



GBMINERALS

— LTD —

FARIM PHOSPHATE PROJECT

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT

VOLUME 3 – ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN



Knight Piésold
CONSULTING



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GB MINERALS LTD. FARIM PHOSPHATE PROJECT

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT

VOLUME 3 - ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN NB301-520/2-3

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ABBREVIATIONS

the Project.....	Farim Phosphate Project
AQMP	Air Quality Management Plan
CAIA.....	Célula de Avaliação de Impacte Ambiental
CDP	Community Development Plan
CEO	Chief Executive Officer
CLO.....	Community Liaison Officers
CPR	Cardiopulmonary Resuscitation
EHS.....	Environmental Health and Safety
EPCM.....	Engineering, Procurement and Construction Management
ESAP	Environmental and Social Action Plan
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
FS	Feasibility Study
GIIP	Good International Industry Practice
GoGB.....	Government of Guinea-Bissau
HSSE	Health, Safety, Social and Environment
ICCM.....	International Council of Mining and Metals
IFC	International Finance Corporation
ISO.....	International Organization for Standardization
MRCP	Mine Reclamation and Closure Plan
MSDS.....	Material Safety Data Sheets
NGO.....	Non-governmental Organization
OHS	Occupational Health and Safety
PS	Performance Standards
QA/QC	Quality Assurance and Quality Control
RAP.....	Resettlement Action Plan
ROM.....	Run-of-Mine
SEP	Stakeholder Engagement Plan
SOP	Standard Operating Procedure
SSMP	Soil Salvage Management Plan
STI	Sexually Transmitted Infection
TOR	Terms of Reference
TSF	Tailings Storage Facility
WD	Waste Dump

1 – INTRODUCTION

1.1 OVERVIEW

The Farim Phosphate Project (the Project) is a proposed phosphate mine located in the central northern part of Guinea-Bissau, West Africa (Figure 1.1).

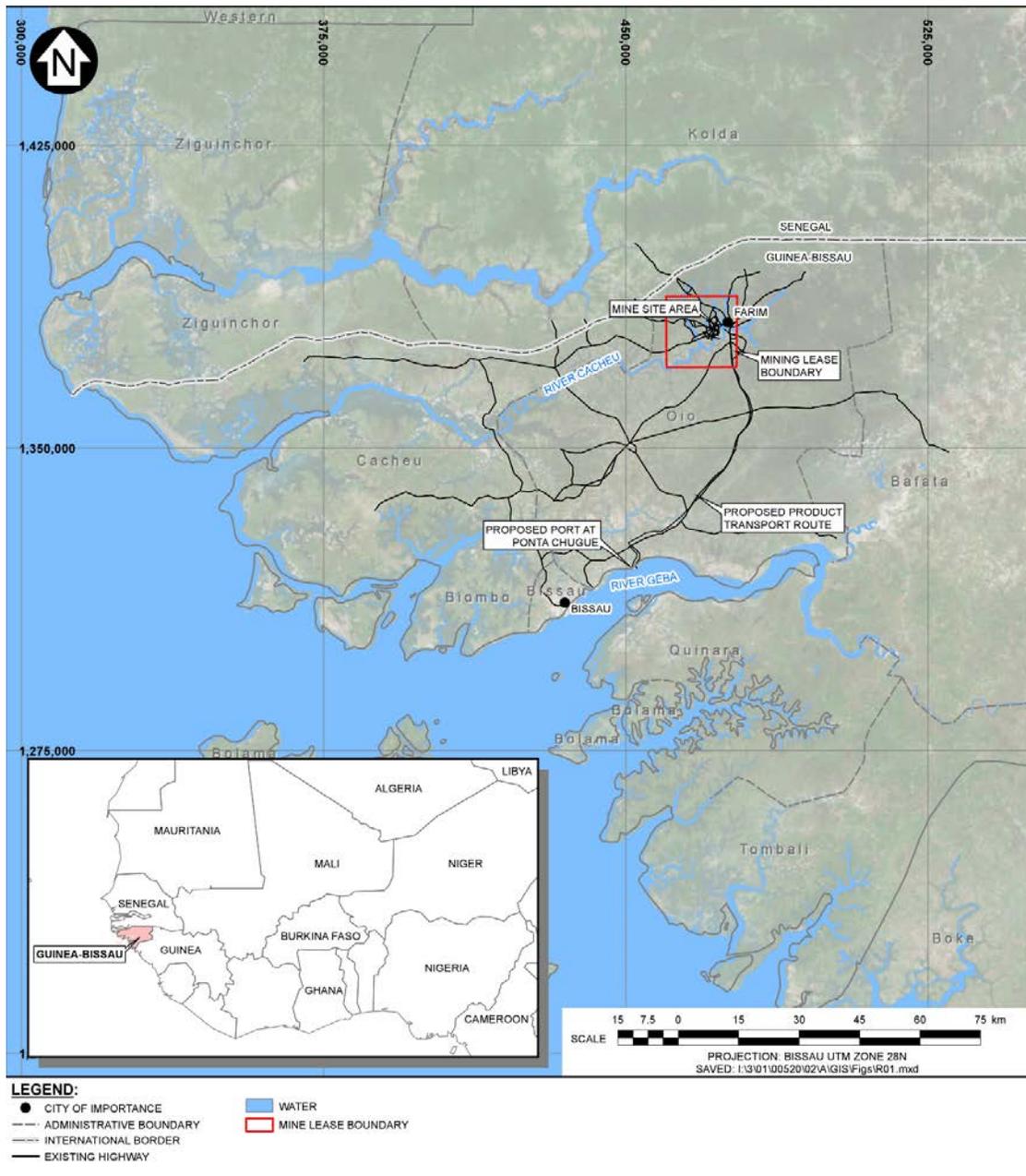


Figure 1.1 Project Location Map

The Project consists of the construction, operation and closure of a proposed open pit mining operation to exploit the Farim phosphate orebody, a process plant at the Mine Site to beneficiate the ore into a phosphate concentrate product, and an associated port facility to export the product to customers. The three main project components (Mine Site, Product Transport Route and Port Site) are shown on Figure 1.2. The Project's zone of influence includes the area and local communities surrounding these project components, as well as the regional and national socioeconomic environment at broader scales.

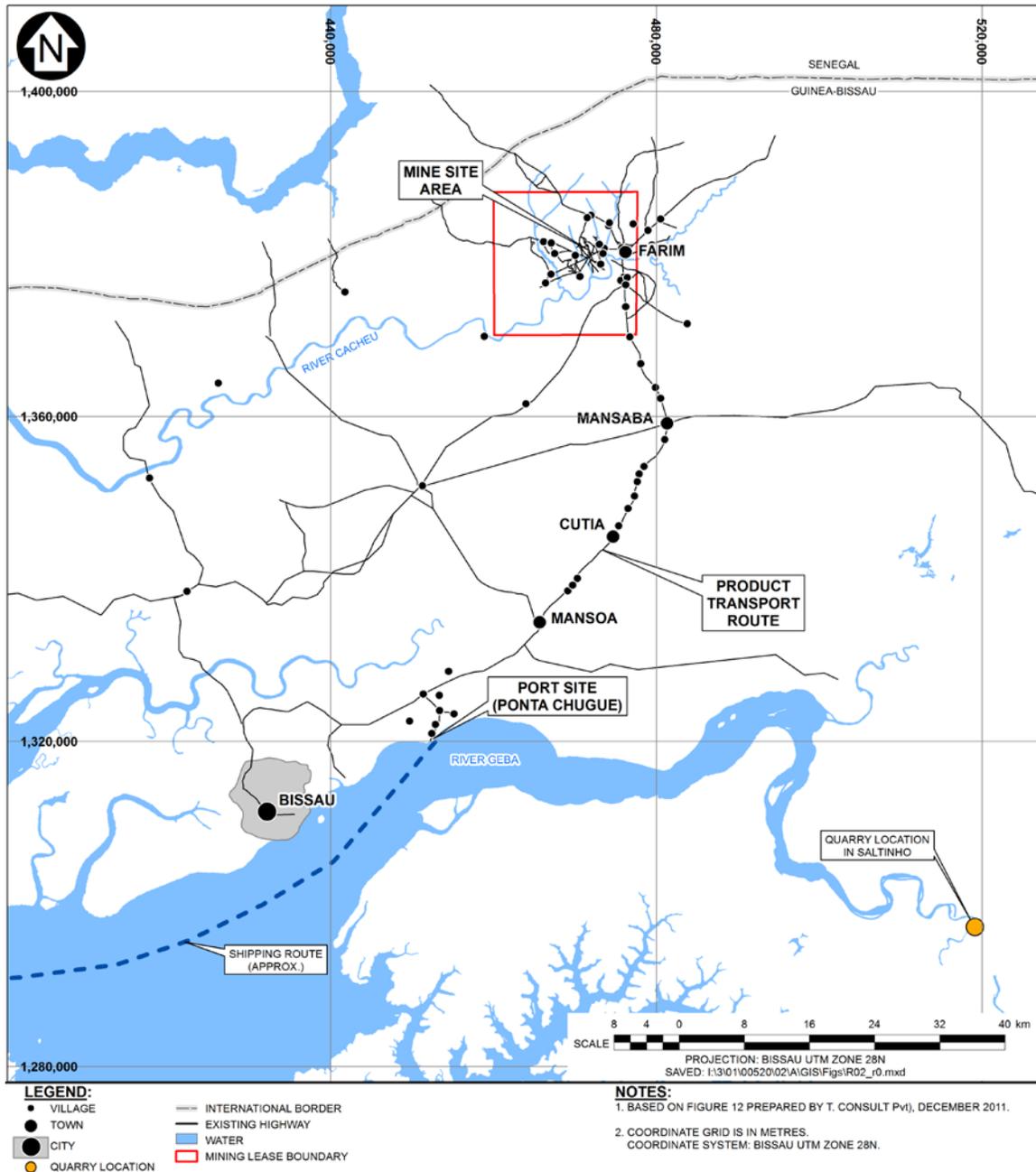


Figure 1.2 Project Regional Setting

GB Minerals Ltd. (GB Minerals) is the 100% owner of GB Minerals AG, the licence holder for the Project.

1.2 PROJECT SUMMARY

The Farim phosphate orebody consists of a high grade sedimentary phosphate deposit which extends over a known surface area of approximately 40 km². The project design is based on a feasibility study (FS) recently completed for the Project by Lycopodium Minerals Canada Ltd. (Lycopodium, 2015).

Construction of the Project is expected to take two years. The Project will operate for 26 years, mining at a rate of 1.75 million tonnes per annum (Mt/a) to produce 1.32 Mt/a of phosphate rock at an average grade of 34.0% P₂O₅. The general arrangement of the proposed Mine Site is shown in Figure 1.3.

