

PANGKALAHATANG BUOD

I. BUOD NG IMPORMASYON TUNGKOL SA PANUKALANG PROYEKTO

PANGALAN NG PROYEKTO	Pantukan Nickel Laterite Mining Project
Lugar kung nasaan ang Proyekto	Barangays Pantukan at Adlay, Carrascal, Surigao del Sur
Sukat ng Proyekto	3,248.0626 ektarya
Uri ng Proyekto	Resource Extraction – Nickel Laterite Mining
Kapasidad ng Proyekto	Ang produkto o mina ay nickel-iron ore at ang kapasidad ng produksyon ay 5,000,000,000 metriko tonelada kada taon year.
Layunin ng Proyekto	Makatulong sa kaunlaran ng ekonomiya ng Pilipinas sa pamamagitan ng pagbibigay ng hanapbuhay at kabuhayan sa lugar na nasasakupan ng MPSA.
Mga Bahagi ng Proyekto:	Ang bahaging ito ay nakatutok sa geological exploration, pagkuha ng mga permit at clearance mula sa kaukulang ahensiya ng pamahalaan at ang pag bi-bidding ng mga iba't-ibang Gawain na kailangan sa susunod na bahagi o ang development na bahagi.
Pre-development	
Development	<p>Ang bahaging ito ng development phase ay paghahanda sa aktuwal na pagmimina. Ang mga Gawain na pagtutuunan ditto ay ang mga sumusunod:</p> <ul style="list-style-type: none"> topographic mapping detalyadong geological na pagsusuri paggawa ng kalsada paggawa ng campsite at support facilities pagsasaayos ng causesway paggawa ng siltation ponds at sabo dams paglalagay ng nursery paglilinis ng lugar na pagmiminahan.
Operations	<p>Ito na ang bahagi kung saan aktuwal na magmimina na ang Proponent. Dito gagawin ang clearing at stripping ng mga lugar na may mina, pagsalansan ng overburden upang magamit sa hinaharap, pagmimina ng malambot na (limonite) ore at matigas na (sapolite) ore, paghila o pagkarga ng ores mula sa minesite papuntang stockyard, at mula stockyard papuntang piyer, pagkarga at pagsasakay sa ores sa mga barko o sasakyang pandagat na magdadala sa mga ores sa merkadong dapat nitong puntahan.</p> <p>Ang rehabilitasyon ng mga lugar na namina na ang suusnod na pagtutuunan ng pansin kung saan kasama dito muling pagsasaayos ng hugis ng mga mine-out areas, pagtatambak ng maayos sa mga bahagdang namina na gamit ang organic na lupa, palalagay ng pataba sa lupa at pagtanim ng mga puno hanggang sa asila ay may kakayanan ng mabuhay mag-isa. Ang Environmental Protection and Enhancement Program (EPEP) ay ipapatupad din sa bahaging ito.</p>

