species may or do utilise these areas (e.g. Sokoke Dog Mongoose, Fischer's Turaco, Martial Eagle). In addition, where these border other sensitive features e.g. wetland areas and forest buffers, provide a supporting role for the foraging

and movement of some species associated with those habitats. These areas are therefore considered of medium-high importance for faunal biodiversity.

Wetlands

A mosaic of small wetlands occur throughout the study area, depicted in green, purple and white in Figure 5.10, also shown in Figure 5.11, and based on hydrogeomorphology and vegetation characteristics. They support a high diversity of amphibians, in some cases including threatened species, and several water birds. Given their relatively scarcity in the landscape and the diverse fauna they support, they should be considered of high faunal biodiversity value.

Deserted Cashew and Palm plantations

These areas are generally fairly uniform, and mostly lack much complex habitat structure and diversity. They abut on sensitive features they may play some supporting role for faunal communities, but otherwise are not particularly important, except for providing some nesting opportunities to hole-nesting birds. Away from sensitive features, these areas are considered low-medium importance for faunal biodiversity.

Shambas

Areas currently or that have been recently cultivated support only a small number of widespread, generalist species. These are therefore considered of low faunal value.

5.4 Socioeconomic Environment

5.4.1 Introduction

This Chapter provides information on primary socio-economic indicators related to the South Dune and South Dune Extension, as a basis on which the nature, magnitude and significance of impacts associated with the Operation will be assessed, and monitoring carried out to address changes during the life of the Mine.

5.4.2 Administrative Context

The South Dune, including the South Dune Extension, is situated in Mivumoni and Mafisini Locations, Msambweni Sub-County, Kwale County. Each of the locations is headed by a Chief, and is divided into settlement areas and villages, with each settlement area and/or village being overseen by a village chairperson and/or village elders. Through his village chairpersons and elders, the Chief is responsible for general administration, the distribution of land, maintenance of law and order (settlement of disputes) and the development of the settlement areas/villages. Figure 5.12 below illustrates the administrative boundaries within Msambweni Sub- County where the South Dune Extension is located.

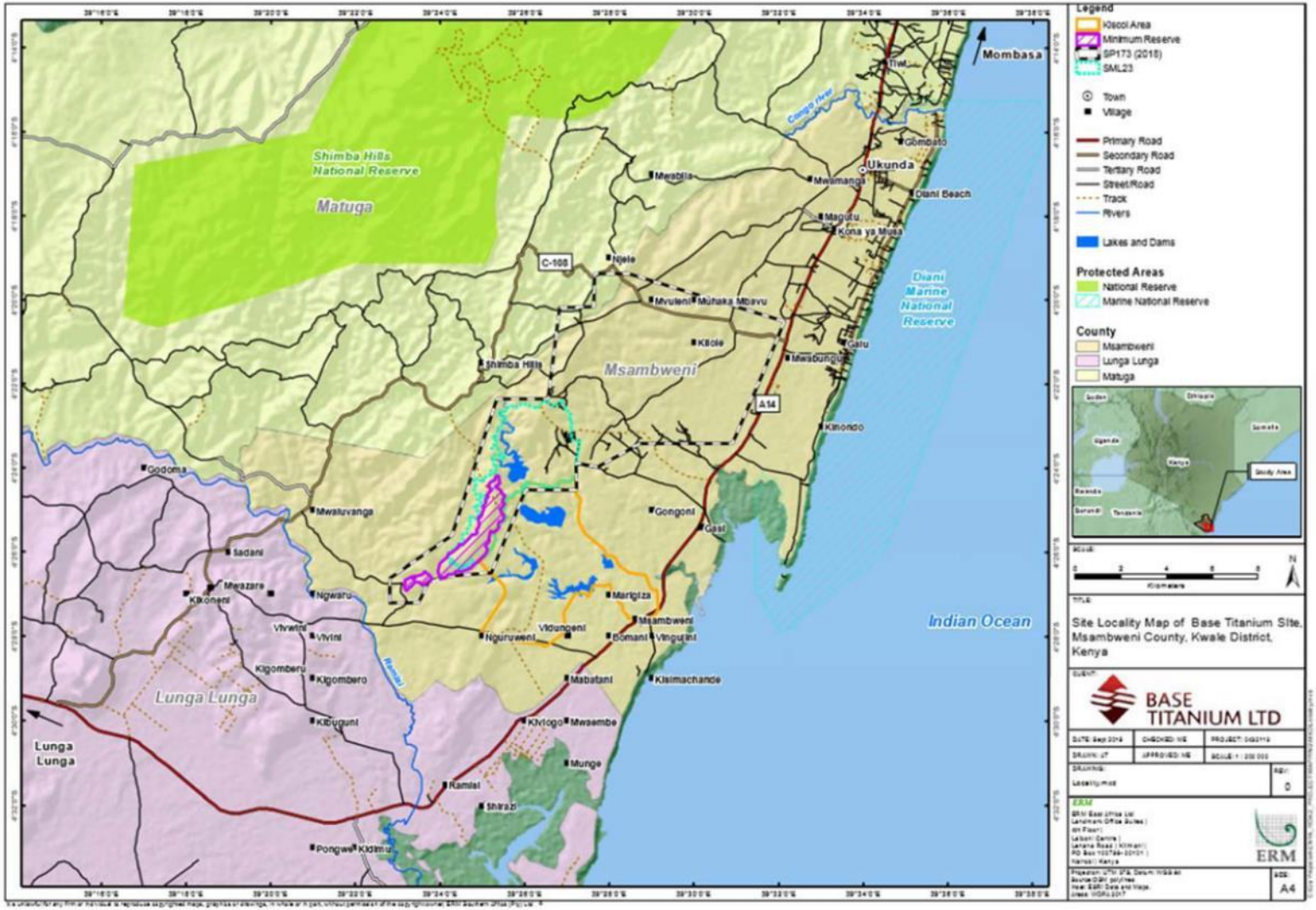


Figure 5.12: Administrative boundaries within Msambweni Sub-County

5.4.3 Demographics

5.4.3.1 Population

Msambweni Sub-County measures an area of 3,227.2km². According to the 2009 census[17], the Sub-County population is estimated at 288,393 persons, comprising 142,305 males and 146,088 females. This population was recorded in 59,484 households, with an average size of 5 persons per household. The population density ranges from 9 to 2,271 persons per km², with an average density of 89 persons per km².

From the socio-economic data gathered during the Household Socio-economic Survey[18] commissioned by Base between May and August 2011, the demographic profile for the Project-affected households situated within the Mivumoni location is typically that of a developing country, in that it has a large base which narrows down with age, indicating high fertility rates and low life expectancy. This is partly due to the generally low health standards and standards of living, and high infant mortality rates (Figure 5.13).

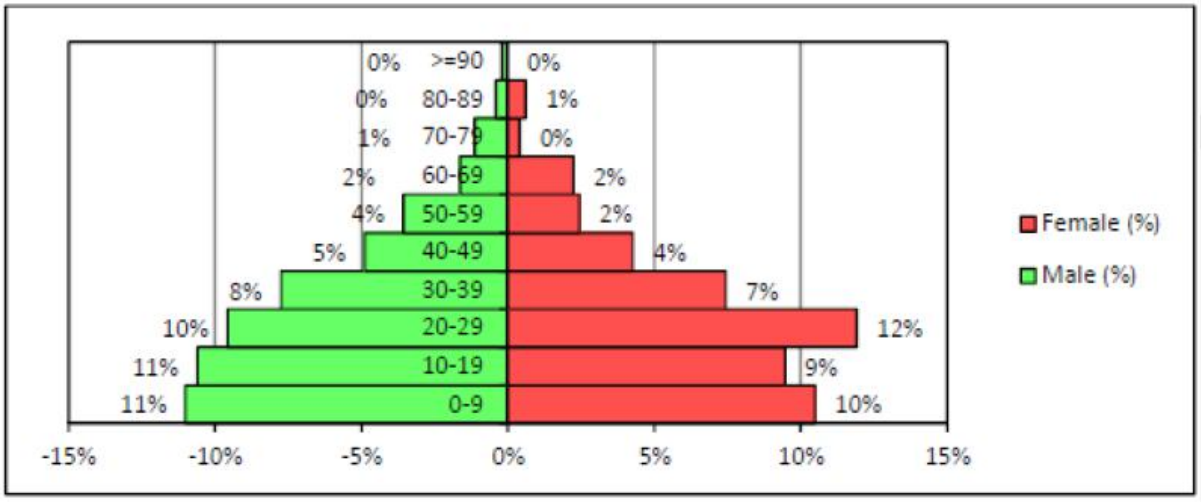


Figure 5.13: Demographic Profile for Sampled Households in Mivumoni Location

Despite the low life expectancy illustrated in Figure 5.13 above, birth control is similarly low, leading to a high birth and population growth rate. It is important to note that the base of the pyramid is fairly upright, an indicator that health standards are improving as the population decline from the 0-9 age group to the 10-19 age group is minimal. There is no clear discrepancy between males and females as one moves into higher age groups, and this fact can hence be used to deduce that life expectancy in the affected population is homogenous by gender. An anomaly is evident in the 20-29 age group, where the female population increases by 3% and overtakes the percentage of males. Likely, this decrease in the male population relative to the female population may be caused by out-migration of young adult males from the area in search of work in various towns and cities. During the survey period, numerous project-affected households indicated that male household members in this age group had left the immediate area to work in Mombasa and Likoni.

[17] *KNBS (2009) Population, Demographics and Housing Census*
[18] *Nomad Socio-Economic Management and Consulting (2012) Social Impact Assessment Report for the Kwale Mineral Sands Project in Kenya.*

5.4.3.2 Age and Gender

Based on the Independent Socio-Economic Monitoring Report 2016[19] the percentage of males in all age groups is considered largely static across all the different surveys. On average there have not been any significant increases or decreases in the percentage of males in each age category. This strongly suggests that there has not been any major change in population trends related to resettlement. The age characteristics for males are presented in Table 5.9 below.

Table 5.9: Breakdown of Age Cadres for Males (%)

Age Cadre	RAP	Baseline	Dam/Pipeline/Access Road RAP	Indirectly Affected Households	2011 Monitoring	2013 monitoring	Resettled HH (2014)	Indirectly Affected HH (2014)	Resettled HH (2016)	Indirectly Affected HH (2016)
0 to 10	25	26	28	22	25	27	27	25	26	32
11 to 20	22	16	24	24	19	29	25	25	24	24
21 to 30	19	18	16	17	19	17	17	16	16	18
31 to 40	15	17	13	13	16	11	10	13	13	8
41 to 50	8	11	9	10	10	8	7	6	8	10
51 to 60	5	6	6	6	4	4	6	8	5	4
60+	5	7	5	8	7	6	9	7	8	4

There has been a 5% reduction from the previous monitoring event in the percentage of males in the 31-40 age group indirectly affected households. This may point to people moving away as jobs in the Project area reduce. In the same age category, there has been an increase of 3% in the resettled households, which supports this theory, as it may indicate that males in that age group are returning to their family homes to take up employment at Base reserved for directly affected households.

Age characteristics for females are presented in Table 5.10 below. The percentage of females in all age groups is considered largely static across all surveys, with not much deviation in the 2016 monitoring results. As with males, this strongly suggests that there has not been any major change in population trends related to resettlement.

Table 5.10: Breakdown of Age Cadres for Females (%)

Age Cadre	RAP	Baseline	Dam/Pipeline/Access Road RAP	Indirectly Affected Households	2011 Monitoring	2013 monitoring	Resettled HH (2014)	Indirectly Affected HH (2014)	Resettled HH (2016)	Indirectly Affected HH (2016)
0 to 10	23	24	26	27	23	31	34	28	25	32
11 to 20	21	21	21	24	25	20	21	21	22	25
21 to 30	22	21	19	21	17	20	17	22	19	18
31 to 40	15	15	14	12	14	11	9	7	14	12
41 to 50	7	7	8	6	8	6	8	6	8	7
51 to 60	6	6	5	4	5	5	5	7	6	2
60+	5	5	7	5	8	7	6	9	6	4

[19] Nomad Socio-Economic Management and Consulting (2016) *Independent Socio-Economic Monitoring Report for the Kwale Mineral Sands Project in Kenya.*

5.4.4 Household Size

The 2016 Monitoring Survey[20] findings show the average household size in the Mivomoni and Kinondo locations of the Msambweni sub-county as 8.1 persons per household. The average number of people per household has increased by one person per household, from the previous monitoring event. However, the total number of people reported to be living on the plots, and not absent household members is 1,439; which brings the average number of physically present people per household to 6.7, which would support the previous monitoring surveys' trend in the reduction of household size. The reduction in household size of approximately 0.5 people per household each year is not considered to be significant.

It is noted, that the 2016 survey has again seen an increase in the formation of new households as a natural growth from the households surveyed in the first monitoring event. This can be attributed to the children of household heads moving to establish their separate households. Another interesting point to note is that the number of household members categorized as not related but dependent has increased, and this could be attributed to people moving into the area to look for work, and being absorbed into households as tenants. This natural evolution is expected as household characteristics do not remain static overtime. Table 5.11 below gives the average number of people per household in the project area based on the different surveys.

Table 5.11: Average Number of People per Household

Survey	Total No. of People	Total Households	Average No of People per Household
RAP Mine Site Survey (2005)	2447	341	8.1
Baseline Survey (2006)	918	119	7.7
Dam/Pipeline/Access Road Survey (2011)	1766	212	8.3
Indirectly Affected households Survey (2011)	1188	155	7.6
Monitoring Survey (2011)	778	80	9.7
Monitoring Survey (2013)	672	85	7.9
Monitoring Survey (2014)	937	1330	7.2
Monitoring Survey (2016)	1724	212	8.1
Miembeni Baseline Survey (2016)	307	21	15

5.4.5 Household structures

The RAP and 2011 monitoring survey included a count of all existing structures for each household. The pre-resettlement holdings are estimated at an average of 3.7 primary structures and 1.3 secondary structures per household. The 2011 monitoring survey shows a growth in both primary (30% increase) and secondary (25% increase) structures. This is generally attributed to the resettlement process and positive trends in the re-establishment, and likely further investment, in new household structures. Table 5.12 gives the average number of household structures per family.

[20] Nomad Socio-Economic Management and Consulting (2016) *Independent Socio-Economic Monitoring Report for the Kwale Mineral Sands Project in Kenya.*

Table 5.12: Average number of Household Structures per family

Type	RAP	Baseline	Dam/Pipeline/Access Road RAP	Indirectly Affected HH	2011 Mon.	2013 mon.	2014 Mon.		2016 Mon.	
							Resettled HH	Indirectly Affected HH	Resettled HH	Indirectly Affected HH
Primary	3.7	0.9	-	-	4.9	1.0	1.3	1.4	0.9	1
Secondary	1.3	0.2	-	-	1.6	0.9	0.6	0.5	0	0

5.4.6 Livelihoods and economic activities

The project area's main livelihood activity is subsistence and small-scale commercial agriculture. The products of such small-scale agriculture include: Poultry rearing, Cotton Planting, Bee Keeping and sorghum planting. Table 5.13 below summarises the data on projects and the total number of beneficiaries per Project collected during the household Socio-Economic survey undertaken for the Mivimoni location between August and September 2018.

Table 5.13: Livelihood activities in the project area (Mivimoni Location)

Project	Number of Beneficiaries	Total
Poultry Project	20 households	300 birds
Cotton	14 Farmers	14 acres
Sorghum	20 Farmers	51 acres
Bee Keeping	3 groups with 58 members each	30 beehives

5.4.6.1 Agriculture

The main agricultural products in the Project area includes fruits such as mangoes, passion fruit, bananas, citrus fruits (oranges, lemons, limes, grape fruit and tangerines), coconuts, guavas, pineapples, paw-paws, custard apple, avocadoes and jack fruit), maize and cassava. Other important crops grown include: Sugarcane, Bexar, Casuarinas, African oil palm, Eucalyptus, sisal, Sheoak, Lebbeck tree, wild date palm, black plum, African fan palm, African teak, Doum palm, red water tree/sasswood, blackwood cassia/iron-wood, and Marula.

5.4.6.2 Livestock

The area's communities have an agro-pastoralist culture, growing crops and grazing cattle around their *'shambas'* or fields. Cattle and goats are regarded as both a symbol and a wealth source as highlighted in the Social Impact Assessment Report.[21]

5.4.6.3 Communal Natural Resource Use

Communal natural resources provide several important goods and services to the affected households in the area. They also contribute to food security maintenance, particularly during periods of low crop yields.

Affected households utilize natural water bodies for washing clothes and bathing, and as a source of drinking water. Firewood is the main energy source for cooking, and wood for charcoal making is sourced from local forested areas. Natural resources are also an important source of construction materials, particularly thatch grass for roofing and weaving.

[21] Nomad Socio-Economic Management and Consulting (2012) Social Impact Assessment Kwale Mineral Sands Project

5.4.7 Education

Maximum adult education is an important indicator of community development and priorities. Table 5.14 and Table 5.15 below illustrate the difference in adult (aged 18 and above) education status by gender as was captured during the surveys.

Table 5.14: Maximum education achieved by adult males (%)

							2014 Mon.		2016 Mon.	
Education Level	RAP	Baseline	Dam/Pipeline/Access Road RAP	Indirectly Affected HH	2011 Mon.	2013 mon.	Resettled HH	Indirectly Affected HH	Resettled HH	Indirectly Affected HH
None	34	37	38	33	29	33	30	30	12	10
Primary School	42	47	31	34	40	44	47	47	53	62
Secondary School	19	13	20	20	20	12	20	20	27	21
Tertiary Education	5	3	9	14	10	10	4	4	10	7

Table 5.15: Maximum education achieved by adult females (%)

							2014 Mon.		2016 Mon.	
Education Level	RAP	Baseline	Dam/Pipeline/Access Road RAP	Indirectly Affected HH	2011 Mon.	2013 mon.	Resettled HH	Indirectly Affected HH	Resettled HH	Indirectly Affected HH
None	39	41	52	40	47	43	42	35	20	22
Primary School	43	49	29	37	33	42	41	41	55	58
Secondary School	16	8	15	16	15	8	16	24	20	15
Tertiary Education	3	2	4	8	5	7	1	1	5	5

A review of the baseline surveys indicates that up until the 2016 monitoring survey it was reported that, on average, a third (30%) of all males have received no education, while the majority have only obtained primary level education. During the 2016 monitoring survey, it has been reported that between 10% and 12% of all males, aged 18 and above, have received no education, which is half the figure of the previous monitoring survey. It appears that this may be attributed to improved access to education, which is supported by the increase in percentage of males with some primary school education.

Enrolment of children of school going age (between 6 and 17), not disaggregated between male and female children, is presented in Table 5.16 below. Findings indicate that enrolment levels are largely static across all surveys.

Table 5.16: Enrolment of School going age at Schools

							2014 Mon.		2016 Mon.	
Enrolment	RAP	Baseline	Dam/Pipeline/Access Road RAP	Indirectly Affected HH	2011 Mon.	2013 mon.	Resettled HH	Indirectly Affected HH	Resettled HH	Indirectly Affected HH
Yes	95	92	92	98	91	96	96	92	98	96
No	5	8	8	2	9	4	4	8	2	4

5.4.8 Health

The majority of the survey respondents indicated that malaria is the greatest health threat to their households, with most infections occurring between May and July. This fact was reasserted in the interviews at Msambweni Sub County Health Centre, which had the highest recorded malaria cases in the County, at these times. Although the government has established a programme that provides free mosquito nets to pregnant women, newborn babies, and children under six years old, not all households use this programme. This is partly because many of the villages' births are facilitated by midwives, especially in those instances where families cannot afford the travel costs to the closest medical facility or hospital.

Typhoid, schistosomiasis (bilharzia), 'jiggers' (*Tunga penetrans* – sand fleas), and upper respiratory infections were some of the other illnesses reported during interviews. 'Jigger' infections, which are caused by sand flea larvae being deposited under toenails and in the feet' skin, are very common in the Project area, and cause much discomfort.

Most villagers stated that they preferred to treat illnesses with pharmaceuticals and that 'traditional' knowledge of herbal medicines is being lost as the elders, who are the bearers of this knowledge, pass on without having transferred their knowledge. Despite claims that 'traditional' knowledge is being lost, many households noted that they make tea or balms from the leaves of the 'mwarubaini' (neem) tree as the first response to various illnesses, including malaria, diarrhoea, nausea, burns, and abrasions. Several midwives interviewed stated that they use medicinal plants to facilitate childbirth.

There are several health facilities available within the area, including a health centre in Shimba Hills, a health centre in Kinondo, a dispensary in Mivumoni, and a district hospital in Msambweni. Most households in the Mivumoni location generally visit the Shimba Hills Health Centre, which provides a range of medical services, including family planning and childbirth, HIV/AIDs prevention and treatment, immunization, and general disease treatment. Staff at the Shimba Hills Health Centre confirmed that malaria prevalence was very high in the area and that STDs (including HIV/AIDS) infection rates are increasing significantly.

In terms of fertility, the crude birth rate of the Project area's population in 2010 is high, with a reported 42 births per 1,000 persons. The crude death rate for infants is 73 deaths per 1,000 infants born. Given that infant deaths are generally under-reported, this figure may indicate that infant mortality rates are higher, and may be attributed to a lack of adequate health facilities, although the midwives interviewed stated that child-birth complications are rare. Table 5.17 presents the prevalence of three major diseases i.e. diarrhoea, tuberculosis, and malaria, experienced by households in the baseline and monitoring surveys.

Table 5.17: Prevalence of diarrhoea, tuberculosis and malaria in the area surrounding the mine site and its environs (%)

Survey	Location	Disease	No of People Affected in the Past Year	% of Population
RAP Survey	SML	No Data		
Baseline Survey (2006)	Host Area	Diarrhea	18	6
		Malaria	107	38
		Tuberculosis	3	1
	Mine Site	Diarrhea	30	7
		Malaria	214	449
		Tuberculosis	3	1
	Non Affected Control	Diarrhea	5	5
		Malaria	26	28
	Vulnerable	Diarrhea	10	10
		Malaria	66	64
		Tuberculosis	6	6
Dam/Pipeline/Access Road RAP	Various	Diarrhea	77	4
		Malaria	554	31
		Tuberculosis	16	1
Monitoring Survey (2011)	Resettled Households	Diarrhea	44	6
		Malaria	253	33
		Tuberculosis	6	1
Indirectly Affected Households Survey (2011)	Various	Different data collection method so no included in Table		
Monitoring Survey (2013)	Various	Diarrhea	35	5
		Malaria	249	37
		Tuberculosis	10	1
Monitoring Survey (2014)	Resettled Households	Diarrhea	33	6
		Malaria	151	26
		Tuberculosis	8	1
	Indirectly Affected Households	Diarrhea	16	4
		Malaria	134	37
		Tuberculosis	3	1
Monitoring Survey (2016)	Resettled Households (Total Count 167)	Diarrhea	50	4
		Malaria	6	1
		Tuberculosis	441	33
	Indirectly Affected Households (Total Count 45)	Diarrhea	17	4
		Malaria	2	1
		Tuberculosis	107	27

5.4.9 Employment

Base Titanium's employment policy No. bkpol001 [22] aims to maximise benefits to local communities by giving preference to project affected parties and those residing in the mine's immediate environs and assigning progressively lower priorities to those living further away.

The employment policy is also designed to include a significant component of training and knowledge transfer to upgrade Kenyans' skills to man Kwale operations and expand the expertise base for the Kenyan mining industry in general. It operates in compliance with the Equator Principles, International

[22] basetitanium.com/careers/employment

Finance Corporation Performance Standards, World Bank Group Environmental, Health and Safety Guidelines, and the International Labour Organization standards as ratified by Kenya's Government.

A total of 699 people, including 41 interns, graduate trainees and apprentices, are currently employed directly by Base. On-site service providers employ a further 275 contracted to Base in the areas of security, transport, catering and analytical laboratory services, bringing the total number in employment on site to 974. The analysis demonstrates that 65% of those in employment are recruited from within Kwale County and that 97% are Kenyans.[23]

Base uses a fencing system to maximize employment opportunities for project affected and local communities. The fences are defined as follows:

1. Resettled communities
2. Villages immediately neighbouring mine and port
3. Locations surrounding the mine site and port
4. Remainder of Kwale County
5. Remainder of Coast Province
6. Remainder of Kenya
7. International

Likoni in Mombasa County where the Shiploading Facility belongs to Fence 4. This rigorous employment policy is in line with IBP and is tailored to ensure a sense of ownership is cultivated among neighbouring communities.

Base's training programmes are also tailored to enhance the fencing system of employment, where talent is identified and nurtured through a supportive system. Most of the management positions are currently held by expatriates, however, employees from Kenya are trained to take over many of the positions.

5.4.10 Water and Sanitation

The availability of a clean and consistent water supply is a critical requirement for households. Table 5.18 presents the sources of water available to households based on the baseline and monitoring surveys' findings[24]. Analysis of the findings needs to be treated with caution, as access to water sources is heavily dependent on location, rather than any specific socio-economic status of the household.

Table 5.18: Household water source by type (%)

Survey	Area	Water Source	% of Total Households
RAP Survey	Mine Site	Well	No Data Collected
		Communal Pump/Borehole	
		Piped Water on Property	
		Stream or River or Dam	
		Spring/Seeps	
		Other	
Baseline Survey (2006)	Host Area	Well	100
	Mine Site	Well	79
		Communal Pump	6
		Piped Water on Property	2
		Stream or River or Dam	6
		Other	6
		Spring	2
	Non Affected Control	Well	60
		Communal Pump	20
		Other	20
	Vulnerable	Well	94

[23] Base Titanium. Special Mining Lease No 23. The Kwale Mineral Sands Mine. Biennial Work Programme for 2017-2019

[24] Nomad Socio-Economic Management and Consulting PTY. 2016 Independent Socio-Economic Monitoring Report for Base Titanium Kwale Mineral Sands Project Kenya

Survey	Area	Water Source	% of Total Households
		Stream or River or Dam	6
Dam/Pipeline/ Access Road RAP	N/A	Well	48
		Communal Pump/Borehole	11
		Piped Water on Property	4
		Stream or River or Dam	25
		Spring/Seeps	11
		Other	1
Indirectly Affected Households Survey (2011)	N/A	Well	2
		Communal Pump/Borehole	14
		Piped Water on Property	0
		Stream or River or Dam	6
		Spring/Seeps	77
		Other	2
Monitoring Survey (2011)	Resettled Households	Well	64
		Communal Pump/Borehole	8
		Piped Water on Property	4
		Stream or River or Dam	5
		Spring	18
		Other	3
Monitoring Survey (2013)	Directly Affected Households	Well	59
		Communal Pump/Borehole	4
		Piped Water on Property	11
		Stream or River or Dam	0
		Spring/Seeps	24
		Other	2
	Indirectly Affected Households	Well	35
		Communal Pump/Borehole	16
		Piped Water on Property	10
		Stream or River or Dam	6
		Spring/Seeps	32
		Other	0
Monitoring Survey (2014)	Resettled Households	Well	55
		Communal Pump/Borehole	21
		Piped Water on Property	13
		Stream or River or Dam	4
		Spring/Seeps	1
		Other	6
	Indirectly Affected Households	Well	44
		Communal Pump/Borehole	27
		Piped Water on Property	23
		Stream or River or Dam	0
		Spring/Seeps	4
		Other	2
Monitoring Survey (2016)	Resettled Households	Well	32
		Communal Pump/Borehole	25
		Piped Water on Property	23
		Stream or River or Dam	2
		Spring/Seeps	16
		Other	2
	Indirectly Affected Households	Well	27
		Communal Pump/Borehole	38
		Piped Water on Property	0
		Stream or River or Dam	0
		Spring/Seeps	31
		Other	4

Based on the 2012 SIA report[25], in Msambweni district, about a quarter of the population has access to piped water schemes with an additional quarter relying on community boreholes and wells equipped with hand pumps. About a half of the district uses water from unclean sources and are exposed to the risk of contracting water-borne diseases.

Households within the project area villages utilize a variety of water sources. Households located near the Mukurumudzi Dam collect water from the river and other natural water sources and government or

[25] Nomad Socio-Economic Management and Consulting (2012) Social Impact Assessment Kwale Mineral Sands Project

NGO-donated boreholes. In most of the villages within which the South Dune and South Dune Extension falls, including Mivumoni, Magaoni, Mafisini, Zigira, Muhaka, Mwabungo, water is collected from ephemeral streams, natural springs, shallow wells, community boreholes or nearby swamps. Communities in these areas are therefore very vulnerable to water contamination. Water quality varies across the different areas, and while water drawn from boreholes generally does not require purification, several the natural springs and wells may need to be treated before consumption.

The average water collection period takes between 20 minutes to 1 hour, but varies between households and settlements depending on where the nearest water source is located. Average daily water consumption was estimated at 120L per household per day, but several female residents, who are primarily responsible for collecting water, noted that collecting water is an "all day" activity and that they collect when, and as often needed.

Although affected households reported pit latrines as the main toilet system, the quantitative socio-economic household surveys indicated that "indiscriminate defecation" is common in the affected areas, with 40% of the households reporting to open defecation. This leads to the risk of water contamination, water borne diseases and explains the high *E. coli* count noted in water samples analysed.

The most common modes of waste management by households are burning, burying, and reusing organic waste to produce fertilizer.

5.4.11 Land Tenure

In the general project area, households claim rights to their land either as private owners with freehold title, as leaseholders, or through customary tenure systems. More than 80% of these households claim customary rather than statutory land rights to the land on which they live. Within the statutory framework, these land rights are defined as "informal," since the Kenyan government legally owns the land. However, a decision was taken, in collaboration with the area chiefs, the district administrators, the village chairmen, village elder councils, and family elders that the District Lands Surveyor define plots and allocate them to a specifically defined category of "quasi- land owners". These "quasi land owners" are now entitled to compensation for this land.[26]

Households resettled from the mine site area between 2005 and 2008 received monetary compensation for their land, and were incorporated into the Bwiti Settlement Scheme, where they were allocated 5.5 acres of agricultural land and granted lifelong leasehold titles for each.

160 plots are affected in their entirety by the southern extension and the households residing on them will be resettled. All plots are located within adjudicated areas and are registered with title deed at Kwale Land Registry. Several these plots are owned by non-resident landowners, some with squatters and some without. The on-going RAP for the Southern Dune Extension will provide detailed information on each plot's status in terms of ownership, residency and any outstanding issues relating to each title.[27]

[26] Nomad Socio-Economic Management and Consulting (2012) Social Impact Assessment Kwale Mineral Sands Project

[27] Resettlement Framework Kwale Mineral Sands Mine, Kenya – Southern Extension Addendum: Special Mining Lease Southern Extension. July 2018. Base Titanium Internal document.

6. STAKEHOLDER ENGAGEMENT

Base has developed the following programme outlined in this *Chapter*, to meet the objectives of the Stakeholder Engagement Plan (SEP), including setting out the structure of ongoing consultation, defining the activities involved and the resources required. There are various levels of engagement recommended and all are being delivered in a language familiar to the stakeholder and in a culturally sensitive manner.

6.1 Structure of Stakeholder Engagement

Three levels of consultation have been identified for the Southern Dune Extension to provide the necessary engagement with affected stakeholders. During the project's implementation phases, various consultation committees are envisaged to provide information dissemination and feedback and participation opportunities.

These are designed to provide structure to the process but do not preclude direct consultation between the company and any stakeholder. All meetings will be documented and records thereof stored in hard and soft copy.

6.2 Public involvement Process

Public involvement is an essential means of gathering accurate and comprehensive baseline data which is the cornerstone of social baseline data collection, followed for this ESIA process. A series of public meetings were held between November 2014 to June 2018

6.3 Recent Consultation activities

Every effort has been made and continues to be made to inform the project stakeholders, which included the exploration phase. The affected communities have been informed about constructing the different infrastructure components of the planned extension, and any associated resettlement in the South Dune Extension.

A series of public meetings was held between the 11th June 2014 and 14th June 2018. The communities expressed support for the project's continuation and granted the Project a 'social license' to operate within the South Dune Extension area. Information on the Dam's construction and the resultant resettlement were discussed at these meetings. A summary of the meetings can be found in *Table 6.1* below. Meeting minutes are attached in Appendix D.

Table 6.1: Summary of Meetings held for the South Dune Extension

Date	Stakeholder	Venue	Key points
11/6/2014	Mafisini farmers	Mafisini village	Seeking consent for application of exploration license
12/6/2014	Mivumoni farmers	Mivumoni youth Polytehnic	Seeking consent for application of exploration license
4/8/2016	Mafisini / Mivumoni farmers	Mivumoni Youth Polytechnic	■ Exploration awareness ■ Seek consent to carry out drilling. ■ Formation of farmers committee
18/8/2016	Muvumoni farmers	Mivumoni Youth Polytechnic	■ Exploration awareness ■ Follow-up on the previous meeting ■ A consultant to visit the 2 villages for EIA Proposal from farmers for BTL to agree upon giving consent for drilling.

Date	Stakeholder	Venue	Key points
28/08/2016	Elders from Mafisini and Mivumoni Auditors - NEMA	Chief's office Mafisini	■ Exploration awareness ■ Auditors to get views from the community if awareness was carried out in the community
7/12/2016	Mafisini farmers	Mafisini village	■ Exploration engagement: Consent was given for drilling to commence the same day
02/11/2017	Mivumoni farmers	Mivumoni Youth Polytechnic	Exploration feedback
09/11/2017	Mafisini farmers	Mafisini Primary School	Exploration progress report
14/02/2018	Mafisini farmers	Mafisini Primary School	■ Exploration feedback meeting. ■ Reading of names of people whose farms are mineralized
13-14/6/2018	Mafisini Resettlement and Compensation Committee	Jacaranda Hotel	Induction and training of the committee
01/08/2018	Mafisini Resettlement and Compensation Committee	Base Titanium	■ Compensation and Leasing ■ Rights of the direct affected people ■ Representation in MLC ■ Boundary verification/Map ■ Access to information ■ Subdivision of land
31/10/2018	Kwale County Commissioner, County Secretary, Deputy County Commissioners (DCCs) and their respective Sub County Administrators (SCAs) for Lunga Lunga, Msambweni and Matuga Sub Counties, Assistant County Commissioner (ACC) Matuga	Kwale County Commisioner's Office	■ The agenda of the meeting was to deliberate on how the 7 'community' slots in the Community Development Agreement Committee (CDAC) will be distributed amongst the 3 sub counties impacted by Base Mining Project in Kwale County.
07/02/2019	Nguluku Community	Base Titanium	■ MLC/BTL to seek for an appointment with KISCOL in their office tentatively on Tuesday 12th February to discuss the relocation matter and also to access the EIA reports. ■ The meeting set the tentative date of survey on Wednesday 13th February. ■ BTL will compensate only families which shall have moved out of the land in question
08/02/2019	Mafisini compensation and resettlement committee	Base Titanium	■ BTL to share RAP with community ■ Subdivision of land will not be conducted by BTL- previous subdivision was carried out by the Ministry of Lands

Date	Stakeholder	Venue	Key points
			■ Employment and Scholarships- priority to be given to affected communities
14/02/2019	Mafisini Community	Mafisini's Meeting Shade	■ Exploration feedback
19/03/2019	■ Nguluku community representatives ■ DCC Msambweni and Chair, Msambweni Liaison Committee ■ Presiding Convener, Kwale Civil Society Consortium and Secretary, Msambweni Liaison Committee	Base Titanium	■ The negotiation process between the two parties will be a continuous process. ■ BTL will compensate the families-but the beneficiaries must leave after getting the cash ■ BTL will consider the community request of Ksh. 100,000 as relocation cost for families which will be moving outside Kwale County. ■ BTL will offer Ksh.10, 000 for each grave exhumed as consolation but will look into community's request to increase the figure to Ksh. 25,000. ■ BTL will plan for another meeting after the Ministry of Agriculture and Kenya Forest Services officials have submitted their reports. ■ The community to involve the other additional committee members (farmers committee) in future meetings. ■ BTL will speak to the section of the community who feels left out in the process to assure them that there was no mischief in leaving them out during the initial meeting(s).
04/07/2019	Msambweni liaison committee	Base Titanium	■ Exploration update ■ Nguluku Relocation ■ Infrastructure, Health and Scholarship Programme update
29/07/2019	Nguluku Farmers Committee	Base Titanium	■ Compensation of Nguluku Farmers (negotiation)
29/11/2019	Msambweni liaison committee	Base Titanium	■ Livelihood and infrastructure ■ Scholarship programme ■ Community health ■ Nguluku relocation - After a series of negotiation sessions, BTL paid the affected families Ksh. 250,000 with a 20% increment on perennial plants
21/02/2020	Mafisini resettlement committee	BTL	■ Discussion about title deed successions ■ BTL employment and scholarship opportunities
19/08/2020	■ DCC Msambweni ■ SCA Msambweni	Msambweni DCC Office	■ Background of Msambweni Liaison Committee

Date	Stakeholder	Venue	Key points
	■ Senior Chief Mivumoni ■ Sub County Forest Officer ■ Sub County Agricultural Officer ■ MoPM Officer-Kwale ■ Mafisini Resettlement and Compensation Committee ■ MLC		■ Mafisini Resettlement and Compensation committee- exploration outcome and land compensation progress ■ Presentation of a Map Outlining the Affected Plot Numbers
30/10/2020	■ Mafisini Resettlement Committee ■ KOMAZA	Mafisini Community Hall	■ Mapping of Mafisini Village ■ KOMAZA Operations in Mafisini
11/12/2020	■ Mafisini Resettlement Committee	Mafisini Social Hall	■ Mafisini Mapping Activity - Mapping of Mafisini was completed satisfactorily, the committee played a big role in this. - Before mapping i.e. During exploration time Mafisini had 91 targeted parcels of land but after BTL had expressed intentions of acquiring the area the number rose to 157 due to land subdivisions.
04/01/2021	■ Mafisini Resettlement Committee members ■ Mivumoni Location Senior Chief ■ Kenya National Commission on Human Rights ■ Msambweni Liaison Committee	Mangro Hotel	■ Resettlement negotiations for Mafisini - Background of previous resettlement exercises conducted by BTL - Discussion about the areas that Base currently have their SML, exploration license and where BTL intends on extending their mining - Ongoing negotiations on land packages / prices

Base has identified all stakeholders, these include:

- Project Affected People (PAPs).
- Local authorities (including both County and National government authorities).
- Traditional leaders.
- Local businesses.
- Residents' associations.

- Individuals who feel they could be impacted (positively or negatively) by mining operations in the southern extension area or the resettlement process.

6.4 Dedicated Consultative Forums

In addition to the public meetings, two dedicated consultative forums have been established. These include the following:

6.4.1 Msambeweni Liaison Committee (MLC)

The Environmental Management and Coordination Act (EMCA), 1999, was amended in several sections. Of relevance here, is the inclusion of the County Government in the administrative structure of the EMCA Act, under Section 18, sub section 29, which states:

"The Governor shall, by notice in the Gazette, constitute a County Environment Committee of the County". Section 19 explains the roles of the County Environment Committee as; (a) to be responsible for the proper management of the environment within the county for which it is appointed; (b) to develop a county strategic environmental action plan every five years; and (c) to perform such additional functions as are prescribed by this Act or as may, from to time, be assigned by the Governor by notice in the Gazette.

The MLC replaced the Mining Project Liaison Committee (MPLC) which carried the process from 2011 to 2018.

The Terms of Reference for the MLC relevant to the South Dune Extension are as follows:

- Act as a formal liaison between the proponent and the Sub county/county government authorities, local leadership and other stakeholders.
- Act as a conduit for public awareness creation among local communities to keep them informed of relevant related developments.
- To confirm the households that will be affected and resettled due to the southern extension and assist with the required census of land, structures, trees, and crops compensated.

The MPLC has been extensively involved in the planning and implementation of the South Dune Extension and has handed over responsibilities in this regard to the MLC.

Woman and youth are represented on this committee.

6.4.2 Mafisini Resettlement Committee

A committee, called the Mafisini resettlement Committee, and comprising representation of households potentially affected by the South Dune Extension has been established and includes representation of those households being resettled. Woman, People with Disabilities and youth are well represented in this committee. This committee is represented on the MLC by the chairman.

The Mafisini Resettlement Committee has been consulted on all aspects of the resettlement programme and will continue to be consulted through the planning and implementation of the resettlement. Aspects of the resettlement planning that the committee have been, or will be, consulted on include: The planned mining activities and schedule, eligibility criteria, the valuation and compensation process, the grievance process, the process for exhumation and reburial of bodies within the Project area and the implementation of the resettlement programme.

6.5 One-on-One Meetings

In addition to the public and dedicated forum consultations that has taken place, one-on-one meetings have been held with the affected households to discuss the process. The affected households will be involved in the surveying of their land, the valuation of their assets, and the identification of their graves,

and will be assessed in the Household Socio-Economic Survey as part of the on-going Southern Dune Extension RAP, described in full in the next *Chapter*.

7. THE RESETTLEMENT PROCESS FOLLOWED TO DATE

7.1 Introduction

Base has undertaken various phases of resettlement since 2006, each conducted according to its Resettlement Action Plan (RAP) prepared and implemented in collaboration with local committees, including representatives of directly affected communities. Compensation was paid for land, crops, forest trees, structures and graves. Additionally, requirements for livelihood replacement strategies and replacement land were provided. These RAPs were prepared in compliance with international best practice as stipulated in the IFC Performance Standards.

Affected households included 381 in the Special Mining Lease (SML), 112 associated with the Mukurumudzi Dam and 86 in the access road and water pipeline routes. Of these a total of 486 were physically relocated. As part of the programme, 289 graves were exhumed and reinterred in a specially created cemetery adjacent to the SML.

Completion audits have been carried out on these RAPs confirming the associated activities' successful conclusion. Further resettlement was implemented in early 2017 in response to impacts associated with mining operations. Through Base's monitoring programme, potential noise impacts were identified to the north of the Central Dune as mining operations moved closer to neighboring communities. Consultation through the Mining Project Liaison Committee culminated in an agreement to temporarily resettle 28 households from this area. The process included leasing land from the owners, providing alternative land and compensation for assets. Agreements with landowners were developed and financial training provided to all households to manage the resettlement process.

7.2 Baseline Surveys

Resettlement of households located within the Special Mining License (SML) area was initiated in 2005 and completed in November 2008. In summary, a total of 10 baseline datasets or databases are available and include:

1. Mine Site RAP Survey (2005) – This survey was undertaken in 2005 to prepare the mine site RAP and was a survey of all 341 households impacted and facing physical and economic displacement.
2. Resettlement Baseline Survey (2006) – A baseline survey was undertaken in 2006 for the Social Monitoring Plan requirements. This consisted of a random sample drawn from the RAP Survey database, consisting of 52 households from the Mine Site, a further 17 households that were defined as "vulnerable", 40 households from the "Host Site" and ten additional households from areas not directly affected, which effectively act as a control sample.
3. Monitoring Survey (2011) – A dedicated monitoring survey was undertaken in May and June 2011. This survey comprised of a sample of 80 out of the total number of households that were resettled to the host resettlement area.
4. Dam, Pipeline and Access Road RAP Survey (2011) – A baseline survey was undertaken in 2011 of the households that would need to be resettled to allow for the Project dam development (on the Mukurumudzi River), access road and dedicated process-water supply water pipeline. The survey comprised a detailed household census and an asset survey of 212 households.
5. Powerline RAP Survey (2011) – A baseline survey was undertaken in 2011, of households that would need to be resettled or compensated for land-loss related to the development of the 14km Project powerline. The survey comprised a detailed household census and asset survey of 157 households. It is important to note that the resettlement was the responsibility of Kenya Power

6. Indirectly Affected Households Survey (2011) – A baseline survey of 155 indirectly affected households was undertaken in November 2011 to supplement the surveys of directly (or resettled) households.
7. Monitoring Survey (2013) – A dedicated monitoring survey was undertaken in February, 2013. This survey comprised of a sample of 85 households from both directly and indirectly affected households.
8. Monitoring Survey (2014) – A dedicated monitoring survey was undertaken in April, 2014. This survey comprised a sample of 130 households from directly and indirectly affected households.
9. Monitoring Survey (2016) – A dedicated monitoring survey was undertaken in May 2016. This survey comprised 212 households from both directly and indirectly affected households, and was divided into twelve different sub-categories, mainly spatially separated.
10. Miembeni Baseline Socio-economic and Assets Survey (2016) – A baseline survey of 21 households that will be moved as the Dozer Mining Unit (DMU) progresses closer to the village of Miembeni.

7.3 South Dune Extension RAP

Due to the South Dune extension where additional mineral resources have been identified, it is projected that the South Dune Extension mining activities will affect sections of the host communities both physically and economically, largely in Michirigini, Mivumoni and Mafisini villages. In accordance with International Best Practice and the commitment by Base to being a responsible developer, the Company is committed to ensuring that its actions do not result in the affected households being worse off due to resettlement and compensation.

Most of the South Dune land already is leased to Base, after the initial transfer of the SPL from the government. However, a few additional pieces, including 160 pieces of land identified in the South Dune Extension, will be further affected in their entirety, and will be acquired to form the larger South Dune Mining reserve (Figure 2.10).

For these 160 households, Base has conducted a Resettlement Action Plan (RAP), in line with the Act, and the IFC Performance Standard 5. The households residing on these plots will be resettled to suitable locations of their own choice. Base has drafted a Resettlement Framework for the Southern Dune Extension[28].

During 2019, a total of 60 families were resettled. This was comprised of 52 households (physical displacement), and eight (8) farmers (economic displacement) were resettled. Of the 60 families, 23 were resettled due to isolation/accessibility issues, 29 due to operations upon the South Dune, and the eight (8) farmers due to water, noise and dust grievances associated with Project operations.

Every effort has been made and continues to be made to inform stakeholders of the proposed mining operations and its resettlement component. The affected community has been informed about the southern extension right through the exploration phase identifying the mineral resource and the resulting resettlement.

An amended RAP has been developed, in line with the IFC Performance Standard requirements, for the South Dune Extension to address the displacement that will result from this additional land acquisition as well as the six plots adjacent to future South Dune mining activities

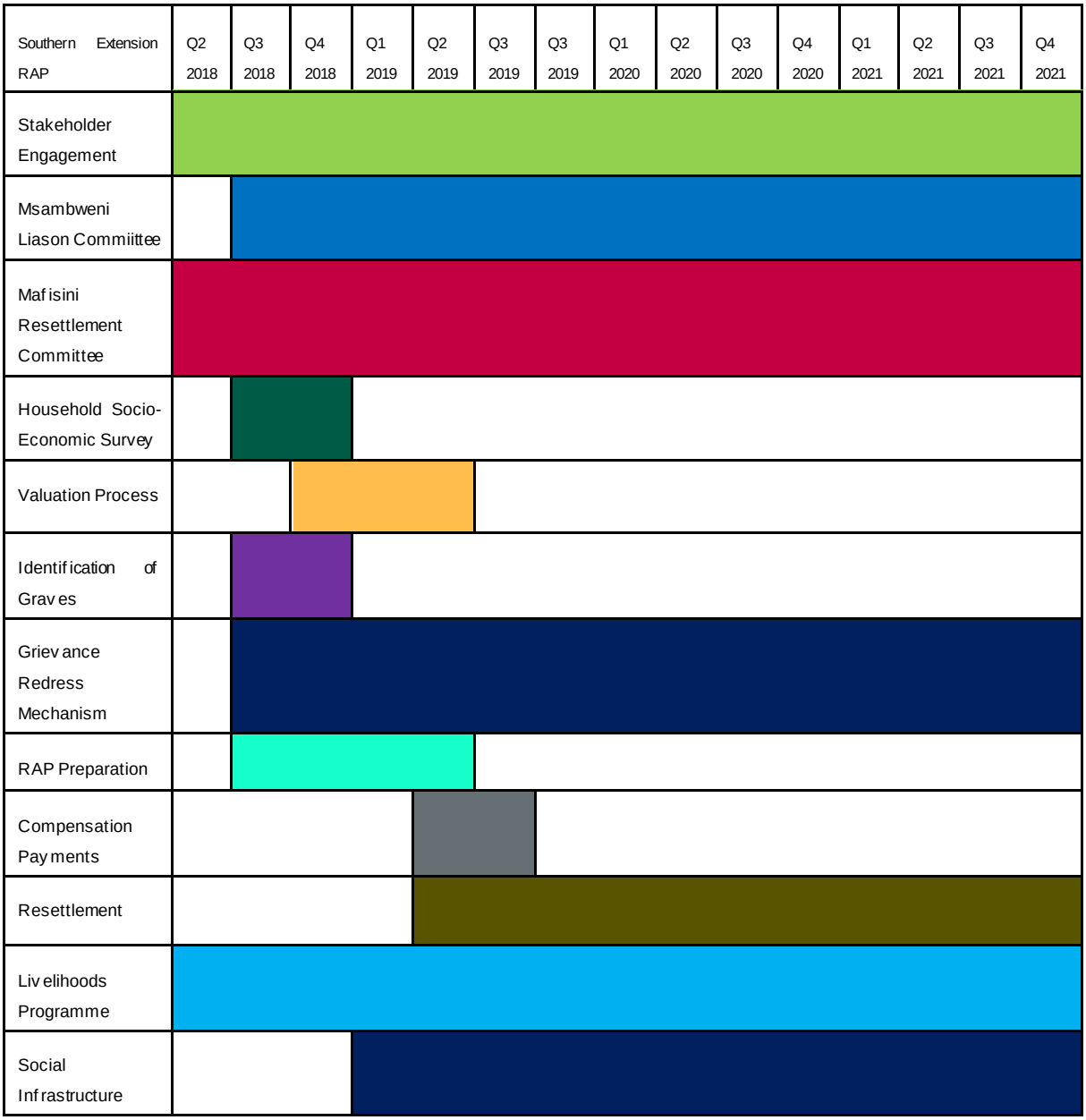
7.4 Implementation schedule

The South Dune Extension resettlement programme will be undertaken in line with the IFC Performance Standards and has commenced with further critical components of the RAP expected to be

[28] Forbes C, Wall S, Kassim P (2018) Resettlement Framework – Southern Extension Addendum, Kwale Mineral Sands Mine, Kenya.

implemented once the ESIA and SML is approved. The schedule for the implementation of the South Dune Extension RAP is presented in Table 7.1 below.