The Mine Site is comprised of the following components:

- Two open pits - Referred to as the south pit and the north pit, which will be developed using conventional open pit mining methods in two sequential phases.
- Run-of-Mine (ROM) Pad - Stockpile of phosphate ore to feed the processing plant.
- Process Plant - For processing the phosphate ore to produce beneficiated phosphate product.
- Conveyance System - A closed conveyor to move product from the product stockpile on the north side of the River Cacheu to the truck load-out facility located on the south side of the River Cacheu.
- Waste Dumps (WDs) - Waste overburden generated by the Project will be used to backfill the south pit and the north pit. Excess overburden will be placed within three ex-pit WDs and three above grade in-pit WDs. One ex-pit waste dump (WD-3b) will contain potentially leachable overburden.
- Tailings Storage Facility (TSF) - Tailings will be generated as a result of the process and will be pumped to the TSF.
- Water Management Facilities - Dewatering wells and in-pit sumps will be used to dewater the active mining areas; flood protection bunds, watercourse diversions and sediment and environmental control ponds will be employed to manage water across the site.
- Water Treatment Plants - One water treatment plant will provide potable water and another will treat mine effluent prior to discharge.
- Storage and Maintenance Facilities - Associated with the mine operation.
- Landfill - For disposal of solid, non-hazardous waste.
- Fuel Storage Facility - To store and supply fuel for power supply and vehicles.
- Ablution Facilities - For mine staff.
- Accommodation Facilities - For expatriate mine staff.
- Administration and Additional support facilities.
- Haul roads - For mining equipment transporting ROM materials from the pits to the process plant and WDs.
- Site Access Roads - For non-mining mobile equipment.

The Product Transport Route will consist of the following components (Figure 1.2):

- A truck load-out facility located on the south side of the River Cacheu, consisting of an elevated bin to store and transfer product to trucks
- A 2-km gravel access road to be constructed to connect the truck load-out facility to the existing paved highway
- Use of an existing 68-km section of the existing paved road between Bissau and Dugal
- A 6-km gravel access road from the highway turnoff at Dugal to the Port Site
- A fleet of 31-t capacity road haulage trucks operating year-round during daylight hours to transport product from the mine to the port

The Port Site will consist of the following components (Figure 1.4):

- Truck unloading facilities
- A closed drier shed (to dry the product from 8% to 3% moisture content)
- A second closed product storage shed
- A 200 m long wharf extending into the River Geba
- Shiploading system to convey the product into the storage holds of 35,000 DWT (dead weight tonne) capacity ships
- Administrative building

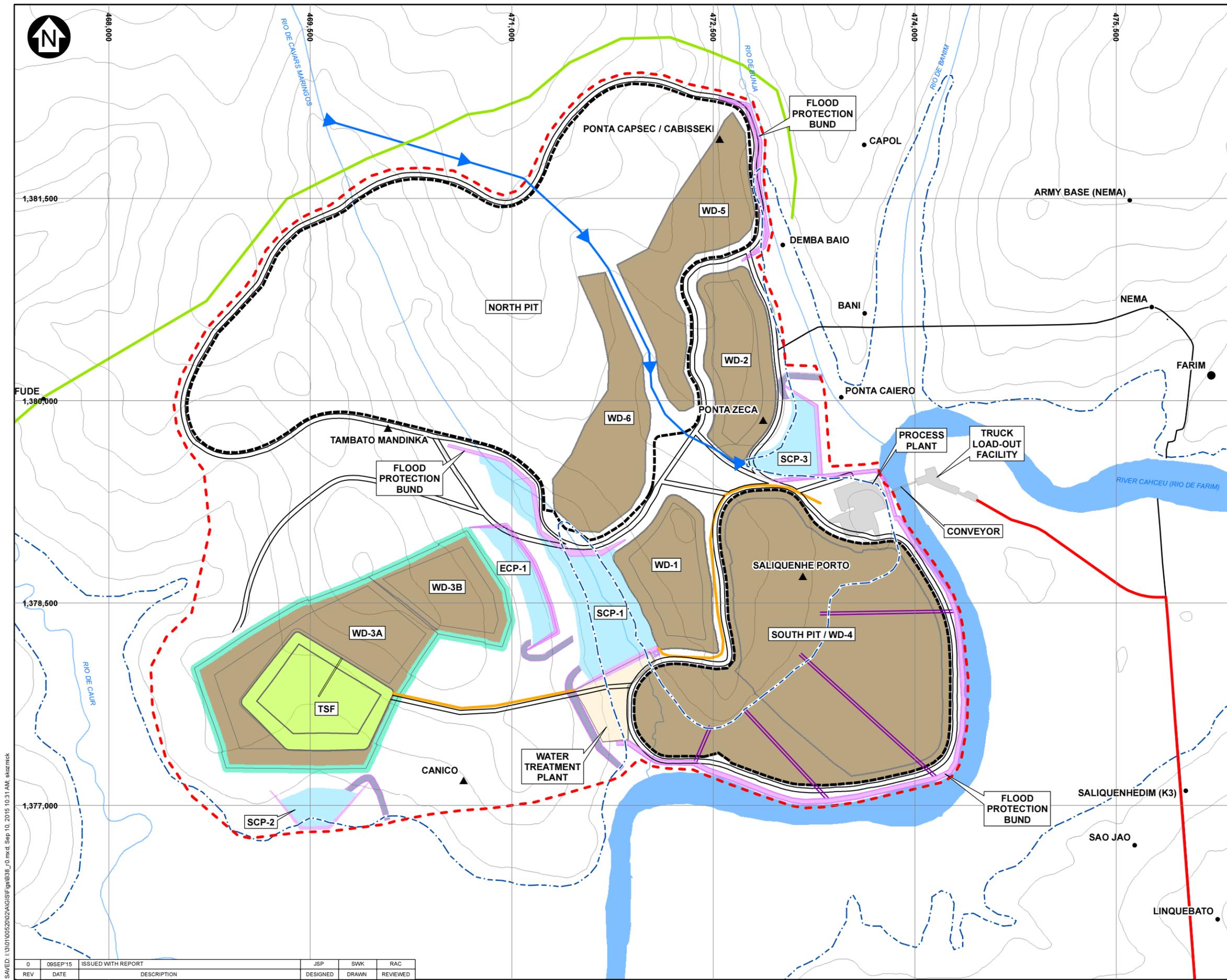
A detailed description of the Project is provided in Volume 1, Section 2 of the Environmental and Social Impact Assessment (ESIA) that this version of the ESMP accompanies.

1.3 ESIA AND ESMP STRUCTURE AND CONTENTS

An ESIA has been prepared to evaluate and address the Project's environmental and social impacts and risks. Significant positive effects are expected from this project, particularly in economic terms at both the national and local levels. It is expected that there will be potential adverse impacts on the environment and on the lives of local communities. The overall aim of the ESIA is to identify and assess potential environmental and social impacts that may be a consequence of the Project. As such, potential adverse impacts can be mitigated (avoided, reduced or offset), to the extent practicable, as part of the Project design.

The ESIA consists of the following components:

- **Non-Technical Summary** - Provides a concise summary of the ESIA in non-technical language.
- **Volume 1 - Introduction to the Assessment** - This volume provides the context for the assessment and includes the following:
 - Introductory section
 - A description of the Project
 - The applicable regulatory and legal framework
 - A summary of the environmental and social setting and area of influence of the Project
 - The Project alternatives and alternative means of completing the Project that were considered
 - The outcomes of public consultation undertaken for the Project



- LEGEND:**
- COMMUNITY
 - ▲ VILLAGE TO BE RESETTLED
 - EXISTING ROAD
 - HAUL ROAD
 - INFRASTRUCTURE
 - WATER MANAGEMENT FACILITY
 - PRODUCT TRANSPORT ROUTE
 - TAILINGS AND DECANT RETURN PIPELINE TRENCH ALIGNMENT
 - TEMPORARY FLOOD PROTECTION BUND
 - PROPOSED BYPASS ROAD
 - - - 100 m FENCELINE
 - ▶ DIVERSION CHANNEL
 - RIVER/STREAM/DRAINAGE
 - WATER
 - POND EXTENT
 - TAILINGS STORAGE FACILITY
 - SPILLWAY
 - WASTE DUMP
 - INTEGRATED WASTE LANDFORM
 - - - 1 IN 100 YEAR FLOODPLAIN EXTENT
 - - - OPEN PIT EXTENT

- NOTES:**
1. MINE INFRASTRUCTURE AND BASEMAP DATA PROVIDED BY LYCOPODIUM MINERALS CANADA LTD. (MARCH 18, 2015). UPDATED AUGUST 17, 2015 BASED ON FIGURES PROVIDED BY KNIGHT PIESOLD PERTH.
 2. COORDINATE GRID IS IN METRES.
COORDINATE SYSTEM: WGS 1984 UTM ZONE 28N.
 3. CONTOUR INTERVAL IS 5 METRES.
 4. IWL - INTEGRATED WASTE LANDFORM
TSF - TAILINGS MANAGEMENT FACILITY
WD - WASTE DUMP
ECP - ENVIRONMENTAL CONTROL POND
SCP - SEDIMENT CONTROL POND