Abandonment Phase	Ang minahan ay matatapos ang sa loob ng halos 10 taon o humigit pa depende sa laman pa nitong mina at permiso galling sa pamahalaan. Bilang bahagi ng pag-abandona sa proyekto, ang Final Mine Rehabilitation and Decommissioning Plan (FMRDP) ay ipapatupad na. Sisiguraduhin ng KMI na maayos at kumpletong naipatupad ang rehabilitasyon bago iwanan ang lugar at ang mga naitanim na puno ay nabuhay at lumaki na sa loob ng limang taon.
Proseso at teknolohiya	Ang proseso ng pagmimina ay pagkuha ng nickel ore at pagdadala nito sa kaniyang tamang destinasyon na merkado matapos magmina. Wala ng iba pang klaseng pagproseso ang kailangan maliban na lang ang paghihiwalay ng iba't-ibang klase ng grado ng mina mua mataas na grado hanggang mababa na tinatawag ding beneficiation process.
Basura (waste) na maaring maidulot ng Pagmimina	Lupang tinanggal sa ibabaw ng miminahing ore ang maaring maging basura ng pagmimina pero ito ay basurang hindi kamukha ng tnya na basura na dapat itapon. Ang overburden o basura sa mina ay ginagamit na pagtambak sa mga kalsadang ire-repair o panghalo sa lupang gagamitn sa pagtanim para sa rehabilitasyon.
Manggagawa	Ang mga manggagawang magtatrabaho sa proyektong ito ay bubuuin ng mga kalalakihan at kababaihan na may kakayahang magtrabaho para sa proyekto na ito at walang partikular na edad. Maaring mangailangan ang proyekto ng humigit-kumulang 1,000 manggagawa sa bahagi ng operasyon nito.
Halaga ng puhunan sa Proyekto	P260,838,610.08
Iskedyul ng pagpapatupad ng Proyekto	Magsisimula ang proyekto kapag nakuha na ang ECC at tumaas o maging matatag ang presyo ng ng nickel. Development: 1 year Operation: 12 years Abandonment: 10 years
Pagkakakilanlan ng Kumpanya	
Pangalan ng Kumpanya	Kafugan Mining Incorporated
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Opisyal na kinatawan ng Kumpanya	Mr. Antonio L. Co President Mr. Romeo C. Say Senior Assistant to the President
Detalye ng contact information	Telephone No.: (02) 533-5242
Pagkakakilanlan ng Preparer	
EIA Preparer	Geo Environmental Consultancy, Inc.
Address	1046 Carola St., Sampaloc, Manila
Contact Person	Mr. Edgardo S. David President

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II. Proseso sa paghahanda ng Environmental Impact Assessment (EIA)

EIA Team

Ang EIA Study ay isinagawa ng grupo ng mga propesyonal na eksperto sa pangunguna ni Ginoong Edgardo S. David, Presidente ng Geo Environmental Consultancy, Inc. Ang mga miyembro ng EIA Team ay nakatala sa **Table ES-1**.

Table ES-1: Mga Miyembro EIA Team

EIA Team	Kalinangan / Eksperto	EIA Registration No.
Edgardo S. David, MSc	Geology, Environmental Science	IPCO-215
Raul R. Buñao, MSc	Terrestrial Ecology	IPCO-192
Benjamin R. Cuevas		IPCO-072
Romell Seronay, PhD	Freshwater and Marine Ecology	-
Benjamin S. Francisco		IPCO-038
Socelyn D. Dalida, ChE	Pedology, Water Quality and Air Quality	-
Felixerto H. Roquia, PhD	Social Development and Safeguards, Anthropology	IPCO-028
Reynaldo S. Tejada	Air Module	IPCO-036

Mula naman sa Kafugan Mining Incorporated (KMI), ang mga kinatawan na nakikipag-ugnayan ay sina Ginoong Antonio L. Co, Presidente, G. Romeo C. Say, Senior Assistant sa Presidente at Matilde J. Fernando, Assistant ng Presidente.

Ang pinirmahang Accountability Statements ng KMI at ng mga EIA Preparers ay nakalakip sa **Annex ES-1**.

EIA Schedule

Ang proseso ng EIA ay sinimulan sa Environmental Compliance Certification (ECC) application na isinumite sa EMB Central noon dulo ng 2014. Ang aplikasyon ay hindi nabigyang pansin dahil sa kakulangan mayroong lumabas na mga bagong polisiya na dapat magsumite din ng final drilling exploration at feasibility study reports. Habang ginagawa ang mga nasabing mga report na kakailanganin pang isumite, ang mag sumusunod ay inihanda ng Consultant:

- a. pakikipag-ugnayan sa barangay at pagsasabi dito ng mga iba't-ibang proseso ng Gawain na kailangan sa ECC application
- b. Public Scoping o konsultasyon sa mga tao na ginanap sa Multi-Purpose Gym, Barangay Pantukan, Carrascal, Surigao del Sur noong February 5, 2016 sa ganap na 10:00 ng umaga. Sa Scoping na ito nagkaroon ng pagpapaliwanag tungkol sa proyekto, initial environmental characterization, at pagpapaliwanag ng mga paunang impacts at mitigations. May Open forum din ito upang makibahagi ang mga umatend na nagbigay ng kanilang saloobin tungkol sa trabaho, alikabok na maidudulot ng pagmimina, siltation, stream discoloration, tamang koordinasyon sa local na pamahalaan proper, municipal boundaries, paglahok ng mga katutubo lalo na sa rehabilitasyon, at safeguards sa water supplies ng komunidad. Walang oposisyon sa proyekto na naitala noong proseso ng Scoping.

