Gutalac Nickel Project

Environmental Impact Statement

FLORJENMAR MINING AND DEVELOPMENT CORPORATION

ZAMBOANGA NICKEL CORPORATION

PREPARED BY
PRISM EXPRESS CONSULTING, INC.

PRISM EXPRESS

ECCA ENVIRONMENT & CLIMATE CHANGE ADVISERS INC.

The copy of the Environmental Impact Statement (EIS) is downloadable at the link provided below:

https://drive.google.com/drive/folders/1PYYNWZHHzcnj_1dhtap0kOm5IJaGGY1t .

For more details, you may contact EMB Office (02) 8539-4378 website: www.eia.emb.gov.ph

EXECUTIVE SUMMARY

E.S. 1.0 Project Fact Sheet

Table E.S.- 1 Basic Project Information

Project Name	Gutalac Nickel Project (GNP)
Location	The Exploration Permit (EP-010-2022-IX) is entirely within the Municipality of Gutalac. It sits on the western portion of Mindanao approximately 200km by road distance northeast of Zamboanga City; or 70km northwest of the town of Ipil; or 170km southwest of Dipolog City, all located in Region IX.
Project Size	Size of Exploration Area – 5,426.57 hectares is covered by an Exploration Permit (EP) granted to Florjenmar Mining & Development Corporation and denoted by EP -010- 2022-IX; covering approx. 5,426.57 hectares in the Municipality of Gutalac Proposed Mining and mining components under this ECC application – 114.50 ha Annual ore extraction rate – 500,000 metric tons per year for 10 years
Proponent	Florjenmar Mining & Development Corporation
Office address	Barangay San Isidro, Gutalac, Zamboanga del Norte
Project Site Office	Barangay Poblacion, Gutalac, Zamboanga del Norte
Project Components	The proposed mining project is composed of the following components:

Facilities/Components	Units	Area/Capacity (ha)
Mine area	1 meridional block	81.00
Stockpile area	3 sites	12.00
Mine Camp	1 location	4.00
Road network	3 km length	10.00
Stockpile area at Port	2 sites	3.00
Ancillary facilities (including 6 settling ponds)	2 locations	4.50
TOTAL AREA (FOOTPRINT) APPLICATION FOR ECC	**Mine/quarry including appurtenant mine facilities**	**114.50**

Project Exploration Activity	Exploration and drilling programs were carried out inside the EP designated area in Gutalac during its first two-year term; commencing on April 25, 2022. The scope of exploration works undertaken include the regional prospecting, reconnaissance and semi-detailed geological mapping, and sub-surface geological investigation.
ECC Project Type	Environmentally Critical Project (ECP) by EMB Memorandum Circular No. 2014-005 (July 7, 2014) – Guidelines for Coverage Screening and Standardized Requirements under the Philippine EIS System, Amending Relevant Portions of MC 2007-002 Under Sub Heading 2.1.2 – Classified as Extraction of Metallic ores/minerals (on shore) with an area ≥ 25 hectares
Contract / Permit Number	Exploration Permit denominated as EP-010-2022-IX issued to Florjenmar Mining & Development Corporation on April 25, 2022; covering approx. 5,426.47 hectares or about 64 meridional blocks. This subject application for ECC from the DENR covers only a mere one meridional block out of assigned 64 blocks of the Parcel 2
Project Annual Extraction Rate	500,000 metric tons per year (MMTPY)
Mine Life	7 years
Total Project Cost	Estimated total operating cost for 7year lifetime of mine is 1.70 billion
Total Manpower	About 400 assorted staff, personnel, and workers in the mine site
Proponent Contact Person	Mr. Mariano Candelaria, Jr. President Florjenmar Mining and Development Corporation candelarianonoy50@gmail.com

	Engr. Aaron Rey Altez General Manager Zamboanga Nickel Corporation arcaltez@gmail.com
EIA Preparer and Contact Person:	Prism Express Consulting, Inc. in collaboration with Environment & Climate Change Advisers, Inc. Engr. Allan R. Plete EIA Project Director allanplete@yahoo.com www.prismexpressconsultinginc.com

Table E.S.- 2 Summary of Project Description

Location	The subject project mine site is within the political jurisdiction of Barangay Bacong in the Municipality of Gutalac in Zamboanga del Norte, Region IX.
Rationale	Metal prices, particularly nickel has exhibited a cyclical trend in the market prices, with nickel showing 4-year cycles of clumps and increases. With the slump in prices in 2008, the next rise in prices is predicted in 2024, barring any changes due to the global pandemic in 2019. Hence, FMDC believes it may be able to mine nickel at the best prices for the Philippines during this time period and would for the funding of its social development projects and provision of jobs for the local communities in Gutalac.
Process Technology	Lateritic nickel mineralization was known within the vicinity of Gutalac, Zamboanga del Norte as early as 1990s under the exclusive rights of Florjenmar Mining (FMDC). The deposit is shallow, and because of the deposit's shallow depth and the marketability of both limonite and saprolite ores, the applicable mining method being considered is simple open cast or bench mining.
Project Components	The Gutalac Nickel Project or GNP is covered by the Exploration Permit (EP) granted to Florjenmar Mining & Development Corporation and denoted by EP -010- 2022-IX; covering approx. 5,426.57 hectares in the Municipality of Gutalac. The proposed mining project development is comprised of the following components:

Facilities / Components	Area/Capacity (ha)
Mine area	81.00
Stockpile area	12.00
Mine Camp	4.00
Road networks	10.00
Stockpile area at Port	3.00
Ancillary facilities (including 6 settling ponds)	4.50
TOTAL APPLICATION FOR ECC	**114.50**

Description of the Exploration Phase	Exploration Phase in Nickel Laterite mining of Parcel 2 (only) has been completed and a final exploration report has been submitted to concerned agency of national government as attached. The scope of works undertaken include the regional prospecting, reconnaissance and semi-detailed geological mapping, and sub-surface geological investigation. In conjunction with its exploration program, FMDC has carried out some basic social and environmental programs within the host communities in Bacong and in Gutalac in general.
Description of Pre-construction Phase	The pre-development stage in mining comprises the acquisition of permits and approvals, completion of detailed engineering and actual field investigations, among others. The acquisition of permits and approvals has commenced as early in 2020, along with the actual field verification and investigations and technical studies undertaken. After the completion of mine feasibility study, the permits are expected to be applied to and acquired from different national government agencies, which will embrace the succeeding or next phases of this planned mining development: • Declaration of Mining Project Feasibility (DMPF) • Mineral Product Sharing Agreement (MPSA) • Environmental Compliance Certificate (ECC) • Tree Cutting Permit • Water Rights Permit

	• Other Permits such as Permits to Construct and Operate
Description of Construction Phase	During construction, mining facilities in the (construction) sites, as well as the areas for Surface Mine, Waste Rock and Overburden Area, Stockyard, and campsite will be cleared and removed of standing trees and vegetation and graded for the final structure construction. Topsoil more importantly within these areas will be segregated and stored temporarily for future use in execution of rehabilitation program. Logs and timber to be recovered from the clearing activities will be repurposed for any related LGU/DENR approved community projects. Mine associated infrastructures will also be constructed following the mine site preparation works.
Description of Operations Phase	Mine Production would immediately commence once the necessary clearances and permits are secured including the associated construction and developments are completed. FMDC will commit to follow and comply strictly with DENR Administrative Order (DAO) 2018-19 setting the maximum disturbed areas for Mines at any one time. The maximum disturbed area is planned at 50 hectares of the (approx. 81 ha surface area) at any one time. Areas for ancillary mine facilities are not included though in the above mentioned maximum disturbed area limit. In cases where the maximum disturbed area is exceeded, an area equivalent to the area in excess should be designated and included part for temporary revegetation or progressive rehabilitation, whichever is appropriate, and shall be implemented immediately.
Description of Abandonment Phase	Progressive rehabilitation strategy, which is mandatory by (mining) law, will be implemented, integrating the all-applicable mitigation and management of any potential adverse impacts of the mining operation cycle in Gutalac. Instead of undertaking a large-scale rehabilitation works at the conclusion of mining operation and whenever feasible, the backfilling of the mind-out areas or spaces/voids in the open and exposed mine sites will be done. Generally, some abandonment programs during the rehabilitation and closure period consist of the following: • Structure Demolition/ Decommissioning. • Decontamination or Remediation, if applicable. • Structural Improvements (erosion control, soil stabilization, re-vegetation, infrastructure support). • Soil Treatment, if applicable. • Re-vegetation and Reforestation.
Project Cost	1.70 Billion Pesos
Project Duration and Schedule	About 6-8 months for Project Construction and 7 years thereafter during Mine Operation.

E.S. 2.0 Brief Summary of the Project's EIA Process

E.S. 2.1 Background Information

Florjenmar Mining & Development Corporation has completed its initial exploration activities for Parcel 2 of the exploration area assigned to Florjenmar Mining & Development Corporation based on the Exploration Permit (EP) granted by MGB in 2022.

Previously, the requirements under EMB regulations necessitated that a mining project should have acquired authority over the area such as a Mineral Production Sharing Agreement (MPSA) or an Application for an MPSA (APSA) prior to application for an Environmental Compliance Certificate (ECC). However, recent policy and regulations by MGB through its Memorandum dated February 22, 2022 Re: Checklist of Requirements for Declaration of Mining Project Feasibility under Exploration Permit now requires an ECC first prior to the application for an MPSA.

Hence, for this project, an Exploration Permit and a Final Exploration Report (FER) suffice for the determination of the authority over the Parcel 2 (project area) by Florjenmar Mining & Development in Bacong, Gutalac.

FMDC is thus submitting this Environmental Impact Statement (EIS) Report to support its application for an environmental clearance (ECC) and allow its mine activities during the construction, development, and operation of the Gutalac Mining Project (GNP).

E.S. 2.2 EIA Study Team

Prism Express Consulting, Inc. has been commissioned by FMDC to conduct an independent EIA study for the Gutalac Nickel Project. Prism is preparing the document, and, on behalf of the FMDC, submits this EIS Report to the DENR-EMB including the necessary supporting papers and information in relation to the planned mining construction and development on Parcel 2 located in Bacong, Gutalac. The following table below presents the EIA Study Team.