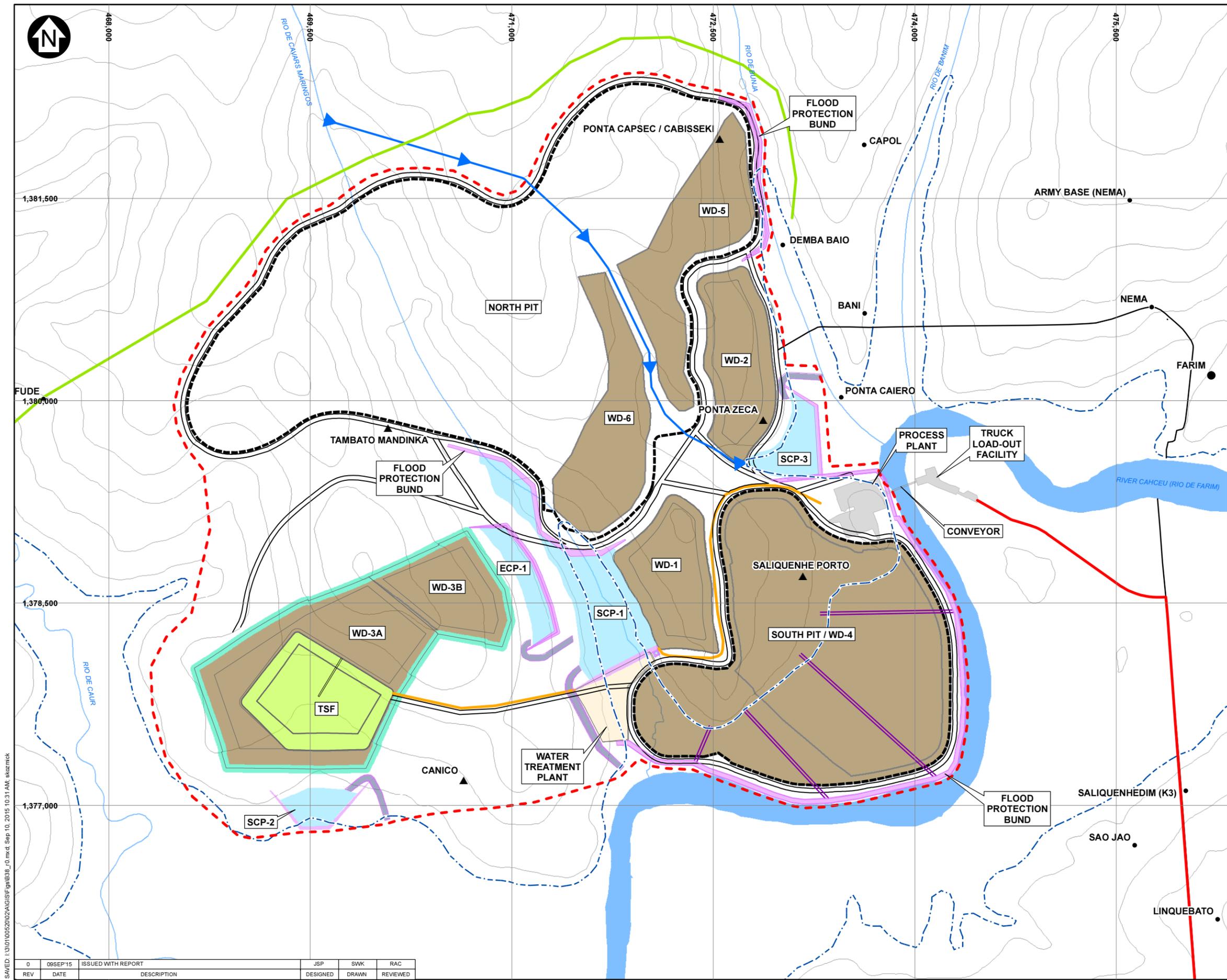


GB MINERALS LTD.
 FARIM PHOSPHATE PROJECT
 MINE SITE LAYOUT

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	FIGURE 1.3	

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- LEGEND:**
- COMMUNITY
 - ▲ VILLAGE TO BE RESETTLED
 - EXISTING ROAD
 - HAUL ROAD
 - INFRASTRUCTURE
 - WATER MANAGEMENT FACILITY
 - PRODUCT TRANSPORT ROUTE
 - TAILINGS AND DECANT RETURN PIPELINE TRENCH ALIGNMENT
 - TEMPORARY FLOOD PROTECTION BUND
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- NOTES:**
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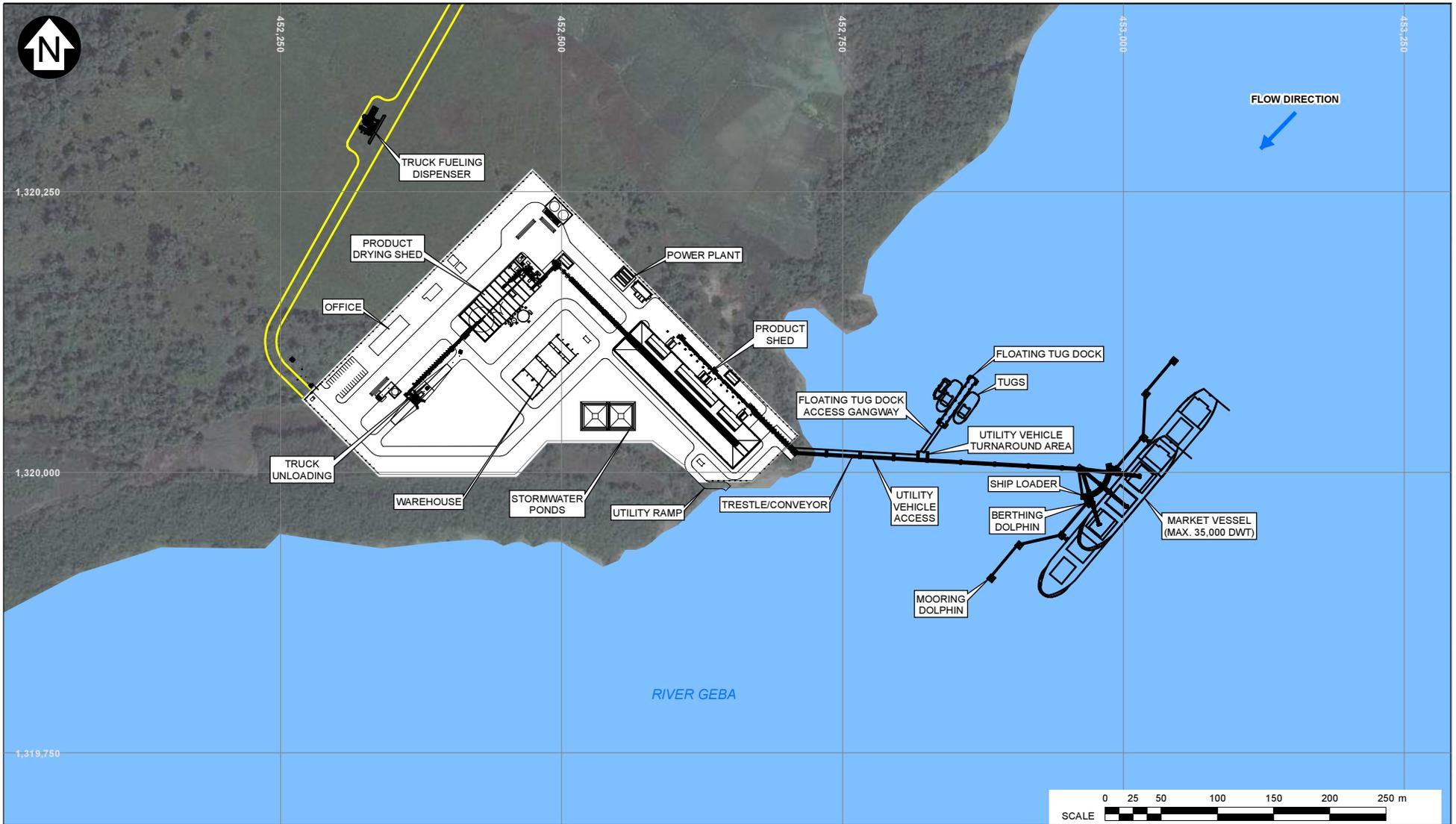


GB MINERALS LTD.
 FARIM PHOSPHATE PROJECT
 MINE SITE LAYOUT

Knight Piésold CONSULTING	PIA NO. NB301-520/2	REF NO. 3
	FIGURE 1.3	

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- LEGEND:**
- PROPOSED INFRASTRUCTURE
 - PROPOSED ROAD
 - WATER

- NOTES:**
1. MINE AND PORT SITE INFRASTRUCTURE AS WELL AS BASEMAP DATA PROVIDED BY LYCOPODIUM MINERALS CANADA LTD. (MARCH 18, 2015). MODIFIED BY KNIGHT PIESOLD LTD. TO SHOW PROPOSED INFRASTRUCTURE CHANGES (APRIL 24, 2015).
 2. COORDINATE GRID IS IN METRES.
COORDINATE SYSTEM: BISSAU UTM ZONE 28N.
 3. IMAGERY: © ESRI DATA AND MAPS (ONLINE) (2015). REDLANDS, CA:
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REV	DATE	DESCRIPTION	DESIGNED	DRAWN	REVIEWED

GB MINERALS LTD.			
FARIM PHOSPHATE PROJECT			
PORT SITE LAYOUT			
<i>Knight Piésold</i> CONSULTING		P/A NO. NB301-520/2	REF NO. 3
FIGURE 1.4			REV 0

- **Volume 2 - Impact Assessment** - The detailed impact assessment of mining activities within the Mine Site area, road transport of supplies and ore, and port operations. The assessment analyzes all potential impacts from the Project, whether they are positive, negative, short term, long term, direct and indirect, reversible and irreversible. The identification and analysis of impacts includes all phases of the Project, from construction through operation to closure and into post-closure.
- **Volume 3 - Environmental and Social Management Plan (ESMP)** - A significant output of an ESIA are the systems and plans that will guide the environmental, health, safety and social management for the Project as described below.
- **Volume 4 - Technical Supporting Documents** - Information collected and analyses completed to support the ESIA.

This volume of the ESIA (Volume 3) is the ESMP, which consists of the following hierarchy:

- **Level 1 - Management System** - The main body of this volume.
- **Level 2 - Discipline-specific Management Plans** - Identified in the Management System, for which conceptual level plans have been included in the appendices of this volume.
- **Level 3 - Standard Operating Procedures (SOPs)** - Detailed instructions or operational standards for executing the discipline-specific management plans. With the exception of a draft chance finds procedure developed in the Cultural Heritage Management Plan (Appendix 3O), most Level 3 SOPs will be developed as the Project moves into the detailed engineering design and construction phases.

The ESMP is an integral part of the ESIA, but will act as a stand-alone document which specifies the organizational structure including resources, capacity, training needs, roles and responsibilities, the impact and mitigation summary, the monitoring program and the procedure for the management of changes having a potential environmental impact. The ESMP will be updated as needed throughout the Project life in response to changes in project circumstances, legislation and guidance, unforeseen events, and the results of monitoring.

The **Level 1 ESMP** is structured as follows:

- **Section 1 - Introduction** - Presents the background to the study, an overview of the Project, the ESMP approach and report structure.
- **Section 2 - Legal and Institutional Framework** - Presents a summary of the national legislation and international standards, guidelines and best management practices, as well as GB Minerals' corporate policies and commitments.
- **Section 3 - Organizational Capacity** - Outlines the organizational structure proposed to implement the ESMP. It includes proposed training and capacity building programs to be adopted.
- **Section 4 - Impact Mitigation and Monitoring** - Summarizes the residual environmental and social impacts following mitigation identified in the ESIA, and provides a summary of the mitigation measures planned to offset the Project's adverse consequences and enhance positive environmental and social impacts in tabular format. It includes the associated monitoring to ensure compliance, together with responsibilities and an estimate of associated costs.

- **Section 5 - Monitoring Evaluation and Reporting** - This section outlines the specific monitoring program to confirm and demonstrate the efficacy of the ESMP. It also includes measures to be adopted in the event of non-compliance with the ESMP and/or an emergency.
- **Section 6 - Implementation Schedule and Cost Estimate** - Outlines how the ESMP will be aligned with the overall project schedule along with a cost estimate to implement the ESMP.

A number of **Level 2 discipline-specific management plans** have been developed as part of the ESIA. These plans, listed below, are included in Appendices 3C through 3P of the current ESMP.

- Air Quality Management Plan (AQMP)
- Noise Management Plan (NMP)
- Erosion and Sediment Control Plan (ESCP), which includes a preliminary soil salvage management plan
- Water Management Plan (WAMP)
- Biodiversity Management Plan (BMP)
- Waste Management Plan (WMP)
- Occupational Health and Safety (OHS) Plan
- Emergency Preparedness and Response Plan (EPRP)
- Preliminary Mine Reclamation and Closure Plan (MRCP)
- Stakeholder Engagement Plan (SEP)
- Community Health, Safety and Security Management Plan (CHSSMP)
- Community Development Plan (CDP)
- Cultural Heritage Management Plan (CHMP)
- Resettlement Policy Framework (RPF)

The following additional discipline-specific management plans were forward-referenced for development in the ESIA:

- Human Resources Management Plan (HRMP)
- Cemetery Relocation Plan (CRP)
- Mosque Relocation Plan (MRP)
- Sacred Site Relocation Plan (SSRP)
- Soil Salvage Management Plan (SSMP; stand-alone version)
- Resettlement Action Plan (RAP)

Candidate Level 3 SOPs to be considered for development in the future include:

- Erosion and sediment control Procedures
- Topsoil Stripping and Stockpiling Procedures
- Air Quality Monitoring Procedures
- Groundwater Monitoring Procedures
- Groundwater Dewatering Procedures
- Surface Water Monitoring Procedures
- Chance Finds Procedure
- Site Inspection Procedure
- Vehicle Inspection Procedures
- Emergency Response Procedures

1.4 OBJECTIVES

The purposes and objectives of the ESMP are to:

- Summarize commitments made in the ESIA
- Provide the regulatory and institutional framework (company policies) under which the ESMP can be further developed and implemented
- Identify the systems GB Minerals will employ to manage its environmental and social risks, including the Project Management structure for social and environmental responsibility, and the responsibilities that will be assigned to GB Minerals staff or its contractors
- Identify and describe monitoring requirements and permissible levels (targets) for monitoring
- Identify general training requirements
- Provide an implementation schedule and budget for implementing mitigation measures and the monitoring program
- Define reporting and change management procedures

Contractors vying for contracts with GB Minerals will be required to include environmental and social management measures that are aligned with this ESMP. If required, GB Minerals will develop draft contract documents aligned with the ESMP and the above mentioned objectives so that contractors can include environmental and social management in their tender documents.