Table 7.1: RAP Implementation Schedule for the Southern Dune Extension



As for all previous RAPs undertaken by Base, the RAP for the South Dune Extension will follow the same procedures and protocols, and will be done in accordance with Kenyan law and the IFCs Performance Standard 5.

8. ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT

This *Chapter* provides a detailed analysis of potential project impacts on the environment and social baseline conditions of the study area in and around the area of the South Dune. The assessments present the existing baseline conditions, the likely changes to these as a result of project activities, the likely magnitude and significance of such changes, and the recommended mitigation/management measures to address each likely impact. Potential residual impacts are also discussed where applicable.

8.1 Summary of Potential Impacts

Based on the project description, analysis of the environmental and social baseline conditions, as well as community and stakeholder engagement, the following impacts have been identified:

Bio-physical Environment

1. Impacts on Soils and Geology
2. Impacts on Air Quality
3. Impacts on Water Resources and Quality
4. Impacts due to Noise and Vibrations
5. Impacts from Radiation
6. Impacts on Faunal and Floral Diversity
7. Impacts on Wetlands

Socio-economic Environment

1. Impacts on Occupational Safety and Health
2. Impacts related to Employment
3. Impacts related to Labour and Working Conditions
4. Impacts on Community Health and Safety
5. Impacts due to Loss of Pasture Land
6. Impacts due to Loss of Agricultural Land
7. Impacts on Community Access to Natural Resources

8.2 Bio-Physical Environment

8.2.1 Impacts on Soils and Geology

8.2.1.1 Introduction

The South Dune Extension measures approx. 393ha, or a 23% increase in the current SML size. The soils in this area will be stripped and most of it processed for mineral extraction.

8.2.1.2 Related Project Activities

Mining in the South Dune and South Dune Extension will involve the use of heavy equipment in stripping of vegetation, and part of the topsoil. Further, the soil containing minerals will be dislodged through hydraulic mining, and the ore fed by slurry pipeline to the existing Wet Concentrator Plant (WCP) where the slimes and sand tails will be removed to produce Heavy Mineral Concentrate (HMC). Slime and sand tails will be directed to two 38-metre diameter thickeners, dosed with a suitable flocculant, separated into clear overflow water and thickened underflow slimes. At 30-35% solids content, the underflow will be directed to the existing TSF (fine slimes) or removed by conveyor and stacker to infill the mined out Central Dune (coarse slimes).

8.2.1.3 Baseline Conditions

Currently, soils in most sections of the South Dune Extension have vegetation cover. The soil surface layer in the western section of the Dune is made up of sands or sandy loams, while the eastern end of the Dune, which forms the greater proportion of mineral sands, is made up of silt and clays, and is generally well-structured. The deeper horizons consist mainly of sandy loams or sandy clay loams in both sections. The general terrain is a gentle slope, with the south eastern side (slopes of Buda Forest) being on the highest gradient.

From the analysis of the South Dune Extension's soil types, the surficial sections are highly erodible when left exposed due to their dispersive nature, especially after mechanical disturbance. The Magarini/Duruma/Mazeras sandstones that host the mineral ores, are generally underlain by weaker Pleistocene sands, which are also easily erodible when exposed. The general project area also experiences two rainy seasons a year, and occasional floods and droughts.

8.2.1.4 Significance of Impact

Vegetation clearance, topsoil stripping, mineral processing and the generation of slimes to be routed either to the TSF (fine slimes) or to the mined out Central Dune (coarse slimes), will alter the soil profile of the southern dune area.

Based on the analysis provided above, the impact significance of project activities on soils and geology will be ***Major*** pre-mitigation (***Table 8.1***).

Table 8.1: Rating of Impacts to Soils and Geology (pre-mitigation)

Type of Impact		
Direct Negative		
Rating of Impact		
Characteristic	**Designation**	**Summary of Reason**
Extent	Local	The soils to be affected are primarily in the project footprint, being the South Dune Extension mine area of 393ha, and the overall area of the current SML which is 1,661ha.
Duration	Long term	This impact will occur throughout the mining period, up to 2024 when rehabilitation begins.
Scale	Major Change	The entire South dune Extension surface area to be mined will be impacted. .
Frequency	Constant	The impact will be experienced throughout mining operations, up to 2024, and beyond rehabilitation.
Magnitude		
Large		
Sensitivity/Vulnerability/Importance of Resource/Receptor		
Medium to High Soils are prone to erosion, by wind and water, especially when bare		
Significance Rating Pre-mitigation		
Major		

8.2.1.5 Recommended Mitigation Measures

To reduce the above impacts to soils during mining of the South Dune and South Dune Extension, Base will:

- Mine in blocks as per the Mine Plan (although some blocks will be mined concurrently). Mining in blocks allows for a reduction in vegetation volume to be cleared and stripped, confining mining activities to active mine blocks only.

- Stockpile topsoil, in stable areas where erosion potential is low.
- Vegetate topsoil stockpiles are expected to remain stockpiled for more than three months, with locally indigenous grass species, especially creepers.
- Ensure that oils/grease spillages and leaks are cleaned up immediately and the contaminated soil either remediated *in situ* or in the event of a major spill disposed through NEMA-licensed waste contractors for safe treatment and disposal.
- Use the results of revegetation trials using "green manure" that have been conducted by Base on the mined-out areas of the Central Dune, on mined-out areas of the South Dune and South Dune Extension, as soon as is possible and allowed by the Mine Plan.
- Implement Base's Biodiversity Conservation Programme on previously mined out and disturbed areas to revegetate such areas with native species.
- Reduce soil erosion by rainfall and water runoff through the construction of settlement ponds, gabions and artificial wetlands on water courses potentially affected by mining operations, thus reducing turbidity and suspended solids in surface waters.
- Erosion on steep slopes, especially towards the mining area's fringes, is to be controlled through revegetation, shade netting placed at right angles to erosion gullies and gulley repair where necessary.

8.2.1.6 Residual Impact (Post-mitigation)

If the above mitigation measures are adequately implemented, the residual impacts of the mining activities on soils will be ***Moderate,*** post-mitigation (***Table 8.2).***

Table 8.2: Rating of Impacts to Soils and Geology (post mitigation)

Type of Impact		
Direct Negative		
Rating of Impact		
Characteristic	**Designation**	**Summary of Reason**
Extent	Local	The soils to be affected are primarily in the project footprint, being the South Dune Extension mine areas.
Duration	Medium-term	This impact will occur throughout the mining period, up to 2024 when rehabilitation begins.
Scale	Evident Difference	The entire South dune extension surface area to be mined will be impacted. .
Frequency	Constant	The impact will be experienced throughout mining operations, up to the year 2024.
Magnitude		
Medium		
Sensitivity/Vulnerability/Importance of Resource/Receptor		
Medium Sensitivity is reduced if soils are rehabilitated/re-vegetated, and wind and water erosion is adequately controlled.		

8.2.2 Impacts on Ambient Air Quality

8.2.2.1 Introduction

The operations can affect air quality through an increase in ambient dust levels as a result of the mining operations, plant operations, and transportation operations. Dust may affect workers' health through

exposure to fine dust (respirable) particulates in enclosed areas over prolonged periods. Surrounding communities may be affected by increased ambient dust concentrations due to increased traffic and increased exposed areas associated with land clearing for mining and mining infrastructure.

8.2.2.2 Related Project Activities

Dust will be released both due to erosion of exposed areas that have been stripped of vegetation, from open mining areas, from areas exposed to vehicular movement and from the TSF.

8.2.2.3 Baseline Conditions

The South Dune is located in a generally rural environment comprising predominantly rural homesteads, thickets, forest reserves and agricultural lands. Dust is the main air quality parameter of concern, where baseline data measurements show that fall out dust is largely less than the guideline value of 600 mg/m^2/day, but with occasional spikes in concentrations between December and March, when conditions in Kwale County are generally dry and windy. Dust concentrations in the nearby settlements of Mafisini, Mivumoni, Michiririni during these months are largely caused by enhanced wind action and activities related to land preparation and the use of unpaved roads in the region.

8.2.2.4 Significance of Impact

Vegetation clearance, stripping of topsoil to expose the mineral ores, and mine traffic on internal mine roads will increase dust levels in the area of the South Dune and South Dune Extension, particularly during dry seasons or prolonged drought periods. Mining in the South Dune and South Dune Extension will also utilize hydraulic mining only, which is not dust generating. These activities will potentially exacerbate the baseline conditions known to exceed the dust fallout guideline of 600mg/m^2/day in some months, particularly between December to March.

Based on the analysis provided above, project activities' impact on existing ambient air quality in the area will be ***Moderate*** pre-mitigation (***Table 8.3***).

Table 8.3: Rating of Impacts to Air Quality (Pre-mitigation)

Type of Impact		
Direct Negative		
Rating of Impact		
Characteristic	**Designation**	**Summary of Reason**
Extent	Local to Regional	Dust and particulate matter emissions from the identified activities will be largely within the mine site and likely only to impact a short distance from the active mining boundaries.
Duration	Long-term	This impact will occur throughout the mining period, up to 2024.
Scale	Distinguishable	The impacts will potentially affect specific localities (settlements close to mining activity areas), but only at specific times of the year. PM10 will only be distinguishable through measurements.
Frequency	Throughout the year, but in particular, the dry months	The impact will be experienced more significantly during dry periods of the year, particularly in the dry, hot months between December to January.
Magnitude		
Small		
Sensitivity/Vulnerability/Importance of Resource/Receptor		
Medium Sensitivity		

8.2.2.5 Recommended Mitigation Measures

Though mining will largely be through hydraulic mining (a wet process), the following measures (many of these measures are already been conducted by Base as part of their Air Quality Management and

Monitoring Programme) will be taken to limit any significant air quality impacts to ambient air from the activities mentioned above:

- Regular wetting of internal mine roads, especially if utilized extensively by mine traffic, with more frequent wetting during December to March.
- Where possible, re-vegetate / rehabilitate cleared areas as soon as possible.
- Limit those cleared areas ahead of mining.
- Limiting clearing activities to the greatest extent possible during December to March.
- Revegetation of stockpiles.
- Recording all complaints from communities in the potentially affected areas and reviewing them to address any unanticipated dust nuisance.
- Enforcement of the 20km/hour speed restriction on access roads in the mining site.
- Ensuring that compensated households have all moved out of sensitive locations before commencing mining activities.
- Maintenance of all vehicles in good condition at all times to ensure complete hydrocarbon combustion.
- Employ adaptive management strategies to suppress dust levels when hot and dry conditions prevail, and especially when the action level of 600mg/m2/day fall out dust is measured in dust buckets surrounding the South Dune. The monitoring campaign should determine the upwind deposition, downwind deposition and the difference in between, which is attributable to the mining activities.

8.2.2.6 Residual Impact (Post-mitigation)

If the above recommended measures are implemented, the residual impact significance of the identified project activities on air quality will be ***Minor*** (***Table 8.4***).

Table 8.4: Rating of Impacts to Air Quality (Post mitigation)

Type of Impact		
Direct Negative		
Rating of Impact		
Characteristic	**Designation**	**Summary of Reason**
Extent	Local, confined to the mine site and immediate environs	The residual emission will largely be dust at minimal scale, at active sites only.
Duration	Long-term	Mining in the South Dune Extension will last for 13 months, extending the LoM up to late 2023, with rehabilitation/reinstatement immediately after such activities.
Scale	distinguishable	The monitoring campaign should determine the upwind deposition, downwind deposition and the difference in between, which is attributable to the mining activities.
Frequency	Occasional	The low residual impact may only be experienced during extended droughts/dry periods, or during strong windy periods.
Magnitude		
Small		
Sensitivity/Vulnerability/Importance of Resource/Receptor		
Medium to Low		

8.2.3 Impacts on Hydrology, Geohydrology and Water Quality

8.2.3.1 Introduction

Hydraulic mining, as planned for the South Dune operations, requires higher (5% to 10%) volumes of water. Mining could also lead to water quality degradation due to the myriad complementing sub-activities. This Section analyses the likely impacts of project activities on the quality, availability and drainage regime of surface and groundwater resources.

8.2.3.2 Related Project Activities

The main project activities that will likely have impacts on water resources and quality include:

- Soil surface layer stripping.
- Stockpiling of stripped waste soils/vegetation.
- Generation of slurries from hydraulic mining.
- Discharge of slimes/tailings to the TSF.
- Water abstraction from boreholes and the Mukurumudzi Dam.

8.2.3.3 Baseline Conditions

The surface hydrology of the area is characterized by water discharge from various natural springs that feed a network of ephemeral streams, which, in turn, radiate dendritically from the Dune to villages, wetlands and farmlands. Some of the identified aquifers help maintain dry weather flows in the Mkurumudzi River, Kidongoweni stream and their tributaries which are important sources of water for key ecosystem services, including maintaining aquatic life, recharge of shallow wells and aquifers, and a habitat for a variety of vegetation species. These sources also serve Mivumoni, Mafisini, Majikuko and Fihoni villages for drinking and other household and agricultural activities.

The deeper Pliocene sands, which host the ores, are of hydrogeological importance since they directly receive rainwater as recharge, store and then discharge it as base flow to the Mkurumudzi River, Koromojo and Kidongoweni streams, and several springs. They are also important for recharge of the Gongoni Forest aquifer system, and provide water for Mivumoni Primary and Secondary Schools (west of the South Dune) through boreholes. The Pliocene sands are considered relatively vulnerable to contamination because of their high vertical permeability and high recharge rates. The water table in the South Dune area is generally high, evidenced by the numerous shallow wells which appear within depths of between 2m to 6m, and boreholes are up to 50m deep on average.

Water from most of the surface and groundwater sources is acidic, soft to moderately hard and poorly-buffered, with naturally higher concentrations of iron from the water quality monitoring results.

8.2.3.4 Significance of Impact

The hydrogeology is as such; the Pliocene acts as a poor aquifer recharged by rain falling on the Dune. It infiltrates through the Pliocene until it reaches the essentially impermeable fresh Mazeras Sandstone, then flows under gravity to the margins of the Dune to discharge from springs and handdug scoops or seeps. The dominant orientation of flow is towards the south east. Impacts on nearby wells/springs/scoops to the east and south east of the South Dune extension will likely include reductions in yields; how much of a reduction will be a function of proximity to actively-mined areas.

It will be difficult to determine the individual contributing recharge area for individual sites, or what effect mining in the South Dune and South Dune Extension will have on the stream system that feeds into the Upper Koromojo at the north edge of the Buda Forest (ref. Monitoring Site S31), although an impact on flow will be a likely impact.

Groundwater in the South Dune extension vicinity is all acidic, soft to moderately hard and poorly-buffered. The acidity explains the relatively high dissolved iron, a pattern observed in historic samples from monitoring sites in the Pliocene sands of the North and Central Dunes.

In water chemistry terms, mining may increase the concentrations of iron and possibly manganese in water coming from, or recharged through mined areas; there is also a risk of increased suspended solids and turbidity, mainly through rainfall/runoff from mined areas. Iron and manganese will precipitate out quickly after exposure to atmospheric oxygen. However, they are very unlikely to affect the Buda Forest's water quality at the S31 stream; this is already being monitored.

Soil from vegetation clearance and surface soil stripping activities may be eroded by storm water into nearby streams, springs and rivers, increased sediment loads and suspended solids, reducing the quality of these waters in the rainy season, and altering habitat in wetlands.

Based on the analysis provided above, the impacts of project activities on the water resources and quality will be ***Medium*** pre-mitigation (***Table 8.5***).

Table 8.5: Rating of Impacts to Hydrology, Geohydrology and Water Quality (Pre mitigation)

Type of Impact		
Direct Negative		
Rating of Impact		
Characteristic	**Designation**	**Summary of Reason**
Extent	Local	The likely impacts will be on localized streams and subsurface water bodies to the east and south east of the South Dune extension, where groundwater flows under gradient and flows in a predominantly south east direction after hitting the Mazaeras sandstones.
Duration	Medium-term	This impact will occur throughout the ore extraction period, for the 13 months leading up to late 2023, where rehabilitation and reinstatement will occur.
Scale	Distinguishable	The impacts will affect specific localities (water resources, communities and biodiversity close to active mining areas) at times throughout the mine life.
Frequency	Frequent	Water will be used throughout the mining period of operations.
Magnitude		
Medium		
Sensitivity/Vulnerability/Importance of Resource/Receptor		
High Streams and Rivers represent important biodiversity hotspots, and are a source of water to communities, livestock and wild animals		
Significant Rating Pre-mitigation		
Medium		

8.2.3.5 Recommended Mitigation Measures

The following measures will be implemented to reduce the impacts on water resources and water quality from the project activities described above:

- Increased turbidity and suspended solids can be reasonably easily addressed by mitigation measures such as settlement ponds, gabions and artificial wetlands, which has the advantage of providing more habitat for wetland species (such as rare reed frogs).
- An abandoned borehole at the former Duncan Ndegwa Primary School, in the north end of the South Dune (WGS84 546521E 9512936N), should be filled with concrete the (defunct) handpump on this borehole removed. To leave this borehole open will risk polluting the (poor) Mazeras aquifer at this location.
- Erection of clean water diversion berms up-gradient of mining areas and overburden stockpiles where these are along known surface drainage routes.

- Reuse of wastewater from the hydraulic mining process to reduce *ex-situ* discharge (already in place for hydraulic mining activities in the Central Dune).
- Erection of silt traps downstream of activity areas, on specific streams of most value to the communities or in recharging the main rivers.
- Limiting heights of topsoil and overburden stockpiles to no more than 2 meters, with a sufficient gradient to reduce erosion.
- Vegetation of topsoil stockpiles with indigenous grass species if stockpiles need to remain in place for 3 months, especially during rainy seasons.
- Ensure Environmental Flow releases from the Mukurumudzi Dam are maintained during mining of the South Dune extension. Ensure abstraction from the Dam and boreholes does not exceed permitted levels
- Continuation with water quality monitoring activities at identified sites, and any other sites that will be noted to be at significant risk to contamination.

8.2.3.6 Residual Impact (Post-mitigation)

If the above recommended measures are implemented, the residual impact of the identified project activities on water resources will be ***Medium*** and on water quality, ***Low (****Table 8.6****).***

Table 8.6: Rating of Impacts to Hydrology, Geohydrology and Water Quality (post mitigation)

Type of Impact		
Direct Negative		
Rating of Impact		
Characteristic	**Designation**	**Summary of Reason**
Extent	Local	The likely impacts will be on local streams and subsurface water bodies.
Duration	Long-term	This impact will occur throughout the ore extraction period, for the 13 months leading up to late 2023, where rehabilitation and reinstatement will occur.
Scale	Distinguishable (for water resources) and Non-distinguishable (water quality) given current water quality data for sites around the Central Dune.	The impacts will affect specific localities (water resources close to activity areas) at a time throughout the mine activities.
Frequency	Occasional	During periods of high rainfall and recharge.
Magnitude		
Small		
Sensitivity/Vulnerability/Importance of Resource/Receptor		
Low to Medium		

8.2.4 Impacts due to Noise and Vibration

8.2.4.1 Introduction

The operations can generate nuisance noise levels on and around the mine site and as a result of active mining operations.

8.2.4.2 Related Project Activities

The main project activities with the likelihood to cause noise and vibration disturbance levels include heavy equipment use in vegetation clearance, hydraulic mining, especially close to the mine boundary, and vehicle movements (both light and heavy). Both workers and the general public are potential receptors of noise generated from the mine site and active mining operations.

8.2.4.3 Baseline Conditions

Daytime:

No results above the Kenyan Regulations level for industrial areas were recorded. In the areas surrounding the Mine Site, a minority of results were over the Kenyan Regulations level for mixed residential areas. Investigation revealed that the unusually high noise levels in most cases were caused by activities not associated with mining and processing, such as noise from crickets', rustling vegetation due to strong winds, motorbikes, people shouting etc. Monitoring data from the South Dune (where no mining or mining-related activities are currently taking place) also presents noise results during the day, above the Kenya Regulations' noise level.

Night time:

Results above the level given in the Kenyan and IFC residential guidelines were recorded, all of them are at a distance of more than one kilometre from the nearest source of noise at the Mine Site. During the monitoring period, observations made indicate significant noise at night emanating from bird calls, insects, frog croaks, bush baby songs, and strong winds.

8.2.4.4 Significance of Impact (Pre-mitigation)

The use of heavy machines (most probably the dozers) for vegetation clearance and topsoil stripping is expected to be the main cause of localized noise and vibration. Hydraulic mining may also cause some noise, but this is expected to be significantly less than the dozers. However, since the households within the South Dune Extension will be relocated before the commencement of mining activities, the impact of noise and vibration from mining operations will be ***Moderate*** pre-mitigation (***Table 8.7***).

Table 8.7: Rating of Impacts from Noise and Vibration (Pre-mitigation)

Type of Impact		
Direct Negative Impact		
Rating of Impact		
Characteristic	**Designation**	**Summary of Reason**
Extent	Local	The likely impacts will be specific to active mining areas at any given time.
Duration	Long-term	This impact will occur throughout the ore extraction period, for the 13 months leading up to late 2023, where rehabilitation and reinstatement will occur.
Scale	Distinguishable	The impacts will affect the mine area's specific sections as per the mine plan. Noise measurements may detect a slight increase to baseline in areas adjacent to mining activities.
Frequency	Occasional	The impact will only be enhanced during strong windy days or when activities are close to settlements.
Magnitude		
Small		
Sensitivity/Vulnerability/Importance of Resource/Receptor		
Medium In particular, communities surrounding the mine are sensitive to increases in noise levels due to the largely rural nature of the surroundings. Communities within the South Dune Extension will be resettled.		
Significance Pre-mitigation		
Moderate		

8.2.4.5 Recommended Mitigation Measures

The following measures will be implemented to limit noise and vibration form Project activities:

- All households within the South Dune Extension will be resettled as per the RAP prepared by Base
- As much as possible, vegetation clearance and topsoil stripping will be conducted during the day, when most households are less sensitive to noise.
- If required, complaints on noise/vibrations shall be recorded, adequately investigated, and necessary remedial measures taken.
- The use of an "octave band analysis" to characterize the noise emitted from Base operations will be considered to compare future measurements with the data obtained at the locations on the Mine Site boundaries. This is proposed since the character of the noise emitted by mining and processing machinery is expected to be significantly different from noise emitted by insects, birds, vegetation rustled by the wind etc. Bases' contributions to these locations' noise levels will then be better understood.

8.2.4.6 Residual Impact (Post-mitigation)

If the above recommended measures are implemented, the residual noise and vibration impact from the identified project activities will be ***Low*** (***Table 8.8***).

Table 8.8: Rating of Impacts from Noise and Vibration (Post mitigation)

Type of Impact		
Direct Negative Impact		
Rating of Impact		
Characteristic	**Designation**	**Summary of Reason**
Extent	Local	The likely impacts will specific to active areas at any given time.
Duration	Long-term	This impact will occur throughout the ore extraction period, for the 13 months leading up to late 2023, where rehabilitation and reinstatement will occur.
Scale	Not Distinguishable	Noise levels away from the mine boundaries will not be distinguishable from baseline noise levels.
Frequency	Frequent	The impact will only be enhanced during strong windy days or when activities are close to settlements.
Magnitude		
Small		
Significant Rating Post-mitigation		
Low		

8.2.5 Impacts from Radiation

8.2.5.1 Introduction

Mineral sands contain natural radiation levels, the amount varying between different mineral sands deposits. Background levels of radiation for the Kwale deposit were established before mining and providing pre-mining baseline levels for the area. The Kwale deposit contained relatively low levels of naturally occurring radiation compared to some other mineral sands deposits.

8.2.5.2 Related Project Activities

The Operation can affect radiation levels because of the mining of mineral sands and the way that the mineral sands are processed. The separation process results in the concentration of monazite and production of non-conductor mags, which contain small quantities of naturally occurring uranium and thorium. These by-products of the separation process are diluted with the remaining tails to ensure that

the tailings' radiation levels remain the same as they were before the sands were mined. Base and management plans have prepared a comprehensive Radiation Management Plan and Monitoring Programme are implemented.

8.2.5.3 Baseline Conditions

Base conducts radiation monitoring for both working areas and site boundaries. From the radiation monitoring findings from 694 different sites, a baseline average of 0.15 (+0.05) µSv/h was set for the South Dune. This baseline level is well within typical levels of natural background radiation levels.

8.2.5.4 Significance of Impact (Pre-mitigation)

No impacts of operations on gamma radiation levels on site boundaries have been detected. No impacts of operations on the levels of gross alpha and gross beta activity concentrations in waters have been detected.

Based on the above, the potential impact of radiation operations is considered l***ow*** pre-mitigation (***Table 8.9***).

Table 8.9: Rating of Radiation Impacts (Pre mitigation)

Type of Impact		
Direct Negative Impact		
Rating of Impact		
Characteristic	**Designation**	**Summary of Reason**
Extent	Local	If the impacts occur, they will be highly localized, at specific activity areas in the mine.
Duration	Long-term	The impacts of radiation are long term and irreversible.
Scale	Not Distinguishable	Impacts may occur in those sections of the mine where people are exposed to higher radiation levels than background.
Frequency	Constant	Radiation is naturally occurring and will occur at very low levels throughout the LOM
Magnitude		
Small		
Sensitivity/Vulnerability/Importance of Resource/Receptor		
Moderate Sensitivity		
Significance Rating Pre-mitigation		
Minor		

8.2.5.5 Recommended Mitigation Measures

The following measures will be implemented to limit radiation levels form Project activities:

- Base will maintain radiation monitoring as per the Radiation Monitoring Programme in both air and water.
- Workers will wear personal radiation badges at the identified radiation risk areas to measure their radiation doses to ensure these are maintained well below international standards.

8.2.5.6 Residual Impact (Post-mitigation)

If the above recommended measures are implemented, the identified project activities' impact will be ***Negligible*** (***Table 8.10*****).**

Table 8.10: Rating of Radiation Impacts (post mitigation)

Type of Impact		
Direct Negative Impact		
Rating of Impact		
Characteristic	**Designation**	**Summary of Reason**
Extent	Local	If the impacts occur, they will be highly localized, at specific activity areas in the mine.
Duration	Long-term	The impacts of radiation are long term and irreversible.
Scale	Not Distinguishable	Impacts may occur in those sections of the mine where people are exposed to higher radiation levels than background.
Frequency	Constant	Radiation is naturally occurring and will occur at very low levels throughout the LOM
Magnitude		
Small		
Significance Rating Post-mitigation		
Negligible		

8.2.6 Impacts on Floral and Faunal Diversity

8.2.6.1 Introduction

Surface mining operations in the South Dune Extension will add 396ha to the current land take of the SML.

8.2.6.2 Related Project Activities

The main project activities that will affect vegetative cover and overall biodiversity in the South Dune Extension will include surface vegetation clearance, topsoil stripping, stockpiling of stripped soil, water use, and mobile and immobile use equipment.

8.2.6.3 Baseline Conditions

The South Dune Extension currently supports various habitat types, including modified habitat due to human settlements and subsistence agriculture. Currently, the South Dune Extension supports the following broad habit.at types:

- Regenerated woody vegetation.
- Farmlands (modified habitat).
- Wetlands (along drainage lines and in shallow depressions).
- Savannah grasslands.
- A small patch of remnant forest, which lies adjacent to the Buda Forest (the latter will not be affected by mining).
- Riparian habitats, particularly along the streams and rivers.

These habitat types support several faunal species and provide ecosystem services to this land's current residents.

About 492 plant taxa were recorded, of which 34 were exotic cultivated or naturalized species, with a greater variety of vegetation species being found closer to the Buda Forest Reserve. A total of 31 identified species are on the IUCN Red List, classified as endangered, critically endangered, vulnerable, or still under assessment. Most of these are already being propagated in Base's Restoration Programme Indigenous Tree Nursery.

Several bird, reptile, amphibian and mammal species, classified as of conservation significance on the IUCN Red List, have been identified within and around the South Dune mineral reserve area.

A total of 18 bird species on the IUCN Red List have been identified within and around the South Dune. Of these, four species are near threatened, three are endangered, and two other near-threatening species may occur. Nine other notable species, which have fairly to highly localized distributions and are mostly habitat specialists, have been recorded within the study area. Most are either partially or completely reliant on forested areas and forest remnants on site, particularly the Buda and Gongoni Forests, but also along the Mukurumudzi River, the ephemeral Koromojo and their tributaries.

Several threatened amphibian species and other sensitive species, as listed in the IUCN Red List, were also recorded from the study area. Eight of these are forest specialists and rely on some degree of closed, wooded habitats for their survival. Six are coastal endemics and two of these appear to be localized endemics, restricted to the southern Kenya coast. Four species are listed as endemic. Two endangered species and four other sensitive species have been confirmed on site, and there is a reasonable chance that others may occur. Most of these are largely confined to forested or formerly forested areas. However, the endangered Shimba Hill Reed Frog and Forest Leaf-folding Frog may move widely between suitable habitat patches.

About 41 reptile species were recorded on the South Dune mine site. However, given the cryptic nature of reptiles and the habitats available, it is suspected that actual species richness is in the vicinity of 60 species. Many of the species recorded are typical of the coastal matrix, but several forest specialists were also recorded in the remaining forest patches. In terms of richness, the savannah and forest areas are the most diverse, while for the most part, the areas under old cashew and oil palm plantations are generally less diverse. There is no up to date data on reptiles in the IUCN Red List, but ten species spotted during the study are likely to be classified as falling into the Threatened or Near Threatened categories.

Most large mammal fauna are either no longer present within the study area or confined to Shimba Hills, however the area still supports a reasonable diversity of smaller mammals. Forty three species were recorded in the study area and the total species present may be as high as seventy species. Several notable species in the IUCN Red List have been recorded on site. Of particularly interest are the Black and Rufous Elephant Shrew and a Sokoke Dog Mongoose, in the Gongoni and Buda Forests. Several notable bats are known from the region. However, several are specialized cave roosters and are not expected to roost at the mine site, except for the East African Little Collared Fruit bat, which is also expected to be strongly reliant on forest areas.

8.2.6.4 Significance of Impact

Vegetation clearance and topsoil stripping for mining activities will further reduce habitat (although largely modified) and hence biodiversity, result in habitat fragmentation, and soil disturbance may result in the proliferation of alien invasive species and soil erosion. Therefore, this impact is deemed to be of ***Medium*** significance pre-mitigation (***Table 8.11***).

Table 8.11: Rating of Impacts to Floral and Faunal Diversity (Pre mitigation)

Type of Impact		
Direct Negative Impact		
Rating of Impact		
Characteristic	**Designation**	**Summary of Reason**
Extent	Local	The likely impacts will be specific to the mine site and specific vegetation in sections that will be cleared.
Duration	Long-term	This impact will occur throughout the ore extraction period, for the 13 months leading up to late 2023, where rehabilitation and reinstatement will occur.
Scale	Distinguishable	The impacts to biodiversity are wider than just the South Dune Extension, as habitat and the flora and fauna reliant on such habitat will be impacted more widely.
Frequency	Constant	The impact will throughout mining activities as well as post closure.
Magnitude		

Type of Impact		
Direct Negative Impact		
Rating of Impact		
Characteristic	**Designation**	**Summary of Reason**
High		
Sensitivity/Vulnerability/Importance of Resource/Receptor		
High Given the baseline, and the pressure on existing natural habitat, any further disturbances will impact on biodiversity.		
Significance Rating Pre-mitigation		
Medium		

8.2.6.5 Recommended Mitigation Measures

Base is committed to preventing, mitigating or offsetting the harmful effects of its activities on the environment and optimising positive impacts on the environment, supporting Base's Environment Policy. As such, the Operation has committed to the following biodiversity objectives:

- Locating Operation facilities such that critical habitat is protected (in this case, specifically the Buda Forest) and impacts to threatened species are minimized.
- Achieving a net positive biodiversity impact for the Operation.
- Protecting and conserving biodiversity and maintaining ecosystem services.

Means of achieving these biodiversity objectives are discussed below.

Rehabilitation of the South Dune

The Mining Act of 2016 requires that the holder of a permit or licence shall ensure that on completion of mining, the land is restored to its original status, or to an acceptable and reasonable condition, as close as possible to its original state. Trials for the South Dune rehabilitation have already been undertaken by Base Titanium(29).

Rehabilitation forms the corner stone of mine closure, with successful mine closure only being possible if effective rehabilitation, and ideally restoration, of impacted areas has been achieved. As such, a Rehabilitation and Restoration Programme is crucial to the successful closure of the Kwale Mine and therefore needs to be undertaken to ensure success.

With respect to the rehabilitation of the South Dune, the challenges include:

- Sand tailings will not be available to assist with reforming and shaping of the South Dune post mining.
- The bimodal rainfall pattern presents a challenge with much of the annual rainfall falling over short periods during the two rainy seasons and little to no rain experienced for the rest of the time.
- The natural vegetation of Kwale is unique with high levels of plant endemism, hence the region's classification as a Biodiversity Hotspot.
- The original condition of the soil in South Dune is generally very poor.

Despite these challenges several opportunities are presented with respect to the rehabilitation of the South Dune; these include:

(29) 20171217 South Dune Simulation Findings and Way Forward, Internal Base Titanium Memo, December, 2017

- Previous rehabilitation efforts and future rehabilitation of the Central Dune which will commence prior to that of the South Dune will provide valuable lessons to inform the South Dune rehabilitation programme.
- Success in the restoration of areas with the Kwale Operation's Biodiversity Corridor have proved that with the right programme it is possible to achieve restoration rather than simply rehabilitation.
- The Environmental Team have proved to be competent in being able to rehabilitate and restore areas as evident by previous successes.
- Continuation of the various Environmental Programmes that have already proved successful in improving biodiversity in the region

Base has conducted several rehabilitation trials on mined areas to simulate the conditions that will be presented post mining for future rehabilitation of the South Dune. The proposed way forward is informed by the findings of the trials and lessons learned from rehabilitation efforts to date.

Trials were in June 2016 to determine the effectiveness of locally available legume species that could be used as 'green manures' for rehabilitation of mined areas. The basis of these trials was informed by research publications that document the value of using legumes as 'green manures' for improving soil condition. 'Green manuring' is the process of turning a crop into the soil, whether originally intended or not, irrespective of its maturity, for the purpose of effecting some soil agronomic improvement. 'Green manure' crops can be used to improve soil fertility due to their nutrient content. Green manure, apart from increasing soil nitrogen, releasing phosphorus, maintains and renews the soil organic matter and improves soil chemical and physical properties.

Following the success of this 'Green Manure' Trial the following recommendations are tabled:

- Continue to research methodologies that may inform the planned Kwale Operation South Dune rehabilitation efforts.
- Further development to supplement the data obtained to date and to inform the proposed methodology for South Dune rehabilitation are recommended.
- Establish a trial to identify the optional number of 'green manure' plantings required to achieve soil suitable for agricultural purposes.
- Identify suitable tree species for incorporation into the Rehabilitation and Restoration Programme and trial these species to determine the impact of different land preparation methodologies, and the depth of tilling in particular, on the successful growth of planted trees on mined areas to identify methodologies that will ensure rehabilitated areas can support tree growth.
- Identify suitable crops that are being grown for outgrower programmes in the region for future trialling on rehabilitated soils.

It is anticipated that rehabilitation of the South Dune will commence as early as 2021, as blocks are mined out and as mining moves to successive blocks (Figure 2.3).

Control of Alien Vegetation

Alien/invasive plant species are often found in areas that have been disturbed, once established they have the tendency to out compete native species and ultimately can result in a loss of biodiversity and in some cases can result in changes to soil chemistry. Alien/invasive plant species are common in parts of the region, particularly on land that has been cleared for farming, as is the case on the mine site where prior to Base acquiring the lease for the SML the site was occupied by farmers. The clearing of land ahead of mining provides additional opportunities for alien/invasive species that were already in the area.

Alien invasives identified on site include *Eucalyptus* spp. and *Casuarina equisetifolia* (which were introduced by farmers who had planted them, and which have since spread, impacting on the

Mukurumudzi catchment and on wetlands in the region), *Cascabela thevetia, Lantana camara, Ricinus communis,* and *Anacardium occidentale* (Cashew nut trees).

Base has a programme for alien invasive eradication and has embarked on a programme of ring barking alien trees to preserve habitat integrity and wetland and riparian zone functioning.

Protection and Conservation of Biodiversity

Base has established a Biodiversity and Conservation Programme to exploit opportunities for improving conservation outcomes provided by the Operation. Working with specialists from the National Museums of Kenya, KWS and KFS Base's Environment Team undertake regular surveys of habitats of conservation importance in the greater Operation area to improve our understanding of the regions rich biodiversity.

Mining of the South Dune is located adjacent to the Buda Forest Reserve and other small forest patches that constitute the Coastal Forests of Eastern Africa Biodiversity Hotspot, comprising small fragmented forest remnants containing significant levels of biodiversity.

Work on biodiversity conservation has seen Base establish a biodiversity corridor, which separates the areas impacted by construction works and areas that will not be impacted by mining activities.

A recommendation of this ESIA is for the extension of this biodiversity corridor to link the Gongoni Forest Reserve to areas of natural vegetation, including wetlands and the Mukurumudzi Riparian Zone, all the way to the Buda Forest. This area will serve both the floral species and faunal species, as a migratory corridor. The proposed corridor linking the Gongoni and Buda Forests is illustrated in Figure 8.1 below.

Figure 8.1: The Proposed South Dune Biodiversity Corridor

Bases' Rare and Threatened Flora Propagation Research Programme is targeting species of conservation interest to identify suitable species and techniques that may be used for the rehabilitation and revegetating of Operation impacted areas. As part of this initiative, Base has established a Restoration Programme Indigenous Tree Nursery in which indigenous trees are propagated.

The Restoration Programme Indigenous Tree Nursery includes several rare species considered to be of conservation significance that have been successfully propagated and grown in a nursery for the first time. Trees grown in the nursery are used for planting in areas impacted by the Operation, and a variety of indigenous tree species as part of this programme will be planted in this planned Biodiversity Corridor.

As of December 2019, over 116,000 indigenous trees, including more than 22,000 classified as being of conservation significance propagated in the Restoration Programme Indigenous Tree Nursery had been planted within the biodiversity corridor established within the SML.

8.2.6.6 Residual Impact (Post-mitigation)

If the above mitigation measures are implemented, the impact on biodiversity in the area will be ***Positive*** (***Table 8.12***).

Table 8.12: Rating of Impacts to Floral and Faunal Diversity (Post mitigation)

Type of Impact		
Direct Positive		
Rating of Impact		
Characteristic	**Designation**	**Summary of Reason**
Extent	Regional	Improvements to biodiversity and habitats will be felt regionally.
Duration	Long-term	The loss of vegetative cover in the mining area of the South Dune extension will be long term, and will be for the duration of mining activities.
Scale	Evident Difference	The impacts to biodiversity are wider than just the mine site, as habitat and the flora and fauna reliant on such habitat will be impacted regionally.
Frequency	Constant	The impact will be throughout mining activities as well as post closure.
Magnitude		
High		
Sensitivity/Vulnerability/Importance of Resource/Receptor		
High		
Significance Rating Post-mitigation		
High		

8.2.7 Impacts on Wetlands

8.2.7.1 Introduction

Open mining activities will negatively impact wetland ecosystems (depicted in green, white and purple in Figure 5.10), which are valuable for ecological and ecosystem support services. This Section analyses the likely nature of impacts of the South Dune Extension Mining activities on the identified wetlands.

8.2.7.2 Related Project Activities

The main project activities that will affect wetlands in the South Dune extension include surface vegetation clearance, topsoil stripping, stockpiling of stripped soil, water use and use of mobile and immobile equipment.

8.2.7.3 Baseline Conditions

A mosaic of small, seasonal wetlands occur throughout the study area. They support a high diversity of amphibians, including threatened species, and several water birds. Given their relative scarcity in the landscape and the diverse fauna they support, they should be considered of high biodiversity value.

The Mafisini –Buda cohort of wetlands are the closest to the South Dune mining area. These wetlands are located between the Mafisini Shopping Centre and the Buda Forest, and comprise the Mafisini stream, the Buda Forest edge stream and the Mwabada swamp.

8.2.7.4 Significance of Impact (Pre-mitigation)

Erosion of topsoil from exposed mine areas into these wetlands can cause temporary changes in species abundance if top-soil management and protection of the riparian zone is not adequately addressed. Inadequate erosion control will lead to siltation and sediment build up with loss of habitat type and a deterioration of water quality through an increase in turbidity and suspended solid loads.

Wetlands around the Central Dune have, however actually improved substantially since mining through reinstatement efforts and through channelling seepage water to these areas, thereby providing increased habitats for various endangered flora and fauna which were not there previously.

Based on the findings above, the impact of South Dune extension mining activities on identified wetlands will be ***High*** pre-mitigation (***Table 8.13***).

Table 8.13: Rating of Impacts on Wetlands (Pre mitigation)

Type of Impact		
Direct Negative Impact		
Rating of Impact		
Characteristic	**Designation**	**Summary of Reason**
Extent	Local	Most of the sensitive wetlands are just at the boundary of the mineral reserve, but the species they support are of regional significance.
Duration	Short-term	Most observed impacts were temporary, and similar activities will be undertaken in the south dune.
Scale	Evident difference	The impacts may be felt in the 3 or 4 main wetlands already identified and as shown in Figure 5.10.
Frequency	Occasional	Mostly during rainy seasons when erosion is potentially high.
Magnitude		
Small		
Sensitivity/Vulnerability/Importance of Resource/Receptor		
High Wetlands and the fauna they support are sensitive to a change in water quality. Surrounding communities also rely on such wetlands for ecosystem services and water provision.		
Significant Rating Pre-mitigation		
High		

8.2.7.5 Recommended Mitigation Measures

The Operation has re-established a wetland in an area adjacent to the Central Dune where an ephemeral wetland used to exist. Prior to 2013 no water had flowed in the area for several preceding years. As part of the rehabilitation of this wetland, the Operation's roads and supporting infrastructure were located such that they avoided this area, excess water was directed to flow through the area and indigenous sedges and trees were propagated in Bases' Indigenous Tree Nursery for planting in to the re-established wetland. Regular monitoring of the wetland was undertaken to monitor the condition of the wetland. Herpetofaunal monitoring found that the wetland continued supporting healthy amphibian populations, including Endangered reed frog species (*Hyperolius rubrovermiculatus* and *Afrixalus sylvaticus*). Macroinvertebrate monitoring indicated that the wetland continued to return high SASS scores due to the presence of sensitive species – this being a direct indication that the wetland continued to be a healthy aquatic environment supporting a diverse range of aquatic species.

Given this successful example of wetland rehabilitation adjacent to the Central Dune, the following measures will be implemented to protect wetlands adjacent to the South Dune:

- Base will continue with wetland conservation and restoration activities to maintain habitat as well as the attendant herpertofauna. This will be done as per wetlands already restored adjacent to the Central Dune, as discussed above.

- Base will identify a suitable site and create wetland conditions, similar to that done in the Central Dune, to propagate more herpertofaunal species as an offset for any that could be lost due to the project.
- Base will replant more grasses and trees in the riparian zone of the proximal wetlands to filter surface water from plant matter or any other suspended solids that could pose risks to the aquatic life in the wetlands.
- During rainy months, Base will identify the main streams feeding the wetlands and erect silt traps to reduce the sediment loads into the wetlands;

Mitigation through Silt Trap Constructions

As part of the mining operation, and as described by the Project's originally approved ESIA Licence as an approved environmental mitigation design measure, Base Titanium has constructed a series of silt traps adjacent to the boundaries of the mining operations, along drainage channels predicted to be affected, or potentially affected by mining operations. These silt traps, which serve to trap sand and silt from the mining operations, are designed to prevent water resources contamination with high sediment loads, downstream of mining operations.

The silt traps serve to control the sediment loading into surrounding water bodies resulting from stormwater runoff from mining operations as such downstream users are protected from adverse effects. Such silt traps also serve to protect the aquatic ecology of these surface water features (streams and wetlands) downstream of mining operations.

Base Titanium have recently constructed two silt traps, located to the southwest and south East of the Special Mining Lease (SML), in proximity to, and heading downstream from mining blocks 1017 and 1018, respectively (Figure 8.2Figure 2.3). The same has been recommended for the South Dune Extension mining operations. The silt traps' proposed locations downstream of the South Dune extension mine blocks 1021 and 1022 are also shown in Figure 8.2 below.

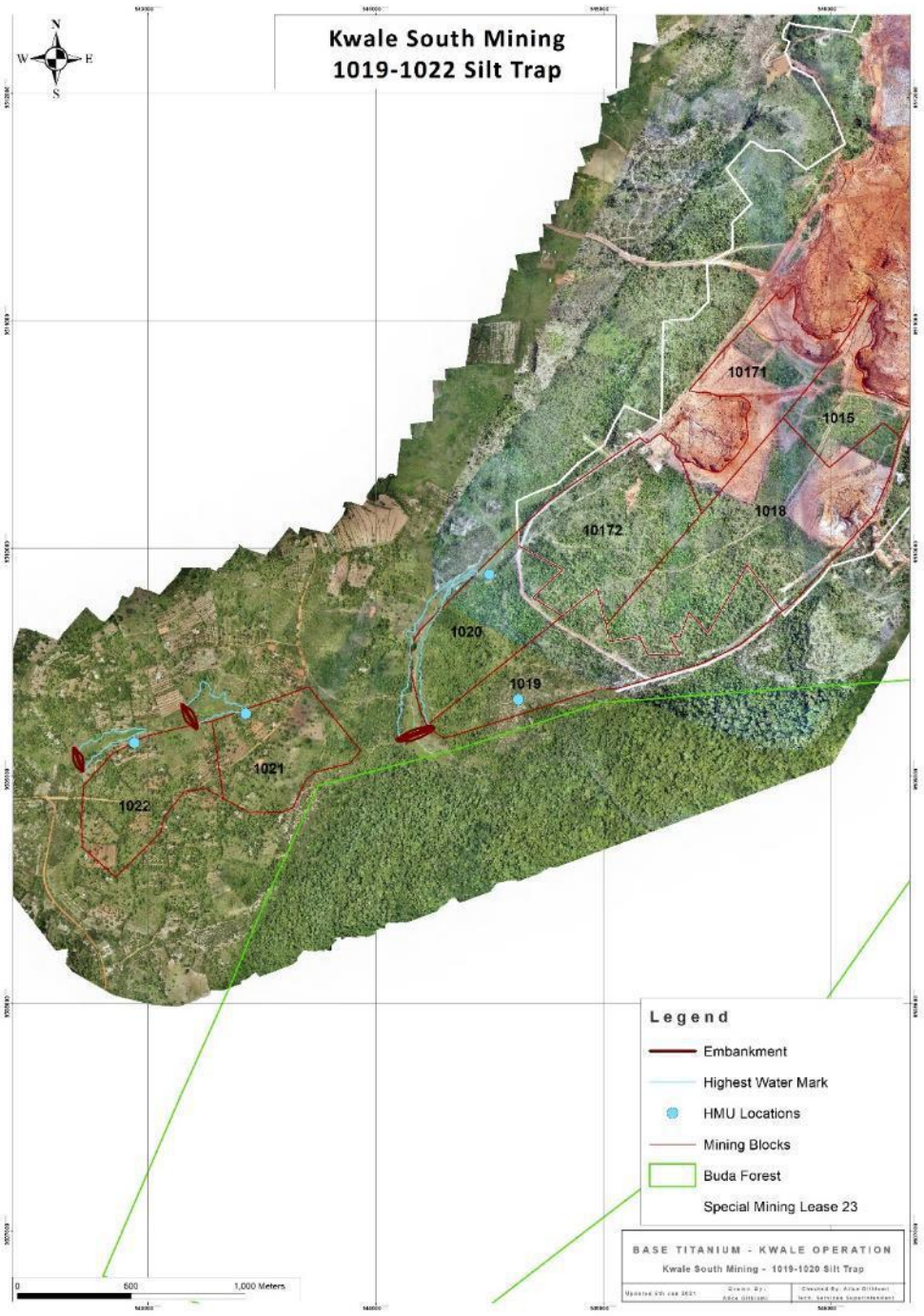


Figure 8.2: The South Dune and South Dune Extension Mining Blocks and Silt Trap locations

(Source: Base Titanium Technical Services, 2021)

For the silt traps to be effective and not cause negative effects to the receiving environment, the following mitigations are recommended for construction and operation of the silt traps.

Mitigations to minimise impacts towards the Geology and Soils

To reduce the above impacts to soils during the operation of the silt traps, the following mitigation measures will be applied:

- The stockpiled topsoil should be vegetated during surface soil stripping to reduce erosion impact from rainfall during wet seasons.
- Silt trap walls will be designed not higher than 5 metres, so as to reduce the risk of walls collapsing, and if in the case they do collapse, a minimal amount of overflow and erosion will occur.
- Mine in blocks as per the Mine Plan (although some blocks will be mined concurrently). Mining in blocks allows for a reduction in vegetation volume to be cleared and stripped, confining mining activities to active mine blocks only. This would also reduce the amount of sediment-laden stormwater from reaching the silt traps.
- Silt trap walls should be rehabilitated as soon as they are constructed, and rehabilitation progress monitored.