Table E.S.- 3 EIA Team

EIA Consultant Team Members	Module	Individual EIA Preparer Registration No.
Engr. Allan Plete	EIA Project Director	IPCO-379
Engr. Aldwin A. Camance	EIA Team Leader/Environmental Specialist	-
Dr. Donato dela Cruz	EIA Technical Reviewer	-
Dr. Merlyn Rivera	Specialist, Sociology / Social Development/ IEC	IPCO-298
Mr. Manuel Potrido	Researcher, IEC, FGD, and Socio Economics	-
Engr. Emerson Darroles	Researcher, Water Quality and General Ecology	IPCO-153

E.S. 2.3 EIA Study Schedule & Activities

Table E.S.- 4 EIA Activities

DATE	ACTIVITY
October 2022	Conduct of EIA Field works for Terrestrial/Aquatic Flora and Fauna Assessment, Socio-economic Survey
October 19, 2022	Marine Water, Surface Water, and Groundwater Sampling (Wet Season)
October 6-13 & 18 2022	IEC Meetings (Brgy. Bacong, Brgy. Bayanihan, Gutalac LGU MDRRMC, MENRO, MEO, MHO, MPDO, MAO)
October 14, 2023	Community Profiling for Impact Assessment
October 19-20, 2022	Baseline Assessment of the Soil Attributes
October 19-20, 2022	Meteorological Parameters Assessment
November 3-11, 2022	Terrestrial Flora and Fauna Biodiversity Assessment (Wet Season)
November 24-26, 2022	Biodiversity Assessment of Aquatic Fauna and Flora (Wet Season)
January 11, 2023	Public Scoping Meeting onsite
January 27, 2023	Technical Scoping Meeting with EMB and the Review Committee Members at EMB-CO
March 10-15, 2023	Focus Group Discussions (FGDs) in 4 barangays of Bacong, Bayanihan, Pitawe, and Mamawan
May 19, 2023	Marine Water, Surface Water, and Groundwater Sampling (Dry Season)
May 19, 2023	Ambient Air and Noise Level Monitoring (Dry Season)
May 19-23, 2023	Terrestrial Flora Assessment (Dry Season)
May 24-28, 2023	Biodiversity Assessment of Aquatic Fauna and Flora (Dry Season)

E.S. 2.4 Description of key EIA Methodology

Table E.S.- 5 Summary of EIA Process

EIA Methodologies	The preparation of the EIS was based on the guidelines and regulations as required under DAO 2003-30 (Philippine Environmental Impact Statement System / Revised Procedural Manual (RPM), DAO 2016-08/DAO 2021-19 for the Revised Effluent Standards, DAO 2000-81 and DA0 2005-10 for the stipulated IRR of Clean Air and Clean Water act, respectively. DAO 2017-015 for the guidelines on Public Participation under PEIS System and EMB MC 2020-30 for the Interim Guidelines on Public Participation during the Pandemic. RA 9003 for the Ecological Solid Waste Management Act as well as the requirements in compliance to the LGUs, sound engineering practices of construction and other relevant DENR environmental regulations including the Comprehensive Land Use Plan and LGU profile of the Municipality of Gutalac.
Land	Actual verification and investigation of the current setting of the geology, landform, land use, and other terrestrial information was made and compile and assess them (environmental data) for proper impact identification, prediction and assessment. The Land Use and Classification and Geology wherein the methodology and approach on baseline characterization considers the CLUP of Gutalac and the available information and reports from MGB, PHIVOLCS, PAGASA, NAMRIA, etc.
Water	For Water environment, the assessment comprises of the baseline survey for Hydrology and Hydrogeology, which took note of the CLUP of Gutalac and other related data from MGB, NAMRIA and PHIVOLCS. For water quality, water samples were collected and submitted for analysis to a DENR recognized laboratory in Laguna for the physicochemical and microbiological analyses with reference to the guidelines set by DAO 2016-08/2021-19 for surface and marine waters and PNSDW 2017 for groundwater.
Air	Baseline measurement of the ambient air quality of the area includes the review of existing maps from PAGASA station in terms of Meteorology and Climatology.
People	Both the socioeconomics and public health factors are considered for the assessment of the People environmental component. With this, public scoping, focus group discussion, and other forms of consultations onsite including the review of CLUP and socioeconomic profile, relevant studies from PSA and other data were gathered. This information will be utilized in the assessment of impacts and risks of the mining development during the construction, operation, and abandonment phases of the project.
Public Participation	Key informants on the impact areas (barangay and municipal levels) were either chosen randomly or made within an institution. Public meetings and consultations with the residents and local officials were held.

E.S. 2.4.1 Public Hearing

The Public Hearing is required under the requirements of DAO 2017-15, "Guidelines on Public Participation Under the Philippine Environmental Impact Statement (EIS) System", however, will be held yet upon completion of the formal technical review by the EIA committee and EMB staff.

E.S. 3.0 EIA Summary

E.S. 3.1 Summary of Baseline Characterization

E.S. 3.1.1 Summary of Land Sector Baseline Information

Table E.S.- 6 Summary of Baseline Information for Land Module

Land Module	Baseline Information
Land Use and Classification	The Municipality of Gutalac is considered an area potential for agricultural with 15,032 hectares or 30.72 percent of its total land. The biggest portion of the land in Gutalac is still classified as forest reservation area, having total area of 32,730 hectares or 66.90 percent. Parcel 2 in terms of industry development has no potential for agriculture as the laterite soil cover is not hospitable to crops and fruit trees. The secondary nature of the forest cover and the inhospitable nature of the laterite soil also precludes the land use for sustainable timber source.
Geology / Geomorphology	The Parcel 2 project area is characterized by diverse topography. Elevation ranges from 15 to 680 meters above sea level, which is highly influenced by rock types traversing the area. The western side majorly consists of medium to high elevation and has a rugged topography. It is defined by prominent NE-SW running ridges and deep escarpments. The Parcel 2 exploration area sits within Sulu-Zamboanga Arc terrane which occurs as a bathymetric high and has continental, arc, and ophiolite affinities (Pubellier et al., 1991; Yumul et al., 2004; Sherlock and Barrett, 2004). It is underlain by pre-Mesozoic to Mesozoic continental rocks consisting primarily of metamorphic rocks (e.g., schists, phyllites and gneisses) originating derived from the continent (Pubellier et al. 1991; Sajona et al., 1997; Mines and Geoscience Bureau, 2010). Parcel 2 is largely underlain by metamorphic rock basement with ultramafic rocks cut by diorite intrusion.
Seismology / Tectonic Setting	The project area is approximately 21.2 km northwest of the Zamboanga Fault System; classifying it as safe to ground rupture.
Geohazards	Parcel 2 area is susceptible to rain-induced landslides with numerous of old or inactive landslides present. Based on site-specific geotechnical investigation, it may deem unsuitable for permanent habitation, but can be developed for alternative uses subject to the implementation of appropriate mitigation measures. According to the HazardHunterPH, the project site area is safe from liquefaction.
Mineralization	Zamboanga Peninsula is ranked as one of the most prospective regions in the Philippines. It hosts multiple metallic resources which include volcanogenic massive sulphides (VMS), epithermal gold, porphyry copper and chromites. The presence of peridotite and dunite in the area indicates a potential for chromite and nickel laterite deposit.
Pedology	Approximately 90% of the soil type in the tenements is covered by Pasonanca loam with minor San Manuel silt loam and Pellupandan sandy loam. (Adopted from an internal report by N.V.M. Primaleon).
Terrestrial Ecology	Parcel 2 mining site was a logged over area in early years and currently vegetated with second growth forest. According to the accounts of communities nearby, logs and lumber of highly preferred timber species with excellent wood quality and lofty economic value were taken and gathered from the area. Most of these species belongs to Dipterocarpaceae, Sapotaceae and Myrtaceae

Land Module	Baseline Information
	family. Based on the data taken from the sampling plots and transect lines, the total number of floras identified was 144 plant species that belong to 105 genera and composed of 66 families.

E.S. 3.1.2 Summary of Water Sector Baseline Information

Table E.S.- 7 Summary of Baseline Information for Water Module

Water Module	Baseline Information
Hydrology/ Hydrogeology	In Gutalac, the drainage exhibits a combination of coarse dendritic and semi-rectangular patterns. The general site appears to be influenced by the NNE-SSW and NE-SW structures/lineaments. Three (3) relatively large watersheds have been delineated with three (3) major rivers draining to the Sulu Sea: Panganuran River, Sibalic River and Quipit River. The largest (~720.993km2) basin is associated with the Quipit River and its tributaries surrounds the tenement blocks. It feeds the Panganuran River and its tributaries. The central basin with an area of 60.30km2 encompasses the Sibalic River its tributary streams.
Oceanography	The northern coast of Zamboanga Peninsula is a coastline, oriented northeast/southwest, with sharp coastline bends at about 122°E and 123°E. The shelf is generally narrow, with the 200-m isobath located about 4–10 km from the coast.
Freshwater Quality	A total of five (5) water quality stations were established in the study area and comprise of one (1) groundwater station, two (2) surface freshwater and two (2) coastal marine water station conducted during dry season. Per water quality standards, the laboratory results showed that in the Groundwater station, all parameters are within the standard regulatory limit except the HPC, *E. Coli*, Fecal Coliforms, and Total Coliforms which showed exceedances; and as per the Surface Freshwater stations and Coastal Marine Water stations, only the Fecal Coliforms did not meet the standards, the rest of the parameters are within the standard regulatory limits. Moreover, wet season sampling was recently conducted with the same established sampling stations during dry season. Per water quality standards, the laboratory results showed that for Ground Water sampling, all parameters are within the limits except for HPC, E. Coli, Fecal Coliforms and Total Coliforms. Surface water sampling exhibited results within DAO 2021-19/DAO 2016-08 Standards for Class A except for Fecal Coliform. Marine water sampling resulted to all parameters are within the standard limits. In comparison, detections of Coliforms were observed in Ground water and Surface water for both dry and wet season. While for Marine waters, it was only during wet season that the MW2 samples have high detection of coliform, dry season exhibited lower count.
Marine Ecology	Bacong reef were fringing with a reef flat 200 meters near the shore, and were normally found adjacent to mangrove and seagrass communities. We have observed boulders of corals and some new coral reefs that begin to regenerate. During survey, the reef visibility is quite fair to excellent condition.

Water Module	Baseline Information
	Substrate is generally composed of sand with occasional silt/mud in areas near river mouth. Sediments and nutrient runoffs that goes to the sea seem to affect the underwater visibility. Mean live hard coral cover in all the sampling stations ranges from 8.6% to 52% indicating that the reef area of barangay Bacong in fair to good condition. There were nine (9) family of hard corals and two (2) soft corals that were identified on the sampling site. For the reef-associated fishes, an average of 28.5 families and subfamilies were identified across all stations in Barangay Bacong. Species richness ranged from 21.9 species per 500m2 to 25.8 species per 500m2. While gearing up in the community and discuss with the dive plan we spotted four (4) common Indo-Pacific bottlenose dolphins (*Tursiops aduncus*) having fun in the shallow waters off Bacong. Another marine species found in the marine waters was a green sea turtle (*Chelonia mydas*) sprawling in the coral reef. A total of eight (8) species of seagrass namely *Thalassia hemprichii*, *Halodule pinifolia*, *Halophila ovalis*, *H. minor*, *Cymodocea rotundata*, *C. serrulata*, *Thalassodendron ciliatum* and *Enhalus acoroides* belonging to two (2) families were recorded in the sampling area. Furthermore, two (2) macro-benthic algae belonging to two (2) families were also recorded thriving within the seagrass bed. All recorded species were classified under the Least Concern Category based on the IUCN red list of threatened species. Overall result of the survey showed that the mean percent seagrass cover yielded 48.82% which translates into FAIR condition based on Amran's seagrass condition index.
	In the Zamboanga upwelling, the dominant small pelagic species is the Indian oil sardine (*Sardinella longiceps*). Fish varieties that are being caught in the municipal waters are as follows; Spanish and King Mackerel (Tangigue), Marlins, Lapu-Lapu, Tuna (Blue and Yellow Fins, Big Eye, Long Tail and Skip Jack), Flying Fish (Bangse), Anchovy (Dilis/Bolinao), Mackerel Scad (Sigarilyo/Galongong), Ladien Oil Sardine (Tuloy), Gold Stripes Sardenilla (Malangse), Pony Fish (Whipfin – Tabilos, Splended – Palotpot, Common – Bakagan and Tooth Pony), Thread Fin Breams (Lagaw, Malintubong, Lalagan and etc) and Reef Fishes (Spinefoot), Snapper, Grouper, hind, emperor and surgeon fish.
Marine planktons	A total of twenty-two (22) genera of phytoplankton were recorded during the assessment. The mean density of all the phytoplankton was 187cells/mL^{-1}. A total of eleven (11) major zooplankton groups (adult and larval form) from the three (3) sampling stations were recorded. The computed mean density of the zooplankton was 27,667 individuals/m^3.