2 – LEGAL AND INSTITUTIONAL FRAMEWORK

2.1 GENERAL

The Constitution of Guinea-Bissau establishes sovereign rights for the Republic of Guinea-Bissau for the preservation or exploitation of living and non-living natural resources. GB Minerals is committed to adhering to the national constitution and regulations of Guinea-Bissau. In addition, GB Minerals will apply international and industry best practice guidelines relating to extractive industries to the development of the Project.

2.2 NATIONAL LEGISLATION AND REGULATION

Further to the constitution, a number of laws related to environmental protection and management have been passed in Guinea-Bissau. The National Environmental Management Plan (NFSP; Republic of Guinea-Bissau, 2004) outlines the national policy on environmental conservation and sustainable development based on principles of equality and equity, environment and development, precaution, preservation, protection, and valuation of natural and built heritage.

The NFSP focuses on strengthening institutional capacity for environmental management, managing land degradation, land use, water resources and water supply, renewable energies, information management, education and environmental awareness, research, rational use of mineral resources, and monitoring of multilateral agreements related to the environment.

The legislation most relevant to the Project is summarized below, with key information related to ESMP highlighted in bold text.

2.2.1 Mining and Minerals Law

Law 1/2000 (the Mining and Minerals Law) regulates all issues related to the exploration and commercial production of mining substances that exist in the soil or subsoil and in the territorial waters, with the exception of oil. All mining resources in Guinea-Bissau belong to the State and property rights and the issuing of licences / permits is the sole responsibility of the government. The Mining and Minerals Law sets out the procedures which enable individuals and entities (national or foreign) to be issued with mining leases, licenses, and rights. The law also establishes:

- The application process, timeframes for consideration, and method of notification
- Conditions to be met for the issue of or an extension to mining leases or mining rights
- Grounds on which the Minister of Energy and Natural Resources can reject application, suspend mining rights, or investigate suspected infractions
- The duration of mining leases, licences, and rights
- Requirements to install markers at the boundary of mining lease area
- Requirements regarding records to be kept on-site and records to be handed over at the end of a mining lease
- **Requirements to assess and manage any environmental impacts, including restrictions on the proximity between operations and residential or agricultural properties, and the requirement to develop an Environmental Plan**

- Obligations should mining operations be suspended or halted
- Fees and taxes to be paid for applications, extensions, and income gained from the sale of minerals
- Sanctions for infractions against the regulations

2.2.2 Basic Law on the Environment

The Government of Guinea-Bissau (GoGB) has developed a framework law on the environment that lays the foundation for environmental policy and environmental assessments. Law No 1/2011 of 2 March 2011 approves the Basic Legislation on the Environment. This law defines the basic concepts, norms, and principles related to the protection, preservation and conservation of the environment. It aims to improve quality of life through the management and rational use of natural resources, to achieve the sustainable use of such resources.

2.2.3 Regulation of Environmental Impact Assessment

Law 10/2010 (the Environmental Assessment Law) regulates ESIA in Guinea-Bissau. It identifies environmental assessment as the fundamental preventative tool of environmental policy, and is an important component of the government's overarching policy of sustainable development.

The Environmental Assessment Law sets out the types of projects for which an ESIA is required and the categorisation of these projects, which is in line with the International Finance Corporation (IFC) categories. The Farim Phosphate project is classified as a Category A project due to the size of the operation. As such, a full ESIA is required for the Project.

The Law details the ESIA processes to be followed, requirements for public consultation and disclosure, the components of the studies to be undertaken and resulting reports, and the government agencies that will be involved in the assessment process. **Requirements are set for environmental and social management plans, which must present recommended mitigations, monitoring, capacity building,** and a schedule and cost estimate to implement the mitigation measures.

The ESMP is defined as the "Technical document containing a summary of the Project for compensation and minimization of impacts identified in the environmental feasibility assessment phase of a development. Under this law, the ESMP is a basic requirement whose compliance facilitates obtaining the Project or works licence, including the exploration of minerals and renewable natural resources."

Article 19.0 sets out the contents of the ESMP below:

'The Environmental and Social Management Plan for the Project describes the measures for the elimination, minimization or mitigation, compensation and monitoring of various impacts including costs, timing, and responsibility of each party in its implementation and must contain at least the following elements:

- a. Attenuation/mitigation of damages: it should define viable/feasible and economic measures capable of restoring the potential very adverse effects on the environment and human health and should present compensatory measures when attenuation measures are not sufficient.

- b. Environmental monitoring: it should be ensured during and after project implementation to provide information on crucial environmental aspects, especially their effects on the environment, the effectiveness of mitigation measures applied and shall allow the Project Owner and other interested parties to take corrective measures.
- c. Capacity building and training: to ensure a good implementation in a desirable timeframe, the environmental component of the Project and mitigation measures should be based on the estimation made by the EA in relation to the role and capacity of environmental firm.
- d. Schedule and cost estimation: for the mitigation of damage, environmental supervision and capacity building the plan shall adopt:
 - I. A schedule for implementing the measures to be taken under the Project, indicating their timeframes and its implementation plan for the Project as a whole.
 - II. An estimate of the cost of investment and operation and indicating sources of funds needed for its implementation.'

2.2.4 ESIA Terms of Reference

Célula de Avaliação de Impacte Ambiental (CAIA), the agency within the Prime Minister's Office responsible for evaluating ESIA's. A draft Terms of Reference (TOR) prepared by the company for the environmental assessment of the Farim Phosphate Project, will be finalized and approved by CAIA (GB Minerals AG, 2015). Task 6 in the TOR outlines the requirements for environmental and social management. This includes:

- Identification of actions to prevent, reduce or eliminate the negative impacts of the Project
- Identification of measures envisaged to promote or maximize the positive impacts
- Compensation measures for residual impacts
- A restoration plan for the area at the end of mining
- Measures to strengthen the involvement of people in recruitment, and to ensure vulnerable groups (women, youth and the elderly) are not excluded
- Allow the participation of local communities in the formulation and implementation of the Project, with particular emphasis on access to information for local communities
- Minimizing social risks of the Project to increase safety
- Proposing a strategy to prevent the development of sexually transmitted infections (STI) including HIV/AIDS for project workers and local people of the area that involves local health participants and health-focused non-governmental organization (NGO)
- An assessment of the costs for these mitigation and optimization measures
- A monitoring program to verify the accuracy of certain impacts and the effectiveness of certain mitigation or compensation measures proposed in the ESIA
- A monitoring plan that describes the elements of the Project and environment to be monitored, the methods, responsibilities and duration of follow-up which ensure compliance with the proposed ESIA measures
- An adaptive management program to detect the need to modify mitigation measures, if necessary

2.3 INTERNATIONAL GUIDANCE FRAMEWORK

For projects in developing countries, leading industry practice suggests the use of international standards and guidelines. Their use can be required in order to gain project funding from international lenders, but can also be implemented in cases where national legislation is not well defined. International standards and guidelines originated within financial institutions which were seeking to identify and manage environmental and social risks associated with projects they were funding. These standards have since been widely adopted and can be used by project proponents to give confidence (to regulators and shareholders) that the project conforms to leading international practice.

The following sections outline the guidance available from a variety of international organisations including the International Finance Corporation, the Equator Principles, and the International Council of Mining and Metals.

2.3.1 Equator Principles

The Equator Principles III is an environmental and social risk framework developed by The Equator Principles Association (2013) applied to identify, assess, and manage environmental and social risks in project finance transactions, based on the International Finance Corporation (IFC) Sustainability Framework.

The Equator Principles were initially developed in June 2003 by the World Bank Group, to provide an approach to determine, assess, and manage environmental and social risk in project financing. As of April 2015, 80 financial institutions were signatories to the Equator Principles (thus referred to as Equator Principle Financial Institutions, EPFIs) to ensure that the projects that were financed were developed in a manner that is socially responsible and reflect sound environmental management practices.

The ten (10) Equator Principles are:

- **Principle 1** - Review and Categorisation: Obliges the categorization of projects based on the magnitude of potential impacts and risks in accordance with the social and environmental screening criteria of the IFC.
- **Principle 2** - Social and Environmental Assessment: Requires the evaluation of social and environmental impacts and risks and the identification of mitigation and management measures that are needed to reduce impacts to acceptable levels.
- **Principle 3** - Applicable Social and Environmental Standards: Establishes the IFC Performance Standards and Environmental, Health and Safety (EHS) Guidelines to complement the host country legislation as the basis for social and environmental performance.
- **Principle 4** - Action Plan and Management System: Requires the development of a plan for implementing the mitigation measures, corrective actions and monitoring measures necessary to manage the impacts and risks identified by the Assessment.
- **Principle 5** - Consultation and Disclosure: Obliges free, prior and informed consultation and the facilitation of informed participation for projects that may have significant adverse impacts to local communities and the public disclosure of the Assessment and Action Plan in a culturally appropriate manner.

- **Principle 6** - Grievance Mechanism: Requires that an appropriate grievance process be included as part of the management system and that affected communities are informed of the process.
- **Principle 7** - Independent Review: Calls for an independent social or environmental expert to review the Assessment, Action Plan, and consultation process to assess compliance with the Principles.
- **Principle 8** - Covenants: Incorporates into the lending covenants compliance with host country requirements, Action Plan implementation commitments, periodic reporting of social and environmental performance, and facility decommissioning and closure where appropriate.
- **Principle 9** - Independent Monitoring and Reporting: Calls for an independent social and/or environmental expert to verify monitoring and reporting information.
- **Principle 10** - EPFI Reporting: Commits the EPFI to publicly report its Equator Principles implementation process and experience on an annual basis.

Categorization of projects is based on the magnitude of its potential impacts and risks in accordance with the environmental and social screening criteria of the IFC. According to IFC classifications, projects fall into one of three categories, depending on the type, location, sensitivity, and scale of the project and the nature and magnitude of its potential environmental impacts.

2.3.2 IFC Performance Standards

The IFC Performance Standards on Social and Environmental Sustainability (IFC, 2012a) are used as comprehensive standards by international finance institutions working with the private sector. These are used in conjunction with the Equator Principles to assess the environmental and social impacts associated with projects in countries which do not have well established environmental legislation. The Performance Standards define a project's role and responsibilities for managing health, safety, environmental, and community issues.