Mitigations to minimise impacts towards Surface Water Resources and Quality

The following measures will be implemented to reduce the impacts on surface water resources and water quality from the project activities described above:

- The construction of silt traps, adequately managed, will catch sediment resulting from erosion of mined areas, and prevent sedimentation of downstream watercourses.
- The Mining Department is required to regularly maintain the silt traps. This should include monitoring of sediment build-up at the bottom of the silt traps, and regularly removing the silt. Regular monitoring of sediment levels should be conducted, the frequency of which will depend on the seasons. A monthly report from mining should be developed, indicating the sediment levels in each of the silt traps, the volumes of sediment removed, and the frequency of removal.
- Silt traps on any watercourse potentially intersected by future mining activities should be constructed before the commencement of vegetation clearing and mining in that area. This is particularly relevant to areas such as the wetland near Buda Forest, where the watercourse and wetland in this area are used by communities and livestock, particularly during those drier months.
- The Environment Department is to conduct regular monitoring of the silt traps to assess their functionality and to check any impacts on the downstream environment.
- Regular reporting of monitoring activities of silt trap performance and maintenance, to be included in regular monthly reporting. Reports to be stored and available to auditors (internal and NEMA) for review.
- Continuation with water quality monitoring activities at identified sites, and any other sites that will be noted to be at significant risk to contamination or reduced flows.
- Base is rehabilitating the slopes of the silt traps. The rehabilitation process should be monitored to ensure that it is progressing well and that gullies are not forming due to erosion.
- Post closure, the silt traps will be cleaned out and rehabilitated if necessary.

Mitigations to minimise impacts towards Air Quality

The following measures (many of these measures are already being conducted by Base as part of their Air Quality Management and Monitoring Programme) will be undertaken to limit any significant air quality impacts to ambient air from the activities mentioned above.

- Rehabilitation of silt trap walls after construction
- Where possible, re-vegetate / rehabilitate cleared areas as soon as it is feasible;
- Limit those cleared areas ahead of mining;

- Limiting clearing activities to the greatest extent possible during the months between December to March.

Mitigations to minimise impacts towards Faunal and Floral Diversity

- Avoid the areas marked in Blue and Purple as marked in Figure 5.10.
- It should, however, be noted that the silt trap footprints occupy a small area which would require clearing, and for any clearing activities planned to take place, the Environment Department must survey the area to identify and salvage any species of high conservation interest so that it is propagated in the Indigenous Tree Nursery for future use in rehabilitation activities.
- Avoid clearing indigenous trees with a bole >50 cm diameter and/or a height over 8 m where such trees fall outside the mineral resource areas
- Do not use topsoil of areas heavily infested with *Leucaena, Chromolaena* or *Lantana* for rehabilitation
- Since all observed spring flows/streams were originally vegetated/forested, at least going by the evidence given by the few remnants, the re-creation of the original riverine vegetation during rehabilitation is recommended.
- Habitats surrounding and downstream of the mine blocks should form part of the Environmental Monitoring Programme so as to assess whether the installation of the silt traps is having any negative impacts on flora and fauna.

Mitigations to minimise impacts towards Wetlands in general

- Avoid wetland habitats as far as possible, especially areas around springs. Protect upper reaches of Critical Wetland habitats to ensure no spillage of runoff from mining areas into these such reaches.
- Avoid the areas marked in Blue and Purple as marked in Figure 5.10.
- Maintain a buffer of preferably 100 m around edges of any perennial wetlands that do not fall within the mining resource area, and ensure no runoff from mining infrastructure/area gets into any rivers/wetlands without being cleaned.
- Critical Wetland habitats outside the mining resource area should be permanently protected
- Since all streams were originally forested at least going by the evidence given by the few remnants, the re-creation of the original riverine vegetation during rehabilitation is recommended. This will be important, especially for shade-loving species that may have disappeared with the opening of the streams.
- Aim to strengthen the riparian woodlands by removing alien invasive plant species and widening it by planting indigenous trees suitable to that habitat.
- The construction of silt traps, adequately managed, will catch sediment resulting from erosion of mined areas, and prevent sedimentation of downstream watercourses.
- BTL is required to maintain the silt traps regularly. This should include monitoring of sediment build-up at the bottom of the silt traps, and periodically removing the silt. Regular monitoring of sediment levels should be conducted, the frequency of which will depend on the seasons. A monthly report from mining should be developed, indicating the sediment levels in each of the silt traps, the volumes of sediment removed, and the frequency of removal.
- Silt traps on any watercourse potentially intersected by future mining activities should be constructed before the commencement of vegetation clearing and mining in that area. This is

particularly relevant to areas such as the wetland near Buda Forest, where the watercourse and wetland in this area are used by communities and livestock, particularly during those drier months.

- The Environment Department is to conduct regular monitoring of the silt traps to assess their functionality and to check any impacts on the downstream environment.
- Regular reporting of monitoring activities of silt trap performance and maintenance, to be included in regular monthly reporting. Reports to be stored and available to auditors (internal and NEMA) for review.
- Continuation with water quality monitoring activities at identified sites, and any other sites that will be noted to be at significant risk to contamination or reduced flows.
- Base is rehabilitating the slopes of the silt traps. The rehabilitation process should be monitored to ensure that it is progressing well and that gullies are not forming due to erosion.

8.2.7.6 Residual Impact (Post-mitigation)

If the above recommended measures are implemented, the impact on wetlands from the identified project activities will be ***Low and*** may result in ***Positive*** impacts should wetlands be restored***.***

Table 8.14: Rating of Impacts on Wetlands (Post mitigation)

Type of Impact		
Direct Negative Impact (but may result in Positive Impact)		
Rating of Impact		
Characteristic	**Designation**	**Summary of Reason**
Extent	Local	Most of the sensitive wetlands are just at the boundary of the mineral reserve, but the species they support are of regional significance.
Duration	Short-term	Impacts may only be temporary if they occur.
Scale	Distinguishable	The impacts may be felt in 3 or 4 main wetlands already identified.
Frequency	Occasional	Mostly during rainy seasons when erosion is potentially high.
Magnitude		
Small		
Significance Rating Post-mitigation		
Low to Positive		

8.3 Impacts on the Socio-Economic Environment

9.3.1. Impacts on Occupational Safety and Health

8.3.1.1 Introduction

Mining operations generally pose significant safety and health risks to workers and other persons within the workplace, and if not adequately addressed, workers may be seriously injured or worse, impacting on their livelihoods and quality of life. This section analyses the likely impacts of these activities to the safety, health and welfare of workers.

8.3.1.2 Related Project Activities

The project activities that have the potential to impact on occupational safety and health at the South Dune and South Dune Extension include the use of mobile and immobile equipment at the Mine, and exposure to other activities such as vegetation clearing, topsoil stripping, and hydraulic mining.

8.3.1.3 Baseline Conditions

The nature of activities to be conducted, and for which workers will be engaged, are presented in *Chapter 2* of this Report.

8.3.1.4 Significance of Impact

During mining activities, workers may be exposed to a variety of physical, chemical and biological hazards in the workplace. These hazards may be related to mechanized and mobile equipment, use of chemicals, noise, dust, radiation, and heat stress, ergonomic risks, as well as interaction with animals and insects. Health and Safety risks are considered ***Critical*** pre-mitigation (***Table 8.15***).

Table 8.15: Rating of Impacts to Workers' Health and Safety (Pre mitigation)

Type of Impact		
Direct Negative Impact		
Rating of Impact		
Characteristic	**Designation**	**Summary of Reason**
Extent	Local	The likely impacts will be specific to the mine site, and to specific workers exposed to the above and related risks.
Duration	Long-term	The impacts may affect the workers for the rest of their lifetime, if they occur.
Scale	Major change	The impacts may affect the workers, their households and other dependents, way beyond the area of operation.
Frequency	Occasional	The impact will be experienced during the lifetime of the Mine operations. .
Magnitude		
High		
Sensitivity/Vulnerability/Importance of Resource/Receptor		
High		
Significance Rating Pre-mitigation		
Critical		

8.3.1.5 Recommended Mitigation Measures

- Base has developed a culture of safety in the workplace. The OHS Management System and various OHS management interventions are fully embedded into the operations, and includes appropriate documentation, procedures, guidelines, standards, risk assessments and monitoring records, with assigned accountabilities and responsibilities. In addition, the OHS Management System undergoes frequent review. Various system elements are audited monthly and identified corrective measures implemented to further improve the system. Also, the operations' Hazard and Operability Study (HAZOP) has been undergoing monthly review. Any improvement actions for high risk activities are implemented, thus reducing the risk profile. A Contractor management plan forms a specific component of the overall OHS Plan.
- Base has in place 9 "Base" cardinal rules, with a zero tolerance for transgression on any of these. Base continues to undertake training programmes, including OHS specific training, for its staff, this ensures that all the workers are continuously trained and their knowledge on OHS improves. New employees or visitors are required to undergo an induction course prior to being allowed to visit the Project sites. The induction covers OHS, environment, social and security components.
- Regular pre-start meetings are required of all Base activities and Contractor activities.
- Appropriate PPE is mandatory for all employees and visitors.
- An OHS Committee and a Worker Safety Committee have been established and continues to meet regularly to evaluate the performance of OHS practices being implemented on site.

- Base has implemented a Fitness for Work Programme that ensures that workers operating equipment are fit to operate; indeed, this programme has been extended to all employees. This is through testing at random to determine blood alcohol levels.
- Base has a zero tolerance to alcohol and drugs, and the random testing is used to further discourage operating machinery while under the influence of alcohol or drugs.
- New employees are also subjected to medical tests before deployed to provide information on their health condition. Compulsory annual check-ups for required staff are also conducted to ensure that only fit workers are allowed on site.
- Emergency response systems have been tested and are likely to work well in case of an emergency.

Base continues to show a high level of compliance with the provisions of the OHS Act and holds current workplace registration certificates for both its mine site (KWL/10293/05/13/00) and the Likoni Shiploading Facility (MSA/2236/05/14/00).

As part of the ongoing OHS Management System reviews, activities applicable to the South Mine Extension will be incorporated into Base's OHS Management System.

8.3.1.6 Residual Impact (Post-mitigation)

If the above mitigation measures are implemented, the residual impact of the project activities to the safety and health of the workers will be ***Low*** *(**Table 8.16**).*

Table 8.16: Rating of Impacts to Occupational Safety and Health (Post mitigation)

Type of Impact		
Direct Negative Impact		
Rating of Impact		
Characteristic	**Designation**	**Summary of Reason**
Extent	Local	The likely impacts will be specific to the mine site, and to specific workers exposed to the above and related risks.
Duration	Long-term	The affected workers may live with the impacts for the rest of their lifetime, if they occur.
Scale	Distinguishable	The impacts may affect the workers, their households and other dependents, way beyond the area of operation.
Frequency	Infrequent	Worker health and safety incidents, with appropriate mitigation will be very infrequent.
Magnitude		
Small		
Significant Rating Post-mitigation		
Low		

8.3.2 Impacts related to Employment

8.3.2.1 Introduction

Mining in the South Dune Extension will increase the Life of Mine by 13 months, resulting in an extension of employment opportunities for current employees of Base Titanium.

8.3.2.2 Related Project Activities

Demand for continued employment contracts for the existing workers, and possible employment of new workers will mainly be generated through activities such as transportation of people and goods, waste

management, provision of security, mechanical and maintenance services, community outreach, infrastructure support and training activities.

8.3.2.3 Baseline Conditions

As it currently stands much of the income in most households around the South Dune Extension is derived from small-scale agriculture, trade, social services and small-scale manufacturing. Most of this income is used to pay for food and other needs of high priority, like health care, school fees and transport.

For some of the households, Base provides the largest formal employment numbers, followed by the Kwale International Sugar Company (KISCOL). A total of 358 people from the community at the Mine site boundary, including interns, graduate trainees and apprentices, are currently employed directly by Base. A further 170 from this cohort are employed by permanent on-site service providers contracted to Base in the areas of security, transport, catering and analytical laboratory services, bringing the total number of employees from the immediate neighbouring community in employment on site to 738.

Base Titanium's employment policy is developed to maximize benefits to local communities by giving preference to project affected applicants and those residing in the immediate environs of the Mine, and assigning progressively lower priorities to those living further away from the Mine site. The South Dune Extension mining activities will extend the employment period for some of the existing workers, and create opportunities for new workers, through an extension of the Life of Mine.

The employment system is also designed to include a significant component of training and knowledge transfer to upgrade skills of Kenyans to man Kwale operations and to expand the expertise base for the Kenyan mining industry in general. It operates in compliance with the Equator Principles, International Finance Corporation Performance Standards, World Bank Group Environmental, Health and Safety Guidelines and the International Labour Organization standards, as ratified by the Government of Kenya.

8.3.2.4 Significance of Impact

Extension of the employment period for existing workers, as well as potential creation of new employment opportunities (especially for those resettled households) will offer additional income generation streams for the benefitting households in the area. Based on the analysis provided above, impacts from opportunities for employment will be a ***Major Positive Impact***.

Table 8.17: Rating of impacts on Employment

Type of Impact		
Positive Impact		
Rating of Impacts		
Characteristic	**Designation**	**Summary of Reasoning**
Extent	Local/Regional/ National	Employment creation will mainly affect the population in the affected project area by improving their income sources and figures.
Duration	Short term to Long-term	Most semi-skilled and unskilled jobs will last for the duration of the South Dune mining operations, but with adequate training, the chances of employment increase post mining activities. South Dune Extension increases the Life of Mine by 13 months.
Scale	Evident Difference	Not all households in the affected area will be employed. Only a section of the communities will have their incomes affected by job creation.
Frequency	Continuous	The workforce will be needed continuously, mainly for the duration of the mining operations.
Magnitude		
High		
Sensitivity/Vulnerability/Importance of the Resource/Receptor		
High		

The need for employment in the region is high, and most interviewed households mentioned jobs as a priority request from the South Dune mining operations.
Significant Rating Before Mitigation
Major Positive

8.3.2.5 Recommended Enhancement Measure

Base employment and procurement and supply chain policies ensure as many new employment opportunities are given to local households where possible, to optimize project benefits to local communities.

8.3.3 Impacts to Community Health and Safety

8.3.3.1 Introduction

The extension of mining activities into the South Dune Extension may have impacts on health and safety of some households in the local community. These likely impacts are discussed in the following sub-sections.

8.3.3.2 Project Related Activities

South Dune Extension mining activities with likely impact on community health and safety include vegetation clearance, topsoil stripping, use of project vehicles and heavy equipment, community outreach, capacity building and infrastructure development activities.

8.3.3.3 Baseline Conditions

The South Dune Extension sits in a generally rural environment comprising predominantly rural homesteads, thickets, agricultural lands, and is adjacent to the Buda Forest Reserve. The baseline status of water is that levels of iron, suspended sediments, turbidity and *E. Coli* are generally above water quality standards for drinking water, and for air quality and noise, standards are periodically exceeded, especially in the dry and hot season between December and March for fall out dust, and for noise (mainly at night).

Apart from the KISCOL operations and related dust along transport routes within the sugarcane plantations, no significant external health risks face the communities around the South Dune Extension. However, prevalence of malaria is high in Msambweni sub-county, and STDs (including HIV/AIDS) infection rates are increasing. There are several health facilities available within the area, including health centers in Shimba Hills and Kinondo, a dispensary in the town of Mivumoni, and a sub-county hospital in Msambweni. Most households located in Mivumoni stated that they generally visit the Shimba Hills Health Centre, which provides a range of medical services, including family planning and child birth support, HIV/AIDs prevention and treatment, immunization, and general disease treatment. The households located in Kinondo Location generally visit the Msambweni sub-county hospital. Most settlements are inaccessible to ambulances given the poor state of the road networks. Given the high transportation costs, other healthcare facilities used by the local community include the Muhaka and Mwapala dispensaries, which are reported as the most commonly utilized medical care facilities in Kinondo location.

8.3.3.4 Significance of Impact (Pre-mitigation)

Dust generation from transport, topsoil stripping during dry periods and other mining related activities has the potential to degrade air quality within and around the mine site boundary. These activities may cause nuisance impacts above and beyond those nuisance impacts from dust which are already experienced away from mining activities.

Spills, leaks and other accidental releases from Project vehicles or equipment, into streams or wetlands through rainfall run off, may result in impacts, including contamination of water supplies and soil contamination.

Potential increases in traffic into the communities in the southern end of the South Dune due to extension of mining activities, outreach and capacity building activities at the villages may pose road-related risks, especially traffic accidents, and conflicts with other road users.

Based on the analysis provided above, the impacts on community health and safety will be ***Moderate*** pre-mitigation (***Table 8.18***).

Table 8.18: Rating of Impacts Related to Community Health and Safety (Pre-mitigation)

Type of Impact		
Induced Negative Impact		
Rating of Impacts		
Characteristic	**Designation**	**Summary of Reasoning**
Extent	Regional	The impacts may be experienced by community members in the vicinity of the South Dune Extension at the nearby settlements and along access routes.
Duration	Long-term	Some of the health impacts as a result of the Project can last much longer than the Project life.
Scale	Evident difference	There are chances that the impacts may spread through the local population, especially communicable diseases, such as STDs. Traffic in the area will increase. Noise and dust may create nuisance impacts.
Frequency	Recurrent	The impacts may be felt during and beyond the LOM.
Likelihood	Likely	
Magnitude		
Large		
Sensitivity/Vulnerability/Importance of the Resource/Receptor		
High		
The communities are already vulnerable from illnesses and have poor medical facilities to support them. Any negative triggers from the project may aggravate this situation.		
Significant Rating Before Mitigation		
Moderate Impact		

8.3.3.5 Recommended Mitigation Measures

- Base has existing Community Health Programmes, aligned to the County's Health Strategic Plan, and implemented in collaboration with the Kwale County Ministry of Health. The programmes are designed to improve health delivery at various levels and address health issues where identified by the communities. This Community Health Programme will be expanded to include locations specific to communities surrounding the South Dune Extension.
- For the newly recruited workers, Base will implement the company's OHS Plan and Worker Code of Conduct as appropriate.
- To address the risks on air quality, radiation, soil contamination, water quality and traffic accidents, the mitigation measures outlined in the descriptions of these impacts will be implemented.
- Sites immediately adjacent to the South Dune Extension boundary will be managed as per the Resettlement Action Plan derived for the Project and may require temporary relocation to minimize exposure to health and safety risks.

8.3.3.6 Residual Impacts (Post-mitigation)

Once the above measures are implemented, the residual impact to community safety and health will be ***Low*** post-mitigation.

Table 8.19: Rating of Impacts Related to Community Health and Safety (Post-mitigation)

Type of Impact		
Induced Negative Impact		
Rating of Impacts		
Characteristic	**Designation**	**Summary of Reasoning**
Extent	Local	The impacts may be experienced by a few community members at the nearby settlements and along access routes.
Duration	Long-term	Some of the health conditions acquired due to the Project can last much longer than the Project life.
Scale	High	Not Distinguishable
Frequency	Recurrent	The impacts may be felt at any moment, and repeatedly during mining operations
Likelihood	Rare	With the mitigation measures implemented, there are highly reduced chances of these impacts affecting many members of the local communities.
Magnitude		
Large		
Significant Rating after Mitigation		
Low		

8.3.4 Physical Displacement of Persons

8.3.4.1 Introduction

The South Dune Extension will require approximately 393ha of land for the expansion of mining operations, that will displace households currently residing in this area.

8.3.4.2 Related Project Activities

The main project activities that will result in the displacement of households in the South Dune Extension include vegetation clearance, topsoil stripping and hydraulic mining of the resource for the purposes of ore extraction.

8.3.4.3 Baseline Conditions

A total of 160 plots are located within the footprint of the South Dune Extension. Out of these, 56 land parcels are located directly within the areas of known ore reserves, whilst the rest are located within the proposed extended boundary of the SML. These are in addition to 6 other plots located at the peripherals of the Main South Dune boundary. All these plots are located within adjudicated areas and are registered, with title deeds, at the Kwale Land Registry. Several these plots are owned by non-resident landowners, some with squatters on them and others without. The households residing on these plots will be resettled to suitable locations of their own choice. There are also another 17 households located next to the existing SML boundary in the Mchingirini adjudication area that have already been acquired through previous resettlement programmes, as a result of continued consultation and engagement between Base and the households in relation to isolation issues raised.

8.3.4.4 Significance of Impact (Pre-mitigation)

At least 160 households will be physically removed from the South Dune Extension site. These households will lose significant sections of their land, crops and structures. These households will therefore require adequate compensation and permanent resettlement. Any other households immediately adjacent to the South Dune Extension boundary may also require temporary resettlement to avert any health and safety risks when mining activities occur in their vicinity.

Based on the analysis provided above, the impacts related to physical displacement of persons will be ***Critical*** pre-mitigation (***Table 8.20***).

Table 8.20: Rating of Impacts Related to Displacement of Persons (Pre-mitigation)

Type of Impact		
Induced Negative Impact		
Rating of Impacts		
Characteristic	**Designation**	**Summary of Reasoning**
Extent	Local	The impacts may be experienced by community members within and adjacent to the South Dune Extension footprint.
Duration	Long-term	Some of the displacement will be permanent, while others may be temporary, where the risks are only related to their health and safety during mining activities.
Scale	Major Change	Over 160 parcels of land will be acquired, and the household numbers may be almost equal to the figure, given the nature of land holding in the area.
Frequency	Once	The resettlement activity will only be carried out once and before mining begins.
Likelihood	Definite	Since the extension of mining activities will require the land in the southern extension, the requirement for acquisition of land parcels is definite, as is the need for resettlement and compensation of affected parties.
Magnitude		
Large		
Sensitivity/Vulnerability/Importance of the Resource/Receptor		
High		
Communities surrounding the mine are dependent on their land for subsistence agriculture, and often reside permanently on their small land parcels.		
Significance Rating Before Mitigation		
Critical		

8.3.4.5 Recommended Mitigation Measures

A Resettlement Action Framework was developed and is attached as (***Appendix B***). Additionally, a Preliminary Resettlement Action Plan (RAP) has been completed (refer to ***Appendix C***) to give an indication of the extent of the impact of the South Dune Extension to the affected communities. The actual RAP process is ongoing, and this is being conducted with due cognizance of the IFC's PS 5 and Kenyan legal requirements. Due and rightful compensation, resettlement and livelihood restoration will be undertaken for the affected households, as and where appropriate.

The RAP study will identify, profile and provide for adequate compensation and livelihood restoration support for the following categories of affected persons, as a priority:

- All persons who will have lost a part or all their land.
- All persons who will have lost their dwellings of dwellings of their pets or livestock.
- All persons who will have lost their jobs.
- Persons who will have increased health risks due to displacement.
- All persons who will be rendered food insecure due to the displacement.
- All persons who will have lost access to common property resources due to the displacement.
- All persons who will have experienced social and cultural disarticulation/disruption due to the displacement.

8.3.4.6 Residual Impact (Post-mitigation)

Once the above measures are implemented, the residual impact of physical displacement of persons will be ***Low*** post-mitigation.

Table 8.21: Rating of Impacts Related to Physical Displacement of Persons (Post-mitigation)

Type of Impact		
Induced Negative Impact		
Rating of Impacts		
Characteristic	**Designation**	**Summary of Reasoning**
Extent	Local	The impacts may be experienced by community members within and adjacent to the South Dune Extension footprint.
Duration	Short-term	Due to resettlement and livelihood restoration support, the impacts of displacement will be temporary for the affected households.
Scale	Distinguishable	Though over 160 parcels of land will be acquired, the household numbers may be almost equal to the figure, given the nature of land holding in the area.
Frequency	Once	The resettlement activity will only be carried out once, and before mining begins.
Likelihood	Low	Since the affected households will be compensated and resettled elsewhere, followed by implementation of livelihood restoration programmes, the likelihood of them feeling the negative impacts mentioned above will be significantly reduced.
Magnitude		
Small		
Significant Rating Before Mitigation		
Low		

8.3.5 Impacts due to Loss of Pasture

8.3.5.1 Introduction

This section assesses how the mining activities will impact on community access to, and use of, productive land and natural resources for livestock pasture.

8.3.5.2 Related Project Activities

The restriction of use of the 393ha covered by the South Dune Extension will cause a reduction in available land for livestock feeding and farming practices, by the residents of Mivumoni, Mafisini and other villages currently depending on the designated land.

8.3.5.3 Baseline Conditions

Livestock farming is an important livelihood activity and provides both a source of food and income to households in those areas surrounding the South Dune Extension. Livestock tendered include chickens, goats, cattle, and occasionally, rabbits. While chicken is mainly a food source for both meat and eggs, goats and cattle are usually only slaughtered for celebrations and are more often seen as a repository of wealth and only sold when a household needs a large sum of money for an expense, such as school fees.

Access to land is also important for rural activities such as grazing, collecting medicinal plants, beekeeping and fetching firewood.

8.3.5.4 Significance of Impacts (Pre-mitigation)

Due to the above important uses of the South Dune Extension footprint for both revenue generation and subsistence activities, the potential loss of access or reduction in size of this land will thus affect economic gain by the practicing households from livestock and livestock products. Loss of access to the land will also lead to a loss of income sources and their means of livelihood.

Based on the analysis provided above, the impacts related to loss of pasture land will be ***Major*** pre-mitigation (***Table 8.22***).

Table 8.22: Rating of Impacts Related to Loss of Pasture Land (Pre-mitigation)

Type of Impact		
Induced Negative Impact		
Rating of Impacts		
Characteristic	**Designation**	**Summary of Reasoning**
Extent	Local	The impacts may be experienced by households in and surrounding the South Dune Extension footprint.
Duration	Long-term	These impacts will exist for the entire duration of the project, and a few months after site rehabilitation, before vegetation grows again.
Scale	Major change	Since not all community members practise livestock keeping, the scale of impact may only be felt by the households who practice it.
Frequency	Once	The restriction of use of the project footprint as pasture land will only be carried once, though the loss will be felt for much longer.
Likelihood	High	Since the entire footprint of the mine reserve will be out of bounds for local community, this impact is a definite one.
Magnitude		
Medium Magnitude		
Sensitivity/Vulnerability/Importance of the Resource/Receptor		
High Livestock farming is a key revenue source and food resource for most of the households around the South Dune Extension.		
Significance Rating Before Mitigation		
Major		

8.3.5.5 Recommended Mitigation Measures

- Base will collaborate with the Department of Land Adjudication and Resettlement (Kwale) and the local administrative heads (headed by area chiefs) to ensure that economically displaced households are granted access to alternative productive land for livestock related activities.
- Through the existing Community Programmes, especially the ongoing community livelihoods, community infrastructure, and community training programmes, Base will collaborate with the Department of Agriculture and the local administrative councils to ensure that the programmes assist the affected households to diversify their livelihoods and increase food and revenue streams.
- For the South Dune Extension area, Base will ensure that compensation rates for productive trees, crops and pasture, as detailed in the RAP report, takes into account loss of livestock-related income and food sources.

8.3.5.6 Residual Impacts (Post-mitigation)

If the above mitigation measures are adequately implemented, the residual impact of loss of pasture land will be ***Low*** post-mitigation (***Table 8.23***).

Table 8.23: Rating of Impacts Related to Loss of Pasture Land (Post-mitigation)

Type of Impact		
Induced Negative Impact		
Rating of Impacts		
Characteristic	**Designation**	**Summary of Reasoning**
Extent	Local	The impacts may be experienced by households at the southern extension footprint.
Duration	Short-term	With proper training and facilitation on livelihood restoration and diversification activities, the affected persons will not feel the loss for long.
Scale	Distinguishable	Since not all community members practise livestock keeping, the scale of impact may only be felt by the households who practice it.

Frequency	Once	The restriction of use of the project footprint as pasture land will only be carried once.
Likelihood	High	Since the entire footprint of the mine reserve will be out of bounds for local community, this impact is a definite one.
Magnitude		
Small		
Significance Rating Before Mitigation		
Low		

8.3.6 Impacts due to Loss of Agricultural Land

8.3.6.1 Introduction

This section assesses how the mining activities will impact agricultural activities conducted by affected households.

8.3.6.2 Project Related Activities

Similar to impacts on pasture land, the restriction of use of the 393ha South Dune Extension land area will reduce available land for farming practices by the residents of Mivumoni, Mafisini and other villages currently depending on the designated land.

8.3.6.3 Baseline Conditions

Farming of fruit trees is the most common agricultural activity practiced by households in and around the South Dune Extension area. More than half of the households surveyed in the Socio-economic Household Surveys reported fruit sales as a regular income source.

Crops, such as maize, cassava, rice and pumpkins are also cultivated in the area, and are produced for subsistence and small-scale commercial purposes. Food security is very much dependent on seasons. Most of the households interviewed stated that household members did not get enough food to eat during the dry season. During periods of drought, the government provides relief food, but villagers noted that it was not sufficient and that at times the relief food did not reach their villages.

8.3.6.4 Significance of Impacts (Pre-mitigation)

The stripping of vegetation and topsoil for mineral ore extraction will cause losses in fruit trees and other crops in land parcels where these are grown. Due to the value of these crops for income generation and food production by the affected households, there may be exposure of affected households to reducing food security and income derived from subsistence agriculture.

Based on the analysis provided above, the impacts related to loss of agricultural land will be ***Major*** pre-mitigation (***Table 8.24***).

Table 8.24: Rating of Impacts Related to Loss of Agricultural Land (Pre-mitigation)

Type of Impact		
Induced Negative Impact		
Rating of Impacts		
Characteristic	**Designation**	**Summary of Reasoning**
Extent	Local	Households may experience the impacts at the southern extension footprint.
Duration	Long-term	These impacts will exist for the entire duration of the project, and a few months after site rehabilitation, before vegetation grows again and topsoil is restored.
Scale	Distinguishable	Since not all community members practise crop farming, the impact scale may only be felt by the households who practice it.
Frequency	Once	The restriction of use of the project footprint as agricultural land will only be carried once, though the loss will be felt for much longer.

Likelihood	High	Since the mine reserve's entire footprint will be out of bounds for local community, this impact is a definite one.
Magnitude		
Medium		
Sensitivity/Vulnerability/Importance of the Resource/Receptor		
High Crop farming is a key revenue and food resource for most households around the southern Dune area.		
Significant Rating Before Mitigation		
Major		

8.3.6.5 Recommended Mitigation Measures

- Through the company's Community Programmes, especially the ongoing community livelihoods, community infrastructure, and community training programmes, Base will work with the affected households towards identifying and supporting them to diversity their livelihood activities, train them on alternative agricultural activities and help them find alternative land for agricultural practices, as necessary.
- Base will collaborate with the Department of Land Adjudication and Resettlement (Kwale) and the local administrative heads (headed by area chiefs) to ensure that economically displaced households are granted access to alternative productive land for crop farming.
- For the South Dune Extension area, Base will ensure that compensation rates for productive trees and crops, as detailed in the RAP report, consider loss of related income and food supply consistency.

8.3.6.6 Residual Impacts (Post-mitigation)

Suppose the above mitigation measures are adequately implemented, the residual impact of loss of agricultural land will be ***Low*** post-mitigation (***Table 8.25***).

Table 8.25: Rating of Impacts Related to Loss of Agricultural Land (Post-mitigation)

Type of Impact		
Induced Negative Impact		
Rating of Impacts		
Characteristic	**Designation**	**Summary of Reasoning**
Extent	Local	Households may experience the impacts at the southern extension footprint.
Duration	Short-term	With proper training and facilitation on livelihood restoration and diversification activities, the affected persons will not feel the loss for long.
Scale	Distinguishable	Since not all community members practise crop farming, the impact scale may only be felt by the households who practice it.
Frequency	Once	The restriction of use of the project footprint as crop land will only be carried once.
Likelihood	High	Since the mine reserve's entire footprint will be out of bounds for local community, this impact is a definite one.
Magnitude		
Small		
Significant Rating Before Mitigation		
Low		

8.3.7 Impacts on Community Access to Natural Resources

8.3.7.1 Introduction

This section assesses how the project will impact individuals' ability within the neighbouring community to access natural resources within the project footprint, especially if mining related activities restrict access to natural resources on the opposite side of the mine in which they reside.

8.3.7.2 Project Related Activities

The anticipated Project activities with potential impacts on access to natural resources include total entry restriction into the South Dune Extension area, removal of vegetation, which provides most of the resources, and closure of some routes used by the locals to access these natural resources.

8.3.7.3 Baseline Conditions

Exploitation of natural resources is an important income-generating activity in the area, with 22% of households attaining a regular income from selling of thatch. Carpentry, charcoal/firewood, hunted/caught meat, brooms made of natural materials, stone masonry and timber sales are also reported as regular income sources by a few households. These are all linked to the gathering of natural resources. Communal natural resources provide several important goods and services to the affected households. They also contribute towards the maintenance of food security, particularly during periods of low crop yields, and assist with maintaining health and hygiene with 39% of households washing their clothes in natural sources of water, and 33% bathing in natural water sources. Medicinal plants are reportedly collected by 36% of households.

In terms of natural resources being utilized as a food source, 55% of households report to be engaged in fishing as a livelihood activity. Fish are an important source of protein in the area. Approximately one quarter of households consume wild vegetables or fruit and only 4% report to consume wild animal or bird meat. Communal grazing land and natural water sources provide sustenance for livestock. Although it may appear that natural resources are not a main food source, they often provide an alternative in times of food insecurity. However, access to natural resources, particularly to forests for wood, for charcoal, and wild animals for hunting is outlawed by conservation regulations prohibiting hunting and incursions into the protected forests reserves of Gongoni and Buda.

8.3.7.4 Significance of Impacts (Pre-mitigation)

Exploitation of natural resources as sources of income is an important alternative to income from agriculture and livestock keeping by the practicing communities, particularly during periods of low food security. Restriction of access routes during mining activities will limit the affected persons' ability to carry out their livelihood activities, hence reducing income sources. Removal of vegetation and topsoil will result in the loss of some of these tree/grass-based resources, restricting access to areas falling within the extended SML.

Based on the analysis provided above, the impacts on community access to natural resources will be a ***High*** pre-mitigation (***Table 8.26***).

Table 8.26: Rating of Impacts Related to Community Access to Natural Resources (Pre-mitigation)

Type of Impact		
Induced Negative Impact		
Rating of Impacts		
Characteristic	**Designation**	**Summary of Reasoning**
Extent	Regional	Households may experience the impacts at the South Dune footprint and neighbouring communities.

Duration	Long-term	These impacts will exist for the entire duration of the project, and a few months after site rehabilitation, before vegetation grows again and topsoil is restored to facilitate growth of thickets and trees.
Scale	Evident difference	Since not all community members access the project footprint for natural resource extraction, the scale of impact may only be felt by the households who practice it.
Frequency	Once	The restriction of use of the project footprint as a source of raw materials for livelihood activities will only be carried once, though the loss will be felt for much longer.
Likelihood	High	Since the mine reserve's entire footprint will be out of bounds for local community, this impact is a definite one.
Magnitude		
Medium		
Sensitivity/Vulnerability/Importance of the Resource/Receptor		
High Natural resource extraction at the Dune footprint for livelihood sustenance is a key activity for some of the households around the Dune.		
Significant Rating Before Mitigation		
High		

8.3.7.5 Recommended Mitigation Measures

- The Restoration Programme Indigenous Tree Nursery, established by Base as part of the Biodiversity and Conservation Programme, in which indigenous trees are propagated and suitable species used for the rehabilitation and revegetating of impacted areas, will have the added positive impact of replenishing alternative off site areas where the community members exploit natural resources for a living, especially the river/stream riparian areas, sections around Buda Forest, and unmined sections in the Central Dune.
- Base will work with the affected households through the ongoing community projects and livelihood programmes, towards identifying and supporting them to diversity their livelihood activities, train them on alternative livelihood activities and support them to carry out such activities, to compensate for the loss of natural resources.
- Base will apply the recommendations in *Section 8.3.3* above to reduce soil erosion and protect water quality to safeguard the life and populations of aquatic life exploited for food and revenue by the affected households.

8.3.7.6 Residual Impacts (Post-mitigation)

If the above mitigation measures are adequately implemented, the residual impact community access to natural resources will be ***Medium*** post-mitigation.

Table 8.27: Rating of Impacts Related to Community Access to Natural Resources (Post-mitigation)

Type of Impact		
Induced Negative Impact		
Rating of Impacts		
Characteristic	**Designation**	**Summary of Reasoning**
Extent	Regional	Households may experience the impacts in the South Dune Extension footprint and neighbouring communities.
Duration	Short-term	With proper training and facilitation on livelihood restoration and diversification activities, the affected persons will not feel the loss for long.
Scale	Distinguishable	Since not all community members access the project footprint for natural resource extraction, the impact scale may only be felt by the households who practice it.

Frequency	Once	The restriction of use of the project footprint as a source of raw materials for livelihood activities will only be carried out once, though the loss will be felt for much longer.
Likelihood	High	Since the mine reserve's entire footprint will be out of bounds for local community, this impact is a definite one.
Magnitude		
Medium		
Significant Rating Before Mitigation		
Medium		

8.3.8 Impacts on Cultural Heritage

8.3.8.1 Introduction

Depending on their location, open mining activities can cause significant alteration or loss of places or features of cultural value to host communities. This Section analyses the likely project impacts on cultural heritage during mining activities in the South Dune Extension.

8.3.8.2 Related Project Activities

The main related activities include topsoil stripping and ore extraction by hydraulic mining.

8.3.8.3 Baseline Conditions

Most of the culturally important, sacred and historical national heritage sites in the area are located along the coast with many on private land. They consist of mosque ruins, palaces, houses and walls with gates and tombs, and "Kayas" or sacred forests. There are no sacred sites located within the South Dune Extension's footprint.

However, the Buda and Gongoni Forests, which are proximal to the South Dune and South Dune Extension, have been previously recorded as key features for various cultural practices. However, the extension of the South Dune mineral reserve has avoided the Buda Forest Reserve.

8.3.8.4 Significance of Impact (Pre-mitigation)

Currently, Base has avoided any activities in the two Forests Reserves, apart from drilling of boreholes in the Gongoni Forest for water supply. Base works closely with KFS, KWS, and NMK to address any ecological and cultural features identified.

Based on these measures, the impact of the South Dune Extension operations on cultural heritage will be ***Insignificant***. Therefore, no additional mitigation measures are required at this stage.

9. ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

This *Chapter* represents the Environmental and Social Management Plan (ESMP) for the South Dune Extension mining operations. It is a summary guide to enable effective management of the key issues identified in the Environmental and Social Impact Assessment (ESIA).

Base currently has in place separate topical management plans addressing the Environment/Social and Occupational Health and Safety aspects that will apply to the activities of the South Dune operations. These form part of Base's current Environmental and Social Management System (ESMS).

Most, if not all, of the impacts identified and elaborated in this ESIA for the South Dune Extension, have been identified, and are currently adequately managed by Base for the current mining operations on the Central Dune. Through the implementation of current EHS Management Plans, management of such impacts is routinely checked through an independent annual Environmental and Social audit, as required and reported to NEMA, and through an internal report produced by Base for submission to Lenders to the Project.

The intention of Base is to integrate the impact management/mitigation measures identified in this ESIA and elaborated in the ESMP into the respective management plans to conform to the Company ESMS and ensure impacts applicable to the South Dune Extension are included, for implementation during mining activities there.

9.1 Organization of the ESMP

The ESMP provides:

- A summary of those Environmental and Social Aspects of the Project.
- The specific impacts arising out of the identified aspects.
- The specific project activities that trigger the identified impacts.
- Mitigation measures for effective management of the identified impacts.
- Responsibility for the implementation of management/mitigation measures.
- Timeframes for reviewing the effectiveness of the outlined mitigation/management measures.
- Monitoring locations.

9.2 The South Dune Extension Environment and Social Management Plan

The South Dune Extension ESMP is presented in ***Table 9.1*** overleaf.

Table 9.1: The South Dune Extension Environment and Social Management Plan

Project Impact	Main Related Activities	Management/Mitigation Measures	Responsibility
Impacts to soils	■ Vegetation clearance ■ Topsoil stripping ■ Hydraulic mining of ore ■ Soil contamination from spillages of fuels and lubricants	**Key Performance Indicators** ■ Turbidity and Suspended solids in nearby water courses below the Kenyan standards for aesthetic quality requirements for drinking water. **Mitigation** ■ Mine in blocks as per the Mine Plan (although some blocks will be mined concurrently). Mining in blocks allows for a reduction in vegetation volume to be cleared and stripped, confining mining activities to active mine blocks only. ■ Stockpile topsoil and subsoil separately, in stable areas where erosion potential is low; ■ Vegetate topsoil stockpiles that are expected to remain stockpiled for more than three months, with locally indigenous grass species, especially creepers; ■ Ensure that oils/grease spillages and leaks are cleaned up immediately and the contaminated soil either remediated in situ or disposed through NEMA-licensed waste contractors for safe treatment and disposal. ■ Use the results of revegetation trials using “green manure” on mined out areas of the Southern Dune as soon as is possible and allowed by the Mine Plan. ■ Undertake concurrent rehabilitation and re-vegetation of the TSF located on the Central Dune, especially of TSF walls, utilizing lessons learnt from revegetation undertaken on the current TSF walls. ■ Reduce erosion of soils by rainfall and water runoff through the construction of settlement ponds, gabions and artificial wetlands on water courses potentially affected by mining operations, thus reducing turbidity and suspended solids in surface waters. ■ Erosion on steep slopes, especially towards the mining area's fringes, is to be controlled through revegetation, shade netting, placed at right angles to erosion gullies and gulley repair where necessary.	Environmental Department
Exposure of workers and communities to nuisance dust fallout and PM10 emissions	■ Vegetation clearance ■ Topsoil stripping ■ Hydraulic mining of ore ■ Dust emissions from TSF.	**Key Performance Indicators** ■ Dust fall-out guideline of 600mg/m^2/day. ■ PM10: 50 ug/m^3 (24 hour average). ■ PM10: 100 ug/m^3 (Annual average). ■ All PM10 data collected to be compared to the annual average of 100 ug/m^3 PM10.	Environmental Department

		Mitigation ■ Where possible, re-vegetate cleared areas. ■ Employ adaptive management strategies to suppress dust levels when hot and dry conditions prevail, and especially when the action level of 600 mg/m²/day fall out dust is measured in dust buckets surrounding the southern dune. ■ Planting of shrubs and grasses along the TSF inner walls, serve to reduce wind speeds and entrap dust, thereby reducing dust levels. ■ Measures to reduce wind speeds on the surface of the TSF (use of shade netting), and hence reduce the erosion of dust from the TSF surface, currently under construction on the TSF walls. ■ Management strategies and monitoring in place. ■ Revegetation of stockpiles and bare TSF slopes, especially during wet months; ■ Recording of all complaints and review these to address any unanticipated dust nuisance; ■ Enforcement of a 40 km/hour speed restriction on access roads; ■ Ensuring that compensated households have all moved out of sensitive locations before commencing mining activities; ■ Maintenance of all vehicles in good condition at all times to ensure complete hydrocarbon combustion; ■ Conducting regular dust and particulate matter monitoring in accordance with the Base Air Quality Monitoring Programme, especially at identified risk areas, and address arising PM10 and/or fall-out dust issues in a timely manner.	
Contamination of surface and ground water resources	■ Vegetation clearance ■ Topsoil stripping ■ Hydraulic mining of ore	**Key Performance Indicator** ■ Kenyan Water quality guidelines, specifically KS 05-459: Part 1:1996. Schedule 1: Aesthetic quality requirements for drinking water and bottled drinking water **Mitigation** ■ Increased turbidity and suspended solids can be reasonably easily addressed by mitigation measures such as settlement ponds, gabions and artificial wetlands, which has the advantage of providing more habitat for wetland species (such as rare reed frogs). ■ An abandoned borehole at the former Duncan Ndegwa Primary School, in the north end of the South Dune (WGS84 546521E 9512936N), should be filled with concrete and the (defunct) hand pump on this borehole removed. To leave this borehole open will risk polluting the (poor) Mazeras aquifer at this location.	Environmental Department

		■ Erection of clean water diversion berms up-gradient of mining areas and overburden stockpiles where these are along known surface drainage routes; ■ Reuse of wastewater from hydraulic process to reduce ex-situ discharge; ■ Erection of silt traps downstream of activity areas, on specific streams of most value to the communities or in recharging the main rivers; ■ Limiting heights of topsoil and overburden stockpiles to no more than 2 meters, with a sufficient gradient to reduce erosion; ■ Vegetation of topsoil stockpiles with indigenous grass species if stockpiles need to remain in place for 3 months, especially during rainy seasons; ■ Abstraction of water from streams, boreholes or rivers used by the communities will observe the required threshold for environmental flows; ■ Continuation with water quality monitoring activities at identified sites, and any other sites that will be noted to be at significant risk to contamination.	
Noise and vibration from mining operations	■ Vegetation clearance ■ Topsoil stripping ■ Hydraulic mining of ore	**Key Performance Indicators** ■ 35 dB(A) night time noise level (Kenyan standard for mixed residential) ■ 55 dB(A) day time noise level (Kenyan standard for mixed residential) ■ < 3 dB(A) increase in background noise level directly as a result of mining activities (IFC guideline) **Mitigation** ■ As much as possible, vegetation clearance and topsoil stripping will be conducted during the day, when most households are less sensitive to noise; ■ Where the heavy equipment causing vibrations are to be used close to settlements, the households will be sensitized prior to such activities; ■ Complaints on noise/vibrations shall be recorded, adequately investigated and necessary remedial measures taken; ■ The use of an “octave band analysis” to characterize the noise emitted from Base operations will be considered to compare future measurements with the data obtained at the locations on the Mine Site boundaries. This is proposed since the character of the noise emitted by mining and processing machinery is expected to be significantly different from noise emitted by insects, birds, vegetation rustled by the wind etc. Bases’ contributions to these locations' noise levels will then be better understood.	Environmental Department
Exposure to dangerous levels of radiation	■ Removal of topsoil and processing of ore	**Key Performance Indicators** ■ Radiation background of 0.19 uSv/hour	Environmental Department

		Mitigation ■ Base will maintain radiation monitoring as per the Radiation Monitoring Programme in both air and water. ■ Workers will wear personal radiation badges at the identified radiation risk areas to measure their personal radiation doses to ensure these are maintained well below international standards.	
Risks to safety and health at the workplace	■ Use of mobile and immobile equipment at the Mine, mineral ore extraction and transfer to processing units, consolidation of stripped topsoil and cleared vegetation, and management of the TSF.	**Key Performance Indicators** ■ Zero Lost Time Injuries ■ A reduction in the Lost Time Injury Frequency rate (LTIFR) **Mitigation** ■ Base has developed a culture of safety in the workplace. The OHS Management System and various OHS Management Plans are fully embedded into the operations, and includes appropriate documentation, procedures, guidelines, standards, risk assessments and monitoring records, with assigned accountabilities and responsibilities. In addition, the OHS Management System undergoes frequent review. Various system elements are audited monthly and identified corrective measures implemented to improve the system further. Also, the operations' Hazard and Operability Study (HAZOP) has been undergoing monthly review. Any improvement actions for high risk activities are implemented, thus reducing the risk profile. A Contractor management plan forms a specific component of the overall OHS Plan. ■ Base has in place 9 "Base" cardinal rules, with a zero tolerance for transgression on any of these. Base continues to undertake training programmes, including OHS specific training, for its staff, this ensures that all the workers are continuously trained and their knowledge on OHS improves. New employees or visitors are required to undergo an induction course prior to being allowed to visit the Project sites. The induction covers OHS, environment, social and security components. ■ Regular pre-start meetings are required of all Base activities and Contractor activities. ■ Appropriate PPE is mandatory for all employees and visitors. ■ An OHS Committee and a Worker Safety Committee have been established and regularly meet to evaluate the performance of OHS practices being implemented on site. ■ Base has implemented a Fitness for Work Programme that ensures that workers operating equipment are fit to operate; indeed, this programme has been	Health and Safety Department

		extended to all employees. This is through testing at random to determine blood alcohol levels. ■ Base has a zero tolerance to alcohol and drugs, and the random testing is used to further discourage operating machinery while under the influence of alcohol or drugs. ■ New employees are also subjected to medical tests before deployed to provide information on their health condition. Compulsory annual check-ups for required staff are also conducted to ensure that only fit workers are allowed on site. ■ Emergency response systems have been tested and are likely to work well in case of an emergency. Base continues to show a high level of compliance with the OHS Act provisions and holds current workplace registration certificates for both its mine site (KWL/10293/05/13/00) and the Likoni Shiploading Facility (MSA/2236/05/14/00). As part of the ongoing OHS Management System reviews, activities applicable to the South Mine will be incorporated into the OHS Management System.	
Loss of floral and faunal species and reduction in surface vegetation cover	■ Surface vegetation clearance ■ Topsoil stripping ■ Stockpiling of stripped soil ■ Water use ■ Use of mobile and immobile equipment.	**Key Performance Indicators** ■ Measurable improvement in biodiversity (presence of noted rare and endemic species) in wetlands and biodiversity corridor, and areas earmarked/zoned for protection. ■ Number of trees/shrubs/plants planted into these areas from Base's indigenous nursery. **Mitigation** Base has committed to the following biodiversity objectives: ■ Locating Operation facilities such that critical habitat is protected and impacts to threatened species are minimized. ■ Achieving a net positive biodiversity impact for the Operation. ■ Protecting and conserving biodiversity and maintaining ecosystem services. To achieve this, Base will undertake the following: ■ Base will undertake the rehabilitation of the South Dune post mining using the results of trials conducted during mining operations of the South Dune; ■ Base will control the spread of alien invasive vegetation;	Environmental Department