E.S. 3.1.3 Summary of Air and Noise Sector Baseline Information

Table E.S.- 8 Summary of Baseline Information for Air and Noise Module

Air and Noise Module	Baseline Information
Meteorology/ Climatology	Gutalac falls under the fourth type of climate in the country (classified from Modified Corona's Classification System), dry season took place between December to April, wet season is from June to October and the rest is a combination of sunny and rainy period. According to the PAGASA rainfall and precipitation data from the Climatological Normal report, Gutalac has increased its precipitation annually at 2,484.2 mm, with the month of October having the highest precipitation value at 301.2 mm as of 2020. The climate in Gutalac is hot, oppressive, and overcast. Over the course of the year, the temperature typically varies from 74°F to 91°F and is rarely below 72°F or above 94°F. According to PAGASA Climate projections report, mean temperatures in the Philippines are expected to rise by 0.9 C to 1.1 C in 2020 and by 1.8 C to 2.2 C in 2050 (PAGASA, 2021). The rainfall data generated shows 5 months in a year with more than 200mm rainfall in Dipolog and none in Zamboanga City.
Air Quality	The ambient air quality sampling was held last May 19 and 20, 2023. Air quality assessment was characterized using the DAO 2000-81 (IRR of the Philippine Clean Air Act of 1999). Five (5) sampling stations were established for 1-hour ambient air quality condition of the site. A Staplex High Volume Air Sampler was used to collect the TSP samples while SOx and NOx used the HS7 Kimoto Gas Sampler equipment. Ambient air quality sampling revealed that the TSP concentrations for all air quality stations were within the allowable DENR standard. Only few vehicular activities were observed during sampling activity. Moreover, the concentrations of SO_2 and NO_2 for all sampling stations were within the maximum limit set by the DENR. The main sources of these concentrations are from vehicles and fuel burning equipment that can be found in the area.
Noise Level	Noise level monitoring was conducted the same day of ambient air quality sampling. A Digital EXTECH 407764 sound meter that meets the American National Standard Institute (ANSI) standard was used in measuring noise level. Eight (8) stations were established within the project site to determine baseline noise level. Noise Level were compared to the Philippine Ambient Noise Standard for Class A since the location of the project is contiguous residential area. The recorded noise level in all monitoring stations exceeded the DENR standard for Class A – primarily for residential areas except for station N8. In general, the highest peak noise readings were contributed by heavy trucks and vehicles passing by.

E.S. 3.1.4 Summary of People Sector Baseline Information

Table E.S.- 9 Summary of Baseline Information for People Module

People Module	Baseline Information
Demography	As of May 2020, per PSA, the population of Gutalac City, Zamboanga Del Norte is 36,090 with an annual average increase of 1.16% per year from 2010-2020. The total number of households in 2020 was 29,976.
Healthcare Facilities	There are no hospitals currently located within the Municipality will address the immediate health care needs of the people. The basic health services are only available under the Municipal Health Office (MHO).
Road Network	The Municipality of Gutalac has a total of 170.176 km of road system connected with 6 bridges and 18 spillways and 3 barangay bridges.
Transportation Network	There are 4 buses and 6 PUVs daily for Dipolog City while 1 bus and 2 PUVs daily for Zamboanga City. Motorcycles or habal-habal are common means of transport in going to and from remote barangays.
Public Awareness, Perception, and Social Acceptability	Household perception survey was conducted from October 14 – 18, 2022 covering two (2) impact barangays Bacong and Bayanihan and two (2) indirect impact barangays Pitawe and Mamawan with a total of 212 respondents.

E.S. 3.1.5 Summary of Issues and Concerns during Public Consultations

General Ambient Air Quality in the area

The present condition of the air quality in the 4 barangays has been considered as cool and clean. Though unpaved/uncemented parts of barangay roads generate fugitive dust whenever vehicles traverse on it. The residents in Bacong expect more dust will be generated/emitted once large and heavy vehicles from the mining construction and development begin to operate.

A member of the Subanen IP group cited the significance of medicinal plants, which they heavily depend on these plants for medicine and maintenance of their health. It was mentioned the equipment and vehicle emissions from the operation will pollute their air.

It was raised that mining operation entails the massive removal of trees and when these trees are cut, the village houses will become directly exposed to the sun (radiation) and increases local temperature and cause uncomfortable conditions for some residents.

Water Quality and Supply

Fisherfolk representatives cited the sea/ocean is clean that provides bountiful fish harvest. Practically almost all coastal residents in the barangay rely on the sea/ocean for income and livelihood. However, the coastal region/waters get turbid during strong rains but the fishermen still obtain a decent catch.

A member of a religious group revealed the river waters are also clean but during rainy season, it turns muddy, which contributes and affects the turbidity of the sea. Their source of potable water comes from the Capunan River.

It was asserted that increase in turbidity will be encountered when the mining activities commence in Bacong. Currently and without mining yet during rains, the turbidity is already

observed to cover kilometers long from the shore. When the mine comes, it will increase in distance causing detrimental effects on marine resources and local livelihood of fishermen.

Also fears of chemical use and contamination during mine operation were raised during the FGD. According to local, the chemical use might get unnoticed that may affect their vulnerable health and other sources of livelihood.

Though GNP is still at its exploration phase yet, some locals already experienced dust and river water turbidity. A further deterioration of the situation is likely the mining activities go full blast.

Land Environment (Agricultural Farms, Forest/Mountains)

Agricultural production as claimed by locals as main source of their income is considered satisfactory. There are few coconut trees but in the applied MPSA area, mostly cogon and lemon grass survive.

According to locals on a positive note, the mining operation will drive away insects, and wild animals like monkeys, wild pigs and birds, which the local consider them as threat to their agriculture and livelihoods. The wildlife takes, eats, and damage their crops including corn, coconut and cash crop vegetables.

It was reported a reduction in agricultural lands in Gutalac. Some FGD participants took notice of the clearing and flattening of the mountain to cater to mine operation, which will cause the reduction of agricultural production in the area.

Dumping of unusable excavated earth materials may impact on their agricultural lands. The locals also believe that the rocks are good protection and defense against local landslide and earthquakes. If these rocks are removed or accumulation of massive dump soil as a result of mining, locals are worried they become prone to landslide and earthquake.

The removal of any standing forest trees and even fruit trees was also a concern to the FGD participants.

Wildlife

According to locals, the area around the applied MPSA are habitat so wild pigs, *halas,* monkeys, birds (kalaw), deer, wild chicken, snakes and bats, among others. They are seen thriving in the forest areas of the barangays.

Some locals foresee that this local wildlife will be driven away and eventually disappear as a result of the mining activities due to excessive noise from operation, vehicle movements, presence of workers, and destruction of trees and other forms of their habitat.

IP Groups

A larger concentration of the IPs is found in barangay Pitawe, which is outside of the claim in Bacong. The size of the IP is estimated roughly 10% of the total affected population including the locals/residents (non-IPs). It is recognized though that as a result of the mining project, IPs will benefit from the generation of local jobs for IPs and the mandatory subsidies to be derived from IP laws and MGB/NCIP rules and regulations.

Local Fisherfolks

The local fishermen reported to have a bountiful fish catch at present but the market price of their harvest is very cheap. A small pile or "tumpok" of fish sells for mere Php10 only. Some local predicts that as a result of the mine operation, more fish catch will tend to increase demand or consumption and the market value/price consequently increases the income of fishermen.

However, fishermen may have to go further to fish resulting to more time, effort and money (gas. boat rental, etc.)

Local fishermen who would find employment in the mine operation will devote more time to mine labor instead of its original fishing livelihood. This may tend to decrease the number of local fisherfolks and may results in lower daily fish catch.

Some FGD participants are worried that red tide as a consequence of mine activities will impact on marine resource such as sea weeds and fishes.

Farmers

Presently, farming and fishing are 2 main sustainable income sources for the locals, i.e., farmers and fishermen. Locals are worried that farming income will be negatively affected by the mine operation due to impact on erosion.

Sources of Potable Water

Water use for home consumption is currently sourced from springs located at the upper region of the forest/mountain. Locals are apprehensive that potable water might be affected by mining activities due to more tree cuttings. Also, water contamination is anticipated to pose a problem, which may impact on local health of the residents.

Barangay Roads

Only motorcycles, *"skylab"* and small trucks can ply and travel the narrow barangay roads going to and from the barangays in Bacong.

When the mine operates, some locals perceived that barangay roads will improve and accessible. Though, some possible road accidents are likely due to more trucks and other types of vehicle movements, which will make the barangay roads prone to mishaps. Also, more dust generation during dry months and the roads become slippery during rains.

Local Transportation

Single motorcycles, *"skylab"* and small trucks are commonly used by the local residents to convey them and their products to and from the barangays. The transportation fare is considered expensive at P300/trip or P600 for a two-way ride.

Some positive impacts of mining in Bacong as perceived by locals include better and improved barangay road system, faster travel time to and from the town proper where the locals sell/market their produce. A better road access will also allow smooth flow of the goods and the public services from LGUs to the far-flung communities.

The perceived negative impact is the occurrence of local traffic congestion due to an increase number or volume of vehicles as derived by the economic activities of mining. More locals who will get employed by the mine company and its sub-contractors may tend to increase their usual revenues and income such that their capacity to purchase new vehicles is very likely.

Access to Wireless/Communication

For locals, the Internet/phone signal is currently not available. If needed, they can access the signal from the top of the mountain in barangay Bayanihan, though cellphone signal is reported to be better in barangays Bacong, Mamawan and Pitawe.

The conventional use of two- way radio is the more reliable and generally used system of communication in all barangays in Gutalac. When the mining comes, a better access to wireless communication is expected.

Peace and Order

The prevailing peace and order condition in all the barangays is described to be peaceful with no crimes or disturbances. A 10:00pm curfew is enforced and the use of videoke machines is allowed only up to 10:00pm. Some locals predict that when the mine starts, people who are mostly employed in the mine will get some extra money to spend, which may lead to petty local neighborhood disorders. Such trouble may be caused by disorderly/drunks or altercations among locals and even migrants and/or due to differences in culture and beliefs. In addition, noise level within the community is likely to happen due to the introduction and availability of local entertainments, e.g., bars and night clubs.

Local Migration

At present, the local population in the barangays is relatively small. When the mine comes, an increase in population due to influx of migrants who seek employment and other business opportunities will take place. In most progressive areas, the increase in population means business prospects flourish. In the same context, some local feuds may happen due to difference in social character and behavior of migrant people from local residents of Gutalac.