The IFC Performance Standards are supported by Guidance Notes which give additional information on the requirements of the Performance Standards and on good practice to enable improved project performance (IFC, 2012b).

The Performance Standards are summarized below, followed by more detailed content definitions:

- **Performance Standard 1** - Assessment and Management of Environmental and Socials Risks and Impacts: This standard seeks to identify and assess the social and environmental impacts of the Project, including cumulative and/or sectoral impacts and technically and financially feasible alternatives, and to avoid, minimize, and manage any unavoidable adverse impacts to people, their communities, and their environment. It requires the development of a formal environmental and social policy reflecting the principles of the performance standards. It clarifies levels of stakeholder engagement under different circumstances and required engagement beyond affected communities. It promotes improved environmental and social performance through effective management systems and periodic performance review by senior management. Finally it refers to private sector responsibility to respect human rights.
- **Performance Standard 2** - Labour and Working Conditions: This standard seeks to establish, maintain, and improve the working relationship between workers and management. It mandates equal opportunity and fair treatment of workers and protects against child and/or forced labour practices. It demands that the workplace offer safe and healthy working conditions that promote

the health and welfare of the employees. It establishes requirements for comparable terms and conditions for migrant workers, compared to non-migrant workers. The mandate also introduces the quality requirements for workers' accommodation. Additionally it requires ongoing monitoring of primary supply chain and introduces "safety" triggers.

- **Performance Standard 3 - Resource Efficiency and Pollution:** This standard is intended to minimize adverse impacts on human health and the environment by minimizing pollution and reducing emissions that contribute to climate change. It introduces a resource efficiency concept for energy, water (including unacceptable water stress), and core materials inputs. Requirements on energy efficiency and greenhouse gas measurement are important, similarly on the concept of "duty of care" for hazardous waste disposal.
- **Performance Standard 4 - Community Health, Safety, and Security:** This standard limits risks and impacts to the local communities associated with all phases of the Project, including unusual conditions. It requires that the health and safety risks be evaluated during all phases of the Project and that preventative measures be implemented to a level that is commensurate with the risk. It considers risks to communities associated with use, and/or alteration of natural resources and climate change through an ecosystem approach. It also gives consideration for the risks posed by security arrangements. Security arrangements must be guided by the principles of proportionality, good international practices in terms of hiring, rules of conduct, training, equipping and monitoring of such personnel, and applicable law. The use of force is typically not sanctioned and a grievance process must be established to allow affected communities to express concerns about the security arrangements and acts of security personnel.
- **Performance Standard 5 - Land Acquisition and Involuntary Resettlement:** This standard seeks to avoid and minimize involuntary resettlement and to mitigate unavoidable adverse impacts through compensation for loss of economic assets and economic and standard of living restoration measures. Land use issues are key to sustainability and requirements regarding consultation are essential. Resettlement measures are intended to aim at improving economic and livelihood conditions.
- **Performance Standard 6 - Biodiversity Conservation and Sustainable Management of Living Natural Resources:** This standard calls for the balancing of conservation of biodiversity and the promotion of sustainable management of natural resources. It explains in detail the definitions of and requirements for various types of habitat and introduces clear requirements for biodiversity offsets.
- **Performance Standard 7 - Indigenous Peoples:** This standard ensures that Project development respects the dignity, human rights, and cultures of indigenous peoples and avoids adverse impacts to their traditions and values. It seeks to establish and maintain ongoing relationships and to foster good faith and informed participation of indigenous peoples when projects are located on traditional or customary lands and to respect and preserve those cultures and practices. It introduces the concept of Free, Prior, and informed Consent (FPIC) under certain circumstance.
- **Performance Standard 8 - Cultural Heritage:** This standard protects cultural heritage sites from Project-related impacts and promotes the equitable sharing of benefits from the use of cultural heritage in business activities. It requires clients to allow access to cultural sites.

2.3.3 IFC EHS Guidelines

The IFC EHS Guidelines were designed with the broad aim of defining 'good international industry practice' and setting specific minimum design and operating standards with regard to the environment, occupational health and safety, community health and safety, and life cycle impacts including during construction, operation, and closure.

The detail in these standards is generally derived from globally recognised sources, such as the World Health Organization (WHO), and are intended to apply where a government's legislation is either not available or is potentially deficient in regards to good international practice. There is some flexibility in their application to existing facilities and less stringent measures can be adopted if there is a detailed justification.

The General EHS Guidelines (IFC, 2007a) are designed to apply to all projects and all sectors, but can be supplemented by sector-specific guidelines, where factors such as facility size, technology and associated impacts merit specific attention. Sector-specific EHS Guidelines that have been referred to for guidance during preparation of the ESIA include the EHS Guidelines for Mining (IFC, 2007b) and the EHS Guidelines for Ports, Harbors and Terminals (IFC, 2007c).

2.3.4 IFC Stakeholder Engagement Good Practice Handbook

The IFC Good Practice Handbook (IFC, 2007d) identifies the following key principles with respect to consultation:

- Provide meaningful information that is tailored to the needs of the stakeholders
- Provide information in advance of consultation and decision making activities
- Ensure that information is easy for stakeholder to access
- Ensure inclusivity in representation of views, including women, minorities and vulnerable people
- Promote two-way dialogues
- Ensure that the process is free of intimidation and coercion
- Incorporate feedback into project design

GB Minerals has considered the above guidance in the development and execution of its Stakeholder Engagement Plan.

2.3.5 ICMM Community Development Toolkit

The International Council on Mining and Metals (ICMM) was established in 2001 to improve sustainable development performance in the mining and metals industry. The ICMM Sustainable Development (SD) framework that all ICMM members are required to implement is centred on integrating the following set of ten principles and seven supporting position statements into corporate policy, as well as setting up transparent and accountable reporting practices (ICMM, 2015). The ICMM Sustainable Development Framework aims to achieve the following:

- Implement and maintain ethical business practices and sound systems of corporate governance
- Integrate sustainable development considerations within the corporate decision-making process
- Uphold fundamental human rights and respect cultures, customs and values in dealings with employees and others who are affected by Project activities
- Implement risk management strategies based on valid data and sound science
- Seek continual improvement of Project health and safety performance

- Seek continual improvement of Project environmental performance
- Contribute to conservation of biodiversity and integrated approaches to land use planning
- Facilitate and encourage responsible product design, use, re-use, recycling and disposal of products
- Contribute to the social, economic and institutional development of the communities in which the Project operates
- Implement effective and transparent engagement, communication and independently verified reporting arrangements with Project stakeholders

Under SD Principle 9, ICMM published a community development toolkit, which includes 17 tools to assist in planning, management, evaluation phases of community development and stakeholder relationships to be implemented throughout the mining cycle (ICMM, 2012).

Principally, SP 9 commits members to:

- Contribute to the social, economic and institutional development of the communities in which the Project operates
- Engage at the earliest practical stage with likely affected parties to discuss and respond to issues and conflicts concerning the management of social impacts
- Ensure that appropriate systems are in place for ongoing interaction with affected parties, making sure that minorities and other marginalised groups have equitable and culturally appropriate means of engagement
- Contribute to community development from project development through closure in collaboration with host communities and their representatives
- Encourage partnerships with governments and non-governmental organisations to ensure that programs (such as community health, education, local business development) are well designed and effectively delivered
- Enhance social and economic development by seeking opportunities to address poverty

The tools have six specific objectives:

- To improve understanding of local community development processes
- To support lasting improvement in the quality of life enjoyed by mining communities
- To facilitate community empowerment through participatory development processes
- To build local capacities and development resources
- To foster constructive working relationships among communities, companies, and governments
- To reduce conflict in mining communities and regions

While not currently an ICMM member, GB Minerals intends to apply the ICMM Community Development Toolkit in the development of a future Community Development Plan.

2.3.6 ICMM Closure Planning Toolkit

The ICMM has similarly developed the *Planning for Integrated Mine Closure: Toolkit*, which provides best practice guidance for closure planning and funding (ICMM, 2008). Closure planning for the Project will be developed according to this guidance, with closure considered early in the planning stages.

3 – ORGANIZATIONAL CAPACITY

This section outlines the organizational structure proposed by GB Minerals to implement the ESMP. It includes GB Minerals' proposed approach to staffing the Project as well as training and capacity building programs that will be adopted.

The organizational structure to be adopted by the Project will be hierarchical, clearly defining each employee's role and nature within the structure and promoting the application of a standardized system of protocols and procedures, yet sufficiently decentralized to allow the heads of departments to allow changes to be made quickly and empowering the senior managers to make decisions.

Environmental and social management of the Farim Project will be administered through an organization that includes corporate oversight, site management, local employees, contractors, and subcontractors. The GB Minerals Board of Directors will appoint experienced managers for key positions at the Farim Project.

These managers will be responsible for:

- Complying with local, national, international, and financial lending institution laws, regulations, policies, and guidelines, as appropriate
- Ensuring that the required environmental and social management activities are implemented and maintained
- Reporting on the effectiveness of such activities to executive management and the GB Minerals Board of Directors for review and corrective action, as necessary

GB Minerals will focus on developing the capabilities and support mechanisms necessary to administer environmental and social management. Implementation will be based on promoting company-wide awareness of environmental and social requirements, expectations, and benefits. Health, safety, and environmental protection as well as social issues and community activities will be among the highest priorities.

3.1 GB MINERALS' ENVIRONMENTAL AND SOCIAL POLICY

GB Minerals is committed to sustainable development, social responsibility, and excellence in environmental management. This commitment encompasses the following values:

- Treating all parties including workers with equality and respect
- Not using forced or child labour
- Promoting transparent business relationships
- Building trust through partnerships with stakeholders
- Understanding and respecting the rights of local communities to retain their culture, identity, customs and traditions, while at the same time providing equal opportunity to employment and other benefits for those wishing to avail themselves of such opportunities
- Developing self-reliability through compassionate education and training
- Minimizing and mitigating potential adverse environmental impacts of its activities
- Promoting rational and efficient natural resource use
- Demonstrating creativity, integrity, and excellence in all endeavours

GB Minerals intends to conduct activities in a manner that safeguards all the resources under GB Mineral's stewardship, whether they are minerals, forests, fauna, water, land, or air. As a good corporate neighbour, GB Minerals intends to do the following:

- Conduct its business at a profit
- Respect diversity and cultural differences and condone discriminatory behaviour in the workplace
- Educate its workers on health, safety, social, community, and environmental issues and its environmental and social programs
- Provide sufficient financial support for environmental and social programs
- Provide safe working conditions and terms of employment for its employees
- Protect the environment from undue degradation
- Communicate with and involve the surrounding communities and interested stakeholders on its project plans and activities
- Solicit input and assistance from the GoGB and non-government organizations (NGOs)
- Invest a part of its profit into the communities, with assistance and implementation from the GoGB and NGOs, to develop skills and opportunities that can be sustained without continuing dependence on the Farim Project

GB Minerals will develop a Community Development Policy designed to improve local community conditions and infrastructure through financial support, soliciting input from local communities and other stakeholders, and the establishment of partnerships with government and NGOs.

GB Minerals is committed to the long-term protection of environmental quality and human interests in Guinea-Bissau. GB Mineral's environmental and social programs aim to continually improve environmental and safety performance in the workplace, maintain multi-directional communication among the company, local communities and interested stakeholders, and limit the local community dependence on the Farim Project.