- c. Technical scoping noong February 11, 2016 sa Conference Room, EMB Central Office, DENR Compound, Visayas Ave., Diliman, Quezon City.
- d. Pagkuha ng secondary data gathering mula February to March 2016 including laboratory analyses of soil, air, water fish samples. May Field surveys din pati geology, hydrology, terrestrial biology, marine biology at sociology. May random perception survey din an ginawa.
- e. Paghahanda ng Environmental Impact Statement (EIS) sa loob ng halos isang buwan.

Table ES-2: EIA Study Schedule

EIA Activity/Stage	Date
IEC	November 2012
Public Scoping	February 5, 2016
Technical Scoping	February 11, 2016
Data Collection/Baseline Studies	
Terrestrial Biology and Wildlife	January 2015
Geology, Hydrology and Meteorology	February-March 2016
Marine and Freshwater Biology	January 2015
Sociology, Anthropology, Community Development	January-February 2016
Perception Survey	February 5-14, 2016
EIA Study, Impact Assessment and Mitigation Plan	
EIS Report Preparation	
Report Submission to EMB	

EIA Study Area

Ang EIA Study area ay nasasakop ang 3,248.0626 ektaryang nasa Barangays Pantukan and Adlay in Carrascal, Surigao del Sur. The coverage is tabulated in **Table ES-3**.

Table ES-3: Coverage of Various Studies

Module	Coverage
Lupa	MPSA area, peripheries of claim, settlement areas gaya ng Adlay at Pantukan
Tubig	Watersheds area gaya ng Benoni River watershed at Marga River watershed; streams darnang the mining claim and ancillary areas like Benoni River, Marga River at Adlay River; coastal waters where rivers from the mining operational areas drain at causeway site sa Carrascal Bay
Hangin	MPSA at ancillary areas; settlement areas sa Pantukan at Adlay
Tao	Ang mga komunidad sa loob ng MPSA.

EIA Methodology

Ang mga sumusunod ay ang mga methods na ginamit ng iba't-ibang consultants sa pagkuha ng primary ant secondary data (**Table ES-4**).

Table ES-4: EIA Methodology

Module	Coverage
Land	Literature and maps review, confirmatory geological mapping, geomorphological mapping, limited geohazards mapping, soil sampling and analyses, land use validation, quadrat sampling for vegetation, opportunistic survey for wildlife, mist nets, trappings, transect line for bird observation, etc.
Water	Identification of drainage system on a topographic map and in the field; discharge measurements of streams using flotation method; computation of monthly streamflow using area-discharge ratio method for ungauged streams; determination of watershed area using planimeter and topo map; measurement of length of rivers using curvimeter and topo map; calculation of water balance, sampling and analyses of water; assessment of groundwater system through field surveys; determination of aquifers and their recharge areas, storage and discharge zones; manta tow technique for general observation of sea grasses and coral reefs; transect quadrat method for sea grasses; visual census for fish; digital fixed photo-transect method for coral reefs; transect plot technique for mangrove; pond net collection for macroinvertebrate; marine water sampling and analyses; marine sediment sampling and analyses.
Air	Largely secondary data gathered from existing literature, air quality sampling and analysis for PM ₁₀ , NO ₂ , and SO ₂
People	Literature review particularly for the socio-eco-cultural profile, IEC with LGU officials, perception survey for the affected communities, public scoping, interviews during field surveys,

Ang Terms of Reference sa Environmental Impact Assessment (EIA) na ito ay ang Scoping at Procedural Checklist na napagkasunduan kasama ang EIA Review Committee (**Annex ES-2**). Ang checklist na ito ang nagsasabi ng lawak ng dapat ihanda at gawin.