Local Traffic

Presently, no traffic on the barangay road because the rugged condition of the road does not attract vehicles to ply the barangay. As earlier mentioned, when the mine project starts, barangay road improvements will entice more road users, thus, and possibly create local road congestion. As jobs are created thus the capacity of local residents to purchase or own vehicles, then more vehicles ply the local roads that would also create small traffic.

Culture and Lifestyle

The present living condition of the barangay residents as indicated by the participants in the FGD is considered simple, happy, and contented. They are generally engaged in farming and fishing. With the mine project, the level of the quality of life of the locals is expected to become better off because of new available source of income like new jobs and other business opportunities that go with it.

Sacred/Tribal Grounds

There are no sacred grounds nor areas of archeological importance except the one located near in barangay Bayanihan which is called Monalisa. Some participants during the FGD indicated that some people have rallied before in Bacong who said the presence of ancestral domain (allegedly) claims in the barangay, however, it was challenged and reportedly false according to a religious leader.

Needs Assessment

When the FGD participants were asked to prioritize the potential social (SDMP) projects according to the various areas of concern, it was unanimous among the participating barangays that focus on infrastructure development especially the construction/rehabilitation of the access roads in the barangays. It is necessary as the participants have emphasized because of the very hazardous and difficulty for local residents to travel and gain access to and from their communities.

However, varying points of view of the participants from the four (4) barangays with regard to the other areas of concern. Nevertheless, when the responses were analyzed, the barangay livelihood projects came as the next area of concern/focus. Most residents in the barangays need more access to sources of income and related additional or alternative income option.

The concern on environment is third among priority for participants. It refers to the destruction of the forest, pollution of water sources and degradation of marine/river if left unabated, impact on current sources of livelihood from farming and fishing. The concern on health and education becomes important as well but it seemed given less attention during the FGD.

Lastly, the barangay road system needs improvement because of its significant contribution to the daily needs and movements of the locals to and from other places like the towns.

Table E.S.- 10 Priority Areas of Concern of FGD Participants for SDMP Projects

Areas of concern	Prioritization				Average
	Barangays				
	Bacong	Mamawan	Bayanihan	Pitawe	
Infrastructure	1	1	1	1	1
Livelihood	2	3	3	2	2.5
Environment	5	2	4	3	3.5
Health	4	5	2	4	3.75
Education	3	4	5	3	3.75

Expectations from the Project (GNP)

The table below indicates other various expectations of participants from all participating barangays during the FGD. It cited the new construction and maintenance of barangay roads, provision of clinics, hospital and medical assistance, prioritization of locals for work, educational assistance and scholarship, tribal houses for IPs, school buildings, and finally a responsible mining practices to name a few.

Table E.S.- 11 Construction, pavement, repair and maintenance of roads for every barangay and other infrastructures

Expectations from the Project (GNP)
Construction, pavement, repair and maintenance of roads for every barangay and other infrastructures
Tertiary Hospital and medical assistance
Prioritization of local residents to work or be employed at FMDC to improve their way of life
Education and Scholarship grants to local students
Tribal house for the IP's
Lot for high school building
That by the operation of the mine must not affect the sea (their fishing grounds). They live along the shoreline and fishing is one their main sources of living
That by the operation of the mine, their sources of domestic water supply must not be contaminated.
FMDC must pay workers reasonably competitive wage rate plus other mandatory benefits
Access road repair from Sitio Tumibang to Highway
School building
Piped water supply
Installation of cell sites and relay stations to boost and improve communication connectivity
That the mine must start operation very soon
Responsible mining practices
Livelihood
Environmental protection
Recreational facilities like covered courts for ball games and other activities
Courtesy call at the barangay before any activity
Housing and relocation site if needed
Compliance of FMDC to all requirements before operation
Bridge for Sibalic

Expectations from the Project (GNP)
Street lighting
FMDC compliance to all promises of benefits to affected people
FMDC as a partner for a better life of the affected barangay residents

Commitment of the Communities

Where there are expectations also comes the commitments. The participants in the FGD were asked to list down their commitments or promises to help maintain and protect the environment. These commitments include maintenance of hygiene, proper waste disposal, waste segregation and recycling, planting of trees, strict implementation of Bantay Kalikasan, maintenance of a peaceful, orderly and quiet life, practice of good manners and respect among barangay residents and compliance to barangay and municipal ordinances.

Table E.S.- 12 Commitments of FGD Participants

Commitment of the Communities
Maintenance of hygiene and cleanliness
Proper waste segregation from biodegradable and non-biodegradable
Proper waste disposal especially the avoidance of disposing waste materials to the sea, waterways and sources of water which is a serious problem in the barangays
Planting of trees
Serious and strict implementation of Bantay Kalikasan guidelines and policies
Maintenance of a peaceful, orderly and quiet life
Practice of good manners and respect among barangay residents
Compliance to barangay and municipal ordinances

E.S. 3.2 Summary of Identification and Analysis of Project Alternatives

E.S. 3.2.1 Site Selection

Mining projects are very site specific. It is because minerals are extracted only in areas where the economic ore deposits occur. Therefore, unlike in other projects or areas, there is no prospect to consider as alternative site in mineral development and utilization because of the unconditional location of the resource.

The extraction of the nickel ore after been proved and defined from the exploration results will be confined only within the approved mining tenement of FMDC, i.e., Parcel 2. Based on the foregoing, there are no other site alternatives for the mineral (laterite) extraction since the area is limited by its economic feasibility and the marketability of the ore outside the Philippines. The site in Gutalac was delineated based on assessment of constraints in the (mine) area, mining method, the cost and the potential environmental and existing social conditions in Gutalac and Zamboanga del Norte, in general.

E.S. 3.2.2 Mining Method

Considering that the nickel deposit is laterite or highly weathered ultramafic rocks, no other mining method that would become effective in optimizing the return of investment than a strip

or contour mining method. This method incorporates a Progressive Mining Rehabilitation to minimize the adverse effects on the surrounding environment, i.e., Bacong.

E.S. 3.2.3 Pollution Control

While the air, water and land disturbance cannot be avoided in any surface mining operation, FMDC though, will adopt the proven methods used in major nickel laterite mines operations to be able to control and mitigate dust and noise pollution, among others. It is important also to educate all staff and employees and even the participation of locals nearby to understand the importance of managing the pollution. It helps environmental integrity of the mine site and the protection of territories of the communities.

E.S. 3.2.4 No-go Project

By not allowing the continuance of development mining in Gutalac, the existing facilities currently being used during the exploration activities would remain idle and junk. These facilities may include the camp sites, drilling sites, nurseries, access roads, and other protection slopes created to accomplish the tasks of exploration. GNP will also be constrained to prematurely rehabilitate areas as subjected by the exploration activities. Economically speaking, it comes at a loss for the town Gutalac and the community of Barangay Bacong, being main source of local residents' income and livelihoods, which mostly sourced from the exploration and mine related works of GNP.

E.S. 3.2.5 Power Supply

The power requirements in the mine camps and other logistical requirements of operations will amply be provided by Zamboanga Del Norte Electrical Cooperative (ZANECO). It has a recorded peak demand of 39.08MW in 2017 and projected to increase to 50.79MW in 2024.

The power load center of ZANECO is located in Liloy town, adjacent to Gutalac, which means sufficient supply of electricity for the mine operation is feasible.

During the mine construction phase, several standby generator sets will be supplied onsite to power its temporary activities. The gensets also serve as backup power supply in case of unexpected outages from the source (ZANECO).

E.S. 3.2.6 Water supply

Mine water supply including domestic will come from nearby natural drainage/creek located northeast of the site (Parcel 2). The operations involve mining/extraction only of the nickel ore, thus, the combined water requirements are considered minimal, approx. 80,000 liters during peak day. Tapping the nearby creek for the water supply will need to secure water rights from the National Water Resources Board (NWRB). The raw water supply from the creek is ideal for fugitive dust control, water plantation/nurseries, equipment maintenance, fire-fighting, and non-contact use.

The availability of free-flowing sources from springs uphill is a good resource of drinkable supply at the campsite.

E.S. 3.2.7 Timeframe

Table 0-1 Project Timeline - Gantt Chart

ACTIVITY	YEAR 1				YEAR 2				YEAR 3				YEAR 4				YEAR 5				YEAR 6				YEAR 7			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Hiring of Personnel																												
Conversion to MPSA																												
FPIC (Mine Operations)																												
Construction of Basecamp and Other Facilities																												
Construction of Jetty																												
Construction of Haul Road																												
Installation of Drainage/Environmental Structures																												
Clearing/Grubbing																												
Construction of Stockyard																												
Stripping of Top Soil																												
Mining																												
Stockpiling of Ore																												
Hauling of Ore																												
Shipping																												
Progressive Rehabilitation																												
Maintenance of Structures																												
Decommissioning																												

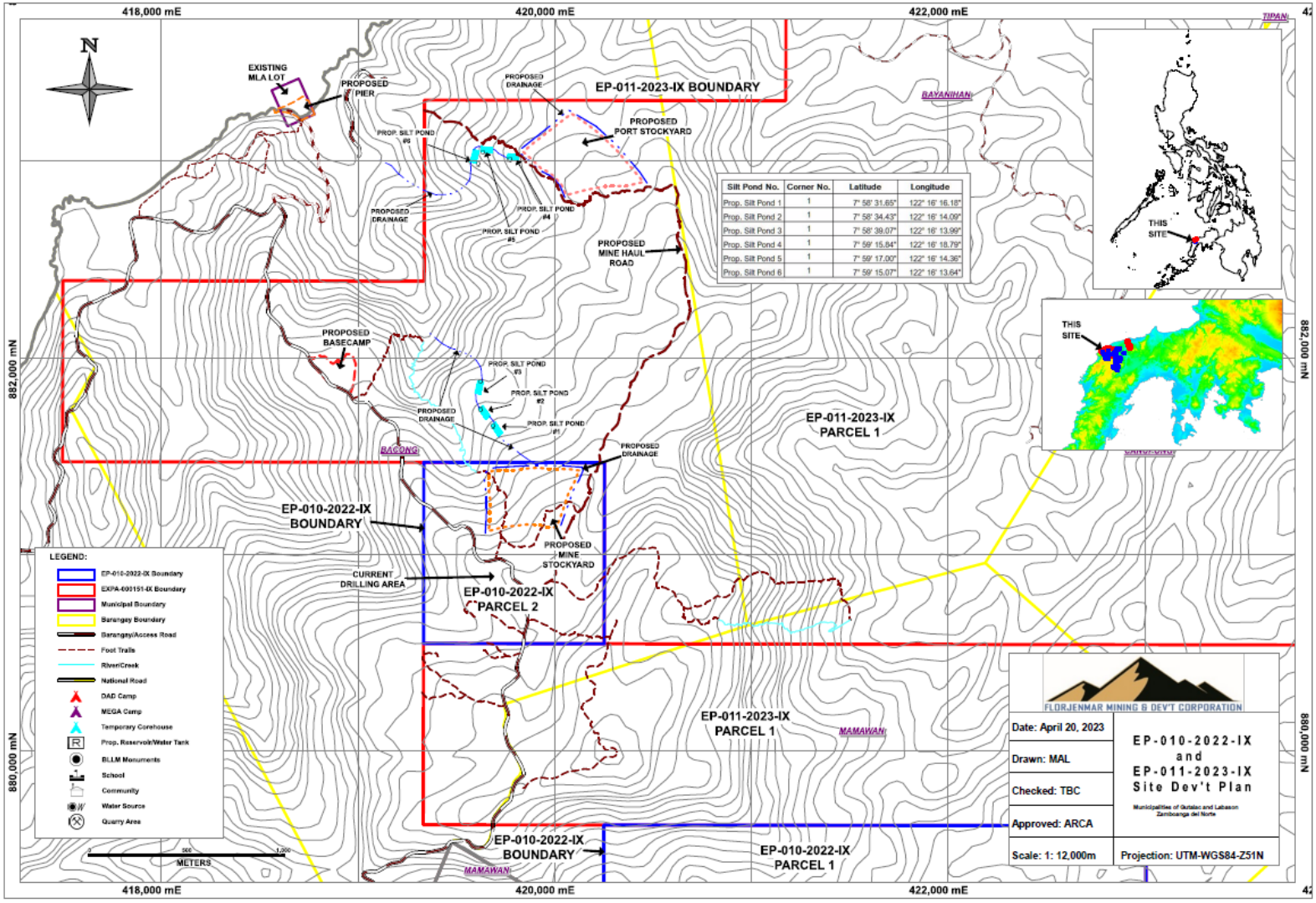
E.S. 3.2.8 Project Components

The areas and capacities of the components are as follows:

Table 0-2 Area and Tenurial Instruments for the components

Project Components	Tenurial Instruments	Area/Capacity/Specs.
Mining Areas	EP-010-2022-IX (Parcel 2)	81 ha
Stockpile Areas at the Mining Areas		14 ha/ 700,000 m3 cap.
•High-Grade		2 ha/ 100,000 m3 cap.
•Marginal-Grade		2 ha/ 100,000 m3 cap.
•Low-Grade		4 ha/ 200,000 m3 cap.
•Topsoil		2 ha/100,000 m3 cap
Waste Dumps		4 ha/ 200,000 m3 cap.
Mining Contractors' Equipment/Motor Pool	MLA	0.5 ha
Camp Site/Mine Office & Nursery	SLUP/EP 11	2.62 ha
•Offices		840 m²
•Warehouse		391 m²
•Core House		484.35 m²
•Fuel Depot		500,000 liters capacity
•Assay Laboratory		403.44 m²
•Staff and Guest Houses		1380 m²
•Recreation Area		1270 m²
Pier Facilities/Causeway	MLA	100.00 m from the shoreline
•Port Stockyard		0.01 ha
•Multipurpose Shed with Amenities		0.03 ha
•Fuel Depot		500,000-liter capacity diesel
•Security House		about 2,000 sq. meters
Stockyards & Drying Areas at the Port	EP 11	12.00 ha
•Solar/Wind Drying Pad		3.9 ha
•Ore Stockyard		5.00 ha

Project Components	Tenurial Instruments	Area/Capacity/Specs.
•Dry Ore Stockpile Area		3.00 ha
•Equipment Service Area	MLA/EP 11	0.1 ha
Road Networks	EP 11/EP 10	10.00 ha
•Haul Roads (from Mining Area to Port)		15 m W x 4 km L
•Brgy. Road (from Mining Area to Bacong)		12 m W x 2.5 km L
•Access Roads		6 m W x 5 km L
o Camp Site to Mining Area		15 m W x 6 km L
o Internal		
Ancillary Facilities		4.50 ha
•Power Supply	SLUP/ EP 11	
o Generator Set		Two 200KVA for laboratory and 3 15KVA for small requirements such as pumps and lighting
o Power House (at the Base Camp)		
•Water Supply (springs)	EP 11	approximately 80,000 liters per day for 400 personnel (approx. 15GPM)
Pollution Control Structures/Facilities/Devices	EP 10/MLA	
•Siltation Ponds		1.2ha / 28000m3 - 56000 m3 cap.
•Waste Dumps		100,000 cubic meters
•Topsoil Stockpile		100,000 cubic meters
•Nursery	SLUP/EP 11	900 m²
•Oil-Water Separators		one unit
•Materials Recovery Facility		40 m²
•Hazardous Waste Storage Facility		40 m²
•Septic Tanks		At 50 gallons per person, approximately 4 septic tanks with 18.9 cubic meter capacity
Total Area Application for ECC		114.50 ha



Silt Pond No.	Corner No.	Latitude	Longitude
Prop. Silt Pond 1	1	7° 58' 31.65"	122° 16' 16.18"
Prop. Silt Pond 2	1	7° 58' 34.43"	122° 16' 14.09"
Prop. Silt Pond 3	1	7° 58' 39.07"	122° 16' 13.99"
Prop. Silt Pond 4	1	7° 59' 15.84"	122° 16' 18.79"
Prop. Silt Pond 5	1	7° 59' 17.00"	122° 16' 14.36"
Prop. Silt Pond 6	1	7° 59' 15.07"	122° 16' 13.64"

Figure 0-1 Project Components Map

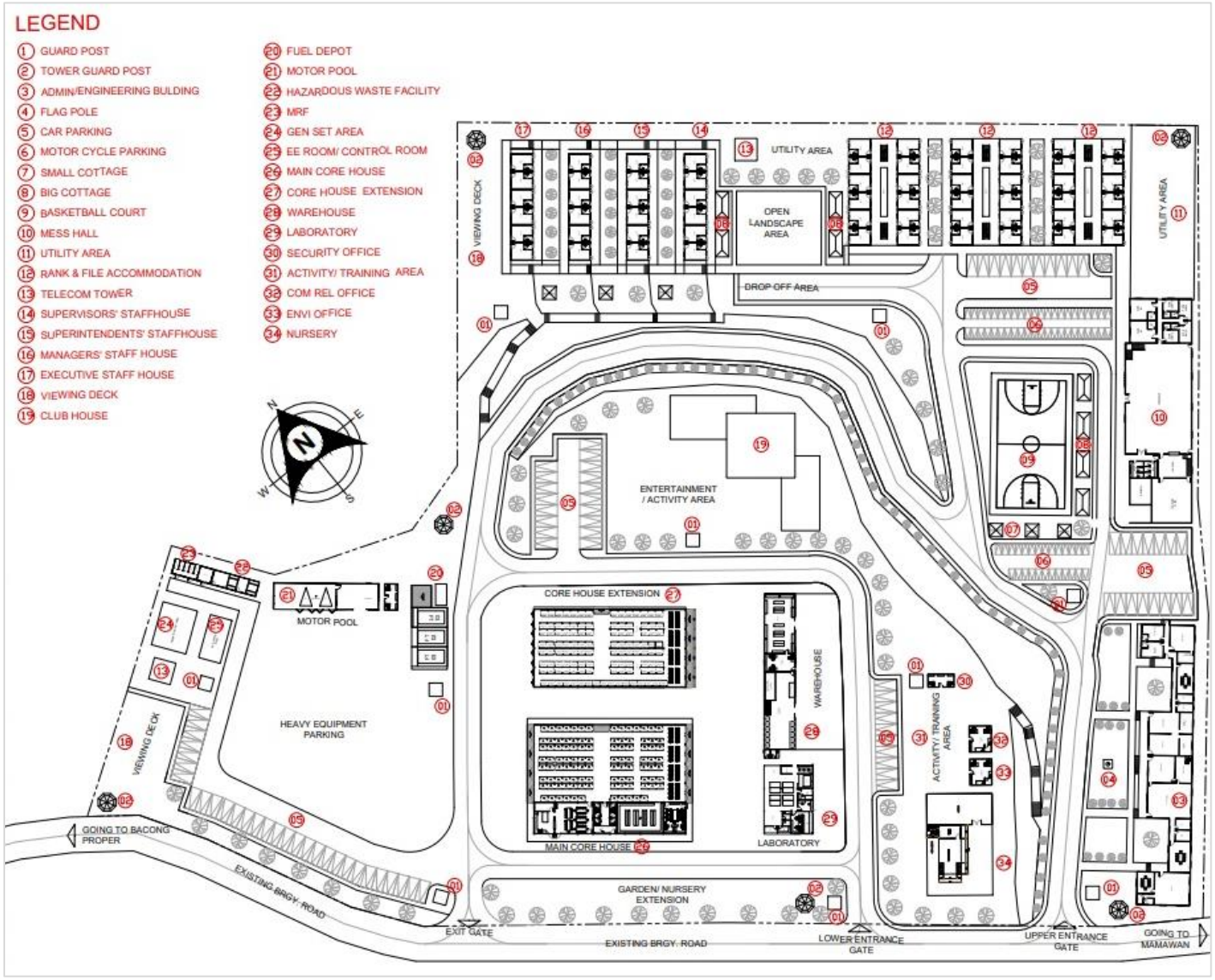


Figure 0-2 Camp Site with major components

1.1.1 Support Components

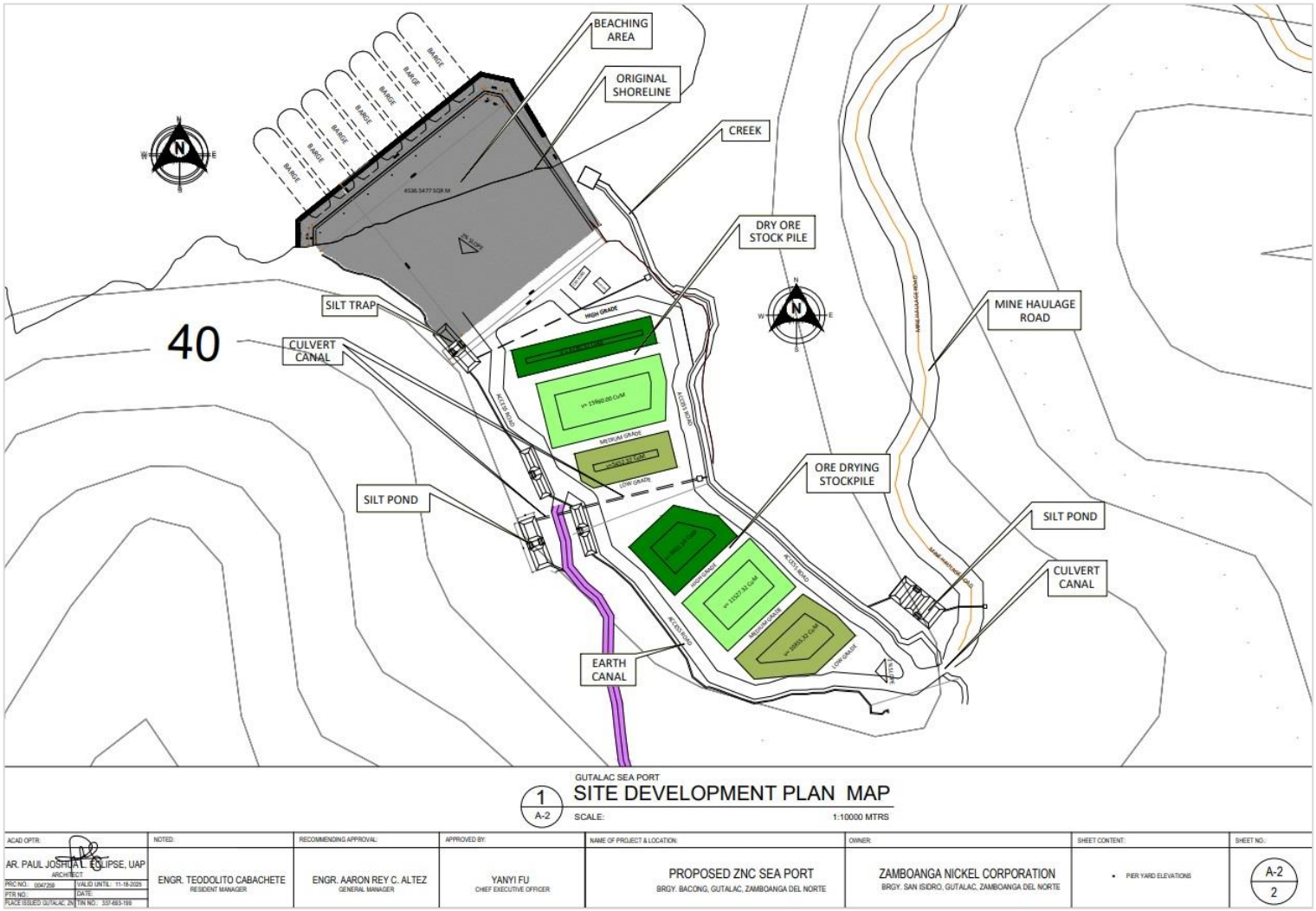


Figure 0-3 Site Development Plan for Seaport

E.S. 3.3 Concise integrated summary of the main impacts and residual effects after applying mitigation