		■ Base has established a Biodiversity and Conservation Programme to exploit opportunities for improving conservation outcomes provided by the Operation; ■ Bases' Rare and Threatened Flora Propagation Research Programme is targeting species of conservation interest to identify suitable species and techniques that may be used for the rehabilitation and revegetating of Operation impacted areas. As part of this initiative, Base has established a Restoration Programme Indigenous Tree Nursery in which indigenous trees are propagated. ■ Work on biodiversity conservation has seen Base establish a biodiversity corridor, which separates the areas impacted by construction works and areas that will not be impacted by mining activities. For the South Dune, the biodiversity corridor will link the Gongoni Forest Reserve to areas of natural vegetation, including wetlands and the Mukurumudzi Riparian Zone, all the way to the Buda Forest. This area will serve both the floral species and faunal species, as a migratory corridor.	
Degradation of water quantity, quality and biodiversity	■ Surface vegetation clearance ■ Topsoil stripping ■ Stockpiling of stripped soil ■ Water use ■ Use of mobile and immobile equipment.	**Key Performance Indicators** ■ Measurable improvement in biodiversity (presence of noted rare and endemic species) in wetlands and biodiversity corridor, and areas earmarked/zoned for protection. ■ Number of trees/shrubs/plants planted into these areas from Base's indigenous nursery **Mitigation** ■ Base will continue with wetland conservation and restoration activities to maintain habitat as well as the attendant herpetofauna to ensure success of the micro-invertebrate monitoring programme. This will be done as per wetlands already restored adjacent to the Central Dune, as discussed above. ■ During rainy months, Base will identify the main streams feeding the wetlands and erect silt traps to reduce the sediment loads into the wetlands; ■ Base will strictly adhere to the surface water abstraction permit conditions in cases where water from rivers Koromojo, Ramisi, Mkurumudzi or others replenishing wetlands is to be used for mining activities. ■ Base will identify a suitable site and create wetland conditions, similar to that done in the Central Dune, to propagate more herpetofauna species as an offset for any that could be lost due to the project. ■ Base will replant more grasses and trees in the riparian of the proximal wetlands to filter surface water from plant matter or any other suspended solids that could pose risks to the wetlands' aquatic life.	Environmental Manager

Extension of employment period for existing workers, as well as potential creation of new employment opportunities	■ Transportation of people and goods, waste management, provision of security, mechanical and maintenance services, community outreach, infrastructure support and training	**Enhancement Measure** ■ Base employment and procurement and supply chain policies will be implemented to ensure as many new employment opportunities are given to local households as possible, to optimize project benefit to local communities.	Human Resources and Community Relations Managers
Noise impacts and degradation of ambient air quality within and around the mine site boundary in the vicinity of the southern Dune	■ Surface vegetation clearance ■ Topsoil stripping ■ Stockpiling of stripped soil ■ Water use ■ Use of mobile and immobile equipment.	**Key Performance Indicators** ■ Noise data within specified limits ■ Ambient air quality within specified limits ■ Zero grievances received from community members **Mitigation** ■ Base has existing Community Health Programmes, aligned to the County's Health Strategic Plan and implemented in collaboration with the Kwale County Ministry of Health. The programme is designed to improve health delivery at various levels and address the communities' health issues as problematic. This programme will be expanded to include locations specific to communities surrounding the South Dune's southern end. ■ For the newly recruited workers, Base will implement the company's OHS Plan appropriately, especially on medical examinations, health and safety training to reduce chances of contracting or infecting other community members with diseases, and improving their safety awareness. ■ The measures outlined in the descriptions of these impacts will be implemented to address the risks on air quality, radiation, soil contamination, water quality, and traffic accidents.	Environmental Manager and Community Relations Manager
Relocation of households from their current dwellings	■ Vegetation clearance ■ Topsoil stripping ■ Hydraulic mining of ore	**Key Performance Indicators** ■ Auditable completion of RAP report ■ Zero grievances received from community members **Mitigation** A Preliminary Resettlement Action Plan (RAP) has been done to indicate the extent of the southern extension's impact on the affected communities. The actual RAP process is ongoing, and this is being conducted with due cognizance of the IFC's PS 5 and Kenyan legal requirements. Due and rightful compensation, resettlement and livelihood restoration will be undertaken for the affected households, as appropriate.	Social and Community Relations Manager

		The RAP study will identify, profile and provide for adequate compensation and livelihood restoration support for the following categories of affected persons, as a priority: ■ All persons who will have lost a part or all their land ■ All persons who will have lost their dwellings of dwellings of their pets or livestock; ■ All persons who will have lost their jobs; ■ Persons who will have increased health risks due to displacement; ■ All persons who will be rendered food insecure due to the displacement. ■ All persons who will have lost access to common property resources due to the displacement. ■ All persons who will have experienced social and cultural disarticulation/disruption due to the displacement.	
Loss or reduction in size of livestock grazing land	■ Vegetation clearance ■ Topsoil stripping ■ Hydraulic mining of ore	**Key Performance Indicators** ■ Auditable completion of RAP report ■ Zero grievances received from community members **Mitigation** ■ Base will collaborate with the Department of Land Adjudication and Resettlement (Kwale) and the local administrative heads (headed by area chiefs) to ensure that economically displaced households are granted access to alternative productive land for livestock related activities; ■ Through the existing Community Programmes, especially the ongoing community livelihoods, community infrastructure, and community training programmes, the Base will collaborate with the Department of Agriculture and the local administrative councils to ensure that the programmes assist the affected households in diversifying their livelihoods and increase food and revenue streams. ■ For the southern extension area, Base will ensure that compensation rates for productive trees, crops and pasture, as detailed in the RAP report, takes into account loss of livestock-related income and food sources.	Environmental Manager and Community Relations Manager
Loss or reduction in size of land for agricultural use	■ Vegetation clearance ■ Topsoil stripping ■ Hydraulic mining of ore	**Key Performance Indicators** ■ Auditable completion of RAP report ■ Zero grievances received from community members	Environmental Manager and

		Mitigation ■ Through the company's Community Programmes, especially the ongoing community livelihoods, community infrastructure, and community training programmes, Base will work with the affected households towards identifying and supporting them to diversity their livelihood activities, train them on alternative agricultural activities and help them find alternative land for agricultural practices, as necessary. ■ Base will collaborate with the Department of Land Adjudication and Resettlement (Kwale) and the local administrative heads (headed by area chiefs) to ensure that economically displaced households are granted access to alternative productive land for crop farming; ■ For the southern extension area, Base will ensure that compensation rates for productive trees, and crops, as detailed in the RAP report, considers loss of related income and food supply consistency.	Community Relations Manager
Inability of dependent households/individuals to exploit natural resources for livelihood sustenance	■ Vegetation clearance ■ Topsoil stripping ■ Hydraulic mining of ore ■ Restriction of access into the southern dune area	**Key Performance Indicators** ■ Auditable completion of RAP report ■ Zero grievances received from community members **Mitigation** ■ The Restoration Programme Indigenous Tree Nursery, established by Base as part of the Biodiversity and Conservation Programme, in which indigenous trees are propagated and suitable species used for the rehabilitation and revegetating of impacted areas, will have the added positive impact of replenishing alternative off site areas where the community members exploit natural resources for a living, especially the river/stream riparian areas, sections around Buda Forest, and unmined sections in the Central Dune. ■ Base will work with the affected households through the ongoing community projects and livelihood programmes, towards identifying and supporting them to diversity their livelihood activities, train them on alternative livelihood activities and support them to carry out such activities, to compensate for the loss of natural resources. ■ Base will apply the recommendations in Section 9.3.3 above to reduce soil erosion and protect water quality as a means of safeguarding the life and populations of aquatic life exploited for food and revenue by the affected households.	Environmental Manager and Community Relations Manager

10. ENVIRONMENTAL AND SOCIAL MONITORING PLAN

This *Chapter* represents the Environmental and Social Monitoring Plan for the South Dune Extension mining operations. Monitoring aims to ensure those mitigation measures elaborated in the ESMP in *Chapter 10*, are being implemented and adequately managed, to ensure the residual impacts identified remain as low as possible, or that positive impacts are enhanced.

Base currently has Environmental and Social Monitoring Plans, which form part of its current Environmental and Social Management System (ESMS).

The following monitoring reports are produced monthly by Base:

- Occupational Health and Hygiene monitoring report:
  - Radiation monitoring for different areas in and around the processing plant and the ship loading facility.
  - Personal and positional dust monitoring.
  - Total coliform testing for all drinking water points.
  - Clinic data.
- Environmental monitoring report:
  - Water Resources Monitoring Programme.
    - *In-situ* Water quality monitoring (surface water and groundwater monitoring).
    - Water samples collection for both Cropnuts (lab) and NEMA analysis.
    - Groundwater Levels Monitoring.
    - Flow measurements for surface waters.
  - Meteorological and Air Quality Monitoring
    - Meteorological monitoring.
    - Dust monitoring.
  - Noise and Radiation Monitoring Programme
    - Noise monitoring.
    - Radiation monitoring.
  - Safety report:
    - This report covers incident trends, management inspections and hazard identification trends, update on fitness for work program and safety awareness.

Environmental (ambient) noise, dust and radiation data are also collated into a quarterly monitoring report. Environmental and Social data are also collated and reported in an internal report produced annually by Base for submission to Lenders to the Project.

Base intends to include the monitoring data collected for the South Dune Extension into this existing monitoring and reporting framework.

10.1 Organisation of the Environmental and Social Monitoring Plan

The Environmental and Social Monitoring Plan provides:

- The specific impacts arising out of the Project's identified Environmental and Social Aspects.
- The specific project activities that trigger the identified impacts.

- Key Performance Indicators that monitoring should demonstrate are being achieved for the Project.
- Responsibility for the implementation of management/mitigation measures.
- Mode of monitoring and monitoring frequency for each environmental or social aspect.
- Monitoring locations.

10.2 The South Dune Extension Environment and Social Monitoring Plan

The South Dune Extension Environmental and Social Monitoring Plan is presented in ***Table 10.1*** overleaf.

Table 10.1: The South Dune Environment and Social Management and Monitoring Plan

Project Impact	Main Related Activities	Management/Mitigation Measures	Responsibility	Mode of Monitoring	Monitoring Frequency	Monitoring Location(s)
Impacts to soils	■ Vegetation clearance ■ Topsoil stripping ■ Hydraulic mining of ore ■ Soil contamination from spillages of fuels and lubricants	**Key Performance Indicators** ■ Turbidity and Suspended solids in nearby water courses at measured baseline levels	Environmental Department	Monitoring for erosion after heavy rains Water quality monitoring	Water quality monitoring as per Environmental Monitoring Programme (Monitoring procedure ENV-STDCDMS-002075-ESMS).	Mining areas, access routes, existing streams and wetlands, surface and groundwater monitoring points.
Exposure of workers and communities to nuisance dust fallout and PM10 emissions	■ Vegetation clearance ■ Topsoil stripping ■ Hydraulic mining of ore	**Key Performance Indicators** ■ Dust fall-out guideline of 600mg/m^2/day. ■ PM10: 50µg/m^3 (24 hour average). ■ PM10: 100µg/m^3 (Annual average). ■ All PM10 data collected to be compared to the annual average of 100µg/m^3 PM10.	Environmental Department	PM10 monitoring Fall-out dust monitoring Grievances to trigger analysis of dust monitoring results and report back to communities As per Environmental Monitoring Programme (Monitoring procedure ENV-STDCDMS-002075-ESMS).	Continuous monitoring for fall out dust (data to be analysed and compared with the dust fall-out guideline of 600mg/m^2/day. For PM10, dust sampling to be undertaken at a higher frequency during the dry season. Daily PM10 data to be compared to the Kenyan Air Quality standard for PM10 (respirable dust) of 50µg/m^3 (24 hour average). All PM10 data collected to be	Dust monitoring locations are provided in Figure 5.6 Dust monitoring must continue at monitoring sites D4, D5, D14, and D18. Dust Monitoring to be undertaken at locations both upwind and downwind of the mine site to ascertain the contribution from the mine to dust levels.

					compared to the annual average of 100µg/m^3 PM10. Base are to investigate any likely sources from the mine site and establish whether such sources are contributing to the higher ambient concentrations.	
Contamination of surface and ground water resources	■ Vegetation clearance ■ Topsoil stripping ■ Hydraulic mining of ore ■	**Key Performance Indicator** ■ Baseline water quality results for both surface and ground water pre-mining of the South Dune Extension.	Environmental Department	Stream and Borehole Water Quality Monitoring as per monitoring procedure ENV-STDCDMS-002075-ESMS (Environmental Monitoring Programme) and data to be fed into procedure ENV-STD-CDMS-002113 (Water Management Plan).	For surface water, water quality is monitored monthly for basic parameters (physico-chemical parameters, major cations and anions, and a few trace constituents). Water quality monitoring at the groundwater monitoring sites GS 50 to GS 55 commenced in March 2018 and is expected to continue throughout the South Dune's mining period. GD20: monitoring commenced in early 2013.	Surface water quality monitoring points are provided in Figure 5.3 and Figure 5.4. Surface water quality is monitored at points S18 (reservoir), S3 (environmental water release), S19 (community crossing at Vumbu) and S17 (a downstream site dubbed Kwa Jumadari) along the Mkurumudzi River, primarily to track changes in water quality through the dam and downstream. Another monitoring station, S31 (Buda Forest inflow) is located on an ephemeral stream draining the south east corner of the South Dune. This site is located between the South Dune and the Buda Forest. There are six shallow groundwater quality monitoring sites located around the South Dune periphery. These are: ■ GS50 (dug seep) ■ GS51 (dug seep)

					Water quality and water levels were collected weekly and, most recently, bi-monthly.	■ GS52 (dug seep) ■ GS53 (dug seep) ■ GS54 (dug seep) ■ GS55 (a protected spring) There are two deep groundwater monitoring points in or near the South Dune area. These include sites GD 20 and GD 23.
Noise and vibration from mining operations	■ Vegetation clearance ■ Topsoil stripping ■ Hydraulic mining of ore	**Key Performance Indicators** ■ 35dB(A) night time noise level (Kenyan standard for mixed residential) ■ 55dB(A) day time noise level (Kenyan standard for mixed residential) ■ < 3ddB(A) increase in background noise level directly as a result of mining activities (IFC guideline). See Tables Table 5.3 and Table 5.4.	Environmental Department	As per monitoring procedure ENV-STDCDMS-002075-ESMS (Environmental Monitoring Programme). During the course of undertaking noise measurements, monitoring conditions are also to be recorded, such as bird calls, insects and wind rustling vegetation, as these contribute, sometimes significantly, to the ambient noise environment.	As per monitoring procedure ENV-STDCDMS-002075-ESMS (Environmental Monitoring Programme).	In order to quantify levels of noise around the Mine Site, ambient noise monitoring will be required. For the southern dune extension, noise monitoring is to be continued during both hours of day-time and night-time, at those locations shown in Figure 5.6, particularly at monitoring locations N18 through to N38.
Exposure to increased levels of radiation	■ Removal of topsoil and processing of ore	**Key Performance Indicators** ■ Radiation background of 0.19uSv/hour	Environmental Department	*In situ* Gamma surveys in the field. Water quality sampling	Monthly The current baseline data obtained for the Mine Site (an overall average of 0.19µSv/hour) is well within typical	Monitoring of gamma radiation levels continues on the boundaries of the South Dune mining areas (as provided in Figure 5.8) to add to and compare with the current gamma background radiation surveys conducted in this area.

					natural background levels. Any increase in baseline will need to be compared to this overall average.	
Risks to safety and health at the workplace	■ Use of mobile and immobile equipment at the Mine, mineral ore extraction and transfer to processing units, consolidation of stripped topsoil and cleared vegetation.	**Key Performance Indicators** ■ Zero Lost Time Injuries ■ A reduction in the Lost Time Injury Frequency rate (LTIFR)	Health and Safety Department	As per Procedure ENV-STD-CDMS-002092 – ESMS-OHS Management Plan	As per Procedure ENV-STD-CDMS-002092 – ESMS-OHS Management Plan	Entire workplace
Loss of floral and faunal species and reduction in surface vegetation cover	■ Surface vegetation clearance ■ Topsoil stripping ■ Stockpiling of stripped soil ■ Water use ■ Use of mobile and immobile equipment.	**Key Performance Indicators** ■ Measurable improvement in biodiversity (presence of noted rare and endemic species) in wetlands and biodiversity corridor, and areas earmarked/zoned for protection. ■ Number of trees/shrubs/plants planted into these areas from Base's indigenous nursery.	Environmental Department	Macroinvertebrate monitoring Herpetofauna monitoring Recording of Number of trees/shrubs/plants planted into areas to be rehabilitated from Base's indigenous nursery.	Seasonal	■ Rehabilitated wetlands, biodiversity corridors, surface water quality monitoring points.
Degradation of water quantity, quality and biodiversity	■ Surface vegetation clearance ■ Topsoil stripping ■ Stockpiling of stripped soil	**Key Performance Indicators** ■ Measurable improvement in biodiversity (presence of noted rare and endemic species) in wetlands and biodiversity corridor, and areas earmarked/zoned for protection.	Environmental Manager	Macroinvertebrate monitoring Herpetofauna monitoring Water quality monitoring as per	Seasonal	Identified wetlands requiring protection in the southern Dune area.

	■ Water use ■ Use of mobile and immobile equipment.	■ Number of trees/shrubs/plants planted into these areas from Base's indigenous nursery		monitoring procedure ENV-STDCDMS-002075-ESMS (Environmental Monitoring Programme).		
Extension of employment period for existing workers, as well as potential creation of new employment opportunities	■ Transportation of people and goods, waste management, provision of security, mechanical and maintenance services, community outreach, infrastructure support and training	**Enhancement Measure** ■ Base employment and procurement and supply chain policies will be implemented to ensure that as many new employment opportunities are given to local households as possible, to optimsze project benefit local communities.	Human Resources and Community Relations Managers	Training records No of employees Tier 1 new employees	Monthly	Mine wide
Noise impacts and degradation of ambient air quality within and around the mine site boundary in the vicinity of the southern Dune	■ Surface vegetation clearance ■ Topsoil stripping ■ Stockpiling of stripped soil ■ Water use ■ Use of mobile and immobile equipment.	**Key Performance Indicators** ■ Noise data within specified limits ■ Ambient air quality within specified limits ■ Zero credible grievances received from community members	Environmental Manager and Community Relations Manager	As per monitoring procedure ENV-STDCDMS-002075-ESMS (Environmental Monitoring Programme).	As per monitoring procedure ENV-STDCDMS-002075-ESMS (Environmental Monitoring Programme).	Identified communities adjacent to the southern dune boundary.
Relocation of households from their current dwellings	■ Vegetation clearance ■ Topsoil stripping	**Key Performance Indicators** ■ Auditable completion of RAP report	Community Relations Manager	Review implementation of compensation, resettlement and livelihood	Quarterly	At all resettlement sites

	■ Hydraulic mining of ore	■ Zero grievances received from community members		restoration activities as entailed in the RAP report.		
Loss or reduction in size of livestock grazing land	■ Vegetation clearance ■ Topsoil stripping ■ Hydraulic mining of ore	**Key Performance Indicators** ■ Auditable completion of RAP report ■ Zero grievances received from community members	Community Relations Manager	Review implementation of compensation, resettlement and livelihood restoration activities as entailed in the RAP report.	Quarterly	At all resettlement sites
Loss or reduction in size of land for agricultural use	■ Vegetation clearance ■ Topsoil stripping ■ Hydraulic mining of ore	**Key Performance Indicators** ■ Auditable completion of RAP report ■ Zero grievances received from community members	Environmental Manager and Community Relations Manager	Review implementation of compensation, resettlement and livelihood restoration activities as entailed in the RAP report.	Quarterly	At all resettlement sites
Inability of dependent households/individuals to exploit natural resources for livelihood sustenance	■ Vegetation clearance ■ Topsoil stripping ■ Hydraulic mining of ore ■ Restriction of access into the southern dune area	**Key Performance Indicators** ■ Auditable completion of RAP report ■ Zero grievances received from community members	Community Relations Manager	Review implementation of compensation, resettlement and livelihood restoration activities as entailed in the RAP report.	Quarterly	At all resettlement sites

11. CONCLUSIONS

The Operation's original mine life was set at 13 years, running up until 2025. However, the mine life was later reduced to 2023 due to higher mining rates and the expansion of the Wet Concentrator Plant (WCP). To address the reduced mine life, Base commenced an exploration programme in the area outside of their existing mining lease area, including around the South Dune, to identify additional resources that could be economically mined. Economically viable mineral resources in an extension to the south dune, but outside of the current Special Mining License (SML) were identified. If approved for mining, the projected mine life would shift to December 2023.

In order to accommodate the additional resources of the South Dune Extension into the mine plan, the Ministry of Petroleum and Mining recommended that Base apply for a boundary variation of the existing Special Mining Lease No. 23 (SML). This is due to the small sizes and low-grade nature of these resources, which would not be economically viable if they were to be mined through a separate operation under a separate mining license. The application for variation has been made and is under review by the Ministry.

In parallel to the boundary variation application, Base contracted ERM to undertake an ESIA process for the South Dune Extension. This ESIA aims to re-evaluate the impacts already identified as part of the original ESIA (Kwale Mineral Sands Project EIA, License No. 0000048 of 2005) or identify any new impacts that may arise as a result of mining operations in the South Dune Extension.

Most, if not all, of the impacts identified and elaborated in this ESIA for the South Dune Extension are currently adequately managed by Base for the current mining operations on the Central Dune. Management of such impacts is undertaken by implementing the current EHS Management Plans. These separate topical Management Plans address all the Environment/Social and Occupational Health and Safety aspects of the current mining operations of the Central Dune, and will also be applicable to the activities of the South Dune (including the South Dune Extension) operations.

Monitoring Plans are also in place and aim to ensure those mitigation and management measures as elaborated in each of the suite of Management Plans, are being adequately implemented.

These Management and Monitoring Plans form an integral part of Base's current Environmental and Social Management System (ESMS).

Base intends to integrate the impact management/mitigation measures identified in this ESIA and elaborated in the ESMP (Chapter 9) into the respective management plans to conform to the Company ESMS. Monitoring data collected for the South Dune Extension will also be incorporated into Base's existing monitoring and reporting framework.

In this way, impacts identified for the South Dune Extension will be adequately managed through Base's ongoing ESMS.

12. REFERENCES

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APPENDIX A ERM EAST AFRICA FIRM OF EXPERTS NEMA CERTIFICATE AND ERM LEAD EXPERT (MIKE EVERETT) NEMA CERTIFICATE

FORM 7 (r.15(2))

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NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY(NEMA)

THE ENVIRONMENTAL MANAGEMENT AND CO-ORDINATION ACT

ENVIRONMENTAL IMPACT ASSESSMENT/AUDIT (EIA/EA) PRACTICING LICENSE

License No : NEMA/EIA/ERPL/13736

Application Reference No: NEMA/EIA/EL/18087

M/S **ENVIRONMENTAL RESOURCE MANAGEMENT EAST AFRICA LTD (ERM)** (individual or firm) of address

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in accordance with the provision of the Environmental Management and Coordination Act Cap 387.

Issued Date: **1/18/2021** Expiry Date: **12/31/2021**

Signature.....

(Seal)
Director General
The National Environment Management Authority

P.T.O.

ISO 9001 BUREAU VERITAS Certification UKAS

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NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY(NEMA)

THE ENVIRONMENTAL MANAGEMENT AND CO-ORDINATION ACT

ENVIRONMENTAL IMPACT ASSESSMENT/AUDIT (EIA/EA) PRACTICING LICENSE

License No : NEMA/EIA/ERPL/13737

Application Reference No: NEMA/EIA/EL/18088

M/S **MICHAEL JOHN EVERETT**
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in accordance with the provision of the Environmental Management and Coordination Act Cap 387.

Issued Date: **1/18/2021** Expiry Date: **12/31/2021**

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Director General
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APPENDIX B RESSETLEMENT ACTION FRAMEWORK: SOUTH DUNE EXTENSION

RESETTLEMENT FRAMEWORK – SOUTHERN EXTENSION

KWALE MINERAL SANDS PROJECT

Compiled by:

Authors: Colin Forbes, Simon Wall and Pius Kassim

July 2018

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LIST OF ABBREVIATIONS AND ACRONYMS

Base	:	Base Resources Ltd / Base Titanium
CLOs	:	Community Liaison Officers
DRC	:	Dispute Resolution Centre
GIIP	:	Good International Industry Practice
GPS	:	Global Positioning System
Ha	:	Hectare
IBP	:	International Best Practice
ICCA	:	International Council for Commercial Arbitration
IFC	:	International Finance Corporation
MLC	:	Msambweni Liaison Committee
MPLC	:	Mining Project Liaison Committee
PAP	:	Project Affected Persons
PS	:	Performance Standards
RAP	:	Resettlement Action Plan
CLS	:	Community Liaison Superintendent
RPF	:	Resettlement Policy Framework
SML	:	Special Mining Lease
UNCITRAL	:	United Nations Commission on International Trade Law
WIPO	:	World Intellectual Property Organization
WTO	:	World Trade Organization

1 INTRODUCTION

1.1 Project Resettlement History

A Resettlement Action Plan (RAP) was prepared for Tiomin Kenya Limited's (Tiomin) Kwale Mineral Sands Project in 2005[1]. This covered the resettlement of the households occupying the SML area which encompasses the Project's footprint. Following disclosure and consultation households were resettled from the SML between 2006 and 2008. 381 households were resettled from within the SML. A post-resettlement monitoring and audit report was prepared in June 2011.

In addition to the original RAP a number of further RAPs have been prepared as follows:

- Mukurumudzi Dam RAP[2] covering households affected by construction of the dam.
- Access Road and Water Pipeline RAP[3] for those affected by the access road and water pipeline components.
- 132kV Transmission Line RAP[4].

The Mukurumudzi Dam RAP and the Access Road and Water Pipeline RAP were prepared in accordance with current Good International Industry Practice (GIIP) and implemented in Quarter 3 and 4 of 2011. A completion audit[5] was carried out in February 2012 confirming satisfactory completion and noting ongoing requirements for Base's monitoring process.

The 132kV Transmission Line RAP has been completed and implementation is still underway awaiting the completion of title documentation and probate for a small number of landowners following which, final compensation payments relating to land will be done. A completion audit will be conducted as part of the Social Monitoring Programme once this process is through.

1.2 Special Mining Lease Variation

Following an investment US$310 million in the development of the Kwale Mineral Sands Project, Base commenced mining operations in October 2013. The Project's original mine life of 13 years has since reduced to 11 years as a result of higher mining rates following work to increase the mining and wet concentrator plant capacity. In an effort to address the short mine life, an exploration drilling programme commenced in November 2016 with the aim of discovering additional nearby resources that could be economically mined.

The drilling programme resulted in the discovery of a contiguous resource extension to the Project's South Dune that saw the Mineral Reserve increase 29% from 88.5Mt to 114.1Mt, equating to approximately an 18-month mine life extension.

Recognising the relatively small and peripheral nature of the additional resources adjacent to the current South Dune reserve, the Ministry of Mining (now Ministry of Petroleum and Mining) recommended that such additional resources be incorporated into the mine plan by way of a boundary variation of the existing Special Mining Lease No. 23 (SML). It was mutually agreed that the small size, low grade and additional costs

[1] Huggins G (2005) Tiomin – Kwale Resettlement Action Plan. Prepared for the Tiomin Kenya Limited. Coastal and Environmental Services, Nottingham Road, South Africa.
[2] Jones G, Huggins G and Lappeman G (2011) Resettlement Action Plan Kwale Mineral Sands Project, Kenya – Mukurumudzi Dam Site. Nomad Socio-Economic Management and Consulting, Nottingham Road, South Africa.
[3] Jones G, Huggins G and Lappeman G (2011) Resettlement Action Plan Kwale Mineral Sands Project, Kenya – Access Road and Water Pipeline. Nomad Socio-Economic Management and Consulting, Nottingham Road, South Africa.
[4] Jones G and Huggins G (2011) Resettlement Action Plan Kwale Mineral Sands Project, Kenya – 132kV Transmission Line. Nomad Socio-Economic Management and Consulting, Nottingham Road, South Africa.
[5] Huggins G (2012) Resettlement Compliance Report for the Mukurumudzi Dam Site, Access Road and Water Pipeline. Nomad Socio-Economic Management and Consulting, Nottingham Road, South Africa.

associated with these extensional resource cannot support an economically viable, standalone operation under a separate mining license, which will highly likely render the additional resources uneconomic.

1.3 Scope of the Addendum RAP

Previous resettlement activities are well known to households affected by the extension of the SML and continuity with recent RAP criteria is important to efficient implementation. On that basis, this RAP will be executed as an additional chapter to the Mukurumudzi Dam RAP.

In accordance with World Bank policy on involuntary resettlement[6] the resettlement action plan can be prepared covering the following minimum elements:

- Census survey of displaced persons and valuation of assets.
- Description of compensation and other resettlement assistance to be provided.
- Consultations with displaced people about acceptable alternatives.
- Institutional responsibility for implementation and procedures for grievance redress.
- Investigation and implementation of livelihood replacement strategies, if required.
- Arrangements for monitoring and implementation.
- Timetable and budget.

This Resettlement Framework forms the basis of the RAP that will be prepared for the households affected by the Southern Extension. It provides contextual background and outlines the principles and processes that will be undertaken for the RAP and the resettlement process.

1.4 Objectives

The Project will displace people due to the extension of the SML where additional mineral resources have been identified. The Mining Act 2016 and the conditions of the Project's SML provide the statutory instruments that allow the Project to resettle people when necessary. This triggers the IFC Performance Standard 5.

IFC Performance Standard 5 applies to physical or economic displacement resulting from the following types of land transactions:

- *Type I: Land rights for a private sector project acquired through expropriation or other compulsory procedures.*
- *Type II: Land rights for a private sector project acquired through negotiated settlements with property owners or those with legal rights to land, including customary or traditional rights recognized or recognizable under the laws of the country, if expropriation or other compulsory process would have resulted upon the failure of negotiation.*

This document considers the displacement induced and the measures that will be taken to comply with the requirements of IFC Performance Standard 5.

The mining operations requires the acquisition of land for mining activities to take place including supporting infrastructure requirements.

Evidence from resettlement projects around the world reveals the following fundamental and recurrent risks[7]:

- Landlessness
- Joblessness

[6] OP 4.12 Involuntary Resettlement, http://web.worldbank.org/WBSITE/EXTERNAL/PROJECTS/EXTPOLICIES/EXTOPMANUAL
[7] Cernea M and McDowell C (2000) Risks and Reconstruction: Experiences of Resettlers and Refugees. World Bank.

- Homelessness
- Marginalisation
- Increased morbidity and mortality
- Educational losses
- Food insecurity
- Loss of common property
- Social disarticulation

As such the RAP clarifies the principles for social impact mitigation with regards to compensation for loss of property, livelihood and relocation or resettlement of directly affected people. The operational objective of the RAP is to provide guidelines to stakeholders (including investors and developers) participating in the mitigation of adverse social impacts of the Project, in order to ensure that Project Affected Persons (PAPs) will not be impoverished by resettlement.

International Best Practice (IBP) implies that PAPs should be: Compensated for any attendant loss of livelihood; compensated for loss of assets at replacement costs; given opportunities to share project benefits which can be through various initiatives including community development, skills transfer and training; and be assisted in case of relocation or resettlement. The paramount purpose is to restore the income earning capacity of the PAPs. The aim is to improve or at the very least sustain the living conditions of the PAPs prior to Project operations or to resettlement. PAPs must be no worse off than prior to resettlement.

The development of the RAP is required as a consequence of the displacement that will result from land acquisition and easement rights. Base is committed to ensuring that its actions, carried out through the RAP, do not result in the affected households being worse off as a consequence of resettlement and compensation. This is in accordance with IBP and is subscribed to by Base as a responsible developer.

1.5 Magnitude of Displacement

Physical resettlement – 99 plots are affected in their entirety by the Southern Extension. The households residing on these plots will be resettled to suitable locations of their own choice. Figure 1.1 illustrates the area making up the Southern Extension and the impacted plots.

There are 17 households located next to the existing SML boundary in Mchingirini adjudication area that have already been acquired through previous resettlement programmes as a result of consultation and engagement with the MPC and the householders themselves in relation to isolation issues raised.

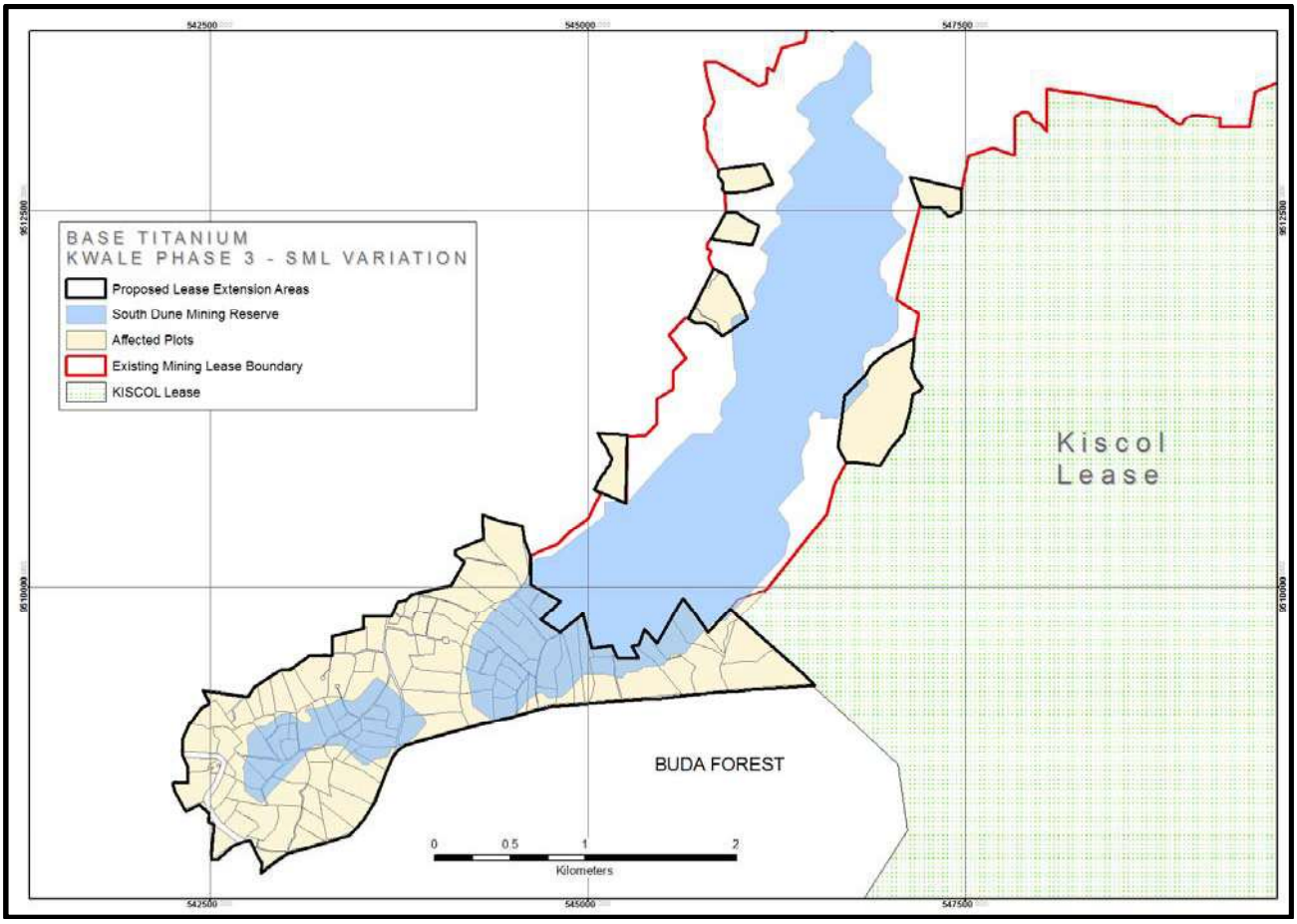


Figure 1.1: The location of the SML Extension in relation to the Project's Special Mining Lease.

2 LEGAL FRAMEWORK

This RAP has been informed by Kenyan legislation and IBP guidelines on resettlement as well as the RAP prepared for the Project's SML and the Project's Resettlement Policy Framework (RPF)[8].

2.1 Kenya Legislation

Summary of Relevant Acts

Kenya uses a number of different instruments to govern land in the country including several statutes that handle the issues of land and the development of infrastructure. These are:

- Land Act 2012
- Land Laws Amendment Act 2016
- Land Registration Act 2012 (Revised Edition 2016)
- National Land Commission Act 2012
- Land Control Act Cap 302 (Revised Edition 2012)
- Mining Act 2016
- Agriculture Act Cap 318 (Revised Edition 2012)
- Environmental Management and Co-ordination Act of 1999 and Amendment Act of 2015
- Water Act 2016
- Community Land Act

In fact, there are over 50 statutes that deal with land and many others that make reference to land. Below are some of the more primary statutes.

Land Act 2012

The Act provides for the conversion of private land to public land via either compulsory acquisition, reversion of leasehold interest to Government, transfers or surrender.

Land Laws Amendment Act 2016

This Act makes amendments to various other Acts impacting the management of land. It should be read together with those listed above.

Community Land Act 2016

This Act provides the requirements for the management and administration of community land, including the conversion of community land to public land. It also provides that reversionary interest of such land shall lie with the community in the first instance upon expiry of such public use interest.

Land Control Act Cap 302 (Revised Edition 2012)

This Act restricts transfer of land and as such has some bearing on the criteria with which affected farmers can acquire or dispose of land. The most pertinent section of this act is section 9 that states:

In deciding whether to grant or refuse consent in respect of a controlled transaction, a land control board shall:

[8] Huggins G (2005) Tiomin – Kwale Resettlement Policy Frawework. Prepared for the Tiomin Kenya Limited. Coastal and Environmental Services, Nottingham Road, South Africa.

(a) have regard to the effect which the grant or refusal of consent is likely to have on the economic development of the land concerned or on the maintenance or improvement of standards of good husbandry within the land control area

(b) act on the principle that consent ought generally to be refused where

(i) the person to who the land is to be disposed of

(a) is unlikely to farm the land well or develop it adequately; or

(b) it is unlikely to be able to use the land profitably for the intended purpose owing to its nature; or

(c) already has sufficient agricultural land; or

(ii) the person to whom the share is to be disposed of

(a) already has sufficient shares in a private company or co-operative society owning agricultural land; or

(b) would by acquiring the share be likely to bring about the transfer of the control of the company or society from one person to another and the transfer would be likely to lower the standards of good husbandry on the land; or

(iii) The terms and conditions of the transaction (including the price to be paid) are markedly unfair or disadvantageous to one of the parties to the transaction; or

(iv) in the case of the division of land into two or more parcels, the division would be likely to reduce the productivity of the land

(c) refuse consent in any case in which the land or share is to be disposed of by way of sale transfer, lease, exchange or partition to a person who is not

(i) a citizen of Kenya; or

(ii) private company or co-operative society all of whose members are citizen of Kenya; or

(iii) group representatives incorporated under the Land (Group Representatives) Act; or

(iv) a state corporation within the meaning of the State Corporation Act

The Mining Act 2016

This Act makes direct reference to the responsibility of the holder of a mining lease for the provision of compensation to people who hold land for any disturbances created (section 153). Section 108 ensures the mineral right holder may take all reasonable measures to carry out mining operations.

The Agriculture Act Cap 318 (Revised Edition 2012)

This act provides for the maintenance of stable agriculture and the conservation of soil and its fertility.

Environmental Management and Co-ordination Act of 1999

This Act makes provision for adequate environmental investigations to be undertaken in respect of certain listed developments (both the mine site and development of the host site qualify in this regard. The need to acquire environmental licenses, required before any listed development may take place, is provided for in the Act.

The Water Act 2016

This Act provides for the management and development of water resources. It also sets out the requirements for the acquisition and regulation of rights to use water and the regulation and management of water supply and sewerage services. The Third Schedule defines rights and obligations with respect to easements associated with water infrastructure permitting. It describes the steps a permit holder must undertake with respect to affected property and forms the legal basis for invoking resettlement.

Dispute Resolution and Arbitration of Disputes

The practice of domestic and international arbitration in Kenya is conducted within the framework of the 1995 Arbitration Act and is interpreted as: "any arbitration whether or not administered by a permanent arbitral institution". The Act follows the UNCITRAL (United Nations Commission on International Trade Law) model almost word for word but with a number of omissions: Notably no provision for costs and interest, nor any provision for appeal in international arbitrations. These omissions are dealt with by the rules of an active local branch of the London-based Chartered Institute of Arbitrators, being an amalgam of rules established by leading international arbitral institutions and providers such as the London Court of Arbitration and the International Council for Commercial Arbitration (ICCA).

Draft amendments to the Act, completed by 2001, take stock of the experience of Kenyan Fellows and Chartered Arbitrators as well as the most effective provisions of the English 1996 Act with particular reference to speed and cost. However, this Draft is yet to see the light of day in Parliament.

In addition to ratifying the UNCITRAL Model Law, Kenya has also ratified the New York Convention, the World Trade Organization (WTO) and World Intellectual Property Organization (WIPO) treaties relating to arbitration. The Kenyan branch of the Chartered Institute of Arbitrators, founded in 1984, is recognised as the professional body for the annual training and examination of those seeking to qualify as arbitrators; it also acts as the appointing body where stipulated in contract.

Kenya's Dispute Resolution Centre (DRC) is an independent, not-for-profit organisation that promotes the prompt, effective and economic resolution of disputes through arbitration, predominantly mediation, expert determination and early neutral evaluation. This is a resource that could be called upon in the Projects instance to arbitrate. They would be of particular use should disputes around the compensation and resettlement process arise.

In addition, there are a series of customary avenues that have been set up to deal with dispute resolution and they will be employed as the "court of first appeal", where relevant.

2.2 International Guidelines

World Bank[9]

World Bank Operational Policy 4.12 is seen as the standard set of resettlement guidelines internationally. The fundamental objective of resettlement planning, as encapsulated in OP 4.12 is to avoid resettlement whenever feasible, or, when resettlement is unavoidable, to minimise its extent and to explore all viable alternatives. Where land acquisition and involuntary resettlement are unavoidable, resettlement and compensation activities are carried out in a manner that provides sufficient opportunity for the people affected to participate in the planning and implementation of the operation. Furthermore, if incomes are adversely affected, adequate investment is required to give the persons displaced by the project the opportunity to at least restore their income.

IFC Performance Standard 5: Land Acquisition and Involuntary Resettlement (IFC, 2012) was developed by the IFC (as part of the World Bank group) from OP 4.12.

[9] Detailed guidelines for preparing a RAP and an abbreviated RAP are available on the World Bank's website (www.worldbank.org) and in the World Bank's Resettlement and Rehabilitation Guidebook. The IFC (www.ifc.org) has a similar site and a similar handbook (IFC: Handbook for Preparing a Resettlement Action Plan) as does the African Development Bank (www.afdb.org) which provides an outline of a typical RAP in the Involuntary Resettlement Policy document.

IFC

The Project will seek to undertake a resettlement process that adheres to International Best Practice (IBP). The IFC as a major lending agency provides for internationally accepted policies and guidelines for resettlement. While the Project may not seek funding from the IFC, its policies, guidelines and standards will be adopted.

IFC Performance Standard 5: Land Acquisition and Involuntary Resettlement (IFC, 2012) relates to resettlement directly. This document states:

> *"Where involuntary resettlement is unavoidable, the client will carry out a census with appropriate socio-economic baseline data to identify the persons who will be displaced by the project, to determine who will be eligible for compensation and assistance, and to discourage inflow of people who are ineligible for these benefits. In the absence of host government procedures, the client will establish a cut-off date for eligibility. Information regarding the cut-off date will be well documented and disseminated throughout the project area."*

This is a critical policy document for the Project, and states the following basic principles in terms of resettlement:

- To avoid or at least minimise involuntary resettlement wherever feasible by exploring alternative project designs.
- To avoid forced eviction.
- To mitigate adverse social and economic impacts from land acquisition or restrictions on affected persons' use of land by:
  - Providing compensation for loss of assets at replacement cost.
  - Ensuring that resettlement activities are implemented with appropriate disclosure of information, consultation, and the informed participation of those affected.
- To improve or at least restore the livelihoods and standards of living of displaced persons.
- To improve living conditions among displaced persons through provision of adequate housing with security of tenure at resettlement sites.

This policy document requires that a RAP be prepared and accepted by the relevant authorities prior to implementing resettlement activities. The IFC also requires that the provision of compensation and the restoration of livelihoods of those affected are ensured prior to any actual resettlement.

In particular, the policy requires that possession of land for Project activities may take place only after compensation has been paid, or alternatively, if adequate guarantees of compensation have been made to the PAPs satisfaction. If the latter is chosen compensation payments must not be delayed once resettlement has taken place. Resettlement sites, new homes and related infrastructure, public services and moving allowances must be provided to the affected persons in accordance with the provisions of the RAP.

The policy further requires particular attention to be given to the needs of vulnerable groups. These are generally defined as those below the poverty line, the landless, the elderly, women and children, indigenous groups, ethnic minorities, orphans, and other disadvantaged persons.

Differences between Kenyan Laws and International Best Practise

The World Banks' OP 4.12 and IFC PS 5 make extensive provisions for the manner in which people who are displaced or suffer other loss as a result of various projects should be treated. They advocate for minimal displacement and where displacement is unavoidable, for full compensation for affected persons. These provisions do not detract from Kenya's statutory provision but go much further in detailing the form of compensation and or assistance to be given to persons who suffer all forms of losses.

Further IBP stipulates that affected persons are entitled to some form of compensation whether or not they have legal title if they occupy the land by a cut-off date. It applies to all components of the programme, all associated activities, and to all economically and/or physically affected persons, regardless of the number of people affected, the severity of impact and the legality of land holding. IBP further requires particular attention to be given to the needs of vulnerable groups especially those below the poverty line, the landless, the elderly, women and children, indigenous groups, ethnic minorities, orphans, and other disadvantaged persons.

3 GUIDING PRINCIPLES

The core principle of resettlement is that no one defined as project-affected, should be worse off after resettlement. Indeed IBP goes further than this and stipulates that resettled people should be project beneficiaries. While these are noble sentiments and need to be borne in mind, practical application is often impossible. Definitions of what constitutes "worse off" are difficult to define with universal acceptance. The notion of whether the principle applies to every individual or to a household is also hotly debated. In order to ensure, however, that the core principle is borne in mind, the following are sub-principles that the Project will adopt with respect to the resettlement process.

Principle 1: Resettlement Must Be Avoided or Minimised
Action: To comply with the principle the Project will demonstrate that the proposed resettlement is both necessary and viable, and that its scope and extent cannot be lessened. The areas that will be affected by mining and associated infrastructure have been determined to establish which plots will be affected.

Principle 2: Genuine Consultation and Participation Must Take Place
Action: Given its focus on resettlement, the primary concern of the resettlement planning has been to take the rights and interests of the displaced and "to-be-resettled" people seriously. Structures and procedures have been put in place for this to occur through the formation of consultative forums. The Msambweni Liaison Committee (MLC) comprising district administration, local government, traditional leadership and affected community representation is the primary link between the Project and its stakeholders. The MLC meets regularly with Project staff to discuss Project issues including resettlement. A committee comprising representation of households potentially affected by the SML variation resettlement has been established and includes representation of those households being resettled. Women and youth are well represented on these committees. These forums have been consulted on the resettlement, the evaluation process, compensation payment and the Project's grievance process.

Principle 3: A Pre-Resettlement Baseline Will Be Established
Action: To support the successful re-establishment of affected homesteads, a Household Socio-Economic Survey and a valuation exercise linked to households records was undertaken prior to displacement and property acquisition and incorporated the following:

- A valuation of landholdings and immovable/non-retrievable improvements (buildings and structures) to determine fair and reasonable levels of compensation.
- A census detailing household composition and demography, and other relevant socio-economic characteristics.
- Information required to satisfy the baseline data conditions for monitoring purposes as per World Bank and IFC guidelines will be collected.

The valuations are used to determine compensation entitlements[10] while the census information is required to monitor homestead re-establishment. The information obtained from the survey will be entered into a computerised Microsoft Access database to facilitate resettlement planning, implementation and monitoring.

Principle 4: A Fair and Equitable Set of Compensation Options Must Be Negotiated
Action: The value of household assets will be negotiated with stakeholders including affected people. Compensation entitlements will be calculated based on the valuations undertaken by the government evaluators. The compensation rates for assets are the official government approved rates currently used for the District. The rates have been discussed and accepted by the communities.

[10] Entitlement is the standard resettlement nomenclature and refers to what people who are defined as project affected can expect in terms of the compensation package.

Principle 5: Resettlement Must Take Place In Accordance With Legal Requirements and International Best Practice

Action: Resettlement and compensation entitlements are being carried out in compliance with Kenyan legislation, and the World Bank's OP 4.12 and IFC PS 5.

Principle 6: Vulnerable Social Groups Must be Specifically Provided For

Action: Special account of vulnerable groups was taken in the consultation and planning processes, as well as in establishing grievance procedures. In particular, physically disabled and weak persons, female-headed households, child-headed households, the aged and youth may be disadvantaged. Vulnerable social groups have been specifically identified in the pre-resettlement database and provision has been made for them to be included in consultative forums. Vulnerable groups will be actively encouraged to participate in the Project's livelihood and community development programmes. Furthermore, the Project will make specific reference to vulnerable social groups being given particular attention in the monitoring process.