3.2 HUMAN RESOURCES POLICY

The Board of Directors of GB Minerals approved the following Human Resources Policy for the Project:

- To comply with the IFC Performance Standard 2 on Labour and Working Conditions, as well as Guinea-Bissau legislation regarding employment and worker rights.
- Not engage in child labour or forced labour.
- Provide reasonable working conditions and terms of employment for its employee, with respect to wages and benefits; wage deductions; hours of work; overtime work; breaks; rest days; leave for illness, maternity, vacation or holiday.
- To develop and implement human resource procedures regarding their rights under national labour and employment law. This includes any applicable collective agreements, rights related to hours of work, wages, overtime, compensation and benefits. The policy and procedures will be which are clear and understandable to employees and will be communicated to employees at the onset of employment.
- Identify any migrant workers, and provide substantially equivalent terms and conditions of employment as provided to non-migrant workers carrying out similar work.

- Establish and implement policies regarding the quality and management of accommodation services that are consistent with the principles of non-discrimination and equal opportunity; provide accommodation services that do not restrict workers' freedom of movement or of association.
- Provide a grievance mechanism for workers to raise workplace concerns, and not restrict workers from developing alternative mechanisms to express their grievances and protect their rights regarding working conditions and terms of employment.
- Permit workers to establish workers' representatives and/or organizations, and engage meaningfully and provide them with information needed for meaningful negotiation in a timely manner.
- Treat all workers with equality and respect, and take measures to prevent and address any harassment intimidation and/or exploitation within the workplace.
- Establish policies and procedures for managing and monitoring the performance of contractors engaged on the Project in complying with this HR policy.

3.3 KEY ROLES AND RESPONSIBILITIES

The General Manager will be responsible for all employees and activities at the Project and will report directly to the Project/Managing Director, who in turn reports directly to the Chief Executive Officer (CEO). The local discipline managers reporting directly to the General Manager and a brief summary of their duties are presented as follows:

- **General Manager** - The General Manager is ultimately responsible for all project-related in-country activities. The other in-country managers' report to the General Manager. The General Manager will collaborate with the Health, Safety, Social and Environment (HSSE) Manager in ensuring that the implementation of the ESMP.
- **Commercial Administrator** - The Commercial Administrator will support the General Manager in corporate affairs, government relations, public and community relations, Bissau supply, and immigration and customs. The Commercial Administrator will also be responsible for product sales, administration, and shipping.
- **Mine Manager** - The Mine Manager will be responsible for all employees and activities at the Farim Mine Site. During the construction phase, this position will be called the Construction Manager. The Mine/Construction Manager will be responsible for conducting construction or mining operations consistent with environmental conditions.
- **Operations Manager** - The Operations Manager will be responsible for equipment operations, mine maintenance, engineering and geology, mine exploration, and laboratory testing.
- **Process Plant Manager** - The Process Plant Manager will be responsible for the process plant performance, reagents, tailings storage facilities and pipelines, metallurgy, and plant maintenance.
- **Port Master** - The Port Master will be responsible for all employees and activities at the Port Site. The Port Master will be accountable for the environmental performance of the company and shipping companies operating at the Port Site.
- **Health, Safety, Social, and Environmental (HSSE) Manager** - The HSSE Manager will be responsible for planning, development and implementation of the ESMP. This includes environmental management and collecting stakeholder input through public consultation, planning, development, implementation, and monitoring of the community development

programs. The HSSE Manager will be the primary liaison with regulatory agencies on all environmental, social, and health and safety related issues.

The HSSE Manager will be supported by the General Manager and the other discipline managers in maintaining the health, safety, social, and environmental programs of the Project. The HSSE Manager will also be supported by an HSSE team comprised of the following:

- **Environmental Superintendent** - Reporting to the HSSE Manager, responsible for advising on environmental matters, designing and leading environmental programs and implementing the environmental aspects of the ESMP.
- **Environmental Technicians** - Reporting to the Environmental Superintendent, responsible for completing compliance monitoring and other environmental studies, and the preparation of monitoring reports.
- **Health and Safety Superintendent** - Reporting to the HSSE Manager, responsible for advising on health and safety matters, designing and conducting health and safety audits, investigating health and safety incidents, and implementation of the health and safety aspects of the ESMP, including the OHS plan.
- **Community Relations Specialist** - Reporting to the HSSE Manager, responsible for overseeing the company's interactions with local communities and implementation of the socially-oriented management plans within the ESMP (i.e., the stakeholder engagement plan (SEP) and grievance mechanism; community health, safety and security management plan; CDP; and resettlement action plan (RAP)).
- **Community Liaison Officers** - Under the direction of the Community Relations Specialist, community liaison officers (CLOs) will be responsible for day-to-day company's interactions with local communities and implementation of the socially-oriented management plans within the ESMP (i.e., the SEP and grievance mechanism; community health, safety and security management plan; CDP; and RAP). One or more community liaisons will support the community relations specialist.

Additional HSSE positions may be identified in the future, as required.

3.4 OTHER INSTITUTIONS TO BE INVOLVED

Successful implementation of the ESMP including the associated environmental and social management plans will require the input and involvement of a number of governmental and non-governmental organizations as well as community groups. A preliminary listing of the potential partners is presented in Table 3.1. The potentially affected communities which will be involved in ongoing stakeholder engagement activities are listed in Table 3.2.

Table 3.1 Potential Partners in Environmental and Social Management of the Project

Groups	Potential Role
<ul style="list-style-type: none"> • National Government, Regional (Farim Sector) Government, Local Administrators • Community representatives from: Canico, Saliquenhe, Tambato Mandinka, Saliquenhe Porto / Ponta Zeca, and Ponta Capsec 	<ul style="list-style-type: none"> • Provide representatives to participate on a Resettlement Working Group, contributing to the development and implementation oversight of a detailed Resettlement Action Plan (see the Resettlement Policy Framework in Appendix 3P for additional details)
CAIA	<ul style="list-style-type: none"> • Coordinate ESIA review
Ministry of Environment	<ul style="list-style-type: none"> • Contribute to ESIA stakeholder engagement activities • Review ESIA and develop recommendations for improving the ESMP • Conduct any government or permit-mandated site inspections or audits • Review GB Minerals' Annual Monitoring Report and other monitoring reports prescribed in the ESMP
Ministry of Geology and Mining	<ul style="list-style-type: none"> • Final negotiation of the Incentives Annex of the Mining Agreement • Execution of the Mining Agreement and associated requirements
Ministry of Public Works	<ul style="list-style-type: none"> • Regular communications regarding road conditions (and the Project's annual road condition survey) and road maintenance • Communications regarding relevant Ministry road construction initiatives (i.e., Farim bridge)
Ministry of Health	<ul style="list-style-type: none"> • Where possible, collaborate with the company on the collection of health data relevant to the Project, and coordinate efforts on any health-related community development initiatives identified by the Project
Farim Municipality	<ul style="list-style-type: none"> • Provide input into social management plans addressing community health, safety and security, as well as influx management and local hiring procedures in a future Human Resource Management Plan
District Administrators in Bissora, Farm, Mansaba, Nhacra and Mansoa	<ul style="list-style-type: none"> • Provide input into traffic management mitigation strategies and relevant joint interest in emergency preparedness and response with respect to project traffic
NGOs (Appropriate NGO groups to be identified)	<ul style="list-style-type: none"> • Participate or lead community development initiatives if requested by GB Minerals

Table 3.2 Potentially Affected Communities

Mine Site	Transport Route	Port Site
<ul style="list-style-type: none"> • Cancenha • Caurndin • Canico Lique Coroto • Tambandito • Tambato Mandinka • Ufude • Sandjal • Saliquenhe Porto • Ponta Caiero • Demba Baio • Urqui • Canico Tumanna • Bani • Nema • Farim • Capol • Saliquenhe • Sara Ioba 	<ul style="list-style-type: none"> • Saliquenhedim (K3) • Sao Jao • Capatrice • Colimessin-Cunda • Djalicunda • Linquebato • Bironqui • Calingue Fula • Calingue Mandinga • Mansaba • Mansaba Sutu • Manbonco • Manbonco Dar • Ponta Fernando • Ndjassone • Some • Tano • Cutia • Cureyni • Cussac • Sansaunto • Mansoa • Rossum • Dugal 	<ul style="list-style-type: none"> • N'Raga • Cunteda • Chugue • Aroté • Ancone

3.5 HUMAN RESOURCES MANAGEMENT PLAN

A Human Resources Management Plan will be developed that is compliant with IFC Performance Standard 2 - Labour and Working Conditions, including the following:

- The company's human resources policy and procedures
- Working conditions and terms of employment
- How the company will interact with any workers' organizations
- Measures to be taken to prevent and address harassment, intimidation, and/or exploitation, especially in regard to women, as well as migrant workers
- Procedures to be taken to ensure any collective dismissal or retrenchment be undertaken
- A description of the legal and contractual requirements related to notification of public authorities, and provision of information to, and consultation with workers and their organizations
- Policies and procedures for managing and monitoring the performance of third party employers in relation to the requirements of Performance Standard 2

3.6 TRAINING

Employees will receive general health, safety, environmental, and social awareness training that emphasises each employee's responsibility for complying with environmental and social laws, regulations, commitments, policies and guidelines. Employees will also receive safety training in programs such as hazard recognition, first aid, and cardiopulmonary resuscitation (CPR), emergency response procedures, job-specific health hazards, and legal and regulatory requirements applicable to the Project. Employees will be provided classroom and / or on-the-job training for their specific job tasks and the environmental or social aspects that should be considered while undertaking such tasks.

HSSE Department staff will receive specific training to qualify them to provide on-site training to all employees as well as to perform specialized jobs and tasks. Staff assigned to sample collection and data analyses will be trained by qualified employed personnel or consultants experienced in environmental monitoring.

Initial orientation and induction training will be conducted for all new employees during the construction and start-up period with continued professional development training throughout the life of the Project. Annual refresher courses will be provided to reinforce this effort.

Contractors and consultants who work at the Project will be required to adhere to the environmental, health, and safety policies, and procedures while on site. Contractors and consultants will also be required to complete similar health, safety and environment induction training programs as a condition of engagement and their agreements.

3.6.1 Environmental and Social Training Programs

Managers and staff will be trained for implementation and performance of environmental monitoring and social programs. Environmental training programs will review procedures for complying with regulatory requirements. These programs will be designed to increase awareness of the need for environmental protection, pollution prevention, sound reclamation practices, and regulatory compliance. Social training programs will include aspects of the CDP and SEP.

Qualified personnel will train GB Minerals employees responsible for environmental and social programs in the following areas:

- CDP initiatives, principles, and sustainability
- Effective public consultation and disclosure
- Issues surrounding the mine site (e.g., slash and burn agriculture, bush meat trade)
- Potential environmental effects and mitigation measures
- Environmental monitoring programs
- Sampling and analytical procedures
- Data management and compilation procedures
- Data interpretation
- Quality assurance and quality control (QA/QC) procedures and practices
- Reporting procedures
- Specific instruction on emergency response procedures and policies

Professional consultants will be utilized when necessary to supplement training and monitoring programs to adequately train employees. Training of the HSSE Department staff in particular will be an ongoing element of the overall training program. All staff will receive health and safety, environment and social awareness training applicable to their position.