Summary of Impact Assessment and EMP is presented in Table below:

Table E.S.- 13 Summary of Impact Assessment and Environmental Management Plan

Project Activities	Environmental components likely to be affected	Potential Impacts	Proposed Mitigating Measures	Target Performance/ Efficiency	Responsible Entity	Cost Allocation	Guarantee or Financial Agreements
Construction Phase							
Site Preparation and Clearing. Construction of Mine Infrastructure Pre-Stripping Activities at the Surface Mine Area	Land	Vegetation Removal and Loss of Faunal Habitat.	Vegetation Removal and Loss of Limiting the Area of Disturbance to cover only the Planned Area for Development. Earth Balling of significant species prior to land grubbing and translocation as enrichment planting materials in the identified reference ecosystem. Wildlings collection from the areas targeted to be stripped and set aside in established nurseries for future rehabilitation. Seeds are collected from native trees within the applied MPSA for propagation in the nurseries;	>90%	FMDC	Construction and Project Development Cost.	Part of the Operating Cost Management of Design and Construction of Facilities in Accordance with DAO 2010- 21: Consolidated Department Orders for the Implementing Rules and Regulation of RA 7942: Philippine Mining Act of 1995. Compliance to DAO 2022-04 Enhancing Biodiversity Conservation and Protection in Mining Operations.
		Loss of Topsoil and Overburden Materials.	Removed Topsoil to be Stockpiled for Progressive Rehabilitation Activities. Management and Control of the Topsoil Storage Areas. The fertility of the soil will degrade over time and may need to be	>90%	FMDC	Construction and Project Development Cost.	Part of the Operating Cost Management of Design and Construction of Facilities in Accordance with DAO 2010- 21: Consolidated Department Orders for the Implementing Rules and

Project Activities	Environmental components likely to be affected	Potential Impacts	Proposed Mitigating Measures	Target Performance/ Efficiency	Responsible Entity	Cost Allocation	Guarantee or Financial Agreements
			enhanced with soil conditioning or fertilizers.				Regulation of RA 7942: Philippine Mining Act of 1995.
		Decrease Carbon Pool in the area which that has the capacity to accumulate or carbon	Establishment of Forest Carbon Project Identification of reference ecosystem which is 5% of the applied MPSA area	>90%	FMDC	EPEP Cost	Compliance to DAO 2022-02: Guidelines on the Establishment of Carbon Accounting, Verification, and Certification System (CAVS) for forest carbon project. Compliance to DAO 2022-04 Enhancing Biodiversity Conservation and Protection in Mining Operations.
		Increase Greenhouse Gas Emissions	Establishment of Forest Carbon Project Identification of reference ecosystem which is 5% of the applied MPSA area	>90%	FMDC	EPEP Cost	Compliance to DAO 2022-02: Guidelines on the Establishment of Carbon Accounting, Verification, and Certification System (CAVS) for forest carbon project. Compliance to DAO 2022-04 Enhancing Biodiversity Conservation and Protection in Mining Operations.

Project Activities	Environmental components likely to be affected	Potential Impacts	Proposed Mitigating Measures	Target Performance/ Efficiency	Responsible Entity	Cost Allocation	Guarantee or Financial Agreements
		Threat to Existence of Important Local Species. Threat to Abundance, Frequency and Distribution of Important Local Species.	Wildlings of Important (Critically Endangered, Endangered and Vulnerable) Floral Species will be Collected Prior to Disturbance and will be Maintained at the Plant Nursery Until Ready for Planting Within Planned Rehabilitation Areas. Identification Reference Ecosystem which is 5% of the applied MPSA area.	100%	FMDC	P8 per seedling; annual target collection is P25,00 or a total cost of P2 million over the span of 10 years	EPEP Cost Compliance to DAO 2022-04 Enhancing Biodiversity Conservation and Protection in Mining Operations.
		Change in Surface Topography.	Progressive Rehab of disturbed areas by placement of soil cover, soil conditioning and vegetative cover Use of fast-growing tree species and intercropped with endemic species and cash crops for livelihood Identification Reference Ecosystem which is 5% of the applied MPSA area. Hiring of Biodiversity Conservation Officer to lead the integration of biodiversity measures in various stages of mining operations.	>90%	FMDC		EPEP Cost Compliance to DAO 2022-04 Enhancing Biodiversity Conservation and Protection in Mining Operations.
		Change in Soil Quality due to improper	Proper Storage and Disposal of Waste Materials (Hazardous and Non-Hazardous) Within Designated Areas (MRF for Solid	>90%	FMDC	Construction and Project Development Cost.	Part of the Operating Cost Management of Waste Materials as Required by DAO 2013-22. Revised

Project Activities	Environmental components likely to be affected	Potential Impacts	Proposed Mitigating Measures	Target Performance/ Efficiency	Responsible Entity	Cost Allocation	Guarantee or Financial Agreements
		management of wastes	Waste and HWSF for Hazardous Waste)				Implementing Rules and Regulations of RA 6969: Toxic Substances and Hazardous Wastes and Nuclear Substances Control Act.
		Soil Erosion	Steep Slopes (>30°) Will Require Benches, Terraces or Other Slope Controls to Reduce Surface Water Runoff Velocity During Rainfall Events. Other Surface Treatment to Control Erosion.	>90%	FMDC	Construction and Project Development Cost.	Use of Reputable and Experienced Engineering Design Consultants for Facility Design and Construction.
		Contamination of Soils from Oil and Fuel Leaks from Construction Equipment Use	Storage and Work Areas shall be Provided with Secondary Containment for Collection of Fuel and Oil Leaks. Regular Maintenance of Construction Equipment.	100%	FMDC	Construction and Project Development Cost.	Management of Waste Materials as Required by DAO 2013-22: Revised Implementing Rules and Regulations of RA 6969: Toxic Substances and Hazardous Wastes and Nuclear Substances Control Act.
	Air	Dust Generation from Movement of Equipment During Clearing and Construction Activities	Use of Dust Suppression Techniques such as Watering of Exposed Surfaces, Reduction of Vehicle Travel Speeds and Limit Exposed Areas.	100%	FMDC	Construction and Project Development Cost.	Conformance with DAO 2000-81: Implementing Rules and Regulations of RA 8749: Philippine Clean Air Act. Conformance with DAO 2010-01: Implementing Rules and Regulations of RA 9729: Climate Change Act.
	Water	Sedimentation and Siltation Local Rivers and Creeks. Increased Turbidity Levels within Local Rivers and Creeks	Provision of Buffer Zones between the Areas of Disturbance and Rivers and Creeks. Operations Involving Soil Disturbance, Such as Overburden Stripping, to Incorporate a Buffer Zone of at Least 20 Meters Away from Creeks and Rivers.	>90%	FMDC	Construction and Project Development Cost.	EPEP Cost Compliance with DAO 2016-008: Water Quality Guidelines and General Effluent Standard and DAO 2021-19: Updated Water Quality Guidelines and General Effluent Standard for Selected Parameters

Project Activities	Environmental components likely to be affected	Potential Impacts	Proposed Mitigating Measures	Target Performance/ Efficiency	Responsible Entity	Cost Allocation	Guarantee or Financial Agreements
			Establish Erosion Control Measures Including Diversion Canals, Soil Stabilization Programs and Re-Vegetation of Disturbed Areas to Reduce the Soil Loss Potential. Construction of Sediment Ponds and Overland Flow Retention Structures to Trap Soil and Reduce Siltation.				
		Changes in Drainage Patterns.	Develop Master Infrastructure Drainage Plan for the Project Area.	>90%	FMDC	Construction and Project Development Cost.	EPEP Cost
		Changes in Flood Characteristics.	Provision of stormwater drainage system	>90%	FMDC	Construction and Project Development Cost.	Environmental Protection and Enhancement Program.
		Loss of Riparian and Aquatic Habitat Areas.	Provision of siltation ponds	>90%	FMDC	Construction and Project Development Cost.	Environmental Protection and Enhancement Program.
		Water Quality Degradation due to Potential Leaks or Spills of Oils and Fuels.	Storage and Work Areas shall be Provided with Secondary Containment for Collection of Fuel and Oil Leaks. Regular Maintenance of Construction Equipment.	100%	FMDC	Construction and Project Development Cost.	Environmental Protection and Enhancement Program. Compliance with DAO 2016-008: Water Quality Guidelines and General Effluent Standard and DAO 2021-19: Updated Water Quality Guidelines and General Effluent Standard for Selected Parameters
	People	Occupational health and safety hazards	Proper training of personnel	100%	FMDC	Construction and Project	Compliance to DAO 2000-08

Project Activities	Environmental components likely to be affected	Potential Impacts	Proposed Mitigating Measures	Target Performance/ Efficiency	Responsible Entity	Cost Allocation	Guarantee or Financial Agreements
			Use only heavy equipment operators with certifications Daily safety meetings, tool meetings, and strict adherence to all safety rules and regulations			Development Cost.	
		Generation of employment from the local population	Assist the local governments (particularly at the municipal and provincial levels) to develop and to assist their respective Public Employment ServicesOffices (PESOs). Institute a system of verification regarding local residency in respect to hiring; Training programs for required skills forresidents of host communities; and Training programs for local governments onrevenue generation and management.	>90%	FMDC	Construction and Project Development Cost.	Compliance to the Labor Code of the Philippines.
Operation Phase							
Mining Operation. Extraction of Ore	Land	Loss of Topsoil and Overburden Materials.	Establishment of Benches in Accordance with the Surface Mine Design.	>90%	FMDC	Project Operation Cost. AEPEP Cost.	This is Included in the Annual Environmental Protection and Enhancement Program (AEPEP).