Principle 7: Resettlement Must Be Seen as an "Upfront" Project Cost

Action: Resettlement and compensation costs have been built into the overall project budget and are clearly defined as such. Experience across the world shows that unless resettlement is built in as an "upfront" project cost, it tends to be under-budgeted, that money gets whittled away from the resettlement budget to 'more pressing' project needs, and that it tends to be seen as peripheral to the overall project. To this end a budget has been prepared (see Section 12).

Principle 8: An Independent Monitoring Procedure Must Be In Place

Action: An independent team will monitor the implementation of the resettlement components of the Project. Monitoring will specifically take place via measurement against the pre-resettlement database.

Principle 10: A Grievance Procedure Must Be In Place

Action: A grievance procedure has been established and has been organised in such a way that it is accessible to all affected parties, with particular concern for vulnerable groupings.

4 ASSESSMENT OF DISPLACEMENT AND DATA MANAGEMENT METHODOLOGY

A critical aspect in developing a RAP is to determine the existing socio-economic characteristics of directly affected households and communities. Current estimates are:

Resettlement – 99 plots are affected in their entirety by the southern extension and the households residing on them will be resettled. All plots are located within adjudicated areas and are registered with title deed at Kwale Land Registry. A number of these plots are owned by non-resident landowners some with squatters and some without. The upcoming Household Socio-Economic Survey will provide detailed information on the status of each plot in terms of ownership, residency and any outstanding issues relating to the each title.

A household socio-economic census was performed of all of the households listed above. The unit of analysis is a household. A multi-faceted definition of a household unit is used, which included blood relations, familial relations, economic dependence and residential status.

A generic household socio-economic questionnaire will be used which is based on a World Bank socio-economic survey template that has been modified and updated for the Project. The questionnaire was further modified to suit the local socio-economic context at a training workshop with local field officers who were recruited from the local area to perform the socio-economic survey questionnaires. The information that was collected includes household demographics, family structure (relation, age, residence status, occupation) and households' livelihoods and economic information (income, occupation). The Household Socio-Economic Survey fulfils several aims, including:

- The enumeration and collection of basic socio-economic information of the affected population.
- The registration of the affected population as per their locality.
- The establishment of legitimate beneficiaries of compensation entitlements, thereby countering spurious claims made by those moving into the Project area in order to benefit from compensation payments.
- Providing data from which a framework can be created for any subsequent socio-economic research that may be required in establishing compensation rates, income restoration measures or development interventions.
- Providing a socio-economic baseline for monitoring and evaluation.

The Chief and Village Chairpersons of the study area will be consulted in order to explain the purpose and importance of the Household Socio-Economic Survey, and obtain their support and assistance to perform the work in his settlement. Village Chairpersons are engaged to assist with community sensitisation as to the purpose and importance of the survey, as well as to arrange household representatives to be available for interviews.

Field officers will be chosen because of their experience in working on the previous baseline socio-economic surveys and monitoring surveys of displaced populations from the SML. The field officers mostly reside in the vicinity of the study area, which facilitated interaction and locating of the representatives from the affected households. The field officers will be retrained focusing on:

- Basic legislative and international context to resettlement.
- Protocols for community interaction.
- Basic systematic sampling.
- Detailed techniques for administration of socio-economic survey questionnaires.
- Consistency and conceptualisation in quantitative socio-economic research.
- Basic research ethics and strategies for eliminating bias in socio-economic surveys.
- Use of Geographical Positioning System (GPS).
- Basic digital camera operation.

The Household Socio-Economic Survey provides a complete inventory of the household's economic activities and has included the following:

- Household demographic data – This includes details on the age, sex, relationship to household head, education and occupation of each household member.
- Economic activities (if any) undertaken from the site.
- Disease and illness – The incidences of disease or illness amongst household member in the year preceding the survey was established.
- Deaths and births – Details of deaths and births within the household in the year preceding the survey was established.
- Household income – Details of average annual income, monthly sources of income, annual agricultural sales and sales sources have been established.
- Material possessions – Ownership of a predetermined collection of possessions (e.g. bicycle, radio, cell phone, iron kettle, plastic chairs, etc.) was ascertained to be used as indicators in ascertaining the socio-economic status of the households.
- Economic access – In particular this concentrated on any economic disruption of households that may occur due to the development of the Project.
- Food security – The availability of food throughout the year was determined.

The assessment of assets for compensation, if required, will be undertaken by the following government evaluators:

- County Agricultural Department – crops owned by the households.
- Kenya Forest Services – trees owned by the households.
- Lands Valuator – evaluate structures belonging to the households.

In order to ensure that all the resettlement data is well managed and readily available the data will be captured into a Microsoft Access database and will be analysed using Microsoft Access queries and Microsoft Excel pivot tables. These tables form the socio-economic baseline indicators which are useful for future socio-economic monitoring. The socio-economic baseline description in Section 5 will be based on these indicators as well as other secondary sources of information. The evaluation data provided by the evaluators will be linked to the socio-economic records of the households and entered into the database. The database allows for easy cross referencing of numerous indicators and enables the Project to see broad trends in the affected community's socio-economic status.

Spatial data of the households will be collected and included in the database records and is linked to a Geographic Information System (GIS) database. This allows the spatial elements of resettlement to be integrated into an easy to use interface. Spatial information such as household structure position on plot and location of graves has been marked by GPS for integration into the GIS database.

5 SOCIO-ECONOMIC CONTEXT AND POTENTIAL FOR LAND ACQUISITION AND DISPLACEMENT

5.1 Introduction

A description of the socio-economic baseline conditions of affected households is essential to provide indicators for future socio-economic monitoring of displaced households as well as to design appropriate livelihood restoration initiatives. This section is intended to describe the socio-economic baseline conditions of the potential displaced population of the proposed southern extension. This information will be gathered during the upcoming Household Socio-Economic Survey to be completed in August/September 2018. The target population is defined as the population affected by displacement of the proposed southern extension. The socio-economic data will be analysed and structured to cover a range of standard socio-economic dimensions, namely demographics, livelihoods, access to public infrastructure, basic goods and services and related socio-economic conditions, vulnerable groups and existing perceptions of the Mine.

5.2 Local Context

Administrative Context

The southern extension is situated in Mivumoni Location which is part of Msambweni Sub county in, Kwale County. At the local administration level Locations are headed by Chiefs in the National government while in county government Village Administrators head them, and are divided into settlement areas and villages, with each settlement area and/or village being overseen by a “village chairperson and/or village elders”. The Chief, through his village chairpersons and elders, is responsible for general administration, the distribution of land, maintenance of law and order (settlement of disputes) and the development of his/her settlement area/village. Decisions in the settlements are made by the Village Chairperson and the elders of the resident families. Youth and women organisations are occasionally consulted in decision making. In general village decisions are presented by the elders to the community during a village assembly. The affected settlements of the proposed southern extension include Mafisini, Mchingirini and Mivumoni with the majority of the households based in Mafisini. The number of households and population affected in each settlement will be provided following the completion of the study.

Local Settlement Pattern of Affected Households

Settlement patterns, although similar to previous resettlement undertaken for the SML, will be ascertained during the survey and resettlement categories established thereafter.

The historic pattern of cumulative household settlement in the study area shows a considerable settlement period between 1965 and 1973. During this period a number of the existing households belonging to the Kamba ethnic group settled in the area. This spike in settlement is closely linked to Kenyan independence in 1963 after there was a large push for people to be settled as well as a land adjudication process in Coast Province. There are conflicting viewpoints about why the Kamba settled in this particular area, which belonged to Ramisi sugar. Some reports mention that this was for political power-sharing reasons; while other reports mention that they settled here for the purposes of obtaining employment. After this period a noticeable number of households of the Digo ethnic group settled in the area over the period of 1974 to 1976. Settlement slowly begins to taper off after 1986, likely due to the collapse of Ramisi Sugar in the late 1980s after the company’s inability to service a large loan against which the land title was held as collateral. Settlement in the study area had stopped entirely by 2005 due to the resettlement of households living inside the SML area and it is estimated that 38% of the affected households consequently voluntarily left the area between 2006 and 2011 (Figure 5.1).

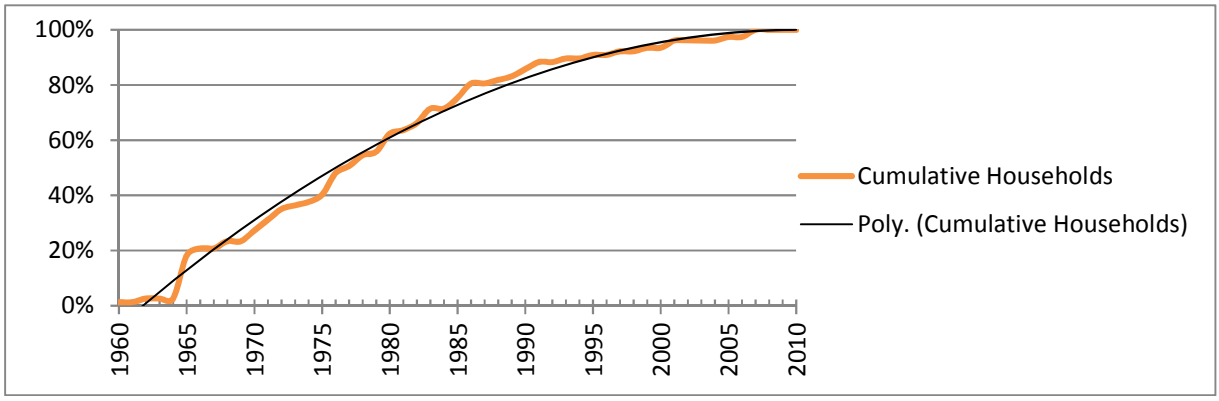


Figure 5.1: Historic pattern of settlement of existing households in the study area[11].

In terms of the areas from which the affected population originated, it is reported that most of the Kamba households originated from Machakos, Eastern Province, approximately 80km south-east of Nairobi. All of the Digo and Duruma report to originate from the Kwale County. Most of the Taita originate from Taita-Taveta District, in the Taita Hills and surrounding plains in the south of Kenya, near the Tanzania border.

5.3 Demographics

A demographic profile will be compiled for the affected population to represent the current baseline against which changes in the villages can be measured. Demographic pyramids will be used to assess long-term population change in communities.

5.4 Livelihoods

The main livelihood activity, as is common in rural households across Africa, is subsistence and small-scale commercial agriculture. Details of these activities will be available following field work for the survey.

Agriculture

Farming practices will be known in more detail once the survey has been completed. It is anticipated that farm produce will be similar to other resettlement for the SML area. This includes fruit (Mango, passion fruit, banana, citrus fruits (orange, lemon, lime, grape fruit and tangerine), coconut, guava, pineapple, paw-paw, custard apple, avocado and jack fruit), maize and cassava.

Other important crop species include: Sugarcane, bixa, cassuarina, African oil palm, Eucalyptus, sisal, she-oak, lebbeck tree, wild date palm, black plum, African fan palm, African teak, doum palm, red water tree/sasswood, blackwood cassia/iron-wood, and Marula.

Livestock

The Household Socio-Economic Survey will also provide information on affected households' livestock holdings. Digo, Taita and Kamba have an agro-pastoralist culture, growing crops and grazing cattle around their 'shambas' or fields. The cattle are regarded as both a symbol and a store of wealth.

[11] This figure illustrates the cumulative year of settlement of existing households in the area. It does not, however, include households which may have left the area and this should be considered when interpreting this information.

Communal Natural Resource Use

Communal natural resources provide a number of important goods and services to the affected households. They also contribute towards the maintenance of food security, particularly during periods of low crop yields.

Affected households utilise natural water bodies for washing clothes and bathing. Firewood, as the main source of energy for cooking, and wood for charcoal making are sourced from local forested areas. Natural resources are also an important source of construction materials, particularly thatch grass for roofing and weaving.

5.5 Basic Goods and Services and Related Socio-Economic Conditions

5.5.1 Basic Goods and Services

Details of domestic water sources, collection times, energy use and sanitary provisions will be elucidated in the upcoming survey.

5.5.2 Health and Mortality

Health conditions are important in order to manage potential impacts of resettlement. The survey will ask household representatives to report on household members affected by a selected set of diseases in the six months prior to the interview.

Household representatives will also provide information on the first step taken when someone in their household is sick or injured.

The crude death rate for the population (regional) in 2010 was 7 deaths per 1 000 members of the population. Deaths can be understated for taboo reasons as unmentioned deaths may be related to tuberculosis, sexually transmitted infections and/or HIV/AIDS which are all diseases that carry a large taboo factor. Stillborn babies or infant deaths are also often not reported. There are also diseases which are often non-declared. The survey will seek to elaborate in as much detail as possible given these circumstances.

In terms of fertility, the crude birth rate of the affected population will be determined following the survey to understand more about maternal challenges and health indicators.

5.5.3 Food Security

The status of food security in potentially displaced populations is very important if food security is to be maintained in the population after resettlement. Resettlement has the potential to impact food security if not planned properly and thus a baseline description of food security and factors causing food insecurity are important. The socio-economic survey will determine household member who have gone to bed hungry in the previous six months and reasons for this.

5.5.4 Education

Education levels in the affected population will be investigated including potential gender disparities.

5.5.5 Transportation

The road network in the study area is unpaved and in generally in a poor state. Certain areas are not accessible by vehicle, particularly during the rainy seasons. Bicycles and motorcycles are the main form of transport and others will investigated during the survey.

5.6 Vulnerable Households

Vulnerable households are those who by virtue of any characteristic not of their making may be more adversely affected by resettlement than others, and who may be limited in their ability to claim or take advantage of resettlement assistance and related development benefits. Specifically vulnerable people include, but are not limited to the following categories.

5.6.1 Households Headed by Woman

It should be noted that not all female headed households are likely to be specifically vulnerable but many, particularly those headed by aged widows, are potentially vulnerable. The affected female headed households will be considered on an individual basis to determine whether they should be considered vulnerable. If they are wage earners, either through employment or ownership of a business or enterprise that provides a regular income, have adult children that live in the house and support the household or are known to be supported by children and family who reside elsewhere, they will not be considered to be particularly vulnerable. Lists of potentially vulnerable female-headed households with an explanation of the trigger for further investigation into their vulnerable status will be provided during the survey.

Households Headed by Children

Households headed by a child under the age of 18 are particularly vulnerable as the need to sustain the household can interfere with their education and they are likely to find it difficult to find regular employment.

People with Disabilities

People with disabilities may be hindered in their ability to earn a livelihood, either through subsistence agriculture or regular employment, and may therefore be vulnerable.

Analysis of the Household Socio-Economic Survey will provide information relating to disabled persons amongst the affected households.

Elderly Headed Households

Households headed by an elderly individual (over the age of 60) may be vulnerable. Elderly headed households which have no household members who are considered potential wage earners (aged between 18 and 60) may be particularly vulnerable. As with the female headed households affected elderly headed households will be considered on an individual basis to determine whether they should be considered vulnerable.

Analysis of the Household Socio-Economic Survey will show numbers of households with elderly household heads, if any.

Extremely Poor Households

The definition of what constitutes extremely poor is difficult to establish with absolute certainty, particularly within the context of endemic relative poverty. However those with no visible means of income certainly qualify. Households who report no income during the Household Socio-Economic Survey will be considered to establish whether they should be considered vulnerable. As with other categories identified households will be considered on an individual basis to determine whether they should be considered vulnerable.

5.7 Existing Perceptions, Concerns and Expectations of the Project

Household representatives will be given the opportunity to raise comments or concerns about the proposed project and this will be documented.

6 ELIGIBILITY CRITERIA AND ENTITLEMENTS

The persons who will be resettled by the southern extension are those losing land and property, assets or investments and/or access to economic resources. The southern extension and its associated resettlement programme will result in the geographic isolation of some households who will consequently also have to be resettled.

A number of considerations were taken into account when formulating the strategy for determining eligibility criteria and entitlements. These included:

- The RAP methodology adopted for the SML resettlement by the Project.
- Updated compensations rates for structures, crops and trees.
- The inability of the government to provide 5.5 acres for affected households (as was done in the SML RAP).
- The availability of land for relocation purposes.
- The Project's present commitments to affected households.
- The current expectations of affected households,

6.1 Categorisation of Affected Households

A total 99 households are affected by the southern extension. These households will be classified into different categories depending on the outcomes of the Household Socio-Economic Survey (Figure 6.1).

Physically Displaced

These households have been identified as within the proposed SML boundary variation which includes mineralise areas, suitable buffer zones to mitigate impacts on neighbouring communities and areas that would be rendered isolated between the Buda Forest Reserve and the proposed mining area (Figure 1.1).

Economically Displaced – Non-Resident Tree Owners

Although all land parcels in the southern extension area have titled deed there may be circumstances where people may claim trees within the area on a plot belonging to another household. These households do not own or reside on the plot on which the trees are located. These households will be compensated for lost trees in agreement with the legal landowner.

6.2 Assets Eligible for Compensation

Eligible for compensation under the Project's RAPs are the following:

- Land – land that is claimed by affected households as documented by the Government Surveyor.
- Homestead structures and other fixed property – this comprises residential structures, non-residential moveable structures (including sheds, verandas, etc.) and non-residential immovable structures (including latrines, kitchens, etc.).
- Trees and crops – this includes agricultural crops, fruit trees, timber trees and indigenous trees with marketable value.
- Graves and sacred sites – comprise graves or sacred sites in areas that will be affected by constructed or inundated by the dams water.
- Community infrastructure – this includes schools, health centres and dispensaries, community halls, markets, wells/boreholes, etc.
- Businesses and enterprises.

6.3 Identification of Vulnerable Households

In terms of vulnerable households these are a subset of the identified categories of affected households. Vulnerable people are those who by virtue of any characteristic not of their making may be more adversely affected by resettlement than others, and who may be limited in their ability to claim or take advantage of resettlement assistance and related development benefits. Specifically, vulnerable people include, but are not limited to the following categories.

Households Headed by Woman

It should be noted that not all female headed households are likely to be specifically vulnerable but many, particularly those headed by aged widows, are potentially vulnerable. The affected female headed households will be considered on an individual basis to determine whether they should be considered vulnerable. If they are wage earners, either through employment or ownership of a business or enterprise that provides a regular income, have adult children that live in the house and support the household or are known to be supported by children and family who reside elsewhere they will not be considered to be particularly vulnerable.

Households Headed by Children

Households headed by a child under the age of 18 are particularly vulnerable as the need to sustain the household can interfere with their education and they are likely to find it difficult to obtain regular employment.

People with Disabilities

People with disabilities may be hindered in their ability to earn a livelihood, either through subsistence agriculture or regular employment, and may therefore be vulnerable.

Elderly Headed Households

Households headed by an elderly individual (over the age of 60) may be vulnerable. Elderly headed households which have no household members who are considered potential wage earners (aged between 18 and 60) may be particularly vulnerable. As with the female headed households affected elderly headed households will be considered on an individual basis to determine whether they should be considered vulnerable.

The Extremely Poor

The definition of what constitutes extremely poor is difficult to establish with absolute certainty, particularly within the context of endemic relative poverty. However, those with no visible means of income certainly qualify. Households who reported no income during the Household Socio-Economic Survey will be considered to establish whether they should be considered vulnerable. As with other categories identified households will be considered on an individual basis to determine whether they should be considered vulnerable.

Identification of Other Vulnerable Households

Other vulnerable people will be identified in consultation with the community. The process will be as follows:

- Determine the categories, based on the IBP guidelines for qualification as vulnerable.
- Advertise the qualifications.

- Provide notice of the Project's intention to provide appropriate assistance for vulnerable people within the PAP population.
- Review each case: This will take place in an interview conducted by a Base staff member and a nominated member from among the local authorities.
- Generate a report on the case and recommended actions.

Vulnerable people will be actively encouraged to participate in the Project's livelihood and community development programmes, community and skills development programmes. Special attention will be given to vulnerable people in the Project's social monitoring programme.

7 VALUATION AND COMPENSATION PROCESS

Compensation is generally the most scrutinised component of resettlement. The valuation process described below has been used to calculate compensation for the southern extension resettlement.

7.1 General Approach

The assessment and valuation of assets that may be lost during resettlement is a sensitive issue and should be done with care and rigor. The general approach to the valuation procedures is summarised below:

- Identify Eligibility under Kenyan and IBP Guidelines – All relevant legislation, policy and valuations guidelines defined by the Kenya government and IBP policies and procedures have been identified and assessed. This will form the basis for the identification of eligibility to compensation and valuation methodology.
- Land Surveying – The area of land claimed by affected households will be defined by land documents as all parcels have established title.
- Valuation of Structures and Fixed Assets – The Sub county Lands Valuator can provide values for structures and fixed assets of affected households based on official government rates set for the County.
- Valuation of Trees – The Sub county Forest Officer assess can provide values for trees owned by the household based on official government rates set for the County.
- Valuation of Crops – The Sub county Agricultural Officer assess can provide values for crops that would be lost as a result of the southern extension based on official government rates set for the County.
- Identification of Graves – Affected households identify location of graves within their plot.
- Compensation and Resettlement Agreement – Contracts will be produced for affected households that contain a summary of all their assets, adopted compensation rates and final valuations.
- Compensation Payment Advance – On signing of the Compensation and Resettlement Agreement households are given 10% of the total value of their compensation package or a documented amount required by the household to exercise their option to purchase replacement in an area of their choosing.
- Balance of Compensation Payment – The balance of the compensation is paid out at the time of resettlement on verification that a suitable structure is ready for occupation and alternative land with title deed in the householder's name has been acquired.

7.2 Valuation Process

It should be noted that valuation procedures set out below follow the recommendations as set out in "A Report to the Cabinet Committee of the Titanium Mining Project in Kwale District" prepared in 2006 but adds additional details so as to comply with the World Bank and IFC safeguards. A workshop will be undertaken with MLC to confirm the valuation methodology to be adopted for the southern extension resettlement programme. Meetings with the affected community will be planned thereafter during which entitlements and the process of valuation will be discussed and agreed.

Land

Legally the area affected by the southern extension is held by individual landowners under freehold title deeds. Table 7.1 sets out the process followed for the valuation of land claimed by affected households and ultimately the calculation of the land compensation package.

Table 7.1: Process of evaluation of land claimed by affected households.

Process
Valuation: The following steps will be undertaken: i. Individuals claiming ownership of plot of land within the affected area will be identified and confirmed by the local administration through the Land Registrar. ii. Land will be paid out at an agreed amount per acre to be determined during the valuation workshop. iii. Determine compensation packages according to acreage of land lost. **Replacement Land:** In addition to the payment for land all households that are affected will receive an agreed amount to cater for the purchase of five and one half acres of land in a location of their choosing. The identification and purchase of replacement land is the responsibility of the householders themselves.

Homestead Structures

Table 7.2 sets out the process followed for the valuation of homestead structures owned by affected households and ultimately the process of resettlement to a new homestead.

Table 7.2: Process of evaluation of homestead structures owned by affected households.

Process
The following steps will be followed: i. Accurate and real valuation of the homestead/dwelling will be undertaken. For the households being resettled all structures will be valued. The County Lands Valuator may undertake valuation of the affected homestead structures and record figures per household. ii. Determine compensation packages according to valuations. iii. Allow a reasonable time period, prior to moving, for salvage of building materials. Project Affected Persons (PAPs) may salvage any material without this being deducted from compensation entitlements. iv. The provision of transport (including packers and loaders) to physically move people and possessions to the new location, if it is either in the Host Site or within Kwale County. v. The owner will be entitled to remove any materials he or she wishes to salvage within one month of vacating the old dwelling. Base will provide transport for these materials, other than masonry, to the new residential site, if it is either in the Host Site or within Kwale County.

Trees and Crops

Table 7.3 sets out the process followed for the valuation of trees and crops owned by affected households.

Table 7.3: Process of evaluation of trees and crops claimed by affected households.

Process
Tree/Perennial Crops: Tree/perennial crops will be compensated on the basis of the values determined by the Kenya Forest Services (KFS) who may have the Sub county Forest Officer, as is their mandate, undertake a census of trees that are defined as of "good form and marketable value", identify each tree, calculate the value, and present compensation values per household. Payment for trees will be made at the time of resettlement.
Annual Crops: Crops will be harvested by the owner and therefore no compensation will be paid for crops. In instances where crops are not able to be harvested, Base will pay compensation at rates set by the Ministry of Agriculture as valued by the District Agricultural Officer. As with trees this payment will be made at the time of resettlement.

Lost Business Profits and Employee Earnings

Table 7.4 sets out the process followed for the valuation of lost business profits and employee earnings.

Table 7.4: Process of evaluation of businesses owned by affected households**.**

Process
Where business profits may be affected compensation will be paid according to audited results of the enterprises monthly income. Similarly, lost wages will be determined through an enterprise audit.

7.3 Graves

Graves that will be affected by the southern extension will need to be exhumed and re-buried. The Project will undertake to ensure that the legal requirements for such exhumations are complied with and the necessary permits are obtained. The following will apply.

Deaths that Occur after 31 July 2018 and Until Resettlement is Complete

Base will pay the burial costs for deceased residents within the southern extension and will continue to do so until the resettlement is complete. The projected area will be marked and a moratorium will be declared on burials within this area. Specifically, Base will pay the following costs:

- Transport to and burial at an authorised site within Kwale County.
- The provision of a vehicle for eight hours to transport the funeral party to and from the place of burial on the day of the funeral.
- Assistance with the completion of any paperwork that may be required to complete the burial.

The deceased's family will be responsible for:

- Making all appropriate arrangements, ceremonial and others, including those with the relevant authorities and with the Project.
- All ceremonial costs.
- Provision of a coffin and any required burial materials.
- After resettlement making all the appropriate arrangements and all costs associated with burials.
- All works associated with the burial where the family chooses to use the cemetery established for the reburial of bodies from the Project's resettlement programme.

Deaths Before 31 July 2018

It is recommended as a general principle that the exhumation and re-burial of individual graves within the affected area only commence following the resettlement of associated families.

Specifically Base will:

- Continue to actively identify all existing graves within the affected area.
- Negotiate the timing and arrangements for the exhumation and re-burial of the deceased with the affected family and record the outcomes of this negotiation.
- Meet the following costs:
  - Exhumation, transport and re-burial of the deceased, this will include the costs of community supervision of the exhumation and re-burial.
  - Provision of a coffin provided by an approved supplier.
  - A replacement tombstone where such exists on the site exhumed. Where no tombstone exists then the Project pay for an inscribed wooden or masonry tablet of a shape in keeping with the religious beliefs of the deceased.
  - An amount per grave to be agreed to the family to satisfy all ceremonial requirements.

The responsibilities and costs of the deceased's family are to make all appropriate arrangements, ceremonial and others.

Bodies and Bones Incidentally Disinterred During Operations

During mining operations in the southern extension zone, Base may incidentally disinter or disturb human remains. As a general principle, it is recommended that the Project manages unidentified and incidentally disinterred bodies and bones in accord with the wishes of the community.

Specifically Base will:

- Establish a small shrine or memorial structure to the ancestors of the people who lived in areas affected by the southern extension.
- Design the shrine to accommodate the various religious beliefs and/or custom and uses.
- Place this shrine at the cemetery where the bodies exhumed from the Project areas will be re-buried.

In the event that human remains are incidentally disinterred or disturbed the Project will:

- Notify the authorities.
- Identify the exact site by GPS and record the information.
- Immediately remove the remains to an agreed storage place.
- Notify the MLC.
- Notify the family that previously owned the plot on which the remains were found.
- Re-bury the remains in the cemetery at which the bodies exhumed from the southern extension areas will be re-buried.

7.4 Compensation Payment Process

Compensation and Resettlement Agreements

A Compensation and Resettlement Agreement will be prepared and will represent a legally binding contract between Base and the affected households. It presents the conditions of the resettlement process and details the amount of money due in compensation for land, structures, trees, crops and graves. As receipt of full payment the affected persons will sign an agreement declaring that they have no further claims over the vacated land.

Compensation Payment

The payments for land, structures, trees, crops and will be made simultaneously. Affected households subject to resettlement will receive an advance at the time of signing of the Compensation and Resettlement Agreement. The balance is paid out at the time of resettlement on verification that a suitable structure is ready for occupation and replacement land is in the name of the householder.

In accordance with government regulations, consent from the Land Control Board and verification by the MLC will confirm that any purchase of replacement land will not result in immediate or long-term impoverishment of the seller.

7.5 Community Infrastructure

Community infrastructure is affected by the southern extension with some land parcels owned by Kwale County Government designated as water points and one small church identified within the targeted area. Compensation modalities will be subject to discussion during the upcoming stakeholder workshop.

8 CONSULTATION, PARTICIPATION AND GRIEVANCE MECHANISMS

8.1 Overview

Consultation has two aspects. The first is the timely dissemination of information regarding the southern extension and its resettlement component. In this regard consultation is a one way process of information provision from the Base staff to the public. The second aspect is the two-way free flow exchange of information that gives stakeholders a chance to air their concerns and have a voice in the actual planning of the resettlement. It is the second aspect which is the most important in resettlement planning and implementation.

Participation of and consultation with the affected community and authorities is vital to the success of the resettlement and compensation programme. The World Bank's OP 4.12 specifically states, as a policy objective, that "*displaced persons should be meaningfully consulted and should have opportunities to participate in planning and implementing resettlement programs*" (paragraph 2[b]). Consultation and participation of the public allows the resettlement to be undertaken such that it is able to benefit affected peoples. The IFC believes that effective consultation can also assist in reducing the costs of implementing the RAP by avoiding implementation that is contrary to the needs of PAPs and which does not breed antagonism towards the proponent by withholding information. Consultation is an ongoing aspect of the resettlement process that takes place through every stage of resettlement planning and implementation and thereafter.

Broadly defined, stakeholders include any individual or group that feels that it is going to be affected by operations, the affected community and any individuals or groups that may have any significant role to play in shaping or affecting it, be it in a positive or negative manner. In a narrower vein, PAPs are those individuals and groups who are directly affected by the southern extension through the loss of assets and/or land, or for whom the Project disrupts or affects their livelihoods.

Base has identified all stakeholders, these include:

- Project Affected People (PAPs).
- Local authorities (including both County and National government authorities).
- Traditional leaders.
- Local businesses.
- Residents' associations.
- Individuals who feel they could be impacted (positively or negatively) by mining operations in the southern extension area or the resettlement process.

8.2 Public Meetings

Every effort has been made and continues to be made to inform stakeholders of the proposed mining operations and its resettlement component. The affected community have been informed about the southern extension right through the exploration phase identifying the mineral resource and the resulting resettlement.

A series of public meetings and engagement have already taken place and are outlined in Table 8.1.

Table 8.1: List of Community Consultations between November 20114 and June 2018.

Date	Stakeholder	Venue	Key points
11/6/2014	Mafisini farmers	Mafisini village	Seeking consent for application of exploration licence
12/6/2014	Mivumoni farmers	Mivumoni youth Polytehnic	Seeking consent for application of exploration licence
4/8/2016	Mafisini / Mivumoni farmers	Mivumoni Youth Polytechnic	Exploration awareness: Seek consent to carry out drilling. Formation of farmers committee.
18/8/2016	Mivumoni farmers	Mivumoni Youth Polytechnic	Exploration awareness: Follow-up on the previous meeting A consultant to visit the 2 villages for EIA Proposal from farmers for BTL to agree upon giving consent for drilling.
28/8/2016	Elders from Mafisini and Mivumoni Auditors - NEMA	Chief's office Mafisini	Exploration awareness Auditors to get views from the community if awareness was carried out in the community
07/12/2016	Mafisini farmers	Mafisini village	Exploration engagement: Consent was given for drilling to commence the same day
02/11/2017	Mivumoni farmers	Mivumoni Youth Polytechnic	Exploration feedback
09/11/2017	Mafisini farmers	Mafisini Primary School	Exploration progress report
14/2/2018	Mafisini farmers	Mafisini Primary School	Exploration feedback meeting. Reading of names of people whose farms are mineralized
13-14/6/2018	Mafisini Resettlement and Compensation Committee	Jacaranda Hotel	Induction and training of the committee.

8.3 Dedicated Consultative Forums

In addition to the public meetings two dedicated consultative forums have been established.

Msambweni Liaison Committee

The MLC was created following the changes recently made to stakeholder engagement notably the transition from the Mining Project Liaison Committee (MPLC) which carried the process from 2011 to 2018. The terms of reference for the MLC relevant to the southern extension are as follows:

- Act as a formal liaison between the proponent and the Sub county/county government authorities, local leadership and other stakeholders.
- Act as a conduit for public awareness creation among local communities to keep them informed of relevant related developments.
- To confirm the households that will be affected and resettled as a result of the southern extension and to assist with the required census of land, structures, trees and crops that will be compensated.

The MPLC has been extensively involved in the planning and implementation of the southern extension and has handed over responsibilities in this regard to the MLC.

Woman and youth are represented on this committee.

Mafisini Resettlement Committee

A committee comprising representation of households potentially affected by the southern extension resettlement has been established and includes representation of those households being resettled. Woman, People with Disabilities and youth are well represented in this committee. This committee is represented on the MLC by the chairman.

The Mafisini Resettlement Committee (Figure 8.1) has been consulted on all aspects of the resettlement programme and will continue to be consulted through the planning and implementation of the resettlement. Aspects of the resettlement planning that the committee have been, or will be, consulted on include: The planned mining activities and schedule, eligibility criteria, the valuation and compensation process, the grievance process, the process for exhumation and reburial of bodies within the Project area and the implementation of the resettlement programme.

Figure 8.1: Mafisini resettlement committee and Base staff after undergoing training and induction at Jacaranda Hotel, Diani

8.4 One-on-One Meetings

In addition to the public and dedicated forum consultation that has taken place, one-on-one meetings have been held with the affected households to discuss the process. The affected households will be involved in the surveying of their land, the valuation of their assets, and the identification of their graves and will be assessed in the Household Socio-Economic Survey.

8.5 Grievance Redress

Even when a project can ultimately claim successful resettlement, there may still be individuals and groups who feel that they have been treated inadequately or unfairly. Providing credible and accessible means to pursue grievances allows the project to address genuine issues in a timely manner and decreases the chances of overt resistance to the project from disgruntled persons.

Equator Principle 6 (Grievance Mechanism) applies to all “Category A” projects and requires the establishment of a grievance mechanism as part of the management system to ensure that consultation, disclosure and community engagement continues throughout construction and operation of the project. Principle 6 requires the borrower to “inform the affected communities about the mechanism...and ensure

that the mechanism addresses concerns promptly and transparently, in a culturally appropriate manner, and is readily accessible to all segments of the affected communities". The International Finance Corporation (IFC) through Performance Standards 1, 4, 5 and 7 also requires the implementation of a grievance mechanism.

A grievance is defined as an issue, concern, problem, complaint or claim (perceived or actual) raised by an individual or a group within the community affected by the Projects operations that they want the Project to address and resolve (IFC and Compliance Advisory Ombudsman (CAO[12]).

Base's grievance mechanism enables stakeholders to lodge grievances and to receive responses in a formalised manner. The grievance mechanism is scaled to fit the level of risks and impacts of mining operations and is part of the broader stakeholder engagement process. It is a process for receiving, evaluating and addressing project-related grievances from affected communities. It is an alternative to external resolution processes, including legal or public mechanisms. The grievance mechanism provides a mutually beneficial method of settling issues within the framework of the community-project relationship, while recognising the right of complainants to lodge their grievances with external or statutory bodies. The grievance mechanism not only serves as Base's instrument for addressing grievances but also as a channel for communities to submit questions, requests for information, suggestions and compliments.

The IFC has identified the following five principles of a good grievance mechanism:

- Principle 1 – Proportionality: A mechanism scaled to risk and adverse impact on affected communities.
- Principle 2 – Cultural Appropriateness: Designed to take into account culturally appropriate ways of handling community concerns.
- Principle 3 – Accessibility: A clear and understandable mechanism that is accessible to all segments of the affected communities at no cost.
- Principle 4 – Transparency and accountability to all stakeholders.
- Principle 5 – Appropriate Protection: A mechanism that prevents retribution and does not impede access to other remedies.

Grievance Mechanism Process

The grievance mechanism involves a series at steps as follows (see Figure 8.2):

Step 1: Publicising the Grievance Management Procedures

The grievance mechanism will be introduced to the stakeholders as part of the Stakeholder Engagement Programme, initially focusing on the communities directly affected by mining and associated resettlement. The following information will be communicated:

- The purpose of the grievance mechanism, what it is able to deliver and the benefits of using it rather than other resolution mechanisms.
- Who can raise complaints – affected communities and other stakeholders.
- Who is responsible for receiving and responding to grievances, including third parties – CLOs, Grievance Officer, chiefs, MLC, County Geologist.
- The type of responses complainants can expect from the Project and the timing of the response.
- What rights and protection are guaranteed to the complainant and Base.

Step 2: Receiving and Registering a Grievance

Grievances will be received in various formats (as detailed in Section 8.5.2) through the following methods:

- CLOs, Community Team members and the Grievance Tracker and other nominated representatives can

[12] The Office of the Compliance Advisor/Ombudsman (CAO) is an independent post that reports directly to the President of the World Bank Group. The CAO reviews complaints from communities affected by development projects undertaken by the private sector lending and insurance members of the World Bank Group, the IFC and the Multilateral Investment Guarantee Agency (MIGA).

receive complainants through direct face-to-face meetings between themselves and groups or individuals.

- Submission of a written letter (anonymous or signed) placed in one of the Comments Boxes or addressed to Base Offices.
- Submission of a grievance to third parties, through a letter or in a face-to-face meeting.
- Online through the Base e-mail address or website.
- Telephonically, through the Base hotline or fixed line numbers.

Step 3: Documenting the Grievance

All grievances received will be documented and records kept of the grievance, the response and the final outcome. Complainants submitting grievances to authorised representatives will be provided with a Grievance Record Sheet. The complainant and the Base representative will fill in the form together, and the complainant will receive a copy and a copy provided to the complainant when possible[13]. All incoming grievances will be acknowledged within five working days and a Grievance Record Sheet completed. A formal confirmation, with a Grievance Record Number and a timeline for response, will be provided giving assurance to the complainant that Base is responding appropriately.

Step 4: Action, Reviewing and Investigating Grievances

All grievances will be screened to determine whether it is eligible for the grievance mechanism. Ineligible complaints may include complaints that are clearly not Base related, or other Project or community procedures are more appropriate to address the issue. If a complaint is rejected, the complainant must be informed of the decision and the reason for rejection. Complainants should be engaged in dialogue before deciding to reject their complaint.

If established that the grievance is eligible it should be placed in one of three categories (A, B or C). Category A requires immediate action (hours), Category B requires urgent action (within 48 hours) and Category C can be responded to within 14 days. Some incidents may be required by law to be reported to the relevant authority. Any directives from the relevant authority should be addressed and recorded in the document control process.

Category A: Immediate Action – Issues requiring immediate action (hours) are typically issues which threaten the short term safety or the lives of community members, employees or the company or has a potentially catastrophic impact on the integrity of the receiving environment (e.g. chemical spills or accidents near community water supply or sensitive environments such as wetlands). Any grievances requiring immediate action (hours) will be reported to the Community Relations Manager as soon as it is received. If necessary, the Community Relations Manager or his designated representative will visit the site to validate the grievance and take photographs. The Emergency Response Mechanism may be invoked by a Category A incident. Any required legal reporting to government on the incident and required actions should be performed within the stipulated legal time period.

Depending on the severity and urgency of the grievance and the action required, the Community Relations Manager will inform the General Manager – Environment & Community Affairs, and a decision of action will be made. If the General Manager – Environment & Community Affairs feels that the action is significant enough, he will inform Group Management. Should the issue be of such a nature that it could influence Base's corporate and public image, the Community Relations Manager will, in conjunction with Legal Counsel, and/or the General Manager – External Affairs and Development, compile a response. Unless directed by the General Manager – External Affairs and Development no employee should communicate with the press directly. It is recommended that a cautious approach be followed.

[13] It is not possible to acknowledge or respond to the anonymous grievances.

Category B: Urgent Action – Issues requiring urgent action are typically issues which pose a nuisance or long term safety risk to community members or employees or a long term impact on the integrity of the receiving environment. All issues of an urgent nature will be communicated to the Community Relations Manager within 12 hours after receiving the grievance. Issues requiring an expedient response or action from Base will be considered by the Community Relations Manager and if necessary, immediate action will be taken with the aim to respond to urgent issues within 72 hours.

Category C: Action – Issues requiring action which are not of an urgent nature are typically procedural or dispute type issues. These issues will be discussed within the Community Department. Appropriate action will be taken based on the urgency of the issue. Once the required course of action has been agreed, the person responsible for the action and the date required for response will be recorded on the original Grievance Record Sheet. The aim will be to respond to all of these type issues within 14 days.

Grievances must be investigated with the response based on the findings of a thorough and fair process of review to ensure an equitable outcome. Complex or widespread grievances (may involve multiple parties) that cannot be resolved quickly may require an extensive investigation. If an extensive investigation is found to be necessary it should be initiated promptly before circumstances change or the conflict escalates further.

Step 5: Feedback – Developing Resolution Options and Preparing a Response

Once it has been established that a grievance is eligible and the nature and category of the grievance is understood, resolution options can be developed taking into consideration community preferences, Base's policy, past experience, current issues and potential outcomes. Typically the selected resolution option will be one of four general approaches:

- A unilateral decision where Base proposes a solution.
- A bilateral decision where Base and the complainant reach a resolution through discussion or negotiation.
- Base and the complainant defer to a third party, either informally or formally through mediation.
- Traditional or customary practices are the selected resolution option.

The grievance mechanism allows flexibility rather than prescribing a specific procedure for each particular type of grievance.

The CAO's Advisory Note of Designing and Implementing Grievance Mechanisms for Development Projects provides the following recommendations of when to use which resolution option:

Use a Project proposed solution when: • The complaint is straightforward, the issue is clear and the solution is obvious. • Project staff can resolve the issue alone, to the satisfaction of the complainant, based on their knowledge and authority. • A considered and respectful Project proposal is more likely to be acceptable to the complainant.
Use a bilateral decision where the Project and the complainant decide together when: • An ongoing relationship and a face-to-face resolution process matter. • The case is more complex and several diverse stakeholders are involved. • Local community members distrust a unilateral Project proposal. • The response from a "Project proposes a solution" procedure is not acceptable. • Talking together is required to promote more accurate communication, share information, or develop mutually acceptable solutions. • There are procedural, psychological, and substantive interests for both parties that lend themselves to such an approach.
Defer to a third party when: • The "decide together" procedures are not acceptable to one or more of the parties. • There are disputes and conflicts about the data. • The parties have been unable to reach a voluntary settlement through other procedures.
Use traditional and customary practices when: • "Imported" procedures are unfamiliar, inaccessible, or culturally incompatible with local customary practices of a community. • Alternative traditional means are available that can be adapted in a way that is mutually acceptable to both the complainant and the Project.

Regardless of the outcome, a response must be provided to all complainants. Responses can either be oral or written depending on how the grievance was received. Typically, there are three scenarios on receipt and registration of a grievance:

1) On screening and assessment of the grievance it is rejected upfront, as it is either ineligible or clearly unfounded. All considerations must be documented and included in a response to the complainant and recorded on the Grievance Record Sheet and in the database record. Communicating a detailed and respectful explanation, together with any compelling evidence, in the communicated response can prevent a conflict from escalating.
2) On screening it is determined that the grievance is not Project related and is outside the mandate of the grievance mechanism or will be more appropriately addressed by other procedures (i.e. labour grievances). As with rejected grievances all considerations must be documented and included in a response to the complainant and recorded on the Grievance Record Sheet and in the database record.
3) The response procedure for grievances that are not rejected or referred includes two steps:
   a. A preliminary response is provided that proposes the consequent actions required to seek resolution and provides details of the status of the claim, and invites further discussion. It should also provide a proposed timeline for resolution.
   b. A final response is given to document the final proposed resolution and seeks agreement from the complainant. If complainants are not satisfied with the proposed resolution or the outcome of the agreed corrective actions they are free to take their grievances to a dispute resolution mechanism outside of Base's grievance mechanism.

All decisions and actions will be documented on the Grievance Records Sheets and will be recorded in the database with supporting documentation.

Step 6: Closure

All grievance records, including Grievance Records Sheets and supporting documents, will be filed and recorded in the database. Upon completion of the agreed-upon corrective actions, collect proof that these actions have taken place, this includes photos, documentary evidence, a record of resolution which is signed and dated by the responsible staff member, and if the resolution has been to the satisfaction of the

complainant confirmation of this for the record. These are all included and recorded in the case documentation.

Step 7: Monitoring, reporting and evaluating

Grievances will be tracked and monitored as they proceed through the grievance mechanism system. A monthly summary and qualitative assessment of what has taken place and whether any improvements should be considered to the mechanism will be undertaken. Monitoring and reporting are the tools for measuring the effectiveness of the grievance mechanism, the efficient use of resources, and for determining broad trends and recurring problems to facilitate proactive resolution. Monitoring facilitates identifying common or recurrent claims that may require structural solutions or policy change. Internal monitoring and reporting will provide information that can be reported back to stakeholders. External monitoring of Base's Grievance Mechanism will comprise part of the Social and Resettlement Monitoring Programme.

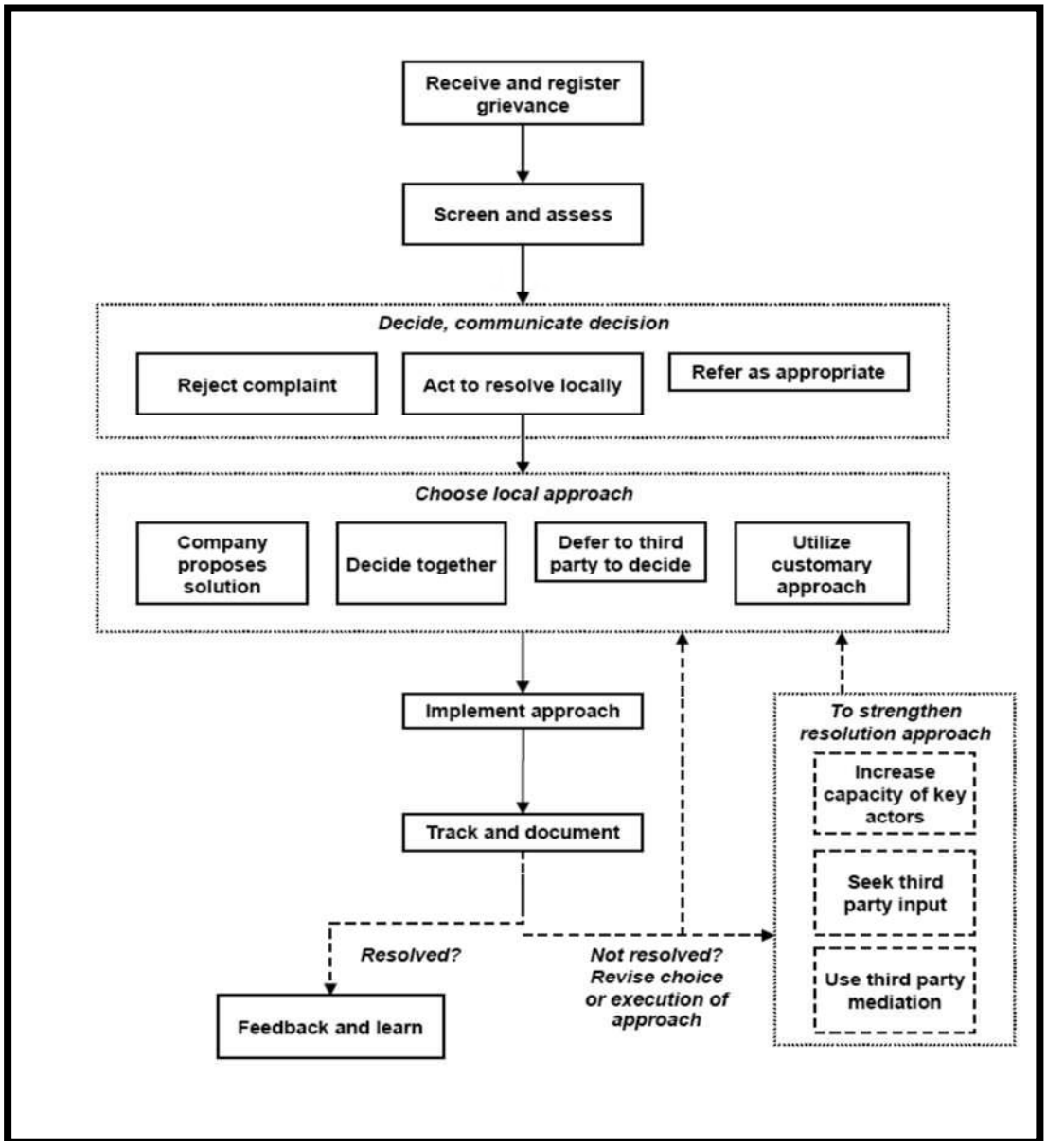


Figure 8.2: Proposed grievance mechanism process (From IFC's Compliance Advisory Ombudsman (CAO) recommendations).

Channels of Communication

Base will establish the following channels for communities to submit questions, requests for information, suggestions and compliments:

- 0800 Project hotline.
- Fixed line telephone contact number.
- Dedicated e-mail address: community@basetitanium.com
- Company postal address.
- Company website.
- Comment boxes located at:
  - Chief's offices at Mivomoni and Kinondo, Msambweni DCC's office and the mine site office.
- Roaming accessibility through CLOs scheduled visits to remote areas, e.g. dam site, Host Site, construction sites, etc.