The HSSE Manager will maintain records that document which employees have received training and will track employee attendance at refresher training programs.

3.6.2 Health and Safety Training Program

A health and safety training program will be developed to address and reduce the hazards associated with the Farim Mine operations. At a minimum, the health and safety training program will include:

- An initial orientation to identify the general work conditions and potential hazards of the work environment
- A summary of the Guinea Bissau, World Bank Group/IFC, and other legal, regulatory and policy requirements applicable to the site
- Training to review occupational hazards, safety procedures, and information sources (e.g., Material Safety Data Sheets [MSDSs] and warnings on barrels and containers)
- Emergency evacuation plans and escape-ways
- Firefighting procedures and responses to emergency situations
- Health hazards associated with certain tasks or assignments
- Dam safety and relevant aspects of their design, construction, maintenance, and monitoring
- First aid and CPR training for all employees
- Additional training and annual refresher courses

The HSSE Manager is responsible for developing and implementing the health and safety training program. All project employees will receive health and safety training before they begin their jobs. In addition, mine employees will receive refresher courses on mine health and safety training at least once per year.

The HSSE Manager will maintain records documenting which employees have received the appropriate training under the health and safety training program, including who is up-to-date in their refresher training programs.

Health records, when available, and work-related incidents and accidents will be monitored to assess the performance of the health and safety training program. Work-related incidents and accidents will be reviewed as part of the health and safety training program in an effort to reduce the possibility of the future occurrence of similar accidents.

4 – IMPACT MITIGATION AND MONITORING

4.1 SUMMARY OF IMPACTS AND MITIGATION MEASURES

The impact assessment is detailed in the ESIA and describes the mitigation measures required to manage potential environmental and socio-economic impacts identified. Impacts identified as moderate or above in significance are considered to be addressed in the ESMP.

This summary of impacts and mitigation measures as an outcome of the ESIA is presented in Appendix 3A.

4.2 COMMITMENTS REGISTER

A Commitments Register has been developed from company commitments stated in the ESIA. The Commitments Register is included as Appendix 3B.

The Commitments Register will be a living component of the ESMP, to be updated on a regular basis as commitments are fulfilled and new commitments are made during the life of the Project. This includes commitments resulting from the development of an Environmental and Social Action Plan (ESAP) that is expected to be developed based in review of the ESIA, and will include commitments made during the course of the stakeholder engagement process, over the life of the Project.

5 – MONITORING EVALUATION AND REPORTING

5.1 ESMP EVALUATION

The evaluation of the ESMP includes the assessment and evaluation of mitigation measures, policy and procedures put forth in the ESMP to ensure their effectiveness.

5.1.1 Pre-construction Audit

A pre-construction audit will be undertaken to verify compliance with the actions outlined in the ESMP for the pre-construction phase of the Project. If non-compliances are identified the pre-construction audit will make recommendations on what actions should be undertaken to comply with the ESMP for pre-construction.

The scope of the pre-construction audit will include:

- Status of ecological setting
- Engineering design amendments subsequent to the final design
- Cultural heritage surveys
- Status of employment policy
- RAP monitoring and evaluation
- Status of the structural integrity report on potentially affected homes, roads and buildings

5.1.2 Construction Auditing/Inspections

During the construction and operation phases of the Project the HSSE Manager will be responsible for undertaking audits and inspections to verify compliance with the ESMP, and any conditions of the environmental approval. These audits will be undertaken on a regular basis, on an ad hoc basis and following non-compliance events.

Tracking records of compliance will be produced and discussed during toolbox talks which will cascade through the HSSE Manager to operational managers and operatives.

Independent environmental audits will be undertaken during the construction and operation phases.

5.1.3 Standard Operating Procedures

SOPs will be prepared for specific actions that take place on a routine basis (e.g., water sampling for laboratory testing, inspections of conditions of roads, facility inspections). The format of the SOP will clearly indicate the following:

- What - A brief description of the work to be undertaken.
- How - A detailed description of the process of work, methods and materials including use of the control of substances hazardous to health.
- Where - A description/sketch map of the locality of work.
- When - The sequencing (phases) of actions with commencement date and completion date estimates.
- Who - The responsible person and qualification to do the work.

5.2 MONITORING

The National requirements for monitoring are described in Section 2.1. The IFC PS for Social and Environmental Sustainability require procedures to be established to monitor and measure the effectiveness of the management program; that qualified external experts are retained to verify monitoring information; and corrective and preventive actions will be implemented.

Monitoring of the Project will take place on two levels including project monitoring and performance monitoring. Project monitoring will include all monitoring commitments as described within the ESMP. Performance monitoring is to assess GB Minerals' overall performance in terms of meeting the commitments set out in the ESMP.

5.2.1 Project Monitoring

Monitoring is a key tool to ensure that mitigation plans are working effectively and to assess compliance against regulatory requirements and other agreed PS. Monitoring provides the information to enable mitigation and management measures to be adjusted to respond to inevitable changing conditions and the unexpected. Mitigation and management of a project before it is constructed depend on assessment of potential impacts and public and government concerns expressed through consultation and the approval process. It is impossible to fully and accurately predict all impacts and benefits which might arise from a project at this early stage.

Even the best impact assessment may fail to identify and mitigate all negative impacts or positive benefits which a project could have on the natural and social environment. In addition, no project is implemented in a static environment. Changes in conditions could lead to negative environmental impacts or positive social benefit arising from a project which would have been impossible to predict at the time of assessment. For these reasons, monitoring and evaluation of a project impact following approval and implementation is an important part of the overall project cycle.

Day-to-day monitoring of environmental and social performance will be the responsibility of GB Minerals as described in the relevant management plans. Implemented social and compensation programs will be monitored utilizing key indicators as identified within the social and compensation management plans. The results of all monitoring will be sent to the Department of Environment or its representatives at agreed upon intervals.

5.2.1.1 Environmental Monitoring

GB Minerals, during all phases of the mine development, will be responsible for ongoing monitoring of project activities as provided in the Environmental and Social Management Plans, Compensation Plans and Other Plans, assessing the effectiveness of mitigation measures, and identifying any new significant issues that arise. Findings will be submitted to GB Minerals' General Manager in the form of monthly reports with updates of significant findings given at weekly management meetings. The measures that are particularly important for environmental protection are:

- A standardized system of regular monitoring for HSSE issues.
- Baseline monitoring must be implemented at a minimum of one month prior to construction activities.

- Results of all the monitoring must be compared to baseline monitoring results and compliance or conformance targets as set out in the Management Plans and/or the proposed effectiveness of mitigation measures as described in the relevant section of the ESMP.
- The ESMP and Procedures and Work Instructions developed prior to construction are followed by the engineering, procurement and construction management (EPCM) Contractor and reports using monitoring data on the effectiveness of the monitoring (supplied by GB Minerals) and any changes to mitigation are to be provided to the HSSE Manager on a weekly basis.

5.2.1.2 Social Monitoring

GB Minerals will engage with stakeholders before construction through to post closure and will implement various social programs as identified in the Social Management Plans. A community grievance procedure has been included in the Stakeholder Engagement Plan. The community grievance procedure describes how complaints will be received and dealt with on an individual basis.

Monitoring activities are expected to change for Social Management Plans over time. Compensation is expected to occur early on during pre-construction, and will require monitoring of the implementation process, as well as follow up on various social issues.

5.2.1.3 Occupational Health and Safety Monitoring

Prior to hiring individuals to work on the Project, the EPCM Contractor will have each potential employee undertake a health exam and drug test. During construction, the EPCM Contractor will be responsible for all health and safety issues as they pertain to its employees, contractors and sub-contractors. The Contractor will keep records of the number of sick days, accident incidents, and any other health problems encountered such as incidence of malaria infection, cholera, respiratory illness, etc. Reported incidences, inclusive of any illness noted, will be dealt with on a case by case basis, and how the situation was addressed will be documented and reported to GB Minerals. Immediate reporting will be required in cases where the spread of infection or safety of other workers is at risk.

During operation and closure phases, GB Minerals will adopt a similar program as described above. In addition, GB Minerals will have regular health surveys conducted of its employees to monitor any potential health issues over time.

5.2.1.4 Compensation Plan Implementation Monitoring

The implementation of temporarily relocating houses and replacing livelihoods must be monitored to ensure compensation has been effective.

5.2.1.5 Other Plans Monitoring

Transportation monitoring will include the number of accidents/incidences over the life of the Project, and compliance with traffic laws as described in the CHSSMP.

The Emergency Preparedness and Response Plan will not contain any monitoring except for the monitoring of people who are trained and any changes required to the plan over time.

The Preliminary MRCP will be updated during operations when the closure plans become better defined. Monitoring of closure activities and post closure will be provided at that time.

5.2.2 Performance Monitoring

In addition to the Project-specific objectives and goals in terms of monitoring for each mitigation/compensation measure implemented to minimize/eliminate impacts, annual monitoring will be conducted to assess health and safety, environmental and social performance.

5.2.2.1 Health and Safety Performance Monitoring

Health and Safety Performance Monitoring will consist of an assessment of the following:

- A management system is in place with the aim to prevent accidents and to respond to accidents in a timely fashion with the necessary supplies and protocol.
- GB Minerals has responded to feedback provided by employees to ensure the workplace is as safe as possible.
- GB Minerals has informed government and interested stakeholders in the event a serious issue has arisen such as an increase in the incidence of Malaria or STIs (including HIV/AIDS).
- Health and Safety Training and Emergency Response Preparedness Training has been provided for all new employees.
- Health and safety issues are fully integrated into reclamation and mine closure planning.

Health and safety monitoring is described further in the OHS Plan.

5.2.2.2 Social Performance Monitoring

Social performance will be assessed by determining if:

- Community development programs to assist the community with adjusting to industrial activities are in progress and functional.
- The RAP and the livelihood restoration is being implemented in a timely manner and is being monitored for success.
- GB Minerals is participating (or has made an effort to) in public/private partnerships related to education and job training.
- Consultation with Affected Communities and other stakeholders is being conducted according to the Stakeholder Engagement Plan.
- The community grievance procedure is in place and functional and complaints are being received, recorded, and resolved according to the procedure.

Social monitoring is described further in the respective social management plans: the CDP; Community Health, Safety and Security Management Plan; and a future RAP.

5.2.2.3 Environmental Performance Monitoring

Environmental Performance will be monitored by assessing the following:

- The Project is in compliance with environmental laws and regulations
- Emergency plans are developed, maintained and tested to ensure protection of the environment, workers and local communities
- Employees, contractors and relevant suppliers are adequately trained to be fully aware of the commitments made by GB Minerals in the ESMP

- There is a regular review of the status of implemented ESMP and mitigation measures to identify and implement opportunities for performance improvement
- Reclamation and mine closure planning is fully integrated into all feasibility planning and adequate resources are available to implement reclamation and closure plans

5.2.3 Non-Compliance Procedures

Non-compliances are occurrences when management actions, discharges or emissions do not conform to the objectives of the ESMP.

The procedures relating to Non-Compliance are as follows:

- Identification of Non-Compliance, through environmental and social monitoring or internal or external auditing of the ESMP
- Investigation into the root cause of the non-compliance
- Communication (verbally and in writing) with responsible person
- Implementation of measures to regain compliance
- Documenting the incident (if significant) on the site log
- Future changes in monitoring (trigger levels or frequency) of the non-compliant activity

5.2.4 Monitoring Reports

Project and performance monitoring reporting will be both internal and external. Internal reports will be more frequent than external reports to government; however, if a serious issue were to arise internal and external reporting will be immediate.