Project Activities	Environmental components likely to be affected	Potential Impacts	Proposed Mitigating Measures	Target Performance/ Efficiency	Responsible Entity	Cost Allocation	Guarantee or Financial Agreements
		Change in Land Use of the Surface Mine Area.	Ensure that the land use plan reflects the changes that will be done to the land Progressive rehabilitation in order to make mined out areas reusable again. Establishment of Forest Carbon Project Identification of reference ecosystem which is 5% of the applied MPSA area	>90%	FMDC	Project Operation Cost. AEPEP Cost.	This is Included in the Annual Environmental Protection and Enhancement Program (AEPEP). Compliance to DAO 2022-02: Guidelines on the Establishment of Carbon Accounting, Verification, and Certification System (CAVS) for forest carbon project. Compliance to DAO 2022-04 Enhancing Biodiversity Conservation and Protection in Mining Operations.
		Increased Soil Erosion	Installation of Drainage Canal System to Prevent Erosion of Benches and Other Areas.	>90%	FMDC	Project Operation Cost. AEPEP Cost.	The Program will be Reviewed and Approved by the MRFC, and Monitored by the MMT.
		Reduction in Soil Fertility.	No plants in the mine site while the mine is operating. Topsoil will be stored, used as vegetable garden, and reused once the area is mined out during progressive rehabilitation	>90%	FMDC	Project Operation Cost. AEPEP Cost.	Third Party Monitoring Every 1 to 2 years as Required by the ECC.
		Climate Change Contribution from the Removal of Vegetation	Progressive Rehabilitation of Disturbed Areas by Placement of Soil Cover, Soil Conditioning and Vegetative Cover Placement. Vegetative Cover Will Include Fast Growing Species Intercropped with Cash Crops and Endemic Species.	>90%	FMDC	Project Operation Cost. AEPEP Cost.	This is Included in the Annual Environmental Protection and Enhancement Program (AEPEP).

Project Activities	Environmental components likely to be affected	Potential Impacts	Proposed Mitigating Measures	Target Performance/ Efficiency	Responsible Entity	Cost Allocation	Guarantee or Financial Agreements
		Change in Surface Topography, Terrain and Land Slope	Progressive Rehabilitation of Disturbed Areas by Placement of Soil Cover, Soil Conditioning and Vegetative Cover Placement. Vegetative Cover Will Include Fast Growing Species Intercropped with Cash Crops and Endemic Species.	>90%	FMDC	Project Operation Cost. AEPEP Cost.	This is Included in the Annual Environmental Protection and Enhancement Program (AEPEP).
		Threat to Existence of Important Local Species. Threat to Abundance, Frequency and Distribution of Important Local Species.	Progressive Rehabilitation of Disturbed Areas by Placement of Soil Cover, Soil Conditioning and Vegetative Cover Placement. Vegetative Cover Will Include Fast Growing Species Intercropped with Cash Crops and Endemic Species. Minimize Vegetation Removal within Project Facility Areas Planned for Development. Increase Ground Cover by Reforestation with Local Important Species. Collection of wildlings of Endangered and Endemic Floral Species for Propagation in the Plant Nursery. Prepare a Biodiversity Management Plan. Maintain Forest Corridors for Wildlife Movement.	>90%	FMDC	Project Operation Cost. AEPEP Cost.	This is Included in the Annual Environmental Protection and Enhancement Program (AEPEP). Third Party Monitoring Every 1 to 2 years as Required by the ECC.

Project Activities	Environmental components likely to be affected	Potential Impacts	Proposed Mitigating Measures	Target Performance/ Efficiency	Responsible Entity	Cost Allocation	Guarantee or Financial Agreements
	Water	Leaching of Metals to Surface Water Runoff and Potential Generation of Acid Mine Drainage.	Conduct Water Quality Monitoring and Assessment of Mine Surface Water Runoff on a Regular Basis. Construction of Passive Wetland Treatment Facilities, if necessary, for Natural Treatment of Surface Water Runoff. Conduct Groundwater Sampling and Water Quality Monitoring on a Regular Basis.	100% Results of water quality monitoring are within the DENR Standards.	FMDC through the Environmental Management Department.	Project Operation Cost. AEPEP Cost.	Quarterly Review and Monitoring of the MMT. Third Party Monitoring as Required by the ECC.
		Potential petroleum leaks	Construction of Fuel Farm complete with sufficient secondary containment bunds which can 120% of the total capacity of the fuel tanks and provision of oil spill contingency plan Oil spills containmentthrough bunds, drip trays, and oil-water separators	100%	FMDC through the Environmental Management Department	Project Operation Cost. AEPEP Cost.	Environmental Protection and Enhancement Program. Compliance with DAO 2016-008: Water Quality Guidelines and General Effluent Standard and DAO 2021-19: Updated Water Quality Guidelines and General Effluent Standard for Selected Parameters
	Air	Dust Generation from Movement of Trucks During Hauling Operations and Heavy Equipment During Excavation and Loading Operations.	Use of Dust Suppression Techniques such as Watering of Exposed Surfaces, Reduction of Vehicle Travel Speeds and Limit Exposed Areas. Provision of Personal Protective Equipment. Conduct of TSP, PM10 measurement as would be	100% Ambient air quality monitoring results are within the DENR Standards.	Proponent through Mines, Safety and Environmental Management Departments.	AEPEP Cost. Safety Operational Cost.	This is included in the Annual Environmental Protection and Enhancement Program (AEPEP) of the company that will be reviewed and approved by the MRFC, and monitored by the MMT. Third Party Monitoring as Required by the ECC.

Project Activities	Environmental components likely to be affected	Potential Impacts	Proposed Mitigating Measures	Target Performance/ Efficiency	Responsible Entity	Cost Allocation	Guarantee or Financial Agreements
		Human Health Impacts within High Dust Production Areas.	Included in the Annual Ambient Air Quality Monitoring. Timely Progressive Rehabilitation Activities for Areas No Longer Part of Construction or Not Needed for Operations.				
Use of Resources.	Water.	Use of Surface Water Sources for Domestic and Industrial supply. Resource Competition with Downstream Users and Reduction in Stream Flows Due to Diversions.	Implementation of Recycling Programs, Improvements Within Operations to Minimize Water Use. Establishment of Other Water Conservation Measures to be Implemented by FMDC and Individual Employees. Preparation and Implementation of a Water Resource and Watershed Management Plan.	>90%	FMDC through the Department Managers. Environment and Civil Engineering Services Departments.	Operations Cost. Environmental Management Department and Civil Engineering Services Departments.	Cost Savings and Economic Benefits from Recycling and Conservation Measures. Conditions Identified in the National Water Resources Board Water Permit.
Generation of Hazardous and Non-Hazardous Wastes.	Land	Potential Soil Contamination, Change in Soil Quality, Arising from Accidental Spills or Leaks	Provision of Bund Walls to Contain at Least 110% the Capacity of the Largest Storage Tank, in the Case of a Spill, Leak or Process Area Washing. Regular Inspection of Storage Tanks, Containers, Pipe Lines for Signs of Leaks, Corrosion, Structural Instability, Malfunctioning Valves and Fittings.	>90%	FMDC	Operations Cost. AEPEP Cost.	Included in the ASHMP. Bund Walls and Secondary Containment will be Included in the Design. Transport and Disposal of Hazardous Wastes will be Done Only with a Valid Permit to Transport and Hazardous Waste Manifest. A Certificate of Treatment will be Issued by the Contractor.
		Generation of Hazardous Wastes such as Acids, Bases, Spent Oils,	Hazardous Wastes will be Labeled and Stored According to the Regulatory Guidelines and Protocols. Transport and Disposal	100%	Proponent through Environmental		

Project Activities	Environmental components likely to be affected	Potential Impacts	Proposed Mitigating Measures	Target Performance/ Efficiency	Responsible Entity	Cost Allocation	Guarantee or Financial Agreements
		and Chemical Contaminated Containers.	will be through Accredited and Licensed Hazardous Waste Management Contractors.		Management Department.		
	Water	Potential Surface Water Contamination and Degradation of Surface Water Quality due to Accidental Spills or Leaks.	Provision of Bund Walls within Chemicals and Reagent Storage Areas to Contain Releases and Minimize Pathways to the Environment During Occurrences of Spill or Leaks. Establish Surface Water Monitoring Program to Collect and Test Samples on a Regular Basis.	>90% Results of surface water monitoring are within DENR standards	FMDC	AEPEP Cost Third Party Monitoring and Testing Consultants.	Monitoring program included in the AEPEP. Laboratory Results of the Monitoring Program are Reported to Government Agencies through the Self-Monitoring Report (SMR), MMT Quarterly Inspection, MRFC Quarterly Meetings. Non-Compliance May Lead to a Notice of Violation.
		Potential Groundwater Contamination and Degradation due to Oils and Fuels from Accidental Releases.	Establish a Groundwater Monitoring Program to Collect and Test Groundwater Samples on a Regular Basis.	100% Results of groundwater monitoring are within PNSDW standards.	FMDC through the Environmental Management Department.	AEPEP Cost Third Party Monitoring and Testing Consultants.	Monitoring program included in the AEPEP. Laboratory Results of the Monitoring Program are Reported to Government Agencies through the Self-Monitoring Report (SMR), MMT Quarterly Inspection, MRFC Quarterly Meetings. Non-Compliance May Lead to a Notice of Violation
		Release of Chemicals and Reagents Due to Drainage System Failure.	Develop Drainage and Surface Water Control Plan to Contain Contaminated Surface Water and Manage Hazardous and Non-Hazardous Storage and Containment Areas. Preparation of Site Remediation Plan for Occurrences of Surface and Groundwater of Contamination and Soil Contamination.	>90%	Third Party Monitoring and Audit Programs.	AEPEP Cost	FMDC Safety Department Protocols and Emergency Response Plan.
	Air Quality and Noise	Generation of Noise and Air Emissions	Air pollution control devices and proper maintenance	>90%	Third Party Monitoring and	AEPEP Cost.	Maintain Compliance with DAO 2000-8: A 8749:

Project Activities	Environmental components likely to be affected	Potential Impacts	Proposed Mitigating Measures	Target Performance/ Efficiency	Responsible Entity	Cost Allocation	Guarantee or Financial Agreements
		from the Use of Generator Sets and vehicles		Results of Ambient Air Quality are within the DENR standards	Audit Programs.	Third Party Monitoring and Testing Consultants.	Implementing Rules and Regulations of Clean Air Act.
	People	Health and Safety Risks from Use, Handling, Storage and Disposal of Chemicals and Reagents.	Provision of Personal Protective Equipment to Employees. Employee Orientation of the Material Safety Data Sheets. Education and Implementation of Proper Handling, Storage and Disposal Protocols.	100%	FMDC through the Safety Department.	Safety and Health	Maintain Compliance with DAO 2000-8: and RA 6969
Site Operations and Maintenance	Land	Generation and Disposal of Solid Wastes.	Development of Solid Waste Management (i.e., Reduction, Reuse, Recycling Activities) Program Activities for Company Wide Implementation Including FMDC Operations and Contractor Operations. Construction of Solid Waste Management Facility and Engineered Septage Facility for Appropriate Storage of Generated Wastes. IEC Programs on Solid Waste Management for both Hazardous and Non-Hazardous Waste Materials.	>90%	FMDC through Company Wide Commitments and Environmental Management Department.	Operations Cost and Environmental Department Cost. AEPEP Cost.	Establish Compliance with RA 9003: Ecological Solid Waste Management Act.
	Water	Reduction or Depletion of Local	Implement Water Recycling and Conservation Programs.	>90%	FMDC through Company	Operations Cost and	Cost Savings from the Recycling Activities.