Record Keeping and Document Control

A purpose-designed Microsoft Access database will be used to document grievances and keep records. This will enable it to track cases, respond to grievances in a timely manner, check the status of complaints and track progress, measure effectiveness, and report on results. The database records will be based on information provided in the Grievance Record Sheet and will include information pertaining to corrective actions and outcomes and associated documentation.

All documents received and generated as a result of the grievance mechanism will be filed and archived.

Roles and Responsibilities

Base's Community Department is responsible for implementing and managing the grievance process. The responsibilities of individual members of the Community Team as pertains to the grievance process is as detailed in Table 8.1.

Table 8.1: Responsibilities of the Social Department team members as pertains to the grievance mechanism.

Role	Responsibilities
General Manager – Environment & Community Affairs	Assists in managing urgent issues. Assists in internal response. Manage external media together with the General Manager – External Affairs and Development.
Community Relations Manager	Responsible for the overall management of the Grievance Mechanism. Manages urgent issues. Manages responses. Advises Community Liaison Superintendent (CLS) on response to grievances raised.
Community Liaison Superintendent	Responsible for day to day management and implementation of the Grievance Mechanism. Approves actions in response to grievances raised.
Grievance Tracker	Receive grievances Investigate grievances Consult and negotiate with complainants. Follow up with responsible persons to ensure response is issued in a timely manner.

Role	Responsibilities
Community Liaison Officers	Screen all grievances according to set criteria. Co-ordinate responses with the CLS. Ensures that the grievance records are well maintained and up to date and all complainants are provided with a timely response. Manage grievance records, Grievance Record Sheets and database and ensure records are correctly referenced, completed and filed.

9 LIVELIHOOD REPLACEMENT

The southern extension will have an impact on livelihoods. As indicated the primary livelihood strategy of the communities living in the area is subsistence agriculture.

In order to mitigate against economic displacement, enhance and sustain food and livelihood security the Project has implemented an Environmental and Social Management System which incorporates the following documents that contribute to this mitigation:

- Resettlement Action Plans (RAP)
- Community Development Management Plan
- Community Development Agreement (CDA) – soon to be implemented.
- Community Health and Safety Management Plan

Base has and will continue to provide community training on aspects of health, safety, business skills, improved farming techniques, alternative skills and sanitation through the implementation of the above mentioned management plans.

These training programmes will enable the people to improve their earning base and therefore contribute to enhancing and sustaining their livelihood security through skills transfer and training. Base has committed to livelihood enhancement which will be closely monitored through the Social Monitoring Programme.

In addition to the above strategies Base will also implement livelihood programmes. The programmes will primarily target affected households that will be displaced by southern extension.

These livelihood programmes will focus primary on improving household livelihoods through the implementation of agricultural programmes and skills training.

10 INSTITUTIONAL ARRANGEMENTS FOR IMPLEMENTATION

10.1 Base Titanium

Base will provide the financial resources necessary for the resettlement and compensation process and will provide significant additional managerial and technical expertise. Base's role can be broken down into two distinct phases - pre-implementation and implementation.

Pre-Implementation Role

During pre-implementation, Base will:

- Prepare the RAP.
- Collected all data required to effect resettlement.
- Put in place the required resources to implement the RAP and the livelihood programmes.
- Attend consultative meetings, and provided administrative support and ad-hoc managerial and technical support as required.

Implementation Role

In the implementation phase Base will:

- Finance the implementation of the RAP.
- Draw up Resettlement and Compensation Agreements for each individual household affected.
- Discuss the terms and conditions of compensation and resettlement with each affected household.
- Manage compensation and resettlement payments.
- Ensure that the principles of the RAP are respected.
- Provide technical and managerial input for the implementation of the RAP.
- Identify households that are "failing" as a result of the resettlement impacts of the southern extension and, together with the relevant local authorities, defining and implementing appropriate corrective action.
- Attend consultative forum meetings and providing support and input as and when required.
- Address compensation and resettlement grievances.
- Establish and manage a local employment committee to ensure the maximisation of employment opportunities for the local community and particularly for those households directly affected.
- Establish a socio-economic monitoring programme for the affected households for implementation after the RAP has been completed and the mitigation measures and effects of resettlement have begun to be realised.
- Define and implement community development and monitoring programmes to ensure that affected households are not worse off in the post-implementation phase – the data collected for the RAP's Household Socio-Economic Survey will form the baseline for the post-implementation monitoring.

Roles and Responsibilities

Ensuring compliance with the resettlement and social commitments contained in RAP is the responsibility of Base's Community Relations Manager who reports to the General Manager – Environment & Community Affairs. The Community Relations Manager is responsible for securing and maintaining the social license to operate. The Community Relations Manager is assisted by a team of staff and consultants.

The Community Liaison Superintendent (CLS) and the Community Liaison Officers (CLOs) who report to him, serve as the primary point of contact between communities and Base, and have the following primary areas of responsibility:

- Liaising with local government with regard to local community liaison and issues in consultation with appropriate Base personnel.
- Assisting with ensuring compliance with implementation of Base policies on recruitment.
- Logging and responding to grievances lodged by members of the community.
- Assist in the identification of individuals to receive compensation through intended or accidental damages during field work as required by the law, and as described in internal procedures.
- Organising and facilitating compensation payment.

10.2 Government of Kenya

The Government of the Kenya acts as the primary support agent to resettlement with Base implementing the resettlement. Base works in close association with the local authorities and the local chiefs, who represent the government.

10.3 Kwale County Government

Kwale County Government acts as an important partner and agent to supporting resettlement through their sub-county administrators and the various devolved agencies under its helm.

10.4 Consultative Forums

The MLC, comprising National and local government officials, traditional leadership and affected community representation, is the primary link between the company and its stakeholders and meets regularly with Base staff to discuss issues including resettlement. The Mafisini Resettlement Committee comprising representation of households potentially affected by the southern extension resettlement has been established and includes representation of those households being resettled.

In addition to acting as a conduit of information, the forums have the following key responsibilities:

- Ensuring that the terms of the RAP are followed.
- Monitoring the implementation of the RAP and suggesting modifications where necessary.
- Identifying issues/areas of concern that may have been overlooked or under emphasised in the environmental documentation and suggesting ameliorative and/or mitigation measures.
- Agreeing on the principles of a means test to determine which households qualify for extended support.
- Monitoring the southern extension operational areas so as to prevent illegal encroachment.

11 MONITORING

Monitoring is a critical part of a resettlement project. The database as discussed Section 4 is designed to provide a baseline against which all standard World Bank and IFC indicators for resettlement can be monitored.

Monitoring is required in order to assess whether the goals of the RAP are being met. Monitoring primarily involves the systematic use of information to determine the extent to which the RAP and associated management plans are being implemented effectively. The Wold Bank has this to say about the role of monitoring in the resettlement process:

> *"Because of the myriad social and economic contingencies that arise during project implementation, resettlement is better conceived not as a rigid blueprint, but as a learning process in which tentative plans are adapted responsively to unfolding obstacles and opportunities"*

The monitoring plan will be designed to be undertaken at two levels as follows.

Internal monitoring, sometimes called performance monitoring, is an internal management function allowing management to measure physical progress against milestones set out in the RAP. Internal monitoring will:

- Ensure that due process has been followed in the notification of stakeholders with adequate public meetings being held.
- Verify that there are no outstanding or unresolved land acquisition issues regarding the southern extension or any of its subprojects, that the census of all PAPs has been carried out, that the RAP and Household Socio-Economic Survey has been prepared, and that property valuation and resettlement has been carried out in accordance with the provisions of the RAP.
- Maintain records of any grievances that require resolution.
- Oversee that all resettlement measures are implemented as approved by management and relevant local authorities.
- Verify that funds for implementing resettlement activities are provided in a timely manner; are sufficient for their purposes; and are spent in accordance with the provisions of the RAP.
- Document completion and payment of compensation payments.
- Document provision of replacement land for those households being resettled.
- Document timely completion of resettlement obligations (i.e. payment of the agreed sums, exhumation and re-burial of graves, etc.) for all losses.
- Ensure that monitoring and evaluation reports are submitted.

External Independent Monitoring, which takes the form of effects and impact monitoring, should be conducted semi-annually for at least the two years following resettlement by an independent consultancy, academic or research institution or an NGO (with resettlement experience).

Both internal and external monitoring reports should be used to assess whether any changes should be made to a RAP in its implementation. Monitoring reports are a valuable tool in identifying problems in the implementation of the resettlement project and should be used as such. Management should meet after each monitoring exercise to consult over findings of the monitoring evaluation and whether steps should be taken to rectify issues that have been highlighted by the monitoring reports.

Monitoring indicators will include the following. These are based on the standard IBP required suite of variables that relate to measuring resettlement impacts.

- **Replacement land:**
  - Amount of replacement land provided.
  - Amount paid for land.

- **Agriculture – food production and marketing:**
  - Agricultural training provision.
  - Crop production.
  - Livestock per household.
  - Incidence of animal disease/type.
  - Farmers' groups, involvement of women.
- **Education:**
  - Primary and basic enrolment levels by gender.
  - Secondary (and possibly tertiary) enrolment levels by gender.
  - Pupil/teacher ratio.
  - Distance to primary school.
- **Health:**
  - Availability of, and distance to, safe drinking water and sanitation.
  - Incidence of main diseases.
  - Death rates of main diseases.
  - Child mortality
  - Trained health staff/catchment population.
  - Distance to health centre.
  - Child nutrition: Height for age (stunting) and weight for age (wasting).
  - Possibly incidence of HIV/AIDS and of other STDs by gender and age.
- **Household economy:**
  - Housing – quality of roof, walls and floor.
  - Road to next village, footpath, quality of road.
  - Income per household.
  - Indebtedness.
  - Suite of assets owned (e.g. radios, mobile phones, bicycles, television, etc.)
  - Capacity building, skills/vocational training.
  - Community infrastructure.
  - Improvement in production/income for women/youths.
- **Social and Environmental Management Programme**
  - Monitoring of management plans that contribute to objectives of the RAP.

12 BUDGET AND IMPLEMENTATION SCHEDULE

12.1 Resettlement and Compensation Budget

A summary of the southern extension resettlement and compensation budget will be provided following the resettlement workshop, community disclosure meetings and the Household Socio-Economic Survey are completed. Compensation will be paid for land, structures, trees, crops and graves.

Although no community infrastructure will be lost, Base will budget for the provision of social infrastructure aligned with relocation outcomes and provide compensation for KCG community properties in the area.

12.2 Implementation Schedule

The southern extension resettlement programme has commenced with further critical components of the RAP expected to be implemented in Q3 and 4 2018 and Q1 and 2 2019.

The schedule for the implementation of the southern extensions RAP is presented in Figure 12.1 below.

Southern Extension RAP	Q2 2018	Q3 2018	Q4 2018	Q1 2019	Q2 2019	Q3 2019	2020
Stakeholder Engagement							
Msambweni Liaison Committee							
Mafisini Resettlement Committee							
Household Socio-Economic Survey							
Valuation Process							
Identification of Graves							
Grievance Redress Mechanism							
RAP Preparation							
Compensation Payments							
Resettlement							
Livelihoods Programme							
Social Infrastructure							

Figure 12.1: Implementation schedule for the southern extension RAP.

13 CONCLUSIONS

Examples where resettlement has been successful, in the sense of leaving the affected people economically better off, in a socially stable condition, and in a manner that they are themselves able to sustain over time, the process has been characterised by a number of IBP enabling factors such as follows:

- An appropriate understanding of the complexities of resettlement.
- Proper legal and policy frameworks at national level.
- Adequate funding.
- Sufficient capacity, including experience in working with resettlement.
- Genuine consultation and negotiation with the affected people.
- Rigorous and effective planning, implementation and monitoring.
- Integration of the resettlement project into its regional economic and political context.
- The necessary political will to ensure that the above enabling factors are obtained, and that resettlement is properly carried out.

International experience of many projects shows that, unless these IBP factors are obtained, resettlement exposes affected people to a range of risks such as:

- Landlessness
- Homelessness
- Joblessness
- Economic and social marginalisation.
- Increased morbidity and mortality.
- Food insecurity.
- Loss of access to common property resources.
- Social and cultural disarticulation/disruption.

Unless consciously countered, these risks become reality, negatively reinforcing each other in an interactive and cumulative manner. On the other hand, if these risks are incorporated as part of planning and project design, and if the necessary best practice factors are obtained, these risks can be turned into development opportunities, resulting in resettlement with development.

Base will undertake the southern extension RAP in line with Kenyan legislation and IBP. The RAP is characterised by the enabling factors listed above to reduce the risks identified with resettlement.

APPENDIX C PRELIMINARY RAP: SOUTH DUNE EXTENSION

SML Extension Preliminary Resettlement Action Plan - Jan 2020

BASE TITANIUM

Table of Contents

1 BACKGROUND

Various Resettlement Action Plans (RAPs) were prepared for the Kwale Mineral Sands Project (the Project) and a Resettlement Framework developed for the SML Extension in July 2018.

The Project was originally developed by Tiomin Resources Inc. (later Vaaldiam), with exploration and pre-feasibility work undertaken in the 1990s. Feasibility studies continued into the mid-2000s and the resettlement of the mining areas was initiated in 2005 and completed in November 2008. The original Project timeline expected construction to begin in the second half of 2006, with first production anticipated in mid-2008. However, in late 2006, delays in providing access to the land and non-completion of other government commitments resulted in Tiomin declaring Force Majeure. Consequently, financing was not secured for the Project. Base Titanium Limited (Base), a wholly owned Kenyan subsidiary of Base Resources Limited, acquired the Project in 2010 and completed its Enhanced Definitive Feasibility Study (EDFS) in April 2011. The Project has been in operation since October 2013.

The Resettlement Framework provides background information to the resettlement process including the legal framework, guiding principles, socio-economic baseline, asset valuation and compensation guidelines, consultation and grievance mechanism and roles and responsibilities applicable to the SML Extension process.

2 OBJECTIVES

Beyond the original RAPs prepared prior to Project commencement, various additional relocation programmes have been implemented in several phases since 2013. This document is prepared as an addendum to the Resettlement Framework prepared in July 2018 and represents the extension of the SML into areas associated with additional project land requirements in Nguluku and Mafisini for further mining activities, stormwater control infrastructure and to address isolation impacts on specific households. The resettlement guidelines are outlined in the Resettlement Framework and inform the implementation of this RAP but differs from the previous resettlement programmes in relation to the value of land compensation and replacement land provisions.

3 METHODOLOGY

The methodology used for implementing this addendum is guided by Kenyan legislation and compliance with the International Finance Corporation (IFC) Performance Standards. The IFC, as a major lending agency, provides for internationally accepted policies and guidelines for resettlement. While the Project has not sought funding from the IFC, its policies, guidelines and standards have been adopted.

3.1 ASSET EVALUATION

Through consultation with the affected households and the Msambweni Liaison Committee (MLC), various government officers (Kwale County Agricultural Officer, Kenya Forest Service Officer and Kwale County Land Valuer) were engaged to conduct an evaluation of assets for 64 households in the area July 2019. A report on this exercise was delivered in August and afterwards each resident household was given the asset evaluation report. Following feedback and spot checks, agreement was reached. The land value was uplifted to Ksh 300,000 to reflect recent increases in land value.

These 64 land parcels in various locations around the South Dune, mostly in Nguluku comprised the first phase of the SML Extension resettlement programme. Additional resettlement is required in the Mafisini area to create access to the land for mining and mining infrastructure and consultation on valuations is currently underway.

3.2 REPLACEMENT LAND

in the original RAP, replacement land was provided in addition to the payment for land by the government of Kenya and all displaced households granted five and one half acres of land in the resettlement area. This resettlement area refers to the Host Resettlement Site known as Mrima Bwiti, and this provision is no longer provided by the government of Kenya. After consultation with the affected households in Nguluku and the MLC, it was agreed resident households would be granted Ksh 500,000/- for the purchase of replacement land of their own choosing instead of the provision provided for in the original RAP.

If a household wishes to purchase land in a location of their own choosing the options available to them in accordance with the original RAP will apply whereby access to compensation amounts will be provided in advance to assist with the purchase of alternative land.

4 MAGNITUDE OF DISPLACEMENT

With respect to the SML Extension RAP, the magnitude of displacement was defined into two groups, namely resident and non-resident households. The magnitude of displacement is summarised below.

4.1 PHYSICAL DISPLACEMENT AND RESETTLEMENT

4.1.1 Nguluku

There are 52 properties affected by the extension of the SML boundary in Nguluku. 31 are resident land occupiers with 21 not living on the land in question.

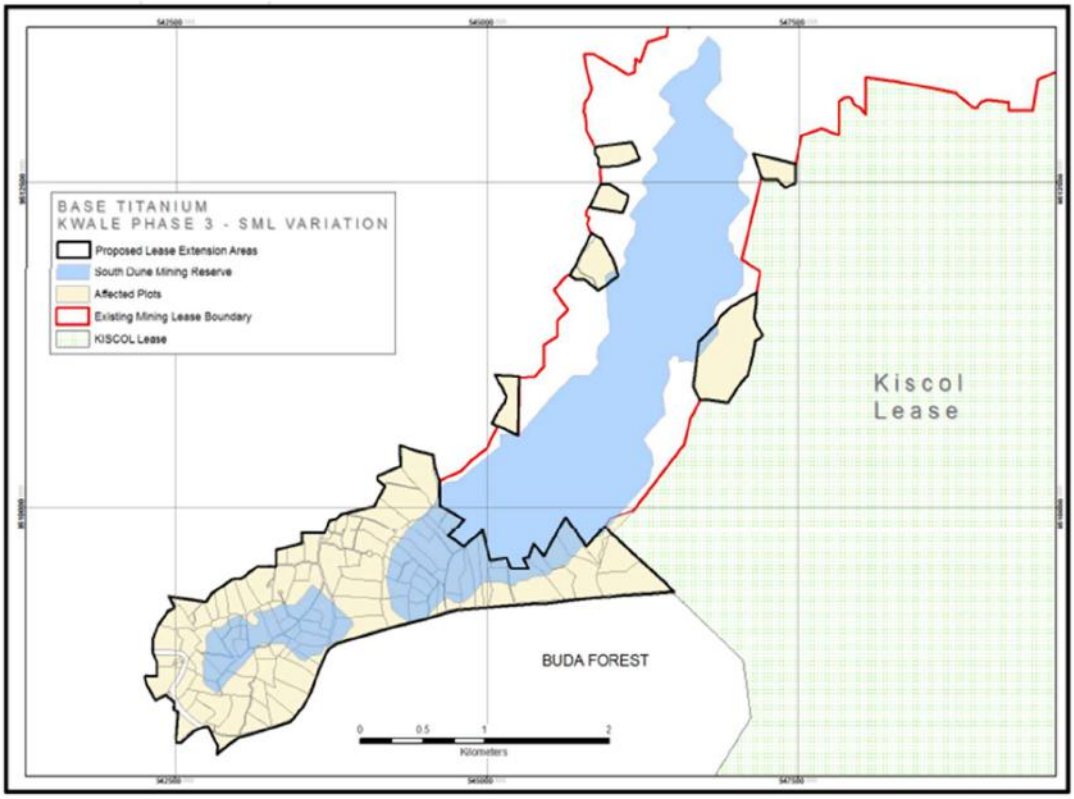
Households are free to purchase their own land in accordance with resettlement options stated in the RAP. Households will not be eligible for replacement land allocation if they are not resident or were beneficiaries of the same process in an earlier RAP.

4.1.2 Mafisini

This RAP is currently being prepared in relation to compensation and resettlement of Mafisini landowners for the area targeted for mining extension/SML variation by Base Titanium's Mineral Sands Project.

4.1.2.1 BACKGROUND

Engagement with Mafisini farmers started in 2016 when Base undertook drilling exploration in the Mivumoni /Mafisini area. This was done in conjunction with the committee established to represent landowners of the targeted plots during the exploration phase. Upon completion of the drilling exercise, mineral deposits were discovered in a small area of Mafisini. Feedback meetings were held to give exploration results to the affected community.



Map showing the Mivumoni/Mafisini Mineralized Area

4.1.2.2 Eligibility

The Mafisini Resettlement Committee (MRC) was established comprising affected landowners in the targeted area to act as their representatives in any engagement with Base. The MRC undertook a two-day induction workshop organized by Base facilitated by an independent consultant, Team Care Communications Ltd. The workshop, held on 13-14th June 2018 at Jacaranda Beach Resort in Diani aimed at sensitizing the members on their expected roles, highlights of the Mining Act 2016, and build their capacity on key skills such as negotiation, conflict resolution and communication.

Recently in late 2020 effort has been put in further understanding the area by identifying how many plots and households are involved in the Mafisini area and confirming their eligibility. Through the help of the MRC, the Area Chief and a contracted surveyor, Base was able to verify all the plots in the said area to the satisfaction of the affected people. In this exercise it was found that significant land subdivision had recently taken place increasing the number of land parcels to 161 from 91 as identified earlier. This was put down primarily to the fact that many people wanted to be compensated independently for their assets.

4.1.2.3 Negotiation

Having confirmed eligible land parcels, the next phase of the resettlement programme in the Mafisini area is agreeing on the terms of relocation or negotiation of compensation which has commenced. Three meetings have so far been conducted in different areas involving all stakeholders although negotiations are still ongoing.

Base/MRC consultation meeting Mangro Hotel, 17th Dec 2020.

5 VULNERABLE HOUSEHOLDS

In accordance with the established framework and in consultation with village elders and general community experiences, three households were identified as vulnerable in Mafisini. Special provisions will be implemented to ensure these households needs are catered for in a sensitive manner to enable them to manage the impacts associated with resettlement.

6 SOCIAL SERVICES AND INFRASTRUCTURE

Notwithstanding, the compensation and resettlement programme includes a commitment to develop infrastructure at various host resettlement sites as well as settlements near the mine site.

Outlined below are some of infrastructure developments completed by the Project:

- Magaoni Village – Construction of Magaoni Secondary School (Phase I).
- Magaoni Village – Water supply borehole for secondary school, health centre, primary school and community.
- Bumamani – Water supply borehole for community.
- Kigombero (near Bwiti where many resettled households currently reside) – Built administration block at Kigombero Primary School.
- Kigombero – Water supply borehole for community.
- Mivumoni Secondary School – Mivumoni borehole replacement of tank, taps, community supply.
- Magaoni Health Centre Phase I – Construction of a MCH block, Outpatient block, staff houses & an incinerator.
- Msambweni Secondary School – Construction of a boys' dormitory.
- Mwamzandi Secondary School – Construction of administration block and dormitory.
- Fihoni – Water supply borehole for primary school and community.
- Bwiti Host Site – Primary school, secondary school, dispensary, social hall and 35 km road work improvement.
- Mwalewa Girls Secondary School – New school in Lunga Lunga Sub-County including classrooms, administration block, teachers houses, laboratory block and dormitory with the dining hall built in conjunction with CDF.

Many people in and around the host site have been identified for agricultural livelihood development programmes and formation of a farmers' cooperative society.

With Kwale's extensive development in primary schools and recent improvements in health facilities, households affected by the SML Extension RAP who have dispersed to various areas including Magaoni, Bumamani, Fingirika, Kigombero, Mivumoni and Bwiti, have been able to find social amenities nearby either existing government built facilities or those provided by Base.

7 GRAVES

Most properties in Nguluku will not be mined so no exhumation and re-burial in the cemetery will be required Compensation of Ksh 25,000 will be paid per grave to the next of kin for spiritual formalities.

Mining will be undertaken in Mafisini where exhumation permits will be needed following which, appeasement payments and, if necessary, graves will be exhumed and reinterred in accordance with the process described in the original RAP and agreement of affected landowners. All costs associated with the transfer of remains will be borne by Base.

8 RELOCATION PROCESS

Relocation of resident households will be paid by Base. On verification of land and housing readiness at their new location, relocation funds will be provided and households relocated following which all structures at the mine site plots will be demolished.

Animals will also be transported either by vehicle or herding them to the new location if within a reasonable distance.

There may be circumstances where suitable alternative relocation arrangements can be implemented as long as verification by Base is undertaken to ensure relocation is managed in an acceptable manner.

APPENDIX D STAKEHOLDER ENGAGEMENT MEETING MINUTES

Minutes of Meeting with Mafisini Resettlement Committee held on 16th Dec. 2020.at Mangro Hotel.

Present

1. Mafisini Resettlement Committee Members -15
2. Mivumoni Location Senior Chief -1
3. Kenya National Commission on Human Rights - 2
4. Msambweni Liaison Committee -1
5. BTL Officials -5

Preliminaries

The meeting started at 9.30 am with a word of prayer from Pastor Ngilla followed by self-introduction by all members present.

Opening Remarks

Base Titanium (Community Relations Manager)

- Informed that the meeting was a great step in the negotiation process
- Gave a background of BTL journey with Mafisini community starting from the exploration in 2016/2017 in wider Mivumoni and Mafisini area, submission of results (indicating existence of minerals in a small area of Mafisini) and later formation of this resettlement committee.
- Mafisini RC was chosen by farmers in the target area in place of the exploration committee.
- Base has involved the committee in all activities done in Mafisini including the recent ground verification of Mafisini plots.
- Informed the next step after verification is asset evaluation/negotiation on compensation.
- Mentioned there is an existing procedure on valuation of assets such as crops and trees, but people should feel free to discuss and agree.
- Base has done several resettlements and the last one was in their neighboring village of Nzeveni in 2019.

Mafisini Committee

The Committee Chairman invited Mr. Kavoi, their first spokesperson to introduce their requests

Paul Kavoi

CRM should put forward the day's agenda because during the previous meeting BTL promised to give a guideline.

BTL response (GM-ECA)

Stated the main agenda was the resettlement process and how it will be jointly implemented by Base and the Mafisini resettlement Committee.

Reiterated that Base had carried out several resettlements since 2012 including for Muk Dam, Special Mining Lease (SML), Nguluku (52) and lastly Nzeveni (8).

Added that BTL is guided by International Best Practice (IBP) in their resettlement process drawn from local laws, World Bank guidelines and IFC standards. The Fundamental aspect in these is that one should not be worse off than they were before the resettlement process.

Therefore, Base wants to be fair to the affected farmers but also expects them to be fair to Base as investors.

Mafisini R.C (Paul Kavoi)

Appreciated the process by Base and the fact of being guided by international laws and ensuring people are not worse off than before. Added that Mafisini people are ready for the negotiation but sought to know the exact targeted area in Mafisini and whether Base has already obtained the mining license as required by the Kenyan law.

BTL Response (CRM)

Displayed the map of the targeted area indicating the current SML, exploration license (area explored in Mafisini) and where the SML variation license has been applied for but not yet granted.

He stressed the need to start the process even as we wait for the license to be granted since mining cannot be done without relocating people and negotiation must be done before undertaking any resettlement.

Base CRM presenting map of Mafisini targeted plots

Mafisini R.C Chairman

He posed that, applying is one thing but being granted the license or failing is another. He expressed that, if Base fails to get the license while we have progressed the negations halfway, people will be psychologically affected. He inquired whether it is in order for Mafisini people to get into negotiation before the license is granted.

BTL response (GM-ECA)

Responded by providing a history of Base resettlement since 2003 when they were issued with the license.

The District Resettlement and Compensation Committee (DRCC) was mandated to advance the resettlement process to give land to GoK to lease to the investor. Initially, existing license was on small areas based on Tiomin lease (which covered free hold titles where people had signed a lease with Tiomin). DRCC was tasked to manage the process and change from a lease to an outright purchase arrangement with the farmers. Discussions included the freehold area under lease, but also all the other areas including

Ramisi which had no lease and no titles. The outcome was to ensure all the 381 HHs had signed agreements and their land could then be handed over to GoK. This enabled the GoK to give the full area as the SML. He concluded that, based on this, it's difficult to say which one comes first (license or negotiation) because they both depend on each other like chicken and egg.

Informed that the application was made 3 years back and Base expected to have the license by now, although not yet granted. He explained that, some processes needed action to be taken now to ensure the necessary arrangements are in place on time hence this meeting to enable us consider the things that need to be done within the required timelines.

He gave assurance that Base will not mine beyond their current SML if they do not get the license, but they are confident that they will get the license hence the need to initiate the negotiation process. He informed the meeting that consultation process being done was within the law and can be confirmed with the Regional geologist.

Mafisini R.C Chairman

Expressed their fear that the community can ask them why they 'colluded' with Base to sell their farms and suggested for Base to wait until they know when the license is almost then they start the negotiation process.

Mafisini R.C (Paul Kavoi)

Supported the Chairman's suggestion and added that, incase Base doesn't get the license; the community will ask the committee why they agreed to start negotiations without the license.

BTL Response (CRM)

CRM clarified that license is between the investor and Government while surface rights is between the landowner and the investor. Reminded that the discussion is about the rights of targeted farmers that need to be met and compensated and has nothing to do with whether it is mined or not.

It was noted that, the process had already started as evidenced by the compensation proposal package presented on 3rd April 2019 by Mafisini Committee.

Mafisini R.C (Patrick Ngilla)

Asked if Base can resettle the people once they negotiate and agree without the SML variation being issued by the GoK?

BTL response (GM-ECA)

If the GoK says no license there may be no need for resettlement. However, Base has already acquired approval from MoPM and Treasury and is awaiting some negotiations to be completed within GoK. They have the confidence that they will get the license and although they know there is a certain risk involved, they expect it's going to progress in a manner that will enable them to engage with confidence and conclude the process.

Mafisini R.C (Felix Kioko Muli)

Will Base mine the newly acquired plots if they don't get their SML Variation? If not why do they need to acquire more plots for silt traps?

BTL Response (CRM)

BTL confirmed they will not mine the newly acquired plots if they don't get the SML variation license. However, they need more plots for the additional silt trap to manage their ongoing operations. No license is required to relocate the people to be affected by the silt trap just like it was done in Nzeveni village.

Mafisini R.C Chairman

The Chairman recalled that during the MLC meeting, Base only presented the map but did not mention that they wanted to continue with the negotiation process in Mafisini.

BTL Response (CRM)

Reminded that MLC and the DCC gave the go-ahead for Mafisini committee and Base to move on with their negotiations while adhering to Covid-19 protocol. Further, 4 members of Mafisini committee are members of the MLC and the MLC secretary and Base representatives are in the meeting hence majorly the MLC is well represented. Besides Mafisini Committee members can also plan to brief the DCC after the meeting.

Area Chief Mivumoni

Observed good discussion done so far and urged members to move forward on the main agenda.

Mafisini R.C (Paul Kavoi)

Sought to know the legal implications of starting the negotiation process and even relocating people without a license?

He cautioned Base not to think that they will only compensate people in their priority area (road & silt trap) only for the rest to be told to wait until the license is obtained. He emphasized that Mafisini committee wants all targeted Mafisini plots to be relocated as block, 'don't move some and leave others behind'. Base can start with their priority plots but assure the committee that they will move on with the process to compensate all targeted plots in Mafisini area.

KNCHR (Madam Alice Mbuvi)

Informed that KNCHR was invited to do quality assurance and gave the following comments.

- Minutes to be written and signed by all.
- Urged women to participate and contribute.
- Allow for breakaway sessions for the committee members to do their own side consultations to ensure full participation of all members.
- Get affirmations that all people are together before moving on to the next point.

Madam Alice of KNCHR presenting her comments during the meeting

BTL Commitment- (GM, ECA)

Base reiterated their intention of starting in the silt trap as their priority area and then move through to engage the other landowners in the entire area. They however cautioned that it is not an easy task and it will take time citing the example of Nguluku process that took 1 year. They committed that they are engaging in this in good faith and want the process to proceed without any interruption. However, all parties were reminded that the process will be subject to the Government's directives. Further, there is also the challenge from the targeted farmers themselves as some may refuse to move as experienced in Nguluku where 2 farmers went to court.

The chairman, who was also moderating the meeting asked Base representatives to leave the room to allow the Mafisini committee and their invited guest (MLC secretary and KNCHR representatives) to do their own internal consultations before proceeding with the meeting.

Presentations after internal consultation session

Mafisini Committee

Raised the issue of inclusivity and insisted on Base doing assessment for all plots and not in bits, silt trap/road, then the rest later.

Reported that currently people are already affected downstream where Base intends to construct the silt trap. They claimed that Base has already started releasing dirty water which has consequently affected both human and cattle. They requested Base to sort out this before embarking on their silt dam construction.

BTL response (GM-ECA)

Base understands the request by the committee to do the assessment for all but the challenge is being able to operate within the proposed area, while being able to implement the small projects that Base intends to put in place within the set timelines.

Reiterated that Base is committed to start the process and finish it for everybody. However, highlighted the challenges, on one hand of the landowners who may be opposed to the process, that will be as much an impediment as is any contrary Government directives.

Emphasized the need for the two parties (Base and Mafisini Committee) to come to a consensus in the process and sort out issues together whenever they arise. Noted that, while it is Important to get into an agreement to start the process and move on until the end, it is equally important to consider the challenges that may arise therein.

On the issue of dirty water affecting people downstream, Base CRM advised that a team comprised of Community Relations and Environment staff accompanied by 2 representatives from Mafisini committee (Musyoka & Mala), Mivumoni/Mafisini subcommittee Chairman, NEMA and MLC representatives to visit the area on 18th Dec. 2020 to assess the situation.

KNCHR (Madam Alice)

Observed that Mafisini people are afraid of allowing Base to start then they (Base) pull out saying the Government has said so. Also wondered why Base thinks the Government may say no after allowing them to do all the mining to date?

BTL response (GM-ECA)

Base has confidence that the SML variation will go through because of the far it has come (MoPM, Treasury) but until such a time that it has actually been issued, any agreement should always acknowledge that there is a possibility that an obstacle may arise.

KNCHR (Madam Alice)

Sought to know for how long Base will be waiting for the SML variation to be issued.

BTL response (GM-ECA)

Informed that currently Base is mining Blocks 1017 and 1018 (Mchanga Mweupe). Blocks 1019 and 1020 are outside the SML but within the mining plan. If the SML variation is not issued within 6 months of 2021, it will be very challenging to fit in the mining plan since mining on Block 1019 is expected to commence in Dec. 2021 and there are preparations to be done before then.

The Proposed Negotiation Package

Mafisini committee chairman invited Base to respond to their proposal submitted to the office on 3rd April 2019 to which they have not heard any response.

BTL response (GM-ECA)

Acknowledged receiving the package but noted that it is very generous to the landowners. Added that mining in Mafisini area is expected to last for about 18 months and this limits the revenue expected by the company within this period. Noted that the proposed package is not workable for Base since it will go beyond the expected revenues if other production costs are added onto it.

Wondered what drove the request for KES 15 Million per acre, since Base expects a reasonable compensation, fair to the landowner but also to the investors.

Mafisini Committee Chair

He noted that as Mafisini farmers, they are currently well settled and contented (they are living in peace and well on their farms) and have no reason to sell their land and move out hence they are asking for 15M per acre as compensation.

KNCHR (Madam Alice)

Noted that Base has implemented many relocations and if they (Base) ask for proposals, people will write anything because they do not have any experience in resettlement processes. She cited the experience of Mwache Dam and SGR where people were asking for 15M compensation. However, when the Resettlement Action Plan (RAP) was shared, it clarified all the details, covering interests of all the people, and provided a clear way forward. She asked Base to share the RAP to provide guidance for this process.

BTL response (GM-ECA)

Cited the meeting as a fundamental part of developing the RAP. Outlined the various steps of the RAP as follows;

1. Determine eligibility- this step has already been done through the ground verification which resulted to the map that has been shared.
2. Agree on the compensation process including the procedures, negotiation process, the agreements between the company and landowners, including the time frames and other side matters such as graves.
3. Parts of the RAP also talk about legal compliance and socio-economic baseline (this can now be done based on the list of landowners as per the final map). This is the method that is used to measure and ensure people are better off than before.
4. It will also involve developing a grievance redress system and a component on how Base will implement the RAP and their commitment to monitor it.

All the above culminates in the RAP and should be developed in a consultative process between the investor (Base) and landowners (through Mafisini Committee and MLC).

It was noted that some of the areas will not be completed before completion of the concept of compensation.

Mafisini R.C. reactions

- ✓ **Chairman**- The RAP includes the procedures and actions that should be taken during the process and Mafisini committee has been asking for it for some time.
- ✓ **Mzee Paul Kavoi-**Emphasized they need the RAP to serve as a guideline for this process. Added that Base should have developed a RAP document in response to their proposal to guide the discussion and reach a consensus.
- ✓ **Mivumoni Area Chief**- Supported Mzee Kavoi's suggestion to have a guiding document from Base to outline their offer and the proposed process to be followed for the meeting to discuss and agree.

BTL response (GM-ECA)

Agreed the RAP is very important and now that we have defined the eligibility, we can start developing the body of the RAP together. Base will start on it and share it for people to understand.

Base response on Mafisini Package Proposal (GM-ECA)

Emphasized the need to look at the proposed package from the guiding principles and the procedures that are followed by Base which are based on the World Bank (WB) guidelines.

On land- WB guidelines provide 2 perspectives.

1. WB prefers land for land instead of cash compensation. However, during the DRCC time, it was agreed by the farmers and the committee, that cash compensation will be better. GoK offered to give 5.5 acres of land in Bwiti settlement area. That was a generous gesture by GoK at that time and not part of WB guidelines.

   WB preferred options are provided - alternative land or pay cash. During the initial resettlement it was agreed relocated farmers could choose where they want to resettle hence for all this years Base has been giving cash compensation and allowing people to choose where to settle. Cash is processed beforehand to enable them access land on time. The essence was to ensure people access cash to buy a plot with a title deed, build a house to move in before being relocated. This was to avoid a situation where people have been given money and have nowhere to go.

2. Fair compensation- Land should be paid on the basis of replacement cost. Base has always paid slightly higher than the prevailing costs. In the last resettlement (Nzeveni), Base paid Kshs. 300,000/- per acre which is a progression from the original payment of 80,000/-. However, the payment for land is not the total compensation paid as people are paid based on the value they have put on their land.

Reactions from Mafisini R.C

- ✓ **Mafisini R.C (Chairman)-** Reiterated their stand to start negotiating on the land first before the rest of the items because it carries everything. He added that Mafisini farmers are thinking of relocating to urban areas such as Bamburi in Mombasa, Diani beach etc. hence the compensation should enable that.
- ✓ **Mafisini R.C (Lady)-** She posed, 'based on our proposal, we had given our figure per acre as 15M, what is your suggestion as Base on the land rate?'
- ✓ **Mafisini R.C (Pastor Ngilla)-** Asked Base if they really need Mafisini, to go think better and present their offer during the next meeting. Added that @300k per acre is not acceptable to them.
- ✓ **Mafisini R.C (Mzee)-** Lamented that they have invested so much in their farms since 1968 and that rate of 300k is just too low for them.

Base response

CRM- Base is willing to pay for land @ 300k per acre exclusive of trees, crops, graves, and other structures.

GM-ECA

Emphasized the importance of talking about the total value based on the last question. Informed that part of RAP will be to explain to everybody on how all the different components are paid including crops, forest trees, structures etc. Insisted the @ 300k per acre is based on bare land with no structures, crops on even trees.

Illustrated the averages based on last 3 compensations. The average amount was KES 750,000/- per acre. Few were at 300k and others at 1.2 M per acre based on the investment on their land.

Base GM-ECA illustrating compensation averages on a flip chart.

Reactions from other Mafisini R.C members.

- ✓ **Mzee Paul Kavoi**- the rate of 300K per acre is very discouraging. Urged Base to look at the times and type of shambas farms/soil that is in Mafisini. The farmers know that Nzeveni were paid 300k per acre but that is not acceptable for them.
- ✓ **Felix Kioko**-Shared that he has lived in Lunga Lunga for 7yrs and Mkongani for 8yrs but went back to Mafisini. Said that 250K can only buy land in Kinango. Urged Base to give a better rate since the 15M per acre by the committee is not final.
- ✓ **Mrs. Muli-** She did not expect something like that because she has 6-7 children and wondered what she will do with them with that kind of money. She asked 'with 4 acres piece of land where will I take my children and grandchildren with that amount of money?
- ✓ **PWD Rep.-**He insisted that their farms are endowed with fruit trees and they have elderly mothers and PWDs hence the rate of 300k will not better their lives in any way.
- ✓ **Mzee Paul Kavoi**
  - Many people in Mafisini settled there in 1965 when most of them were young and the area was just bush, and they have invested a lot to make the farms the way they are today.
  - Was hoping the 'better life' would be going to Kikambala on a 5-acres plot with a ready house built for him to move in because they don't have the energy to supervise construction of houses.
  - Was also hoping they would go to Mombasa and own the storey buildings after compensation and start collecting rent like the Indians are doing as part of their 'better life'.
  - Asked Base to also consider the 7-9 years needed before the coconut, orange trees can start producing.

BTL response (GM-ECA)

- Noted a fundamental misunderstanding on the total value based on their focusing on land from their reactions.
- The fact is the compensation Base is paying is much higher than the 300k and does provide for value after compensation.

- Appreciated the comment from PWD rep. and added that part of the RAP is also to consider vulnerability and advise on how they should be handled and supported.
- Mwache Dam (WB project) paid land @292,000/- per acre with total average of Kshs. 506,000/- per acre while Base is already in excess of that.
- Urged the need to have a more holistic approach and understanding instead of focusing only on land.

Way forward

Mafisini R.C. Chairman

- Appreciated the good and healthy discussion held.
- Mafisini Committee to go and discuss what Base has offered and come again to hear what they (Base) have to say.

KNCHR (Madam Alice)

- You cannot negotiate if you don't have the guidelines.
- Base to share the WB guidelines and the Kenyan laws that they are currently using.
- Base to also share the RAP document to provide a good point of negotiation.

Mivumoni Area Chief

Asked Base to consider the lowest person scenario (1acre land, bare no development with only a small simple structure) and give a package that would better their lives.

AOB

- **Cooperative Bank**, Ukunda Branch Manager (Mr. David 0723237481) gave a brief talk on financial literacy and the services offered by the bank including the different accounts and their monthly charges. Encouraged Mafisini community to partner with his bank for all their financial services.
- **Mafisini Chair**- Reminder on their Christmas package and T-shirts as promised by Base.

There being no other business, the meeting ended at 4.30p.m with closing prayer from Musyoki.

Appendix 1: More Meeting Photos below:

PWDs representative making his point during the discussion

A lady from Mafisini R.C posing a question to Base during the meeting

Mzee Paul Kavoi of Mafisini R.C. making a presentation during the meeting

Meeting with Mafisini Resettlement Committee held on 11th Dec 2020 at Mafisini Social Hall

Attendance

1. 12 Mafisini Resettlement Committee Members
2. Mivumoni/Mafisini Committee Chairperson
3. BTL Officials led by GM, ECA

Absent with Apology

1. Area Senior Chief
2. 3 Mafisini Resettlement Committee Members

Agenda

1. Recap on the Mafisini Mapping Activity
2. Construction of a Silt Trap

BTL

1. Recap on the Mafisini Mapping Activity

- Mapping of Mafisini was completed satisfactorily, the committee played a big role in this.
- Before mapping i.e. During exploration time Mafisini had 91 targeted parcels of land but after BTL had expressed intentions of acquiring the area the number rose to 157 due to land subdivisions.
- So far the searches carried out on behalf of the company are 51 out of 157, Kwale Land Office is busy with other searches Countywide.
- It should be noted that the Company also has previous search records and it is looking forward to complete the exercise.
- There is one farm owner who has subdivided his land into several pieces under his name.

2. Construction of a Silt Trap

- Base Titanium is expecting to start mining block 10172 by June 2021, and with that calls for preparation inform of constructing Silt traps to support this mining operation.
- The said silt traps are expected to be placed in plots within the SML targeted expansion area. Because of this need there is urgency of doing the negotiations and resettling/paying the land owners in time to give way.
- The Construction is expected to commence in February 2021, this engagement was to take place earlier but was obstructed by the pandemic.
- Base and the community has a period of less than 2 months to reach an agreement however the crucial process will be followed prior construction despite the limited time.

- The engagement will involve negotiations and relocations of the affected farmers and the MLC has been informed of the same.
- The company has plans of prioritizing the small area then expand to the rest of Mafisini targeted area.
- The existence of the silt trap might affect the livelihoods of some community members hence the need for immediate relocation.

Committee's Reaction

- The negotiation time outlined is limited, the committee members need to go back and relay the same to the larger community.
- BTL should resettle the entire community at ago.
- Residents' concern is land rate, the rest such as trees, crops and structure price can be negotiated later.
- The more the process is delayed the more farmers go on with unnecessary subdivision of lands.

Conclusion

- Committee had presented the community proposal/interests to the company via a written proposal therefore there is no need of meeting them again. In order to save the limited time BTL, should instead ponder through the written proposal and provide feedback against each concern**.**
- A meeting should be planned before GM ECA leaves for thorough discussion of the feedback to the proposals.
- Due to the upcoming Msambweni by-election, the parties should meet on 16th December from 10am, the committee preferred a venue outside Mafisini for comfort purposes, and BTL was given the responsibility and revert.
- Committee members to have a tour to one of the silt traps recently constructed by BTL so as to have a better understanding of the work since majority of them did not know how it looks like.
- Parties involved promised to have a comprehensive engagement process regardless of the limited time.
- After the initiation of the engagement with BTL's GM ECA, meetings afterwards will be spearheaded by Community Relations Manager.
- Mivumoni/Mafisini Committees and Mafisini resettlement Committees to receive T-shirts which they had requested.
- Foot balls to be given to Mafisini Community through the committee.

Photos

CRM doing a detailed presentation on Mafisini map, the initial farms to be relocated and the location of the silt trap were key areas touched

Committee member insisting on a fair process

Meeting with Mafisini Resettlement Committee at Mafisini Community Hall on 30.10.2020

Present

1. Committee Members
2. Mafisini Village Elder
3. Base Titanium
4. KOMAZA

Agenda

1. Mapping of Mafisini Village
2. KOMAZA Operations in Mafisini

Opening Prayer

Meeting was opened with a word of prayer by Mr. Ngila, committee member.

Opening Remarks

Committee chairman, Mr. Maasai informed BTL about Mafisini's targeted community being fully aware that their land is mineralized. This has made them anxious about engagements on relocations. He added that KOMAZA Company's presence was because they needed to understand BTL's intent on Mafisini since they are among the key stakeholders.

Community Relations Manager, BTL

1. **Mapping of Mafisini Village**

- CRM Thanked the community for having supported the prospecting exercise on a larger targeted area however, only a small portion had mineral deposit.
- Members were informed that the current mining is on its final stage where the company is mining its last 2 blocks notably; block 1017 and 1018. The company needs to plan for its expansion in advance.
- There are various challenges experienced prior acquisition of Mafisini by the company, the major one is land ownership by farmers. BTL had previously advised community to work on proper inheritance because there are many cases of title deeds appearing on the names of their previous owners. Committee members were requested to sensitize the community on the same.
- Recently the company desired to construct a silt dam on one of the Mivumoni farms. Before the actual work took place a map of the area was sourced from Kwale lands office which had some errors. The plot identified was different from what the map had indicated. This was realized during valuation of the assets within the land, this brought issues between Base and the farmer. To avoid such instances the company needs to have accurate information on lands.
- Finding authentic land-owners in-advance will assist in planning for a thorough engagement.

- A Surveyor will be brought in with a map of Mafisini, he will be walking through the village accompanied by Mafisini committee members who will be in charge of verification and noting down discrepancies. BTL will also assign an officer to participate.
- The exercise is anticipated to take a period of 2 weeks after which all participants will meet and discuss the findings in depth. The committee will be divided into 3 groups for swiftness of the activity as opposed to walking in big numbers.
- Previously BTL had presented a map showing the area but it appreciates that the map needs updating because it has been a while since its initial sourcing. Land owners might have changed and sub divisions carried out in some parcels of land.
- There are instances of having plot numbers on plot yet on ground they do not fall under Mafisini. Other plots might be excluded on the map yet present on ground, the committee should note this as well. All these scenarios are possible because they have been experienced before.
- Mapping activity is expected to commence as early as 31st October. The committee should sensitize farmers to be on their farms during the assessment so as to capture the correct information.
- The committee is not mandated to dictate the ownership of the land but rather note divergences.

2. KOMAZA Operations in Mafisini

- BTL Met with KOMAZA Company Officials where they found out that Mafisini too is their area of interest therefore having them on board during mapping will be a good idea.
- BTL informed KOMAZA that they will not interfere with signed contracts between them and farmers.
- In the event of payments the two will sign a distribution list demonstrating consensus in splitting the cash. An evidence of the contract should be presented before BTL. This has happened before and has safeguarded BTL against emerging disbursement complaints. This clearly indicate that it is not obligated for a land owner to be compensated all the assets within his land provided there is tangible evidence.

3. Reaction

No.	Question	Answer
1	Wrong mapping has led to a displeasing case involving plot 164 in Mivumoni therefore ground work is very important.	All members supported mapping.
2.	The road from Kibaoni heading to Mwachande should be considered during BTL's operations	BTL provides alternative routes while operating.
3.	Some lands were sold but original owners cannot be traced due to lack of transfers.	Committee will be on ground for verification purposes since they have a good understanding of farms in their locality.