Project mitigation effectiveness reports will be written weekly by the EPCM Contractor for Health, Safety and Environment issues inclusive of the monitoring reports, where possible, provided by the HSSE Manager and provided to the General Manager during the construction phase (in some cases, such as laboratory analyses, results will not be available to be reported on for the week; these results will need to be shown when they become available on a subsequent weekly report). These reports will include data compilation, areas where exceedances have occurred when compared to targets and guidelines as identified in the management plans, and any other issues that have arisen or have been dealt with during the reporting period. During the operation phase all reporting will be completed on a monthly basis. The Community Relations Specialist will provide monthly reports on the social programs and stakeholder engagement to the General Manager.

The monitoring reports will reconcile the site activities and accomplishments; characterize the health, safety, environmental, and social program performance during the reporting period; and anticipate what will happen with these programs during the forthcoming reporting period. Such reports may include:

- Identification and qualifications of individuals responsible for safety, health, environmental, and social program management
- Certification of the validity and representation of the information provided and of the data upon which the summaries are based
- A summary to the General Manager on health, safety, environmental, and/or community issues encountered during the reporting period with any corrective actions/responses to specific circumstances

- A detailed description of all environmental, health and safety, and social incidents that occurred during the reporting period and any corrective actions/responses to specific circumstances
- Explanation of upset conditions or violations of laws or regulations (if any) that have occurred, the cause of the violation, and the corresponding corrective measures planned or underway to prevent reoccurrence
- A description of changes, if any, in applicable safety, health, and environmental regulations
- Copies of records containing significant information on environmental matters including, for example, chemical spills or accident investigation results
- Weekly reports highlighting deviations from accepted standards and other issues pertaining to performance

GB Minerals and the EPCM Contractor will develop mechanisms for appropriate timely reporting for emergency and crisis situations including, but not limited to, accidents and occupational illnesses, spills, fires, and other incidents; and immediate verbal notification to GB Minerals General Manager, as appropriate, if there has been a lost-time accident, fire, spill, etc., with a written report to be submitted within 24 hours.

At closure, GB Minerals will continue to monitor project impacts as identified in the MRCP.

Performance monitoring will be conducted and reported annually by a qualified consultant with auditing experience. The report will be submitted to the General Manager and the Guinea-Bissau government. Where deviations in performance are observed, corrective actions will be identified in the reports and implemented.

5.2.5 Government Monitoring

The Department of Environment (with assistance from members of the CAIA) is responsible for the overall monitoring of the effectiveness of the environmental assessment process in Guinea-Bissau. This includes monitoring of approved projects in order to:

- Ensure that negative environmental impacts arising from project implementation do not exceed allowable limits.
- Provide lessons learned from project implementation which can be fed back into the environmental assessment process (via improved questionnaires for Environmental Evaluation and improved scoping procedures for full ESIA's).
- Provide a link to the post-environmental auditing of projects which can be undertaken by CAIA and other relevant Government agencies as part of the overall environmental management program for Guinea-Bissau.

5.3 DATA MANAGEMENT, DOCUMENT CONTROL AND RECORDS

To accurately evaluate the effectiveness of the ESMP data will need to be regularly collected and recorded. The following section identifies the data management, document control and records management measures to be undertaken by GB Minerals.

5.3.1 Data Management

Data generated from the required monitoring programs must be collected, stored, updated, and maintained in an orderly and useful manner. These data sets should include geographical data as

well as tabular data. The Project database should undergo regular maintenance procedures for updates, backups, and programming. Database maintenance should also guard against hardware failure, software problems, or user mistakes.

Few spatial database tools have internal backup procedures, so manual backups may be required at the file system level. A copy of the system backup file should be sent offsite to GB Minerals' head office at least quarterly for safe storage. This should protect the records from catastrophic accidents or incidents that could destroy the site records. All data must be compiled, analysed and submitted to GB Minerals General Manager in a timely manner. GB Minerals will be responsible for the adequacy and accuracy of all data generated under its monitoring programs and also for any relevant additions or updates to the database with the exception of the occupational health safety and employment records and data during the construction phase as it will be collected by the Contractor. These data will be collected in the same manner GB Minerals plans to collect data for the remaining phases of mine development to ensure quality control/assurance and continuity of data collection records. Various types of data will be converted properly and correctly entered into an overall database as appropriate.

5.3.2 Document Control

The EPCM Contractor and Company will establish and maintain procedures for controlling all documents to ensure that:

- Documents can be located
- Documents are periodically reviewed, revised, and accepted by appropriate management personnel
- Current versions of relevant documents are available at appropriate locations (i.e., MSDS located in close proximity to the end use or emergency response contact information located near site communication systems)
- Obsolete documents are removed from all points of use or otherwise ensured against unintended use
- Any obsolete documents retained for legal and/or knowledge preservation purposes are suitably identified

The EPCM Contractor will maintain sufficient documentation to describe the core elements of the site construction plans.

All documentation should be legible, dated (with correct revision dates), readily identifiable, organized in an orderly manner, and archived for a specified period of time. Procedures and responsibilities should be established and maintained concerning the creation and modification of the various types of documents. Documents will include, but not be limited to:

- Organizational charts
- Training programs
- Project construction and operation plans
- Various management plans, procedures and work instructions

5.3.3 Records

Various records will be kept from which reports will be produced both internally and externally. Records, shall not be changed or altered in any way, and shall be filed in a system such that the records can be retrieved easily. Records will include:

- Monitoring results
- Training records
- Accidents and injuries records
- Environmental spills and issues records
- Permit and authorization database records
- Actions taken to resolve issues
- Stakeholder engagement records
- Complaints received and response/action taken recorded

5.4 REPORTING AND CHANGE MANAGEMENT PROCEDURE

5.4.1 Reporting

Reporting will be consistent with the continuous improvement goals for environmental management of the Project. Reporting shall include:

- A summary of activities undertaken during the reporting period
- Any material deviations or non-compliances to this Management Plan
- Planned activities during the next reporting period
- A summary of HSSE issues that have occurred, and how they have been resolved
- A summary of HSSE issues that may be unresolved
- Other issues of concern

Further information on environmental monitoring and reporting requirements and procedures is set out in each of the specific ESMPs. In emergency situations, standard reporting should include, but may not be limited to:

- Timely reports for emergency and crisis situations including, but not limited to, accidents and occupational illnesses, spills, fires, and other incidents
- Immediate verbal notification to GB Minerals General Manager, as appropriate, if there has been a lost-time accident, fire, spill, etc., with a written report to be submitted within 24 hours
- Weekly reports highlighting deviations from accepted standards and other issues pertaining to performance
- A summary of corrective actions to specific circumstances
- Summary reports to GB Minerals General Manager on activities and performance in general

5.4.2 Change Management Procedure

As documents are updated, a system is required to ensure the latest version is available for use. To achieve this, a central document tracking system will be established at the site office where as each document is updated, the version and date of such document will be recorded in soft copy and hard copy. The International Organization for Standardization (ISO) 9001 system of document control will

be adopted where draft documents will be labelled as Rev A, Rev B, Rev C, etc., for Draft No. 1, No. 2, No. 3, etc. Final documents will be labelled as Rev 0 (First Final), and when updated or changed, the document will be labelled as Rev 1, Rev 2 (for first and second updates), etc. When a particular document is required for printing for use, the protocol will be to search the central document tracking system to determine which version is currently in use, before printing or obtaining the digital copy of such document. Additional information will be stored in the central document tracking system such as author, purpose, category (e.g., engineering or environmental) and full name of the document.

The above system applies to all documents, inclusive of the Management System (if necessary) and the ESMP; however it does not include records of any kind, as records are not to be changed over time.

6 – IMPLEMENTATION SCHEDULE AND COST ESTIMATE

6.1 IMPLEMENTATION SCHEDULE

The ESMP informs the overall planning process of the Project. The ESMP guides the planning and design, construction and operational phases of the development to eliminate or mitigate the various possible risks to the environment and its surrounding inhabitants during the planning and pre-construction phase. In addition, this practice will subsequently minimize damage to the study area during the Project.

This ESMP will be used during the pre-construction, construction, operational and decommissioning phases of the proposed project, and will be updated periodically as the Project develops.

The implementation schedule is described at a conceptual level in Table 6.1. Additional detail regarding ESMP implementation is presented in the commitments register in Appendix 3B.

Table 6.1 Implementation Schedule of ESMP

Step	Schedule Detail
1	Draft ESMP submitted to Guinea-Bissau Government (completed)
2	ESMP revised, included with ESIA, impacts and mitigation table included (completed in this version)
3	Guinea-Bissau Government/EPFI due diligence generates Environmental Social Action Plan (ESAP); ESMP revised to address input and updated based on detailed design prior to construction

6.2 COST ESTIMATES

Table 6.2 presents the estimated life of project environmental and social management costs for the Project, inclusive of mine closure. This estimate excludes GB Minerals staff salaries and facilities required by management plans (e.g., environmental laboratory setup). The cost was developed jointly by Knight Piésold, Lycopodium, and GB Minerals as part of the FS (Lycopodium, 2015). Additional contributions to the cost estimate were as follows:

- Final mine closure costs (Knight Piésold, 2015; Appendix 3L)
- Biodiversity management - Scherman, Colloty & Associates (SC&A, 2015; Appendix 3G)
- Community resettlement (including relocation of cultural heritage features) - Nomad Socio Economic Management and Consultancy (Pty) Ltd. (Nomad, 2015; Appendix 3P)

This cost estimate was prepared using professional judgment, and is based on the Project design presented in the ESIA and FS. The cost estimate should be updated following completion of detailed design and prior to construction.

Table 6.2 Preliminary ESMP Implementation Cost Estimate

ESMP Actions	Construction (2 years)	Operations (26 years)	Closure (7 years)³	Total (\$USD)
Biodiversity Management ¹	529,000		-	529,000
Community Resettlement and Cultural Heritage ²	3,800,000		-	3,800,000
Environmental Monitoring Laboratory Testing & Monitoring (water, soil, air, noise)	38,000	1,950,000	-	1,988,000
Technical Consultants	400,000	10,400,000	-	10,800,000
Community Relations	400,000	5,200,000	-	5,600,000
Training	100,000	1,300,000	-	1,400,000
Final Mine Closure	-	-	11,180,000	11,180,000
			Total	35,297,000

NOTES:

1. BASED ON A PERIOD OF TEN YEARS AND DOES NOT INCLUDE THE COSTS FOR GB MINERALS TO EMPLOY A BIODIVERSITY CONSERVATION OFFICER.
2. BASED ON COSTS ASSOCIATED WITH IMPLEMENTING SCENARIO 2 OUTLINED IN APPENDIX 3P.
3. FINAL MINE CLOSURE COST ESTIMATE INCLUDES ENVIRONMENTAL MONITORING, TECHNICAL CONSULTANTS, AND COMMUNITY RELATIONS DURING THE ACTIVE CLOSURE PHASE (2 YEARS) AND POST-CLOSURE MONITORING PHASE (5 YEARS).

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