Project Activities	Environmental components likely to be affected	Potential Impacts	Proposed Mitigating Measures	Target Performance/ Efficiency	Responsible Entity	Cost Allocation	Guarantee or Financial Agreements
		Water Resource Supply.	Prepare and Monitor Water Balance Data to Determine Input and Output Requirements in the Process Operation and Determine Areas for Potential Water Conservation Measures. IEC Programs for Water Use and Water Conservation.		Wide Commitments and Environmental Management Department.	Environmental Management Department Cost. AEPEP Cost.	Compliance with the Approved National Water Resource Board Water Rights Permit.
Storm water Management	Water	Increased Sedimentation and Siltation of Downstream Rivers and Creeks. Potential downstream flooding.	Development of overall Drainage Plan to balance volume flow of water within the Project site. Natural drainage features and patterns in undisturbed areas will be retained. Identification of areas with high risk of erosion in order to divert or reduce runoff through that area. Construction of diversion and drainage canals. Installation of cross drainage or culverts. Landscaping and reforestation of exposed areas to reduce water runoff volume.	>90%	FMDC through Civil Engineering, Mines and Environment Department	Mine Operations, Civil Engineering and Environmental Management Department Cost	Included as part of AEPEP.
Abandonment/Decommissioning							
Decommissioning Activities. Disposal of Equipment and Scrap Materials.	Land	Soil Contamination from Equipment Removal. Stability of the Tailings Storage	The Majority of the Impacts During Closure will have been Addressed and Reduced by Progressive Rehabilitation Activities Implemented During the Operations Phase. Similar	100%	FMDC through all Department Managers.	Costs Identified in the Final Mine Rehabilitation and	Addressed in the Final Mine Rehabilitation and Decommissioning Plan Reviewed and Approved by the CLRF.

Project Activities	Environmental components likely to be affected	Potential Impacts	Proposed Mitigating Measures	Target Performance/ Efficiency	Responsible Entity	Cost Allocation	Guarantee or Financial Agreements
Disposal of Hazardous Wastes. Closure of the Surface Mine, Removal or Rehabilitation of Administration Buildings, Staff Housing, Warehouses and Access Roads.		Dam, Surface Mine and Waste Rock and Overburden Stockpiles. Consistency in the Land Use Plan of the Project with the Subanen and Local Government. Aesthetic Value. Exposure of Decommissioned Buildings and Structures.	Programs will be Implemented During Closure. Preparation of a Final Mine Rehabilitation and Decommissioning Plan. Implement Soil Remediation Measures, if Necessary, After Conduct of Soil Monitoring Programs. Conduct Geohazard Assessment of the Surface Mine and Overburden Waste Stockpiles. Consultation Activities with Respect to Land Use will be Conducted during the Operational Phase Prior to Closure. Soil Conditioning of Exposed Areas Prior to Revegetation. Planting of a Large Variety of Plant Species within the Disturbed Areas Using Indigenous, Endemic Species in Accordance with the Final Land Use Plan of the Area.		Environmental Management Department. Community Relations Department.	Decommissioning Plan. Environmental Management Department.	Allocation of Final Mine Rehabilitation and Decommissioning Plan Fund. Certificate of Final Relinquishment to be Approved by the CLRF and the MGB.
	Water	Potential Water Quality Degradation from Clearing Activities.	Water Discharges and Washings will Pass Through Detoxification Facilities and Sediment/Neutralization Ponds.	100%	FMDC through Maintenance and Environmental	Costs Identified in the Final Mine Rehabilitation and	Addressed in the Final Mine Rehabilitation and Decommissioning Plan Reviewed and Approved by the CLRF.

Project Activities	Environmental components likely to be affected	Potential Impacts	Proposed Mitigating Measures	Target Performance/ Efficiency	Responsible Entity	Cost Allocation	Guarantee or Financial Agreements
		Localized Erosion from the Mine Structures Undergoing Rehabilitation.	Reduce Slopes and Maintain as Much Vegetation Cover as Possible for Erosion Control. Establish Water Quality Monitoring Program During Mine Closure Activities.		Management Departments.	Decommissioning Plan. Environmental Management Department.	Allocation of Final Mine Rehabilitation and Decommissioning Plan Fund. Certificate of Final Relinquishment to be Approved by the CLRF and the MGB.
Decommissioning Activities. Rehabilitated Lands Programs and Turnover to the Community. Establishment of Sustainability Programs. Community Governance and Financial Management.	Social	Community Issues on Turnover of Rehabilitated Areas, Life-After Mining Opportunities and Sustainability Programs.	Management of Community Issues during the Operations Phase of the Project Using Continuous Stakeholder Dialogue. Long Term Livelihood Programs Introduced During the Operations Phase and Combined with SDMP Projects. Exploration of Private Sector Participation in Post Mining Sustainability and Business Model Preparation. Assistance in Governance Training and Development and Financial Management. Continued Presence of FMDC After the Closure of Mining Operations and Transition of Rehabilitated Lands, SDMP and Sustainability Programs to the Community.	100%	FMDC through the Community Relations and Environmental Management Department.	Final Mine Rehabilitation and Decommissioning Fund. Social Development Management Fund. Private Sector Business Enterprises.	Addressed in the Final Mine Rehabilitation and Decommissioning Plan Reviewed and Approved by the CLRF. Allocation of Final Mine Rehabilitation and Decommissioning Plan Fund. Certificate of Final Relinquishment to be Approved by the CLRF and the MGB.

E.S. 3.4 Risks and uncertainties relating to the findings and implications for decision making

Table E.S.- 14 Summary Matrix of Predicted Environmental Risks

Environmental Aspects	Risks and uncertainties relating to the findings and implications for decision-making
Geohazards	Risks are associated with uncertainties in geotechnical properties of soils and rocks, which can be minimized with the continuation of preventive measures and site monitoring.
	The mine site area is highly susceptible to earthquake and water-induced landslides. FMDC will ensure that proper drills are undertaken. Risks cannot be eliminated but can be managed using proper mining designs and technologies that allow safe operations.
Terrestrial Vegetation and Wildlife	It is uncertain that immediate remedial and reforestation will hold the top soil intact nor suffice the presence of trees considering the high potential for landslides. Mineralization of the soil is a key factor, as the levels of metals in the soil is not conducive to vegetative growth.
Hydrology	The depletion of groundwater as a risk is anticipated to be significant but considered low to medium as no established spring water from the mountain is being utilized by the community
	PHIVOLCS has indicated that the area is very high potential for both earthquake and water induced landslides. Mitigation may temper the effects of mining but must keep the local communities well prepared for disasters. Risks cannot be eliminated but can be brought down to a manageable level.
Water Quality	Risks associated with the release of deleterious substances which were not previously identified in the mine planning and design. The risks will be eliminated by continued and active monitoring including pilot testing, if needed.
	The possible sources of leaks from machine operations are considered, and the mitigation measures are provided to prevent any occurrence or scenario including disaster risk planning.
Climate, Air Quality and Noise	Mine Safety will be strictly enforced, and no shortcuts tolerated.
	Fugitive dust will always be a key feature of mine operations and materials/hauling trucks movement, with health effects down the line, including workers safety and community health; they should be strictly monitored.
Socioeconomics, Public Health and Safety	Risks are associated with negative perception and conflicts with stakeholders (grievance) which normally occur in all communities closer to mining operations, however, commitments or measures are included in the EIS and SDMP to address them and should be fulfilled. Other social risks are associated with local security. It could entail provision for additional resources and manpower to handle community- related concerns in terms of security, enhanced coordination with stakeholders and local governments or entail additional resources to manage other concerns not previously identified in the EIA.

E.S. 3.5 EMF and EGF Commitments

DENR Administrative Order No. 2005-07 instituted the provision of environmental guarantee fund for mining operations and related activities and the mechanism known collectively as the Contingent Liability and Rehabilitation Fund (CLRF). FMDC commits to follow the regulations with regards to the constitution of the CLRF. However, it does not cover MWTF since no tailings are involved under this project. The mine procedure is purely mine ore extraction, sorting & drying, and hauling & shipping to the final market; no mineral processing is involved.

Furthermore, DAO 2015-02, or the Harmonization of the Implementation of the "Philippine Environmental Impact Statement System and the Philippine Mining Act of 195 in Relation to Mining Projects", allows CLRF to allocate for the Social Development and Management Program (SDMP) and Environmental Trust Funds (ETF), in lieu of the EGF and the Environmental Monitoring Fund (EMF). The CLRF is also contained in the Monitoring Trust Fund (MTF) and Rehabilitation Cash Fund (RCF) to ensure the satisfactory compliance of the mine activities as stipulated in the EPEP/AEPEP and trust funds identified in DAO 2015-02.

FMDC submits that the CLRF, ETFs, and SDMP funds to be created for this GNP project will suffice for the institution of the EGF and EMF under its mining operations/obligations.

AFFIDAVIT OF UNDERTAKING

I, **MARIANO C. CANDELARIA JR.**, Filipino citizen, of legal age, married, and a resident of **Barangay Turno, Dipolog City, Zamboanga del Norte**, Philippines, after being duly sworn to in accordance with law, hereby depose and state"

1. I am the President of FLORJENMAR MINING AND DEVELOPMENT CORPORATION, a corporation duly established and existing under and by virtue of the laws of the Republic of the Philippines with business address at Poblacion, Municipality of Gutalac, Zamboanga del Norte (the "Company");
2. The Company has an existing and valid Exploration Permit No. 010-2022-IX ("EP") with the Government of the Republic of the Philippines consisting of 5,426.47 hectares, located at Gutalac, Zamboanga del Norte ("Contract Area");
3. I have been duly authorized by the Company to sign and execute this Affidavit of Undertaking and to perform any and other obligations in relation thereto, for and on behalf of the Company. A copy of the Secretary's Certificate issued by the Corporate Secretary of the Company is attached herewith as Annex "A";
4. After due consideration of certain terms, the company undertakes to commit to perform all avoidance, mitigation, rehabilitation and compensatory activities for the environmental impact caused by the Gutalac Nickel Project in Barangay Bacong, Mamawan and Bayanihan in Gutalac, Zamboanga del Norte as will be provided in the ENVIRONMENTAL MANAGEMENT PLAN to be prepared as part of the EIS and applicable environmental laws.

IN WITNESS WHEREOF, I have hereunto set my hands this JUN 07 2023 day of _____ 2023 at _____.

MARIANO C. CANDELARIA JR.
Affiant

SUBSCRIBED AND SWORN to before me this JUN 07 2023 day of _____, 2023 in the City of _____ affiant exhibiting to me his _____ with number _____ issued on _____ at _____.

IVO M. MANDANTES, CPA
NOTARY PUBLIC FOR DIPOLOG CITY
DAPITAN CITY & ZAMBOANGA DEL NORTE
SERIAL NO. 035-2022
ATTORNEY'S ROLL NO. 65014
PTR NO. 2625306 - 1/3/2023 - DIPOLOG
ESTAKA, DIPOLOG CITY
VALID UNTIL 12/31/2024

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