4.	Team requested for a surveyor who knows the area well, Brian, a government Surveyor was recommended.	BTL promised to put this into consideration.
5.	What happens to farms that are isolated, with all the neighbors earmarked for relocation?	Not every portion acquired will be mined, some ends are very shallow and will be left untouched.
6.	31st October is very soon, the team should be given time to mobilize the larger community	A meeting should be conducted from 3rd November, the tentative date set for mapping was 9th November.
7.	Chairman appreciated the surveying of the area by General Manager ECA.	Noted.
8.	There are some farmers who are working on attainment of title deeds yet mapping is underway.	The former plot numbers can be used instead. Farmers should be advised not to waste too much time on division especially on plots with no issues because family members have the authenticity of receiving different cheques on one farm.
9.	There are families who have started cutting down lands so as to receive various alternative parcels of land.	BTL will not offer alternative land because the settlement scheme that was done in Bwiti was a government initiative. The recent Nzeveni relocation did not have this privilege.
10.	What happens to family issues experienced during mapping in as far as land ownership is concerned.	Committee can deal with what is resolvable, anything beyond their ability will be escalated to conflict resolution committee.
11.	Will BTL recognize absentee landlord's representatives?	This is possible under the guidance of the committee.
12.	Mafisini has around 36 pieces of land and its mine life should take less than 18 months due to its limited and shallow depth.	Noted.
13.	Why did BTL sensitize KOMAZA against planting trees for locals in Mafisini?	KOMAZA has withdrawn from the exercise by themselves because BTL's interest in the area will affect their profit margin.
14.	Does KOMAZA plant trees for squatters without owners' consent?	KOMAZA has a procedure of seeking consent from real land owners.

Photos

CRM Presenting the initial map

KOMAZA Official responding to concerns directed to him

MLC /Mafisini Committees Meeting- 19th August 2020 at Msambweni DCC Office

Attendance

1. DCC Msambweni
2. SCA Msambweni
3. Senior Chief Mivumoni
4. Sub County Forest Officer
5. Sub County Agricultural Officer
6. MoPM Officer-Kwale
7. Mafisini Resettlement and Compensation Committee
8. MLC
9. BTL Officials

Agenda

1. Opening prayer
2. Chairman's Remarks
3. BTL's Presentation
4. Reaction to BTL's Presentation
5. Closing Remark
6. Closing Prayer

1. Opening prayer

The meeting Started at 11.03 a.m. with a word of prayer by Pastor Patrick Ngilla.

2. Chairman's Remarks

DCC, Mr. Koskey welcomed members and stressed that he was looking forward to learn from the meeting how BTL engages with communities. He then urged members to respect each other's opinion in order to have a smooth session. Community Relations Manager who led the BTL team was appointed by DCC to do the presentation which was the center of the day's discussion.

3. BTL's Presentation

CRM thanked all participants and shared a brief history of some committees ran by BTL.

Msambweni Liaison Committee (MLC)

MLC began in 2013, its composition brings together different stakeholders; political leaders, religious leaders, county government officials, (women, youth, PLWDs) representatives, CSO and national government officials. The committee has been under the chairmanship of DCC. MLC has 2 main segments notably; conflict resolution and education subcommittees. Conflict resolution deals with handling conflicts between the company and community members while education task force carries out scholarship process with the company officials.

Mafisini Resettlement and Compensation Committee

This committee was established after positive exploration results attained during Mafisini drilling . Its membership is composed of Kamba natives and this was a concern raised by CS mining during one of his visit in the area. The main reason behind such is that Mafisini's residents are only Kambas. It was also highlighted that 50% of Mafisini landowners are nonresidents.

What Transpired after Impressive Exploration Outcome

BTL applied for a mining license and the targeted area covers about 100 farms. Base will be concluding mining of its 2 remaining blocks come 2022 and this calls for preparations of next mining phase prior issuance of Mafisini mining license.

The company plans to find out registered land owners of the targeted area through land office as one of the crucial steps. This is expected to be followed by an intensive valuation exercise on the number of crops and forest trees per farm. Their rates will be paid as per the relative departmental guidelines.

Graves within a farm will attract a fee of 25000 Kenyan shillings but farmers were urged to be honest during identification. There will be exhumation and relocation of the dead bodies. Experience shows that there has been cases where villagers give false information on the actual number.

During assessments, Valuers will be accompanied by BTL officials as well as farmers representatives to monitor the procedure. Plots with the highest proximity with the company during the activity will be dealt with first.

Evaluation is expected to be carried out on all structures situated on a plot and compensation done duly.

Asset valuation process is expected to be kick off in three months' time if the involved parties reach a desirable agreement. MoPM requires evidence that the community has consented before issuing the license hence the desire of engagement.

Land Compensation Negotiation Process

Land price negotiations will be conducted after conclusion of crops, trees, graves and structures valuation.

When that time comes, MLC, Mafisini resettlement committee among other stakeholders will be invited for a workshop where comprehensive discussion about the land will be done. Engagement of prices is expected to take quite a while because it is not an easy task.

Presentation of a Map Outlining the Affected Plot Numbers

Members had an opportunity of interacting with the map. Some snapshotted for further pondering. All plots in pit and buffer zone were clearly illustrated.

4. Reaction to BTL's Presentation

No.	Concern	Response
1.	A concern was raised on the acquisition of mining license by BTL so as to have a go ahead on the negotiation Programme.	Exploitation license has been approved by all ministries and now being completed by Treasury, its conclusion is dependent on farmers consent.
2.	BTL's approach is not correct, land price should be prioritized. Base wants to estimate the cost through asset valuation upfront then peg their budget there. This will work against farmers because of a recent experience whereby the company wants to pull off from the whole process of assessment in plot 163 after finding out that it was expensive to compensate.	This is the approach given to the company by MoM since 2008 it is procedural. It has been applied throughout.
3.	Base should conduct community sensitization before any assessment is done.	DCC gave a go ahead to have a community engagement of not more than 100 locals and area chief was mandated to lead the team under covid 19 prevention guidelines.
4.	Once crop and tree valuation process is done, does it mean farmers won't be allowed to plant more trees noting that compensation might take a while?	Payment will be done immediately and farmers will be given a period of 3 months to transplant what they can to their anticipated areas.
5.	Community livelihoods should be assessed as well because this is key.	This is part of the process. Even the homeless who are dependent on neighbors will be considered in it.
6.	Mafisini Committee on behalf of members are ready to for relocation provided that BTL honors their pre-relocation proposal.	BTL acknowledged receipt of the document, they will comb through it and have an intensive discussion on doable.
7.	BTL was not keen during a recent assessment of farms in Mivumoni. A plot was assessed and the company is now claiming that it was a mistake it is not targeted. The owner lives on a polluted environment.	BTL took ownership of the mistake that happened on kidiani 164 but it should be known that the plot is within SML variation. The owner can escalate the issue to conflict and resolution committee for a resolution. Another mismatch on plot numbers has happened before. The map showed a different plot number as opposed to what was on ground, parcel targeted was 366 and not 165 as shown. This was resolved.
8.	What is the NEMA guidelines on buffer zone	NEMA official indicated that there is a clear guideline and the company has been adhering to it. Incase farmers are

		affected their concerns will be handled appropriately.
9.	Most Mafisini farmers are eager to be evacuated. They have been contacting BTL to hasten the process.	Community issues must be channeled through committees for safeguarding. Decisions will be done collectively.
10	Committee was elected by the identified land owners, BTL did not induct it. Instead they have interacted with many NGOs therefore they know their rights. BTL should not assume that Mafisini will be easy to deal with.	BTL will have meetings with them and an agreement will be reached before relocation is done, all rights will be accorded.
11	BTL airplanes have been surveying Mafisini without their consent.	DCC confirmed that the planes belong to the national security department and not BTL as perceived.

5. Closing Remark

Msambweni Sub County Administrator Thanked members for a calm meeting. She urged them to embrace dialogue. Mafisini committee was reminded to deliver the correct information to the farmers.

6. Closing Prayer

Closing prayers were read by Omar Kisinyo. Meeting ended at 1.23pm.

MSAMBWENI LIAISON & MAFISINI

BASE TITANIUM

Attendance Register

Meeting : ....

Date: 19/08/2020

No	Name	Designation	Contact	ID/No	Signature
1	JAMES KOSKEY	DCC	0720797617	12440981	[signature]
2	GEORGE JARAMBA	SEC MLC	0720701408	10035040	[signature]
3	ABDALLAH MAMBO	MEMBER.	0720932146	16095142	[signature]
4	HASSAN JUMA GAO	MLC MEMBER	0729849377	1168976	[signature]
5	FATUMA S. MWAFIKIRI	MLC	0729443885	54707778	[signature]
6	SHABAN MWERO	MLC	0700329918	27562716	[signature]
7	NTIRO KIDANGY HAMISI	REP SENATOR.	0718751665	20963959	[signature]
8	PAUL O. KIBAGENDI	ED.	0720437400	1634279	[signature]
9	NICHOLAS M. MWAMBEZI	SCAO	0724658873	8459092	[signature]
10	BERNEDETA M. KILULU	MEMBER M.L.C	0717203254	10505997	[signature]
11	RASHID OMAR MWARIKO	MCA REP	0711715550	14623214	[signature]
12	Joshua Jacob KASSIM	membere mafisini	0723650223	8419802	[signature]
13	MORIS N. KINULUI	Committee	0719518459	5478126	[signature]
14	NAOMY N. MUNYWOKI	membere mafisini	0745790408	5465214	[signature]

15	SAMMY MUGUA	MEMBER MAFISINI	0717016737	8408206	
16	SAMSON KAMUA	MEMBER MAFISINI	0769390130	28366459	
17	KEALO MUENDE NAULULU	V/SECRETARY MAFISINI	0703132942	11367558	
18	MARY SYOKAU MUSAU	TREASURER MAFISINI	0740795721	22190895	
19	~~FABITHA KAVESU~~				
20	KAVESU MWANZIA MUGANDI	V/C - MAFISINI	0719185259	2225575	
21	Musyoka Muinde Mutiso	MEMBER MAFINI	0723223887	0765033	
22	F. PATRICK NGILAH	MLC	0719457804	2211394	
23	ANDREW MAKAU KITULU	MLC	0726367985	14623326	
24	MEALI SALMA HUSSEIN	WOMEN REP	0718058146	27487085	
25	JOSEPH MULI	SECRETARY-MAFISINI	0723972686	2196524	
26	OMAR RASHID KISINYO	M.L.C	0710362284	10769805	
27	THOMAS M. NGANGA	CHIEF	0720432229	10769158	
28	ATHUMANI MUSUNGA	A/CHIEF	0716501333	9881103	
29	MBARAK MWAMAKU	M.L.C	0703634605	2510611	
30	Dickson Mbijiwo	MOP&W	0720300010	25805012	
31	Mwangombo Kilalo	SCA	0711317862	25269914	
32	OMARI M. IDATO	UMBRELLA CHAIRMAN	0714163579	0464585	
33	MWERO KATHAMBI	MLC-MEMBER	0712515721	4624480	
34	RAMADHAN MASAMBO	MLC-MEMBER	0724956636	8425045	

35	Lemmy Mutua Kavii	Farmer	0721478785	21920866	[signature]
36	FATUMA MAULIDI KOI	M.L.C	0701882900	23514195	[signature]
37	DEOGRATIAS MUOVYA MAJAI	CHAIRMAN MAFNIM.	0723204450	8452090.	[signature]
38	Cecilia Nyambu	NEMA	0724928850	22613994	[signature]
39	MUSA ATHMAN	INT	0726836304	25114941	[signature]
40					

MINUTES OF MAFISINI RESETTLEMENT COMMITTEE HELD ON 21st FEBRUARY, 2020 AT BTL BOARD ROOM 2

In attendance were:

1. BTL
2. Mafisini Resettlement Committee
3. ACC
4. Jaramba

Agenda

1. Appreciation
2. Title Deed Succession
3. Employment
4. Scholarship
5. A.O.B

Min1 21/02/2020: Opening Prayer

The meeting started with a word of prayer.

Min2 21/02/2020: Chairman's Remarks

The chairman thanked BTL for supporting Manyatta social hall with 50 plastic chairs and requested for 2 tables.

Min3 21/02/2020: Title Deeds Succession

Most of the communities from the targeted Mafisini area are viewed as squatters because 90% of the population have title deeds which bears name of their late parents so the plots need succession but comparing with the living stands of the community most of them are unable to afford the required amount for succession.

Pius requested to know the number of farmers who need succession of the plots, chairman responded that it was around 90% of the farmers. He promised that BTL will take care of the cost of succession but the turn up is so low so there is need for committee to enlighten. Some plots have more than one issue of succession and it is therefore important for these issues to be addressed.

Christine advised the committee to do enlightenment of communities to get the secession letter from Chiefs because BTL will support if members are one step ahead. The committee should make the farmers understand that they are not doing it for BTL but for their own benefit on land ownership to prevent land related conflicts.

The chairman informed the members that some plots indicate that no card, Pius requested the committee that they should assist the farmers to make immediate follow up on those plots.

Min4 21/02/2020: Employment

This has been a major issue and community member are wondering that other people from different areas get jobs while people from their area are left behind, this has forced the youth from the community to block roads and stop operations going on their side for them to be considered for employment.

Reactions

Christine: This has been a challenge since slots available for employment are few and this has led to the frequent youth demonstration, BTL called for a meeting with them and explained that since operations is coming to an end they should understand that jobs will not be able to cater for all. There was area solution for that and some members were considered for employment.

Chairman: What happened to the phrase when slots are available we will inform you?

Rose: There are other committee members who were given employment slots from the area so she requested the two chairman's to have clear communication or have both chairman's in every meeting.

ACC gave a procedure that chair to attend the liaison subcommittee meeting so she wanted to know if he has been doing so but the chairman informed him that they stopped giving him dates for the meetings.

Chairman requested if BTL can offer tender to youth from the area.

Pius: Depends on what kind of tender, groups are more advisable to be because they will not be doing real business with BTL and if people are ready to do the supply of fruits and vegetables should register and if there is need for supply they will be contacted.

Min5 21/02/2020: scholarship

Chairman Pupils applied for scholarship in the target area (Mafisini) but didn't qualify and most of them came from needy families, how can the company help these community members in a special way?

Pius: We as a company treated Mafisini in a special way and take even those who didn't succeed well. But am sorry to say because the results we are getting are discouraging even to my senior bosses, and no more scholarship in a special way. Target area should be considered for scholarship opportunities and did score well. Those cases of need people can be subjected to discussion if they appear. Sometimes applicants are not considered because of wrong filling of information request for guidance should be considered.

Min6 21/02/2020: AOB

The following were the AOBs discussed:

- Request for disabled people to be supported with wheel chair and BTL to organize forums for the available disabled groups.
  ACC: The government got a section dealing with disabilities, every disable person has a registration number therefore this section should provide some guidance during the forum.
- Proposal to add more members to bring gender balance up to now members are only 3 female propose for 2 youths preferably female.
  Christine: Procedure should be followed the same way the other members were elected and accepted and should consider other tribes not Kambas.
- We are hoping SML variation will come out and engagements will be many so be prepared with your work schedules.
- Funny information from Mafisini especially from Mafisini church recent one was that from DCC asking whether they have broken down the church. Churches were brought down back in 2000 and was led by the father himself. Meeting are held at Mombasa quoting Deogratius and when Father Pinto tries to explain they claim that father has been given something. Asked chairman if he attended the meeting and the chairman responded he has never attended such meeting.

Sub Committees' Meetings 2018-2019

0Date	Forum	Issues	Remarks
19/07/2018	Security	◆ Training on Security related Skills ◆ General Security	◆ C/man requested for a seminar on security related topics that will help them address any security related issues in the community. ◆ Members were asked to sensitize children to stop playing by the road and throwing stones to vehicles. ◆ Nassoro reported to members that there's a person who lives at the shade in 00, he urged them to follow up so as to know his intention.
15/08/2018	BMU Likoni	◆ Fishing at wharf ◆ Stow away case	◆ BMU was reminded that it had been previously agreed that fishing should be discouraged during ship loading because of safety reasons but some incidences of the same had been witnessed recently. ◆ Members were asked to cooperate with BTL security to prevent future occurrences of stow away cases.
24/08/2018	Conservation	◆ Mandate to the new committee ◆ Priority areas for the conservation	◆ Solving human –wildlife conflict within surrounding and other Environmental aspects. ◆ These are the areas which surround BTL and its where these human wildlife conflict have since been reported and they are directly affected. These are Mivumoni, Mafisini, Dzibwage, Nguluku, Kibwaga &Fingirika.
31/08/2018	Fingirika/Dzibwage	◆ BTL's boundary ◆ Training Slots	◆ Members needed to know if they fall under the SML and were informed that clarification will be made on the same after a thorough investigations by BTL. ◆ Members inquired about the slots given to the community & were informed that they are normally distributed to the surrounding communities equally.
29/08/2018	Kibuyuni	◆ KSC mandate ◆ KSC's proposal	◆ The subcommittee is mandated to represent Kibuyuni village to the company and expected to give feedback to it in case of any discussions concerning the community ◆ KSC had presented a number of items to BTL for funding & were directed to channel them through LLC.
31/08/2018	BMU Mtongwe	◆ Introduction ◆ Project update	◆ There was an introduction for members because they were all new. ◆ BMU was given an update on all of the company projects within Likoni Sub County
31/08/2018	Kaya Elders	◆ Introduction ◆ Kaya rituals	◆ There was new membership including BTL's CLO ◆ Planned for the rituals to be held on 25th Oct and the budget set was 140000 and this money was to cover fencing of the kaya boundary.
02/11/2018	Security	◆ Security reports from the village elders ◆ Security report from BTL	◆ The sign boards set up to ban people from accessing the dam had been removed an installation of new ones should be done. ◆ There has been an increase in cattle grazing in the SML especially from Vumbu side this should be stopped.
15/11/2018	Access Road	◆ Project Update ◆ Employment	◆ BTL has concluded the tertiary scholarship & is planning to roll out the high school one. ◆ Members wanted more job opportunities but were informed that BTL capacity is limited & that the community can benefit from other projects such as livelihood.
22/11/2018	BMU Likoni	◆ BTL's Project Update ◆ BMU's Proposal	◆ BTL updated BMU on the 2018 Scholarship for tertiary & planning to advertise for the 2018 high school. ◆ BTL was requested to strictly stick to their initial proposal and its implementation.

Sub Committees' Meetings 2018-2019

0Date	Forum	Issues	Remarks
23/11/2018	BMU Mtongwe	◆ BTL's Project Update ◆ BMU's Proposal	◆ Updated on Scholarship for both Tertiary & high school ◆ Requested for funding in any of their projects because nothing has been done for them since they began engagements. Were promised to be supported on any project that will cost less than 150000shillings.
23/11/2018	Conservation	◆ Area Reports from committee members	◆ The rate of fishing at Mukdam has increased, animals encroachment has increased this has affected crop production.
23/11/2018	Kibwaga/Nguluku	◆ Proposal	◆ Requested for sunking of a borehole/frequent supply of fresh water & relocation due harsh life conditions.
14/11/2018	Kibuyuni	◆ CDAC formation	◆ Members inquired about CDAC formation process and this was explained to them, they requested for a slot to be given to their C/man because Kibuyuni is directly affected.
10/07/2018	Mivumoni/Mafisini	◆ Human Animal Conflicts ◆ Support Ongoing Feeding Program In Mivumoni & Mafisini Primary School ◆ Appointment of Mivumoni/Mafisini CLO	◆ Members requested for a villager from Mafisini and Mivumoni to monitor Baboon chasers because Nguluku & Vumbu Village Chairmen had retired. ◆ Committee requested BTL to support Kindergarten Lunch program for Mivumoni/Mafisini and were asked to write a proposal on the same. ◆ Committee requested to have a CLO from their area for a good representation, BTL informed them that it was not possible and asked them to feel free when it comes to raising concerns at any time.
10/07/2019	Kibwaga/Nguluku	◆ BTL's Update ◆ Employment ◆ Relocation	◆ Informed about the advert on tertiary scholarship, 40 slots have been set aside for 3 special courses which are engineering, law and medicine. ◆ Committee requested BTL to offer them permanent jobs, they are only considered on temporary basis. ◆ Members inquired about relocation due to factors such as noise, dust and water pollution as a result of company works at Southern Dune. They were informed that BTL is waiting for SML variation License from Ministry.

Sub Committees' Meetings 2018-2019

0Date	Forum	Issues	Remarks
12/7/2019	BMU Likoni	◆ BTL's project update ◆ BMU's Update	◆ Updated on the conclusion of exploration in Lunga Sub County with negative results. ◆ Updated on commencement of mining activities in Southern Dune (Nguluku) after conclusion of Central dune (Maumba). Current SML expected to close down in 2022. ◆ BMU updated BTL on the various activities it had, the main ones being meetings with different stakeholders such as KPA, Kenya Fisheries.
10/12/2019		◆ BMU Updates ◆ BTL Updates ◆ BMU's MOU	◆ BMU to receive a 2 engine boat from Mombasa County Government ◆ MV base was serviced ◆ BMU monthly feedback meeting ◆ Exploration engagements meetings in Vanga are ongoing ◆ High school Scholarship program for 2020 intake is ongoing at application stage ◆ BTL awaits CDAC gazettement by the government ◆ There was an MOU between BTL and BMU on projects for the BMU community though it has been stall due to delays in CDAC gazettment delays. BMU requested to meet with Community Relations' Manager to discuss about the same.
11/04/2019	Conservation	◆ Buffaloes Translocation to Shimbahills National reserve ◆ Community Area updates	◆ KWS translocated 12 out of 17 identified buffaloes who disturbed locals due to SML expansion to Shimbahills national reserve. 5 were not located and assumed to have moved away by themselves. ◆ This was majorly on animals' encroachment such as baboons, monkeys, wild pigs and snakes. Members were informed to contact baboon chasers on the same since they are doing a tremendous job.
11/07/2019	Kibuyuni	◆ BTL's Project Update ◆ KSC Request on Public Baraza to the Community	◆ Updated on the conclusion of exploration in Lunga Sub County with negative results. ◆ Updated on commencement of mining activities in Southern Dune (Nguluku) after conclusion of Central dune (Maumba). Current SML expected to close down in 2022. ◆ Kibuyuni requested BTL to hold baraza meetings with villagers otherwise they will boycott all the meetings. They claimed they are facing resentments from the community because BTL has not had any projects within the village recently despite being reminded of many.
27/11/2019		◆ BTL's Update ◆ KSC request for a Public Baraza to the community ◆ KSC requested for community projects	◆ Updated on the ongoing High Scholarship Programme. ◆ Updated on exploration engagements in Ramisi ward. ◆ Informed on Lungalunga Sub County negative exploration results. ◆ BTL should meet the community and explain what it has done for them ◆ KSC insist that they are entitled to their specific community projects because they are the most affected compared to the rest of Likoni Sub County.

Sub Committees' Meetings 2018-2019

0Date	Forum	Issues	Remarks
19/7/2019	BMU Mtongwe	◆ BMU Proposals	◆ The committee requested for discussion of one agenda which was their proposal. BTL had engaged them since 2014 to date and the committee has not benefitted despite presenting their project proposal to BTL. They were asked to resend their proposal for BTL's consideration in the next financial year's budget.
6/12/2019		◆ BMU Proposal ◆ Scholarship ◆ Meeting Schedule ◆ Mine Life	◆ Members needed to know if BTL will work on their proposal because it is long overdue but were informed that BTL will prioritize this. ◆ Committee complained that they are not benefitting from scholarship program despite their children applying. BTL stressed that there is vetting procedures and beneficiaries are picked out of merit. ◆ BTL takes long in meeting with this particular committee they would like to have a copy of yearly schedule, BTL to share this. There was a concern on Mine life because the team was worried about community benefitting from BTL's projects.
2019	Kaya Elders	◆ No meetings held for this subcommittee in 2019	◆ They had issues with accounting for 2018 ritual cash given to them by BTL, they were asked to work on that when they requested for 2019 ritual funds. This is the reason the team has been shunning away from meeting BTL.

Sub Committees' Meetings 2018-2019

0Date	Forum	Issues	Remarks
21/08/2019	Security	◆ Security/Safety Reports from the villages ◆ Report from BTL security	◆ Kibwaga villagers complained about trespassing by BTL officials within their lands, owners' consent should be asked prior. ◆ Mivumoni B villagers reported on noise especially at night due to Southern dune mining activities. ◆ Gang attacks reported in Gazi areas. ◆ Community awareness on BTL's power line should be done in Mchinjirini and Fingirika villages for safety purposes. ◆ Access road users should be sensitised against the usage of phones while on road. ◆ BTL reported an increase of cattle grazing at SML. ◆ BTL urged members to sensitise motorbike riders to reduce speed. ◆ Animal traps by community members were spotted at BTL's fence, this was discouraged.

MINUTES OF MSAMBWENI LIAISON COMMITTEE MEETING HELD AT MAKUTI (BTL) ON NOVEMBER 28TH 2019

AGENDA

1. Opening prayers
2. Chairman's remarks
3. Reading and confirmation of previous minutes
4. Project update:
    - Livelihood and infrastructure
    - Scholarship programme
    - Community health
    - Nguluku relocation
5. AOB
6. Closing prayers

Minute 1: Opening prayers

Meeting was called to order by acting chair Mr. Abdallah Mambo at 11.00 after word of prayer and self-introduction of members.

NOTE: The ACC 1 Msambweni, Mr. Anderson Ayuku who was meant to chair the meeting arrived when the meeting had begun and allowed Mr. Mambo to continue as chair.

APOLOGIES

There were no reported apologies

Minute 2: Chairman's remarks

The acting chair requested the meeting to skip the "chairman's remarks" bit to be handled by the ACC when he arrived.

Minute 3: Minutes of previous meeting

Minutes of previous minutes were read by the secretary. Mbarak Mwamaku confirmed the minutes while Patrick Ngila seconded.

Matters Arising

- A member reminded the meeting that attendance list was not attached to the minutes as had been indicated. Ms. Rose King'oo who was heading the BTL team in the meeting pledged to have the attendance list shared in the future meetings.
- In reference to a question raised by a member on the previous scholarship distribution, Mr. Challa, who represented the BTL Scholarship programme, clarified that the 140 slots indicated in the minutes as meant for "teachers and others," implied all courses offered in the university and tertiary institutions other than Law, Engineering and Medicine.
- It was also clarified that the Prospecting License for Ramisi was given in 2018 (Ramisi-Pongwe/Kikoneni-Vanga) and not 2013 as indicated in the minutes.
- Record was also set straight that out of the 700 desks BTL purchased for local primary schools in Ramisi and Pongwe/Kikoneni wards, 400 were distributed to Dargube and Mchinjirini while 300 were divided among some schools in Pongwe/Kikoneni Ward.
- The borehole repair works in Nguluku-Nora area had been completed and the project was in use

  NOTE: The MLC representative for Nguluku claimed she was not involved in the project. But Ms. Siti Kiponda who represented the Livelihood and Infrastructure informed the meeting that the borehole was being repaired (not freshly constructed), complete and in use and that a project committee was in place to oversee its operations. Meeting heard that BTL will make further follow-up on the matter.

- **Mwaweche** Project too had been completed and in use.
- Mr. Shaban Mwero expressed the great need to involve or inform MLC members on projects planned or taking place in their respective areas.
- The matter of the bridge at FIONI was raised in the previous meeting and BTL committed to make follow-up but it has not been repaired to date.

NOTE: BTL's Rose King'oo challenged MLC members to be willing to volunteer their time and follow up on proposed projects as well as physically make visits to BTL and make inquiries on the same.

- A member reminded the meeting of a resolution made in the previous meeting (in July 2019) to the effect that MLC members be subjected to regular capacity building workshop so as to be able to effectively execute their mandate. He questioned why not a single workshop had been organized for the team more than one year since the current MLC was constituted. But in response, Rose King'oo told the meeting that the proposal was agreed upon but dates of workshops have not been agreed upon.
- On livelihoods, the meeting was advised on the need to inform MLC members when the cultivation exercise is meant to kick off. Ms. Kiponda however clarified that updates are normally done but only the list of beneficiaries had not been shared.
- A member, expressed concern that BTL was doing a lot of work in the community but information dissemination was still low. He proposed that BTL should do one major strategic activity that would remain in the memory of beneficiaries for a long time.
- The meeting was also informed of the need for adequate sensitization programmes on PAVI projects.
- The meeting was told that there is apathy among cotton growers (a case study was shared of a farmer who was reluctant to harvest for fear of alleged lack of market for the crop). But Ms. Kiponda asked members to advise community to plant other crops than cotton) She further stated that PAVI had structures at the ward and village levels. She noted that there were delegates in each village; and that before any activities took place, potential beneficiaries were made aware. She however appreciated the feedback and promised that BTL will work towards enhancing the publicity of PAVI as a way of attracting more potential beneficiaries.
- "Anyone interested in PAVI activities should contact PAVI as it operates autonomously," advised Siti Kiponda

Other proposals included:

- The need to create a stronger link between MLC and PAVI so MLC can understand more about PAVI

Minute 4: Project Update

a) INFRASTUCTURE

BTL through Ms. Kalimbo made a presentation of work progress so far made in infrastructure development as follows:-

Project	Location	Status
Borehole Drilling	Mivumoni Catholic Church	Completed
Dormitory	Dori Girls Sec. School	On-going
Rehabilitation of collapsed toilets	Magaoni Sec. School	To be commenced - BTL to purchase materials - School to cater for labour

b) LIVELIHOODS

The table below indicates the number farmers, acreage cultivated/planted this season and challenges farmers face with the crops in Msambweni Sub-county.

Crop	No. of Acreage	No. of farmers	Harvesting stage	Status of harvest	Remarks
Cotton	425.25	344	- 251.25 acres - 210 farmers	App. 495 kg from 23 acres	
Maize	23	23	- 20 acres - 20 farmers	6300 Kg from 20 acres	
Sorghum	184	156	- 102 acres - 93 farmers	1000 kg from 17 acres	
Rice	3.5	5	- 0.5 acre - 1 farmer	20 Kg from 0.5 acre	

Note:

- Sunflower planting on-going as the seeds were received late. Number of acreage planted to be confirmed.

POULTRY

There are 13 poultry groups, 12 groups are farmers in Msambweni Sub-county located within the four wards such as Kilole, Mtambwe, Mwaloya, Mbavu,Mwaweche, Bumamani, Magaoni, Majikuko and Fihoni.

BEE KEEPING

There are 9 groups in Msambweni Sub-county spread out in various areas including, Kidzumbani, Mivumoni, Kidiani, Mkeleleni, Nguluku, Vumbu and Magaoni. Out of the 9, 8 groups harvested and managed 122kg (@ Ksh 1000 per kg). Additionally, each group received 10 beehives and bee suits.

PAVI SACCO

- PAVI offices have been moved from Kinondo to Matunda Bora where the SACCO has a business park
- The new facility has a Feed mill and has started formulating grower feeds to be sold to farmers.
- PAVI would be recruiting 2020 farmers by December 2019 and that marketing of the produce is guaranteed.

MEMBERS REACTION

CONCERNS	RESPONSE BY BTL
Does BTL still do CSR or which funds were used to do Dori girls	*Projects being done will go on until CDA is gazette. Such projects will be incorporated in CDA project*
Why doesn't Mwabungo Polytechnic borehole appear on the list of infrastructure projects yet it was done by BTL	*There are certain projects that were done following requests done directly to BTL by affected communities and not through MLC. Mwabungo Poly could be one of such projects*

If BTL still does CSR, why didn't it respond to the needs of Miembeni families which were marooned in their homes for weeks following the heavy rains in October and part of November?	*This is a responsibility for the Kwale county. BTL is yet to confirm but a followup will be made on the same.* Note: *Meeting told that civil society organizations raised funds and purchased foodstuff for the affected families. But the ACC1 said he led the national government to visit the area but the families never indicated that they needed food.*

c) Scholarship Programme

Mr. Challa made the following presentation to the members:-

- All college and university students who successfully applied for scholarship were paid for including students who were admitted to take special courses such as Law, Medicine and Engineering.
- BTL was already rolling out a new intake exercise for the 2019 KCPE candidates meant to join Form One in 2020
- The company had raised the number of beneficiaries from 200 upwards to 300 to mitigate the increased need/demand.
- The company was in the process of receiving application forms up to December 3rd at 4 pm.
    - The education sub-committee would sit at an appointed time to sort the application forms.

d) Community Health

- Riziki of BTL informed the meeting that BTL had supported the County Government's Department of Health to conduct a 3-day training workshop of Community Health Assistants (Trainers).
- BTL also supported an awareness campaign of cancer screening at Gazi in Kinondo Ward.

- BTL facilitated a sensitization activity for Community Health Volunteers (CHVs) on reproductive health at Magaoni Health Centre.

MEMBERS' REACTIONS

The reported awareness was not widely publicized and many potential beneficiaries were not aware of it.	The event was organized by the Ministry of Health and BTL just supported.
There is need to share the report on the cancer screening activities to inform the next course of action by MLC	Noted. Similar reports will be availed in future.

NOTE. The members were urged to make good use of the WhatsApp platform created by Mr. Abdallah Mambo to share information relevant to MLC.

e) Nguluku Relocation

Rose King'oo made the following presentation on Nguluku relocation exercise:-

- That, after a series of negotiation sessions, BTL paid the affected families Ksh. 250,000 with a 20% increment on perennial plants.
- That, 32 farmers had so far been relocated and the payment process was still on-going.
- That, those who had been paid were given half (50 %) of the compensation amount to collect the reaming balance after they have demolished their structures.
- That, families at Nzeveni village complained that they were affected by water released by BTL but that company had acted on the matter.
- That, BTL had engaged the 8 families who would be compensated at similar rate as was done to Nguluku families and that 3out of 8 families have already been compensated fully, 2 families who had succession issues are yet to be issued with the title deeds but the process is ongoing.

- That, all the potential beneficiaries (Nguluku and Nzeveni) were separately subjected to financial literacy and management training before compensation.
- Reacting to concerns by a member that water in Mivumoni has been polluted due to the ongoing mining activities, the Senior County Geologist, Mr. David Mwangi, informed the meeting that a committee was formed for NORA, KIBWAGA AND VUMBU and that his office would meet with the committee, visit the boreholes and take water samples for testing. He said that State Department of Mining will take care of the responsibility. He advised that at least two representatives of the community should be present when the water sample is taken.

Exploration

- **BTL** together with some government officials have had several engagement with Ramisi community on exploration
- **The** exercise will involve 5 villages: Fahamuni, Mchingirini, Dargube, Kidzumbani and Gongonda
- Making of points had started, 40 points had so far been marked before the exercise was halted because of political incitements
- Those against exploration have been boycotting sensitization meetings and later claim that the community is not aware of the exercise
- Acc informed members that even children are also being incited to shout at and heckle people during the meeting.
- A meeting is in plan to determine the way forward.

Minute 5: AOB

- Rose King'oo informed the meeting that BTL would be hosting journalists from Nation Media Group on 6th Dec, 2019, the journalists would be around for a period of 3 days.
- The journalists would meet with various stakeholders including MLC members. However whether or not they would meet with all members would be communicated.

AOB 2: Shaban Mwero-Youth Representative in MLC

- Shaban informed the meeting that his group is involved in anti-jigger campaign and recently sought for support of an organization based abroad who have offered to export 26,000 (twenty six thousand) pairs of shoes. He reported that the county government has also offered to support the group to clear the cargo. However, the group is facing transport challenges to ferry the consignment from Mombasa port to Kwale. Shaban therefore requested BTL to support the organization to have the shoes transported from the port to Kwale. He was advised by Rose to do a letter to Community Relations Manager on the same with specific costs.

  Shaban also informed the meeting that for accountability purposes, the shoes would be distributed by his group (which made the request) with the support of other relevant stakeholders in the anti-jigger campaign. Beneficiaries would include schools which shall have proved the need.

AOB 3: Shabaan Mwero

- Noting the security procedures at the main gate took considerable amount of time, Mwero requested BTL management to consider putting up a shade outside the entrance to provide shelter to the visitors against the scorching sun and/or rains. Mwero also suggested that names of all MLC members should be provided to the security at the main gate for ease of entry. He cited occasions when members had gained entry only after making calls to the "bosses" because their names were not in the list given to the security guards.

AOB 4: Abdallah Mambo

- There is need for MLC members to make a site visit to PAVI ginnery to have a first-hand feeling on its operations.

AOB 5: Challa

- Next year, BTL will receive KCSE results of the students the company has been supporting through the scholarship programme since 2017. The company also reported that 20 university students who are beneficiaries of the scholarship programme graduated from Pwani University this year.

- Jiggers: This is done on request

AOB 6: ACC Msambweni

- The ACC informed the meeting of various meetings that had been held to sensitize the communities living in areas which have been identified for exploration.
- He said politicians and a local community based organization in Mchinjirini had misled the community on the whole issue of exploration leading to hostility against the company and government agents.
- He ruled out using force (exploration) to get the community to cooperate but appealed to MLC to exercise their mandate by educating the community so that they do not fall prey to misleading forces.
- He said politicians should engage the State Department of Mining instead of creating obstacles in the process and that the Government had asked those opposed to the project to seek legal redress instead of resorting to acts of violence.
- He said major concerns have been on health and environment and that the ministry is clear on how to handle such issues. Issues around mining effects are crucial and the government is willing to engage with the community on genuine concerns.
- The ACC also advised members to share information on any destruction caused by ongoing, heavy rains to enable the government to prepare to manage the situation/disasters promptly.

  "Let's also share information on areas with food shortages as a result of the crop failure," he concluded.

Mr. David Mwangi, the County Geologist said the Company had followed the due process in engaging the community. He said the law only required the consent of the land owner. Those opposed should not deny the others from benefitting from the exercise.

Meeting adjourned at 1:58 pm with closing prayers

Chairman…… Date……
Secretary……. Date……
BTL Rep……Date……

NGULUKU FARMERS COMMITTEE MEETING HELD ON 29.7.2019

VENUE: BASE TITANIUM – MAKUTI

ATTENDANCE;

- **Committee members** **15**
- **BTL Representatives** **7**

AGENDA;

- **Compensation of Nguluku farmers**

Preliminaries/chairman's remarks

The chairman called the meeting into order and requested Mr. Hamisi Ruga to give a word of prayer, the CRM Base titanium informed members that the GM – ECA will be joining the meeting later and so they should be patient and feel free to engage as they waited for his arrival. In his remarks, the chair hoped that this would be the last meeting towards relocation since is everyone was eager and ready to move.

Recap of events by CRM - Base titanium

The Community Relations Manager gave a recap of the whole process to date to bring the GM – ECA to speed as seen below;

- Evaluation of assets was done and feedback given to farmers

- Negotiation for relocation package commenced with both parties agreeing on some issues ;
    - Land compensation – Committee requested for 2.5M per acre, BTLs' initial offer was Ksh.150, 000 but after consultation the figure was raised to Ksh.250, 000, still the committee requested BTL to reconsider and adjust the figure.
    - Alternative land – Ksh800, 000 was the figure requested by the committee to carter for a replacement land, BTL offered Ksh500,000
    - Transport /relocation cost – The figure was raised from Ksh.50, 000 to Ksh.100, 000 a figure that was agreed by both parties.
    - Graves – Committee had initially requested for Ksh.50, 000 for each grave, after more consultation both parties settled for Ksh.25, 000 which according to BTL was an increment compared to the 10k that was offered in the previous relocations.

Reading of Nguluku Grievance letter on compensation

The secretary Mr. Stanley Kitavi took members through the grievance letter, below issues were registered;

- Appreciated BTL for initiating the process of compensating the affected families whose farms were identified/targeted for relocation.
- BTL to consider increasing the land rates from Ksh.250, 000 per acre to Ksh.500.
- Cash for replacement land be increased to Ksh. 1M from the initial offer of Ksh.500,000
- It should be noted that this is not a common relocation
- Farmers not happy with valuation of perennial crops (different compensation rates from different companies were tabled).
- The proposed rates have depreciated and do not correspond with the current economic challenges.
- Efforts to get in touch with the consultant who did crop valuation were futile
- Request for BTL to consider increasing crop compensation with 40% for every farmer

Deliberations on the letter

GM ECA – Base titanium

Land rates

- A lot has been covered since this process was initiated, however members should know that relocation process is always guided by principles of involuntary resettlement by the IFC and World Bank and that these systems are based on certain principles that are defined in making sure that it reduces impacts on those resettled.
- System does not recommend cash compensation but land for land
- Implementation of cash compensation came in after deep discussion and consultation with the DRCC, the Gov't however was to chip in and provide for the alternative land. It should be noted that now the Government is not part of the process.
- The company is very keen to address the issue of land compensation and it should be done based on the current market value, the findings of the survey gave motivation for the company to offer Khs.250, 000 per acre.

Reaction from committee

John Munyao – Coordinator

- Appreciated Mr. Forbes for granting the committee audience
- Farmers not refusing the offer but due to the high cost of living land has increased in price, it would be unfair if one will not be in a position to purchase more or equivalent number of acres he/she had before.
- Some families are large, cannot fit in a peace of 5.5acres

Stanley Kitavi – Secretary

- Relocated people should be in a position live a better life
- Good compensation may open doors for relocation in other areas the company has interest in
- Did a market survey for land and the lowest he could get was going fornKsh.250,000 excluding other expenses like land subdivision and transfers

Eunice Titus

- People will lose friends after relocation, one will have no one turn to for help and so the increment will help sustain them until their lives get back to normal.

GM ECA – Base titanium

- His wish was to see those relocated live a better life, any increment has to be justified and will require more consultation with the management
- The company has already put the issue into consideration by raising the figure from 100k to 250k
- Farmers will not incur any costs in land processing, the company will cater for that but only for those who will acquire free hold land. No one should settle on Kiscol land after relocation.
- BTL has no land to offer, farmers will be free to purchase land in any areas of their interest

Perennial crops

The committee expressed its dissatisfaction with valuation of the perennial crops sighting low rates, comparison for land rates from different companies was done. However members were cautioned not to compare Base titanium to other companies and that they should appreciate the increment of rates for the mature trees.

There emerged a rift between the farmers, one party wanted the company to reconsider giving the previous compensation rates that was in favor of the young trees, they requested for time to discuss amongst themselves and the request was granted. They all agreed to go with the current rates but also implored BTL to consider the 40% increment.

Mr. Forbes promised to check the reports and revert in the next meeting that will be held on 5th August, 2019.

MINUTES OF MSAMBWENI LIAISON COMMITTEE MEETING

BASE TITANIUM (MAKUTI)

4TH JULY 2019

START TIME: 10.45

The attendance list attached in a separate sheet.

The chair called the meeting to order at 10:45 am after a word of prayer before requesting the secretary to read the previous minutes.

The previous minutes were confirmed by Mr. Mbarak Mamaku and seconded by Mr. Nyiro Kidangu.

MATTERS ARISISING

There were only two matters arising namely:

- Non-inclusion of Mbarak in the KISCOL meeting:- Mbarak questioned why he was not included in the MLC team that visited KISCOL for a meeting.
- VANGA: Exploration and not relocation to be sped up:- Meeting was reminded that the exercise BTL had to speed up in Vanga was exploration and not relocation as was captured in the previous minutes.

AGENDA

i. PROJECT UPDATE
ii. NGULUKU RELOCATION
iii. INFRASTRUCTURE AND LIVELIHOOD
iv. SCHOLARSHIP PROGRAMME UPDATE

Minute 01/04/07/19: Project Update

Exploration

Ms. Rose King'oo of BTL took members through the status of the project in the areas that had been earmarked for exploration in Lunga-lunga Sub-county. She informed the meeting that the Government of Kenya issued BTL with a prospecting license in 2013 and the company began engaging the communities in Vanga and Pongwe-Kikoneni wards the same year. Other target areas were Mchinjirini, Kidzumbani and Dargube in Ramisi Ward. Activities in the target areas were conducted in the following sequence:-

- A committee of six individuals was formed to oversee the exploration process
- Drilling began in May 2019

- 236 holes were drilled in the two wards
- Drilling did not take place in Ramisi Ward due to misunderstanding/resistance by the community.
- Exploration was conducted on the northern dune areas of Malonya, Mkwambani and Mwaweche.
- Only 59 holes were drilled against the targeted 102 holes (There were indications according to the Geologist that there were no minerals in the area but BTL had to pay because the cost of the exercise would be more expensive)
- The exercise took place on 16th May

Minute 02/04/07/19: Nguluku Relocation

- The initial number of households identified for possible relocation was 29 but the number increased to 52
- Surveyor went to the ground and did an inventory of acreage per family
- BTL, farmers and the farmers' committee have had a series of follow-up meetings
- Relevant authorities have evaluated trees and structures in the Nguluku
- The SML variation approval has not been done by the Government hence delayed negotiations on land compensation.
- BTL's initial offer per acre was Ksh. 150,000 while the farmers committee's asking rate was Ksh. 2.5 million. BTL has since increased the figure to 250,000
- Negotiation on land will continue after the variation
- So far the process is up to 95 percent complete
- NOTE:
- ROSE: Initially BTL was talking about isolation only and had not incorporate the operation area

Minute 03/04/07/19: Infrastructure and Livelihoods Progress

Timamu Chembe of BTL's PAVI SACCO made a presentation as follows:-

- In Msambweni Sub-county PAVI targeted cotton, sorghum, rice, sunflower, maize crops
- All agricultural projects have been integrated in PAVI
- 175 acres were targeted for cultivation but only 88 acres were cultivated.
- MAIZE: 36 acres targeted but 26 cultivated while those grown are 37 acres
- SUNFLOWER: 53 acres were targeted but only 32 were cultivated and none was planted
- POULTRY: 10 groups successfully applied
- Each of the 162 farmers in the 10 groups got 6 chickens
- 17 groups are practicing beekeeping. The groups were trained and given hives
- Criterion for applying and who can benefit from the livelihoods programme was explained by Mr. Chembe (Potential beneficiaries are registered, organized groups)
- Meeting was informed that many potential beneficiaries were not aware of the programme and urged BTL to enhance publicity on the same.
- The chair further urged BTL to make clear the conditions and terms of engagement.

- Poultry project information update, Rose pointed out, was done selectively with groups interested in poultry farming.
- Project targets mainly those who live with special needs-TIMAMI
- A member was concerned about the reporting period and suggested that PAVI should be updating MLC regularly to enable members to disseminate information to the community, the same way the scholarship information is disseminated.(Report of poultry shared was since the project began in 2016)

- Whether or not there was a ready market for PAVI products, the meeting was informed that certain crops were cultivated on orders but at times those who ordered them failed to purchase in the long run.
  - Meeting was informed that most farmers prefer growing maize as opposed to cotton. Therefore BTL has decided to mix maize and cotton in the same farms.

Infrastructure

- Nguluku-Nora wells (borehole) drilled
- Mwaweche borehole and pump installation
- BTL purchased 700 desks for local primary schools (400 distributed in Dargube and Mchinjirini). Area MCA is yet to give a go ahead for delivery of the desks

Minute 04/04/07/19: Scholarship Programme Update

Mwanaidi of BTL gave the following updates:

- That, BTL had begun advertising for the scholarship for university students
- That, there were requests that BTL considers increasing the number of scholarship beneficiaries from 120 up to 170 and that the request had been granted. 30 out of the additional 50 slots will be set aside for applicants taking law, Engineering and medical courses in the three sub-counties
- That, 140 chances will be for teachers and other courses
- That, Committee should spread the information widely in their areas of operation
- That, application forms are available on the BTL website, at BTL mine site and BTL Likoni offices
- That, 19th February is the last day for application

A member claimed that some members of the community in Ramisi Ward had alleged that there were irregularities in the previous scholarship process but the meeting could not confirm the authenticity of the allegations.

Mr. Shaban Mwero who was involved in the process explained what transpired during the process and assured the meeting that it would be difficult for corruption to take place. He noted that the process was waterproof ant that it was not easy to manipulate because there were several procedures before a candidate could benefit. He said most of the complaints were from individuals who failed to meet the set conditions.

The secretary requested that he be furnished with the list of the beneficiaries of the previous secondary school scholarship programme to enable him compile a report. Mwanaidi pledged to share the list.

The meeting was informed that approximately Ksh. 50 million had been set aside for the scholarship programme.

Members urged BTL to keep the scholarship programme as transparent as possible.

HEALTH

The meeting heard that:

- BTL supported 25 nurses from the four sub-counties to train on prostate cancer
- BTL organized a one week meeting with a health committee from Magoni health facility (Challenges)
- BTL organized an Open Day May forum at Kombani on the projects BTL supports on health

And that Community Health Volunteers (CHVs) and Village Savings and Lending Associations (VSLAs) were in attendance.

QUESTIONS AND COMMENTS FROM MEMBERS

i. How do you report to the public other than reporting to the MLCs (*Reports are spread by CHVs/7 CHU)*
ii. There is need to be more strategic/Conduct Road shows to enhance dissemination of information
iii. RAMISI:
iv. Connect the committee to the village elders
v. Need to involve the MLC members in more BTL activities
vi. Need to support representatives of each segment of the community represented in MLC to organize forums (at least one in one quarter) to give feedback to the people they represent on the BTL programmes.

The Chair noted that:

- It was the responsibility of the MLC to disseminate the correct information out to the community.
- There was need for BTL to organize workshops from time to time for the MLC members and invite the heads of relevant departments to share information with MLC
- BTL should liaise with HUDUMA Center as a means of enhancing publicity

AOB

COMMUNITY DEVELOPMENT SCHEDULES

Meeting was informed that community development schedules were no longer in place due to the introduction of Community Development Agreements CDAs (CDS played a role in scheduling development activities) and that BTL could not implement a major project due to the introduction of CDAs.

- The bridge at Borehole 7 (Fioni), has collapsed and a member requests BTL to repair it.
- BTL needs to share information on conflicts happening in the community with MLC
- While conducting community meetings BTL should involve MLC members from respective villages/communities
- There is a lot of misinformation in the community-there is very little or misleading information
- The incident at Zigira was misreported
- There is need for public participation and information sharing at all times
- BTL should do thorough research after receiving information that people are ready for drilling
- BTL should share activity schedules in good time
- The CDA issue is still with the ministry of petroleum and mining

Meeting adjourned with word of prayer at 1:15 pm

Chairperson……..