Ang mga sumusunod ay ilan sa mga issues at concerns ng members ng EIARC (**Table ES-5**).

Table ES-5: Mahahalagang issues na tinukoy ng EIARC members at stakeholders

Issues	How EIA addressed the issue
Loss of Vegetation	Actual survey of terrestrial flora and fauna. Analysis of existing vegetation maps and GIS images. Sampling of wildlife. Determination of adjacent active mining property to assess compounded effect of mining to terrestrial ecology.
Increased rate of erosion	Secondary data collection and analysis. Determination of soil type, slope, vegetative cover and relative erodability of soil. Also, delineation of areas to be directly affected by mining operation particularly ore extraction.
Siltation of rivers and coastal areas	Identification of streams that would most probably be affected by the mining operations. Determine the present status of water bodies in the locality if already affected by siltation. Secondary data collection and analysis. Review of sedimentary transport modeling made on the existing coastal body of water.
Dust generation	Identify possible sources of dusts and how these can be generated. Identify also the possible receptor of dust especially residential communities. Determine the population of age groups that are vulnerable to respiratory diseases like the young and the old groups.
Adverse effect to groundwater resource	Secondary data collection and analysis. Hydrogeological mapping with emphasis on aquifer, recharge, storage, and discharge. Investigation to determine hydraulic connection of springs to the extraction areas

Risks from geohazards	Identify geohazards present in the locality through review of literature and maps. Confirm such presence by assessing field manifestations of the geohazards. Determine the communities that are vulnerable to such risks and recommend evacuation areas to lessen the probability of occurrence any disaster.
Community participation in the SDMP	Find means to involve the community in deciding on how the budget for the SDMP is to be allocated, i.e., aside from the barangay officials. Enjoin the participation of SWO of the Municipality of Carrascal to synchronize with their activities so that the community can get the full benefits of the plan.
Hiring of local workers	The KMI shall commit to hiring the greater majority of their workers from the community of Pantukan and partly from Adlay. Indigenous people must be given equal opportunity for employment and trainings.

Public Participation Activities

Information, Education at Communication

Ang IEC ay ginanap noong November 2012.

Public Scoping

Ang Public Scoping ay isinagawa ng Geo Environmental Consultancy, Inc. at Kafugan Mining Incorporated sa Multi-Purpose Hall ng Brgy. Pantukan, Carrascal, Surigao del Sur noong ika-10 ng umaga noong February 5, 2016. Sinunod ng Scoping ang guidelines ng EMB sa pagsasagawa ng Public Scoping.

Lumahok sa Scoping ang iba't-ibang sangay ng local na pamahalaan at sector ng lipunan. May mga imbitasyon na ipinamahagi bago ang araw ng pagpupulong para sa Claver Municipal Government, Surigao del Norte; Carrascal Municipal Government, Surigao del Sur; Pantukan Barangay Officials, Adlay Barangay Officials, and Cagdianao (Claver) Barangay Officials, EMB Region 13, CENRO Cantilan and MGB Region 13, private organizations gaya ng simbahan, kabataan, magsasaka, at iba pa. May streamer din na isinabit na nagpapahayag ng activity at pag welcome sa mga stakeholders.

Mahigit 200 stakeholders ang nag attend. Ang audience ay masusing nakinig at nagpakita ng interes. Sa open forum, may mga issues at concerns silang ibinahagi gaya ng dust generation, river and coastal siltation, employment priority, IP participation in rehabilitation, geohazards, adverse effects sa Benoni River, protection for the watershed of water supply source, lack of proper coordination with barangay officials, at SWO participation at SDMP.

III. EIA SUMMARY

Buod

Wala ng ibang lugar na pinagpilian ang KMI dahil meron na silang Deed of Assignment at Operating Agreement para sa lokasyon ng MPSA na miminahin.