Secretary …….

MINUTES OF NEGOTIATION MEETING BETWEEN NGULUKU COMMUNITY REPRESENTATIVES AND BASE TITANIUM

BTL OHS BOARDROOM

March 11th 2019

PRESENT

1. Mr. Ronald Enyakasi: DCC Msambweni and Chair, Msambweni Liaison Committee.
2. Mr. George Jaramba: Presiding Convener, Kwale Civil Society Consortium and Secretary, Msambweni Liaison Committee
3. Mr. Pius Kassim: Community Relations Manager, Base Titanium Limited.
4. Ms. Christine Mwaka: Community Liaison Superintendent, Base Titanium Limited.
5. Ms. Rose King'oo: Community Liaison Supervisor, Base Titanium Limited.
6. Nguluku community representatives led by Messrs. Peter Nzeki and William Maponda- Coordinator and Chair respectively.

SUMMARY OF RESOLUTIONS

- ✓ That the negotiation process between the two parties will be a continuous process.
- ✓ That Nguluku community should henceforth make their submissions in writing.
- ✓ BTL will compensate the families-but the beneficiaries must leave after getting the cash
- ✓ That BTL will consider the community request of Ksh. 100,000 as relocation cost for families which will be moving outside Kwale County.
- ✓ That BTL will offer Ksh.10, 000 for each grave exhumed as consolation but will look into community's request to increase the figure to Ksh. 25,000.
- ✓ That BTL will plan for another meeting after the Ministry of Agriculture and Kenya Forest Services officials have submitted their reports.
- ✓ That the community should come up with a similar table to the one BTL has presented in the meeting with their recommendations and present to the BTL.
- ✓ That the community to involve the other additional committee members (farmers committee) in future meetings.
- ✓ That Pius will speak to the section of the community who feels left out in the process to assure them that there was no mischief in leaving them out during the initial meeting(s).

MAIN AGENDA

1. To deliberate on the compensation of the 50 families in Nguluku who will be moved to pave way for BTL operations in the area

   The chair called the meeting to attention at 11.20 am after word of prayer. As this was a special meeting, there were no previous minutes to be read. The chair then requested Mr.

Pius Kassim to brief the meeting on the progress of plans to relocate families living in Nguluku village. The meeting would particularly dwell on the following key issues:-

1.1) Cost of land per acre

1.2) Alternative land

1.3) Relocation cost

1.4) Cost of exhumation and transfer of graves to the cemetery for reburial

Before deliberating on the main agenda of the meeting, Mr. Pius Kassim briefed the meeting of the situation on the ground and gave an overview of the progress as follows:-

- ✓ That there are 50 families occupying land leased out to KISCOL (by the Government of Kenya) identified for compensation.
- ✓ That KISCOL had called BTL to inform them that they (KISCOL) were not comfortable with part of the proposed agreement on the Nguluku land issue.
- ✓ That KISCOL would participate in another meeting to consult further on the matter the following day.
- ✓ That BTL was waiting for certain signatures (PS and CS signatures) that would approve the variation on taking sections of land from KISCOL to the holders of mining license (BTL) and that this may delay the process.
- ✓ That the process should be open to all parties.
- ✓ That negotiation between BTL and the community would focus on land.
- ✓ That BTL had identified the areas and the ball was now on the court of the community.
- ✓ That all communications relevant to the matter should henceforth be in writing.
- ✓ That the previous negotiation process took more than 9 years and that this one should take less time.
- ✓ That there was need for some historical background before anything else was done.

Pius further pointed out that there were 20 families to be relocated so the vacated land could be given back to KISCOL.

He noted that the Government did not have a task on the isolation area because it was KISCOL to have the final say on the land. He said the intended operation would affect 20 plots. He made it clear that BTL would give cash (compensation)-but the beneficiaries must leave after getting the cash.

Those who are currently residing on the plots in question will be assisted to identify where they will be moving to but those who do not reside in the area will be assumed to be having alternative residences.

Minute 1.1/11/03/19: Cost of land per acre

- In a letter to BTL, Nguluku community had requested to be compensated Ksh. 2.5 Million for each acre of land. But Pius took the meeting through the history of how the previous

relocation activities were conducted. He informed the meeting that first group to be relocated from Nguluku/Maumba between 2007/2008 had asked for only Ksh. 50,000 per acre but the then Minister for Environment Dr. Newton Kulundu and his assistant Prof. Wangari Mathai increased the figure to Ksh. 80,000.

- In 2015/2016, he reported that the company had increased the compensation to Ksh. 100,000. He told the meeting that BTL was willing to offer Ksh. 150,000 per acre. Community representatives however contested the offer arguing that a lot had changed between 2007/08 and now and that the amount would not sustain them. The asked BTL to reconsider the offer.
- Ms. Mary Munyao stated that Ksh. 2.5 M was meant for the land per acre while trees and crops to be treated separately
- The community requested that price of agricultural crops should be multiplied by 6.

Minute 1.2/11/03/19: Alternative land

- Pius explained that in 2007/08, the Government of Kenya relocated the affected families to Mrima Bwiti in Lunga-Lunga Sub-county and provided each family with a total of 5.5 acres of land. He however made it clear that in the current scenario, the company would be willing to provide the affected families with cash so that each family would have the option to purchase land at their area of preference.

Minute 1.3/11/03/19: Relocation cost

In 2007/08, Pius informed the meeting that BTL paid each family Ksh. 40,000 as relocation cost to those who were moving outside Kwale County. In 2015/16, the company increased the figure to Ksh. 50,000. When asked how much would be convenient to them, the community asked for Ksh. 100,000 for relocation. In response, Pius told the meeting that the company would consider the request.

Minute 1.4/11/03/19: Cost of exhumation and transfer of graves to the cemetery for reburial

- Pius told the meeting that exercise of exhuming the bodies was the sole responsibility of the government. And that when the bodies have been exhumed, the bodies are transferred to the cemetery and costs incurred borne by BTL. He said that in the past, the company offered a consolation of Ksh. 10,000 for each affected family. The community contested the amount and requested BTL to raise it to Ksh. 50,000. But after deliberations, the community climbed down to the figure of Ksh. 25,000.

The table below indicates how BTL compensated the affected families in the previous exercise. Areas marked in red depict Nguluku community's and BTL's offers.

TABLE 1.0:

REF No	ACR	TREE	CROPS	STRUCTURE	ALTERNATIVE LAND	RELOC COST	GRAVES
✓	✓	✓ - - -	✓ - - -		XX	XX	
2007-08	80,000/-	Forest dept decides	Min of Agric		5.5 in Bwiti by GoK	40K for those going outside Kwale county	Exhumed bodies transferred to the cemetery and costs taken by BTL CG takes the authority Consolation of 10K
2015-16	100.000/-					50k	
2019-	2.5 million				2.5 m	100k (BTL says it can consider that)	50k @ grave
BTL Offer	150k @acre				Each family eligible for 5 acres (will be given irrespective of the number of acreages one his having) Cost 100k @ acre (BTL offer)		BTL offers 25k

EMERGING ISSUES

The following issues emerged during the meeting:-

- Ngwatu family raised a concern that the size of their land had substantially decreased and sought to know what could have happened. In response, Pius said that could be true but the total acreage was correct-this means the community members may have "stolen" from one another. The meeting advised the family to go and sit and come up with a consensus.

- Mzee Jumadari claimed part of his land was not surveyed. But Pius said this could have been negligence on the part of the affected family.
- The meeting was also informed that there was a group which was not in attendance-among committee members
- The community representatives also expressed dissatisfaction with the rates the ministry of agriculture had costed the crops and plants in the previous exercises and appealed for better and reasonable offer this time round.
- Other issues that featured in the meeting included the proposal to sensitize and prepare the affected families for the impending resettlement as well as provision of awareness in financial management. BTL pledged to take care of the same.
- A community member asked if there was a possibility of having the remains of exhumed bodies reburied in their would-be new homesteads. However, Pius informed the meeting that this would be difficult because the law requires that exhumed bodies in such circumstances are re-buried in the cemeteries. But the family can make a special request to the Ministry of Mining.
- The community also suggested that while costing for land compensation, BTL should take note that the sizes of families had significantly increased.
- Pius informed the meeting that there were cases of mischief by certain beneficiaries who despite getting the 5.5 acres in Bwiti, decided to return to the lands they had vacated and put up fresh structures.

In Conclusion, the chair said he was pleased with the progress of the process so far and urged BTL to increase its offer slightly as the community also steps down a bit so both parties can have a middle ground. He noted that crops have higher value than what the ministry of agriculture pays according to the law. He proposed that there should be a monitoring and evaluation committee to oversee the process.

Meeting ended at 2:15 pm with word of prayer.

1. Chairperson…….
2. Secretary…….
3. BTL…….
4. Community Representative…….

Appendix 1: Photos of the meeting:

MAFISINI MEETING

Date	14.02.2018	
Venue	Mafisini's Meeting Shade	
Purpose	Exploration's Feedback	
Agenda	1.Prayers 2. Opening Remarks 4. BTL's Remarks 3. Reading of Affected Farmers' Names 4. Villager's Concerns 4. Question & Answer Session 5.Closing prayer	
Attendance	 	
	Issues Discussed	**Reactions**
	<u>Opening Prayer</u> The meeting was opened with a word of prayer.	
	<u>Opening Remarks</u> The village administrator welcomed everyone, he urged farmers to have a peaceful meeting. He informed members that there will be a selection of members that will form a subcommittee which will be representing their issues at BTL for a period of 5years. An election will be conducted on a village level. The area sub chief also stressed on having a peaceful meeting and reactions should be on a peaceful manner. He reminded members that according to the initial report mineral deposits at Mafisini are so shallow compared to the current SML. BTL was then asked to take the lead by reading out names of the affected farmers in Mafisini.	

	BTL Remarks A brief of Mafisini/Mivumoni findings was shared as seen below; Mivumoni did not have any minerals but a portion of Mafisini had some though not as deep as Maumbas' and Ngulukus. Only 50% of the identified plots have some minerals deposits, the rest will be used to put up some offices and a portion for tailings storage facility. BTL holds an exploration license and not a mining one this means BTL will not relocate anyone immediately; there will be a negotiation process with the affected party until a consensus is reached. BTL also took that opportunity to appreciate the Mafisini subcommittee for a good working relationship shared.	
	Reading of Affected farmers names A list of 105 names of affected farms was read including their plot nos. and acreage. There was a reaction against each name. Apart from the local names there were some small portions owned by KCG, national government, some were for absentee landlords.	Community members confirmed that most of them were locals. The major issue raised on this was MCH/005 which is located in Kibaoni and not Mafisini. BTL promise to investigate on this. Members acknowledge that they knew some of these plots as well.
	Villagers' Concerns One of the villagers by the name Peter Kimeu asked the company to let them stay at their place peacefully because they are afraid that the compensation won't be sufficient. He added that they are living a comfortable and happy life. One of the major concerns of the villagers was that there have not benefitted enough with job vacancies at BTL. It was mentioned that some of the committee members played a big role in tarnishing the	This was supported by many villagers who went to an extent of them applauding. BTL informed them that there will be definitely a series of engagement with

	company's image because they threatened other villagers that a forceful evacuation will be done by the company because they have the government's consent. Members requested BTL any sort of engagement that will be done should be done publicly; farmers should approach BTL on an individual basis for the sake of the village's unity.	the affected farmers as soon as they are willing. No one will be forced into entering into any agreement.
	AoB Several villagers claimed that the current Mafisini present their own interests to the company and not community's. Mr. Muli, one of the villagers appreciated BTL's efforts and promised that the affected ones will come together and give a way forward.	Mafisini sub committee's chairman asked the villagers to at least appreciate them for the scholarship accorded to their children among other projects because it was as a result of the team's effort. He added that they are free to select new Mafisini subcommittee members.
	Closing Prayer The meeting ended with a word of prayer.	

MINUTES OF MAFISINI COMPENSATION AND RESSETTLEMENT COMMITTEE HELD ON 08/02/2019.

VENUE: BASETITANIUM MAKUTI SHADE.

Agenda;

1. Opening prayers and chairman's remarks
2. RAP
3. Land subdivision
4. Scholarship and employment
5. Closing remarks
6. AoB

MEMBERS PRESENT:

NO	NAME	DESIGNATION	CONTACT	ID.NO
1	Deogratias Muovya Masai	Chairman	0723204450	8452090
2	Joseph Muli	Secretary	0723972686	2196524
3	Kyalo M. Mululu	V/Secretary	0703132942	1136558
4	Mary S. Musau	Treasurer	0719858174	2219088
5	Nahum NZivulu Munywoki	Member	0702094879	5465214
6	Kikwao Mulwa	Member	0700190262	6742932
7	Musyoka Muinde Mutiso	Member	0723223887	0765033
8	Sammy Mutua Matee	Member	0713016737	8408206
9	Moris N. Kivului	Member	0719518459	5478126
10	Fredrick Patrick Ngila	Member	0719457804	2211334
`11	Pius Kassim	BTL	0733231056	11367580
12	Rose King'oo	BTL	0726727444	23128171
13	Jumadari Rashid	BTL	0735459739	8452090
14	Samuel Muya	Ex Official	0757867517	14623429
15	David Mwangi	R. Mining officer Kwale	0720967900	21699459
16	Kavesu Mulandi	Member	0719185159	2225573

Opening prayer & Chairman's remarks

The meeting was officially opened with a word of prayer by Mr. Patrick Fredrick Ngila, the chairman then thanked members for sacrificing their time to attend the meeting, he confirmed it has been long since the two parties met and on that note he applauded the good relationship that has been witnessed between the community and BTL.

Minute 1/2/2019: RAP

The company had previously promised to share Mafisini RAP with the committee which has not happened, the committee therefore requested BTL to honor its promise and give a copy to the committee. Pius gave clarification on this stating that for a RAP to be developed the committee must provide a proposal entailing the relocation process, the proposal will play a major role in drafting the RAP.

Members were further advised that it is important to hold a meeting with larger community to get their views, from experience a division may occur if this drags for long, Pius confirmed to have held a meeting with a section of mafisini land owners who wanted BTL to hasten the relocation process. The committee reiterated that they represent the community and not a few hence the need to work together without trying to subdivide the community. Mr. Mwangi, the regional coordinator Kwale advised that as much as

they are the tittle holders, the mining Act states that All the minerals belongs to the National gov't, it's good that the company recognizes the landowners thus encouraging dialogue and negotiations. The committee then requested to be given a time frame of 2 months to come up with a proposal.

Minute 2/2/2019: Land subdivision

Issue of land subdivision was raised and discussed in the previous meeting, the resolution was that BTL will not be in a position to do any subdivision, however the committee still requested BTL to reconsider and help out just like they did in the relocation of Maumba and Nguluku. The committee added that just recently BTL assisted plot no. Mch/123 to subdivide their property.

Clarification was given on the same, during the first relocation subdivision was done to help allocation of bwiti plots and it was carried out by the ministry of lands and adjudication. BTL never took part in subdivision of plot no. Mch/123, this was an agreement between the landowners and the surveyor however the company is willing to help in succession, land transfer and obtaining tittle deeds from the land registry.

Minute 3/2/2019: Employment and scholarship

The committee requested BTL to always give the affected priorities in benefits sharing and without terms and conditions, example is the ongoing scholarship programme, BTL had initiated this very well, sponsoring students even those who did not reach the pass mark put in place, however this has since stopped. Members implored BTL to reconsider.

Another complaint was raised on youths from the affected area being sidelined on employment opportunities, instead many chances are directed to those that are not affected and so the committee requested to be given special considerations.

The committee was reminded that it is impossible for BTL to employ everyone in the community, however a good number from the area is currently working with the company. More opportunities like socio – economic survey and evaluation will open up when negotiations for relocations are reached.

Furthermore this agenda was also discussed in the previous meeting and it was agreed that employment issues be left to the Mafisini/Mivumoni subcommittee. Members however did not agree to this stating that there is big rift between the 2 committees and flow of information is highly affected and so BTL should also consider notifying the chair when opportunities arises. Pius pointed out that that there is a need for the 2 committees to meet and dialogue, he promised to spear head the talks.

Minute 4/2/2019: Closing remarks.

By Mr. Mwangi

- Talks on royalties sharing ongoing especially on the 10% that is supposed to benefit the community.
- Applauded the good relation between the 2 parties, advised the committee to work for the good of the larger community.
- There should be transparency during negotiations agreements reached should be shared
- Land owner consent is very vital prior to a company being given a mining license, Gov't always comes in 2 parties fails to come to an understanding.

Minute 5/2/2019: AoB.

- **BTL** was requested to make a follow-up on the case of the disabled children who were to go for operation.

Mafisini Resettlement and compensation committee

BASE TITANIUM

Attendance Register

Meeting : ....

Date: 8/2/2019

No	Name	Designation	Contact	ID/No	Signature
1	David Mwangi	R. MINING Officer-Kwale	0720967900	21699459	[signature]
2	DESDERATIAS M. MAKAI	CHAIRMAN MAFISINI	0723204450	8452090	[signature]
3	SAMUEL M. MUTA	EX-Official	0717867517	14623429	[signature]
4	KYALO M. MULULU	V/Secretary	0703132942	11367558	[signature]
5	Sammy Mutua	Member	0713016737	8408206	[signature]
6	KAVESU M. MULANDI	Member	0719185159	2225575	[signature]
7	JOSEPH MULI	Secretary	0723972886	2196524	[signature]
8	Ali Mwadzo		0703700113	13412472	[signature]
9	MARY S. MUSAU	Treasurer	0719858174	2219088	[signature]
10	FREDRICK P. NGULA	TRUSTEE	0719457804	2211334	[signature]
11	JUMAPARY RASHID	BTL	0735459737	20926132	[signature]
12	MORIS KIVUKU	MEMBER	0719518459	5478126	[signature]
13	KIKWAO MULWA	EX/OFFICIAL	0700190261	6742932	[signature]
14	NAOMI A NZIVULU	MEMBER	0745798804	5465214	[signature]

15	MWIOICA MUINDE	MEMBER	0723223887	~~0776533~~ 0776533	Friends
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MLC MEETING WITH NGULUKU COMMUNITY

MAKUTI

February 7, 2019

Prayer and introductions

SUMMARY OF RESOLUTION

- ✓ MLC/BTL to seek for an appointment with KISCOL in their office tentatively on Tuesday 12th February to discuss the relocation matter and also to access the EIA reports.
- ✓ The meeting set the tentative date of survey on Wednesday 13th February.
- ✓ BTL will compensate only families which shall have moved out of the land in question.

MEMBERS TO GO TO KISCOL will include:

1. Chair
2. Vice Chair
3. NEMA
4. COMMUNITY: Maria Nzeki
5. CSO: Jaramba
6. BTL: Pius
7. Representative of the Senator
8. Representative of Kinondo MCA
9. Representative of Ramisi MCA
10. Ramisi Ward Administrator

Meeting began at 10: 30 am with word of prayer and self-introduction of participants, who included MLC members, BTL staff led by Pius Kassim and Christine Mwaka.

The chair requested the secretary to read the draft minutes of the previous meeting after which he asked members to comment on the same. Mr.Abdallah Mambo proposed the confirmation of the minutes while Messrs. William Maponda and Peter Nzeki seconded.

NOTE: ***The previous meeting took place on January 29th first at Base Titanium (Makuti) and later at Nguluku at the home of Mr. Peter Nzeki***

MATTERS ARISING

- Mr. Khamisi Mwandaro reminded the meeting that one of the resolutions of the previous meeting was to have a meeting of MLC members on their own before inviting representatives of Nguluku community thereafter. Mr. Mwandaro questioned why representatives of the community were seated in the meeting.

- In response, Mr. Pius Kassim stated that when the MLC team visited Nguluku it did not anticipate having an impromptu meeting with members of the community. He informed the meeting that a

large number of members of the community were present, prompting a meeting which was never planned. Community members also joined in the subsequent fact-finding exercise and became part of the entire exercise.

- Pius further informed the meeting that after the MLC team had left Nguluku, community members continued to sit in a meeting that resulted in the formation of a committee that would represent them in the planned relocation talks. He said BTL had received communication from the community through their elected representatives to be part of the meeting. He argued that there was nothing wrong with the arrangement as the same community representatives were present during the visit in Nguluku and were therefore privy to the issues discussed. He further stated that having them in the meeting would fast-track the process and save MLC considerable time to address the issue at a different meeting.

- While contributing on the matter, Ms. Christine Mwaka said that representatives of Nguluku community were attending the meeting to introduce their committee so that as MLC proceeded to deliberate, they would be able to understand the progress the community had made with respect to the matter.
- Mr. Abdallah Mambo supported the position taken by Pius and Christine but suggested that in future, the secretary should distribute minutes to members in good time. (No resolution was passed on this suggestion though)
- After listening to members concerns, the Chair ruled that the meeting would go on with community representatives in attendance but they would be excused after making their presentation to give way for MLC members to continue with their planned meeting.

The presence of the Nguluku community representatives prompted the revision of the initial agenda which was "deliberating on the Nguluku Visit) The agenda were then revised as follows:-

1. ***Hearing from the representatives of Nguluku community***
2. ***Deliberating on the Nguluku site visit and the subsequent meeting on January 29th.***
3. ***AOB***

Minute 01/07/02/19: Hearing from the representatives of Nguluku community

- Speaking on behalf of the Nguluku community, the Nguluku committee chair Mr. William Maponda expressed the community's satisfaction with the steps the MLC had taken to address their plight. He informed the meeting that the community had called a meeting and invited those who were not present in the MLC/community meeting in Nguluku to give them feedback on the same.

- Noting that the community had gone through a myriad challenges, Maponda informed the meeting that the community had formed a committee that would henceforth represent their

interest in the entire process leading to the proposed relocation of the identified households within Nguluku.

- Mr. Maponda said the community had requested that the relocation process be undertaken expeditiously but carefully. He noted that the community depended heavily on rain-fed agriculture and appealed to MLC to prevail upon the concerned authorities to fast-track the relocation exercise so the families can move out before the long rains begin to enable them prepare for planting season in their new homes. He expressed concerns that the community members were already feeling that their freedom of movement was curtailed as BTL machineries were all over the place.

- Mr. Peter NZEKI, a committee member of the Nguluku community echoed Mr. Maponda's sentiments adding that the community representatives had come to the meeting in good faith to share information on the ground.

- Mr. Nzeki informed the meeting that there were more than 30 farmers in the village but the number had been reduced to 19 farmers. He said farmers who lived around River Mkurudmudzi in Nguluku had also wanted to come out and present their issues. He appreciated that unlike the previous relocation processes, a different and more open process was being adopted to implement the relocation.

- In his remarks after the Nguluku team presentation, the MLC chair informed members that he was pleased that no one was against the project. But Pius informed the meeting that he had received a letter of complaint signed by two people from Nguluku. He however noted that this was an isolated case.

He formally introduced to the meeting Mr. David Mwangi who had taken over as the Kwale Regional Geologist from Ms. Sarah Bungei. He further informed the meeting that the reason for bringing Mr. Mwangi on board was because BTL would be working in an area across the River Mkurumudzi in an exercise that should begin in May.

- Pius gave an overview of the intended relocation exercise to the members. He noted that when BTL did the Environmental Impact Assessment (EIA) the KISCOL dam had not been constructed. He explained that BTL's plans to relocate the people in Nguluku was not because minerals had been discovered in the particular homesteads but because of the disturbances that the mining activities in the actual mine site were likely to cause to the families.

- He said BTL would on humanitarian grounds arrange to compensate the affected families despite the fact that the land on which they settled belonged to KISCOL. In order to fulfill its part of the bargain faithfully, he said, BTL needed assurance from KISCOL that when the families are relocated, they will take over the land and manage it. To ensure that this materialized, the

committee resolved that selected members of MLC and BTL staff pay a visit to KISCOL to conclusively deliberate on the matter.

- Noting the that the the land from which the families would be relocated measured 165 acres, Pius said there would be need to conduct a survey so as to know exactly the number of acreage each family possessed. He confirmed that currently, BTL did not know how many acres each family had as they did not have titles. The intended survey, he said, would also prevent possible conflicts in the event that neighbours did not agree on the boundaries.

- Pius underscored the significance of KISCOL in the process and said delays could be experienced if there were disagreements between the families and KISCOL. Equally crucial in the whole process, he said, was the ability of the would-be affected families to manage the funds after the payment. He regretted that KISCOL did not send a representative to the meeting adding that the process would not be done as fast as the community expected if KISCOL was not cooperative.

- He said the land being occupied by the families in Nguluku had structures, crops and other vegetation whose value must be agreed upon. He however cautioned the community members against engaging in mischief as this would negatively affect the process and the company's good intentions.

Pius' presentation provoked reaction from both representatives of Nguluku community and MLC alike.

a) Mr. Maponda for instance, informed the meeting that he had recently planted some coconut trees though not due to anticipation of payment during the relocation exercise. He sought clarification on how such a case would be treated. But Pius responded that genuine cases will be looked into and a way forward will be found.

b) Mr. Nzeki wondered why BTL should not deal with them first and let the community handle KISCOL. But the chair reminded him that the land in question belonged to the government and legally leased out to KISCOL. Therefore, to avoid possible squatting, KISCOL must occupy the land.

c) Mr. Mwandaro sought to know whether BTL will compensate the families for the land. Pius answered in the affirmative. Mr. Mwandaro then advised the community representatives that if BTL would be compensating the community members for the land, there was no need of antagonizing BTL as that was a fair game.

d) The secretary of the Nguluku community committee affirmed that when BTL approached the community with the relocation proposal, there was no objection on the part of the community as long as BTL was going to compensate them fairly.

e) Mr. Mwandaro reminded the meeting that Mr. Maponda had alluded to the possibility of having absentee landlords on the land in question and sought to know if the MLC had taken the matter into account. In response, Mr. Maponda assured the meeting that he had taken time to consult

the “absentee landlords” who had settled at Bomani. He said they had no objection to the exercise. He said their land was approximately 10 acres.

f) But Eunice, the vice chair of Nguluku community committee added that the so-called absentee landlords were genuine part and parcel of Nguluku community who just moved out due to the harsh living conditions in the area. She said they had also requested to be updated on the development concerning the relocation exercise.

g) Mr. Mwandaro also sought clarification on whether BTL will be relocating the families to a particular area for resettlement or they would be paid cash to look for their preferred areas of resettlement. But Pius explained that relocation was the responsibility of the government. However, BTL would compensate the families in cash. He noted that 75% of the supposed beneficiaries of relocation in Bwiti were not families compensated by BTL. He also noted that those who successfully relocated in the previous exercise are those who left as soon as they received the cash. He told the community representatives to advise the affected families against staying behind for long after receiving the money to avoid similar challenges faced by the previous group. To avoid similar mistakes, he said BTL will pay the cash in two installments: First installment at the time of moving out and the other only when the families had moved out and settled. He emphasized that no one will be paid the whole amount of money while still occupying the government/KISCOL land.

h) In his remarks, the MLC chair said when people have been paid, they will have to leave. He also noted that men had issues with money and that women may be left to suffer in scenarios where men do not consult their spouses on financial matters. He proposed to BTL to consider providing civic education to the families before they could be paid to avoid financial mismanagement.

i) MLC secretary informed the meeting that Kwale Community Development Programme - an organization affiliated to Kwale Civil Society Consortium had expressed willingness to educate women on possible challenges they may face during the relocation process. But Christine advised that such an exercise would be more useful if men were also involved.

j) The area Assistant County Commissioner Ms. Lucy Ndinda, advised the community to start the search for where they will be moving to in good time so that when the money is available, they are able to move first. She also suggested that the intended civic education should start earlier before the families were compensated.

k) Mr. Mwandaro reiterated the need to educate the identified families including assisting them to identify the land without ownership problems.

l) Community committee secretary supported the idea of training the families. She noted that some families who benefitted from compensation in the previous exercise were living pathetic lives because they did not benefit from such training. She suggested that the organization offering such training exercises should coordinate with their committee.

m) Mr. Mbarak Mwamaku-the representative of the area MCA requested Pius to read the letter from the two individuals namely Rehema and Hamisi, who had registered complaints with BTL about the process. Pius read the letter in which the two claimed they were never involved in the process by their colleagues. They also claimed the presence of crocodiles and hippopotamus posed danger to them. The meeting however resolved that their grievances (crocodile/hippo issue) should be addressed by KISCOL as the dam hosting the animals belonged to KISCOL. Pius confirmed that the duo did not appear on the map presented to MLC because there were no compelling reasons to include them on the map.

4. **Minute 02/07/02/19:** ***Deliberations on the Nguluku site visit and the subsequent meeting on January 29th.***

- The chair expressed satisfaction in the progress of the process. He was particularly pleased with the fact that Nguluku community had welcomed the relocation idea and formed a committee to take care of their interests in the implementation process. He urged the committee members to ensure that the exercise was undertaken fairly and above board even better than the previous exercises. The committee's key responsibility, he said, was to guide the process and ensure that all parties involved accessed justice. The chair then requested Mr. Mwandaro who is also the vice chair, to brief the meeting on the findings of the site visit.

- Mr. MWANDARO took members through objective of the Nguluku site visit and what it achieved. He reiterated the need to have KISCOL on board as they had a key role to play in the process.

- He noted that there was a great need to involve technocrats from various government departments in the intended survey. He particularly singled out the department of agriculture, lands and any other relevant department to be brought on board to inform the needs of the affected families.
- Mr. Mwandaro suggested that there was need to have a meeting between MLC, BTL, KISCOL and the surveyor.
- He hinted that some politics was brewing in the matter as there were murmurs that majority of the people being relocated are from the Kamba community while those remaining behind were from Digo community. He said there was need to sensitize the communities to avoid possible conflicts.
- He alerted committee members to expect some unusual happenings such as the likelihood of people planting trees, building new houses hoping to benefit financially from the process. He however cautioned that if that happens, chances of abandoning the project would be high. Mr. Mwandaro also recommended that a meeting be conducted in the affected areas with the community before carrying out the survey to create awareness to the communities.

- While contributing to the same agenda, PIUS informed the meeting that survey was the topmost priority. Although BTL had its own surveyors, he doubted if the community will have confidence in the process if BTL was to be the one to disclose the acreages. He said there would be suspicion

that BTL had kept some acres to themselves. At this juncture, Pius sought the views of members whether it was okay for BTL to undertake the survey or let an independent surveyor do the job. He also noted that in te previous exercise, BTL engaged the Engage department of agriculture and land valuer but they were not very efficient. He urged MLC to ensure that the process was fair and credible.

- Pius said Linet-a legal officer with BTL would be needed to provide support during the exercise. He said BTL will request the government to deploy a particular surveyor named Sanya to undertake the survey work. He proposed Tuesday of the following week as the tentative date for the survey. He said a letter would be written to Mr. Njenga-the District Land Adjudication and Settlement Officer on the same.
- Pius said involving the village chairman would be a good idea as he would play a neutral role since he was not part of the affected families.

- Ms. Cecilia of NEMA suggested that either BTL takes up the awareness issue or leave it to the surveyor
- Abdallah Mambo suggested that the committee holds a meeting with KISCOL and also go to the ground with the surveyor

Minute 03/07/02/19: AOB

1. EXPLORATIONIN VANGA
   - Pius informed the meeting that BTL had held 6 meetings in Kikoneni and Vanga with regard to exploration and that committees had been formed in the respective areas.
   - In Vanga, the committee had submitted names of 25 individuals including three ladies which BTL was considering for employment.
   - Activities of mapping began around 4th February and that the process was peaceful and devoid of conflicts.
   - Drilling should be done before end of February or early March
   - The next target will be Daru Gube and MChinjirini
   - Other areas where drilling had been done included Mafisini where 600 acreas were confirmed to be having minerals.
   - Community of Mafisini had also formed a committee and was meant to visit BTL on February 8th.
   - All affected families in Mafisini have land titles.

2. Speed up relocation in Vanga
   - Nyiro Kidangu, the representative of the Senator urged BTL to speed up relocation in Vanga before the long rains begin.

3. Unpaid allowances
   - 3 MLC members namely Mbarak Mwamaku, Meali Salim and Shabaan Mwero informed the meeting that they had not been paid their allowances for participating in the home visit of

KCPE candidates who applied for BTL scholarship late last year. But Pius called the staff in charge of the programme and directed that the three be paid.

4. Committees formed in Lunga-Lunga

    - Mr. Abdallah Mambo asked why Pius had given a lot of credit to committees in Lunga-Lunga unlike other areas. But Pius responded that there was no tension in Lunga-Lunga and the people were more organized. The only complaint, he said, was that most affected areas belong to Durumas and Kambas and not Digos.

In his closing remarks, the Chair informed the meeting that once the CDA is in place some of the emerging issues will be handled by CDA committee because the CDA operates under the act of Parliament.

Meeting ended at 1:44 pm with word of prayer.

Signed this ….day of…….. 2019

Chairperson……..

Secretary…….

CC:

1. MLC File
2. BTL
3. All members of MLC

-

Community Affairs Department

Community Liaison Section

Report Title:	Brief on Kwale CDAC Formation Meeting
Date:	Wednesday 31st October, 2018
Venue	Kwale County Commisioner's Office, Kwale Town
Author:	Christine Mwaka

INTRODUCTION

The meeting was convened by the County Commissioner Kwale and was held on Wednesday 31st October 2018, in his office in Kwale Town. It was chaired by the Kwale County Commissioner and attended by the County Secretary, the Deputy County Commissioners (DCCs) and their respective Sub County Administrators (SCAs) for Lunga Lunga, Msambweni and Matuga Sub Counties. The Assistant County Commissioner (ACC) Matuga, who is also the Chair of Matuga Liaison Committee also attended the meeting, while Base was represented by the Community Liaison Superintendent (CLS) (Table 3).

The agenda of the meeting was to deliberate on how the 7 'community' slots in the Community Development Agreement Committee (CDAC) will be distributed amongst the 3 sub counties impacted by Base Mining Project in Kwale County.

In his welcoming remarks, the County Commissioner urged the administrators to cooperate and ensure the process succeeds. He cautioned that politicians may have their own interests but it is their (DCCS/SCAs) responsility as administsrative leaders to ensure we have a committee that can deliver their expected mandate for the benefit of the Kwale community. The County Secretary also urged the leaders to guide communities to consider people with integrity who can be relied upon and not looking after their own vested interests.

DELIBERATIONS

Base CLS outlined the composition of the CDAC as provided in the CDA regulations. She reiterated that Base intends to form 2 CDACs one for Kwale County and another for Mombasa County since its area of influence spans across 4 sub counties including LungaLunga (Host Site), Msambweni (Mine Site), Matuga (Transport Corridor) and Likoni (ShipLoading Facility).

There was a detailed discussion on how the 7 slots should be shared amongst the 3 sub counties with some leaders wondering why Matuga should be included since the road is a national road and not being used by Base alone. At some point, some felt Vanga area should be included in the CDAC since Base is hopeful in getting the license to avoid repeating the process again. Later, it was agreed it should be left out for now since it does not fit in the current definition of 'commuity' as provided in S12 of the new Mining Act.

After the deliberations, it was agreed more concentration to be provided for the directly affected communities in Msambweni (Mine Site)-4 slots and LungaLunga (Host Site)-2 slots, as opposed to those indirectly affected (transport corridor)-1 slot. The table below outlines how the various slots were distributed amongst the sub counties.

Table 1: Distribution of CDAC Slots in Kwale County

No	CDAC Slot	Sub County	Comment
1	(d) one representative of women elected by the community;	Msambweni	Kinondo or Ramisi Ward
2	(e) one representative elected from among the village elders of the community	LungaLunga	Pongwe/Kikoneni Ward
3	(f) one representatives of the youth of either gender from the community;- Male	Matuga	Tiwi or Waa/Ng'ombeni Ward
4	(f) one representatives of the youth of either gender from the community;- Female	Lunga Lunga	Pongwe/Kikoneni Ward
5	(g) one representative elected by civil society organisations working in the area of extractives in the County;	Msambweni	Members (CSOs) to determine but maybe Ukunda since most of them are based there
6	(h) one representative of marginalised groups, ethnic and other minorities	Msambweni (Ramisi Ward)	Ramisi Ward- Shirazi community since they are a minority and also had issues with registration-IDs coz of their names though they are locals.
7	(i) one representative of persons with disability from the community;	Msambweni	Kinodno or Ramisi Ward

WAY FORWARD

- On the 7 slots- DCCs/SCAs to conduct joint community barazas with the relevant target communities to allow them an opportunity to elect their representatives.
- Base to write a letter to consortium of CSOs and PWDs to inform them of their slot in CDAC and need to liaise with Msambweni DCC/SCA to convene a meeting of their members to elect their representative.
- Governor- Base to follow up with Governors offices on written commincation of their representatives
- National Government Representative- County Commissioner , may consider delegating to Msambweni DCC although not sure if the Regulations allow this.
- MCAs- Directly affected (3)- Ramisi, Kinondo, Pongwe/Kikoneni and indirectly affected (transport corridor) (4)-Ukunda, Gombatto/Bongwe, Tiwi and Waa/Ng'ombeni totaling to 7. Will Base include all these?
- Area M.P- Also will Base include all the 3 (LungaLunga, Msambweni , Matuga) or not?.
- The leaders seemed to feel the politicans will already have **10 slots** posing potential 'danger' of political 'control' of the CDAC hence the need to have very strong community representatives.
- Next meeting to be held on Wed. 14th November 2018 at the County Commissioner's office for DCCs/SCAs to give feedback and present names of elected representatives to inform the next steps in conjunction with Base and MoPM.

Table 2: Some photos from the meeting.

Table 3: List of participants for Kwale CDAC Meeting

No	Name	Designation	Location	Contact	Email Address
1	Karuku J. Ngumo	County Commisioner	Kwale County	721165468	cckwale@yahoo.com
2	Martin Mwaro	County Secretary, KGC	Kwale County	721883464	mwaromart@yahoo.co.uk
3	Ronald Enyakasi	DCC Msambweni	Msambweni Sub County	722745833	lenyokosi@gmail.com
4	Khamisi Mwandaro	SCA Msambweni	Msambweni Sub County	701006877	mwandaroh@yahoo.com
5	Josephat K Biwott	DCC LungaLunga	Lunga Lunga Sub County	0720356667	biwottjosphat2016@gmail.com or dcclungalunga@gmail.com
6	Eddy Chibu	SCA LungaLunga	Lunga Lunga Sub County	721921227	eddychibu@gmail.com
7	Isaac Keter	DCC Matuga	Matuga Sub County	720881193	keterisaac340@gmail.com
8	Nimusimu Mwasina	SCA Matuga	Matuga Sub County	722651818	nimusimuiddi@yahoo.com
9	Robert Shunet	ACC Matuga	Matuga Sub County	0722899845	accmatuga@gmail.com
10	Christine Mwaka	CLS	Base Titanium	0722639632	CMwaka@basetitanium.com

MINUTES OF MAFISINI COMPENSATION AND RESSETTLEMENT COMMITTEE HELD ON 01/08/2018.

VENUE: BASETITANIUM MAKUTI SHADE.

Agenda;

1. Compensation and Leasing
2. Rights of the direct affected people
3. Representation in MLC
4. Boundary verification/Map
5. Access to information
6. Subdivision of land
7. AoB

MEMBERS PRESENT:

NO	NAME	DESIGNATION	CONTACT	ID.NO
1	Deogratias Muovya Masai	Chairman	0723204450	8452090
2	Joseph Muli	Secretary	0723972686	2196524
3	Kyalo M. Mululu	V/Secretary	0703132942	1136558
4	Tabitha K. Mwanzia	V/chairperson	0719185159	22257515
5	Mary S. Musau	Treasurer	0719858174	2219088
6	Nahum NZivulu Munywoki	Member	0702094879	5465214
7	Kikwao Mulwa	Member	0700190262	6742932
8	Musyoka Muinde Mutiso	Member	0723223887	0765033
9	Damas M. Muli	Member	0719729844	11244637
10	Thomas Ngangi	Chief Mivumoni	0720432229	10769158
11	Sammy Mutua Matee	Member	0713016737	8408206
12	Moris N. Kivului	Member	0719518459	5478126
13	Fredrick Patrick Ngila	Member	0719457804	2211334
`14	Pius Kassim	BTL	0733231056	11367580
15	Rose King'oo	BTL	0726727444	23128171
16	Jumadari Rashid	BTL	0735459739	8452090

The Chairman called the meeting into order at 11:09 am and requested Mr. Fredrick to give a word of prayer. In his remarks he thanked BTL for granting audience to the committee.

Minute 1/8/2018: Compensation and Leasing

The committee needed a broader explanation on one off compensation and leasing, if all the affected people will be relocated completely or some will have to lease their farms. Clarification was given on the same, leasing was done only in Miembeni since BTL had no interest on the land, they were relocated on the basis of noise and dust. Only crops and structures were compensated for and a total sum of **Ksh500, 000** was given as alternative land. Leasing was done at **ksh8, 000** per acre per year and plot owners shall return to their land when the lease elapses. Mafisini however has a different status since the land is mineralized so the affected will be given a one off compensation to pave way for mining.

Minute 2/8/2018: Rights of the direct affected people

It was the feeling of the committee that the affected have the right to be given priority on every opportunity or benefits from the company i.e. Education, Employment and community assistance. The chairman also emphasized that his committee should be recognized as the only body that is mandated to handle Mafisini issues and grievances. Pius reminded them on Mivumoni/ Mafisini subcommittee that was elected by the communities from the two villages under the supervision of the DCC Msambweni and the Sub County administrator to deal with any issue emerging from the said villages thus having an upper hand. He gave an example of the recently completed social security recruitment, priority was given to villages in the southern dune Mivumoni/Mafisini included. The chairperson of the subcommittee was conducted to give names of candidates for the said position, one of them who is also a member in both committees qualified for the job and so he will have to relinquish his position as a member of the committee since he will now be working with BTL.

Minute 3/8/2018: Representation in MLC

The committee requested to have a member who will be representing them in Msambweni Liaison Committee just like the rest of the subcommittees, they had a feeling that they have been missing out on many opportunities. Pius explained that all the subcommittees must have a representative in the main committees, there was a confusion with resettlement committee since Mr. Damas was a member in MLC so it was assumed that the subcommittee was also represented. Mr. Deogratias expressed his concern saying that there is no link between the 2 subcommittees, he felt that the real affected people are being sidelined.

Every main committee has 2 subcommittees on Education and Conflict resolution where the communities surrounding the mine site are represented, it was then agreed that Mr. Deogratias Muovya be a member in MLC. Pius however advised the committee to concentrate more on its core responsibility which is compensation and resettlement.

Minute 4/8/2018: Boundary Verification

The committee needed to be shown clear boundary of area of interest for BTL and if the buffer zone was included to avoid environmental impacts on the people who will be left behind after relocation. This was done through a map presented by Mr. Pius Kassim. He further explained that BTL has intention of carry out survey activity in the village which will help in solving many boundary related grievances.

Minute 5/8/2018: Access to information.

All the information concerning any activity BTL intends to undertake/perform in the village should pass through the subcommittee first. An example was given when the NEMA consultant visited the village without the knowledge of the committee. This was agreed upon, BTL apologized for that, Rose King'oo and Deogratius Muovya were appointed as contact persons for both sides.

Minute 6/8/2018: Subdivision of land

Ownership of land in Mafisini is somehow complicated, most cases witnessed are tittle deeds being in the names of people who are deceased, the children never saw the need of doing succession while others are still with the land registry. The committee therefore requested BTL to assist in funding the process of succession, acquiring the deeds from the land registry and subdivision of land. Pius agreed that BTL will give a hand on the 2 but not subdivision of land.

Minute 7/8/2018: AoB

- Request for BTL to construct a toilet and blackboard for mafisini meeting banda.
- A joint meeting to be arranged for Mivumoni/Mafisini and Mafisini compensation & resettlement subcommittees to iron out their differences.
- BTL will be undertaking a socio-economic baseline survey for mafisini farmers, this will also create employment for those who will be involved in the survey.

~~MATUGA LIAISON COMMITTEE~~

BASE TITANIUM

Attendace Register

Meeting : MAFASINI RESSETTLEMENT

Date: 1/8/2018

No	Name	Designation	Contact	ID/No	Signature
1	DEOGRATIAS MUOMA MASAI	CHAIRMAN	0723204450	8452090	
2	JOSEPH MULI	SECRETARY	0723972686	2196524	
3	KYALO M. MULYLY	V/SECRETARY	0703132942	11367558	
4	TABITHA 'K' MWANZIA	V/CHAIRPERSON	0719185159	22257515	
5	MARY S. MUSAU	TREASURER	0719858174	22190888 ~~5465214~~	
6	NAHUM NZIVULU MUNYWOKI	MEMBER	0702094879	5465214	
7	KIKWAO MULWA	V/ELDER	0700190262	6742932	
8	MUSYOKA MUINDE MUTISO	MEMBAR	0723223887	0765033	
9	DAMAS M. MULI	MEMBER.	0719729844	11244637	
10	THOMAS NGANGI	EX-OFFICIAL	0720432229	10769158	
11	SAMMY MUTUA MATEE	MEMBER	0713016737	8408206	
12	MORRIS N KIVULUI	MEMBER	0719518459	5478126	
13	F. PATRICK NGILLAH	TRUSTEE	0719457804	2211334	
14	Rawd Koss	BTL	[illegible]33231056	11367890	

Mivumoni Exploration Progress Report Minutes

Date	**02.11.2017**
Venue	**Mivumoni Polytechnic**
Purpose	**Exploration Feedback Meeting**
Agenda	**1. Opening Prayer** **2. Chairman's remarks** **3. Sub-chief's remarks** **4. Updates from BTL team** **5. Q&A** **6. A.O.B** **7. Closing Prayer**
Attendance	

	Issues Discussed	**Reactions**
	1. Opening Prayers Opening prayer was by Pastor Mbali.	
	2. Chairman's Opening Remarks The meeting was called to order by Mivumoni village chairman who was the chair for the day. BTL officials were given an opportunity to introduce themselves Villages represented were; Mivumoni A & B, Fingirika, and Nguluku. The area assistant chief attended. The chairman briefly introduced the purpose of the meeting; a year ago BTL had requested for permission to carry out exploration exercise in their villages. It was not an easy task because there was some defiance by the community during the initial stage. The chairman added that Locals had many questions after the exploration therefore asked them to make good use of the forum.	
	3. Sub-chief's Remarks The sub chief congratulated the two parties for concluding the matter well. He on behalf of the community appreciated BTL for the fee paid per hole drilled despite the fact that some had negative results.	

	He did not hesitate to mention that Nguluku and Kibwaga community members had requested to be relocated due to isolation and animals' encroachment. Government officials were involved in this engagement and feedback is yet to be communicated.	
	4. Updates from BTL BTL representatives expressed gratitude for the exploration opportunity accorded to them. During the exercise BTL employed some youths. The holes drilled were coded for tracing purpose. The minerals depth found in this location was somewhat shallow compared to the current SML. Minerals were found in many parts of Fingirika and Mafisini but not in Mivumoni. BTL shared the exploration results with the government first because all types of minerals belong to them as per the law. Mafisini/Mivumoni committee was then informed but requested the company to dispense feedback to the rest of community members. The government has not yet issued the mining license to the company. BTL has 6 more years to mine at their current SML. The extension might take 6 years. Maumba's mining took off after 10 years of exploration. The affected farmers' names would not be announced publicly on that particular day. Villagers were advised to use the waiting time for proper planning such as identification of boundaries and the land registry can assist with this. Locals should not entertain incitement from politicians for their own good. As much as there are job scarcities, BTL job vacancies are limited. A committee will be formed to represent the interest of all affected farmers.	Residents paid attention to the presentation.
	5. Question & Answer Session Bakari Mwamguta, a villager from Fingirika needed to know the reason behind BTL's failure of holding a public baraza prior exploration.	BTL apologized for this. The company's only focus back then was Mivumoni and Mafisini but later on learnt that there were minerals in Fingirika. A meeting will be held to share feedback as well.

Mivumoni Exploration Progress Report Minutes

	Francis a Mivumoni/Mafisini committee member needed to know the exact affected boundaries.	A list of the affected residents will be generated and shared.
	He also needed to know if by any chance BTL came into contact with any other type of minerals apart from titanium and leaked the info to other mining companies.	BTL's only interest is Titanium.
	Joseph Kiteto from Mafisini needed to know more about the mined places.	Rehabilitation will be conducted, if not the company will be penalized heavily by the government.
	He further asked about the bee hive project specifically on the hives issuance to the community.	They are specifically distributed to groups and many beneficiaries are women, Mivumoni community is part of this.
	Ramadan Alfani needed to know who will take over the rehabilitated land.	It will be surrendered to the government for them to decide.
	Mr. Mutua Kavila informed everyone that the ideal compensation is 1M and above per acre anything below this will be rejected.	There will be proper negotiations with the affected farmers when the right time comes.
	The ladies were requested to participate because men had dominated the entire session.	There were 30% of ladies present and their opinion was farms belong to men.
	Isaac Musyoka from Fingirika needed to know if the few holes drilled will give reliable results.	They are sufficient because there were specific measurements between them.
	6. A.O.B	
	Mr. Mutua the former MCA warned BTL that its penetration will be faced with many challenges because the community has not benefitted from company's current employment. Major beneficiaries are people from Msambweni and Ukunda.	Most of the employees are not from the 2 regions but recruited as per fences and relocated to towns.
	BTL promised to hold 2 more public barazas on exploration feedback in Mafisini and Fingirika respectively.	This was agreed.
	7. Closing Prayer	
	Closing prayer by sheikh.	

Minutes Written By Samira

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