Ang tanging maaring pagpilian na lamang ay ang posibilidad ng expansion kung magkakaroon ng nickel processing plant sa hinaharap.

Summary of Key Environmental Impacts and Management Plan

Ang matrix of the Environmental Management Plan sa development and operations na bahagi ay ipinapakita sa Table ES-6.

Table ES-6: Summary of Key Environmental Impacts and Management Plan

Project Phase/ Environmental Aspect	Environmental Component to be Affected	Potential Impact	Options for Prevention or Mitigation or Enhancement
Development and Operation	Land	Loss of vegetation	Unavoidable. Progressive rehabilitation/ revegetation shall be done immediately in mined-out areas. Donation of seedlings as replacement for cut trees will be initiated.
Operation	Land	Loss of subsoil	Unavoidable and permanent since soil will be shipped out as ore. For stored top soil, keep secured from erosion.
Operation	Land	Accelerated and excessive erosion	Cover the mined out area with plant remains or mulches. Reduce angle of repose of stockpiles, protect base of stockpiles, reduce slopes of cutslopes, bench the extracted areas, distribute surface runoff, compact loosen soil, etc.
Development and Operation	Land	Habitat loss and displacement of wildlife	Allow gradual displacement by slowing down operation in fauna populated areas. Rehabilitation of mined-out areas to reconstruct destroyed habitats.
Development and Operation	Land	Generation of mining waste	Unavoidable but soil will be used eventually for rehabilitation. Proper stockpiling of top soil and plant remains.
Development and Operation	Land	Solid and hazardous waste generation	Implement 3Rs for domestic wastes at source level and establish a Material Recovery Facility. Provide separate storage area for hazardous waste and send these to DENR-accredited waste treater for treatment and final disposal.
Operation	Land	Occurrence of mass-wasting processes	To avoid occurrences of mass wasting, there should be no steep slopes in stockpiles or cutslopes, no dumping of soil in gullies, benching of working areas is a must, compaction of filled areas, and stockpiling of loose materials.
Operation	Water	Siltation of streambeds and coastal areas	Construction of a Siltation Control System to include series of sabo dams, contour holding ponds, perimeter canals, siltation ponds with flocculation cell.
Operation	Water	Extreme discoloration of river and coastal waters	Same as above. The system is expected to protect surface and coastal waters.
Operation	Water	Deterioration of water quality	Same as above. The system is expected to protect ground, surface and coastal waters.
Operation	Water	Loss of groundwater recharge areas	Implement progressive rehabilitation in mined-out areas to recover recharge zones. Limit disturbance of vegetation to the delineated extraction areas. Avoid unnecessary destruction of other areas.

Operation	Water	Damage to some marine ecosystems	Same Siltation Control System with perimeter canals and flocculation process.
Operation	Water	Modification of freshwater habitat	Erosion must be effectively controlled at source. If there are residuals, siltation control system must be implemented as recommended earlier. Discoloration must be checked using flocculants.
Operation	Air	Dust generation	Frequent wetting of hauling roads to prevent lifting of dust. Use of uniformly graded base course in road surfacing to suppress dust generation. Workers must use dust mask always to prevent inhalation.
Operation	Air	Increased amount of NO ₂ and SO ₂	Engines shall always be kept in tip-top conditions. If available, use of catalytic converter is encouraged.
Operation	Air	Noise generation	Engines shall be equipped with appropriate mufflers.
Operation	People	Resource competition	KMI to provide barracks for its workers, a water supply system for the community and minesite, medical services, and others.
Operation	People	Increased in safety and health risks	Mitigating measures cited in the land module for mass wasting and air module for dust generation also apply to this module. IEC on these risks shall also be initiated by the company.
Operation	People	Non-assimilation of diverse culture	Initiate social gathering to promote interactions that would lead to harmonious relationships among peoples of different regions.
Operation	People	Proliferation of vices	The KMI shall encourage prayer meetings and sports development and competitions to divert attention of workers from the places of vices.