

EXECUTIVE SUMMARY

ES 1 Project Fact Sheet

ES 1.1 Project Information

Name of Project:	Sta. Cruz-Candelaria Mining Project
Project Type	Mining Project
Project Location:	Municipalities of Sta. Cruz and Candelaria, Province of Zambales
Project Capacity/ Size	Nickel Laterite Ore extraction = 3,000,000 DMT per year Surface mining rate = 415,800 MT per year of Chromite Lode (lumpy and milling grade) Underground mining rate = 315,000 MT per year of Chromite Laterite Ore
Project Area	Existing Area = 3,765.39 hectares Proposed Expansion = 3,846.39 hectares
Project Cost	Estimated cost of the project is at US\$ 27,000,000

ES 1.2 Proponent's Profile

Project Proponent	Zambales Diversified Metals Corporation (ZDMC)
Address:	Corporate: 3rd Floor, DMCI Homes Corporate Center, 1321 Apolinario street, Bangkal, Makati City , 1223
Authorized Signatory/Representative:	Ramon Manuel R. Briones Vice President for Operations
Contact details:	Contact Number : 8823-7963; 8831-6241 E-mail Address : rrbriones@dmcmining.com
Name of Preparer:	ARGOTEK, INC.
Address:	Unit 408 Pasda Mansion, 77 Panay Ave corner Timog Ave., Barangay Paligsahan, Quezon City
Contact Person:	Jay Richard R. Siasoco
Contact details:	Contact Number : +6323664240 / 09155400790 E-mail Address : argotek.projects@gmail.com

ES 2 Project Description

ES 2.1 Project Location

The project site is located in the Municipalities of Sta Cruz and Candelaria, Province of Zambales. The mine site is around 280 kilometers away from Manila via the North Luzon Expressway. The project's MPSA is between geographical coordinates Longitude 120° 03' 30" East, and Latitude 15° 42' North. The mine site is around 27 km distance from the National Highway passing through Barangay Lucapon South via the old Acoje Mines access road. Figure ES-1 shows the location map of the Project.

ES 2.2 Process Technology Option

ES 2.2.1 Description of Operations and Maintenance

For the mining operation proper, existing methods include clearing and stripping will be done in discrete parcels to minimize ground disturbance. Overburden thickness over the mining areas vary from near zero to three meters. This will be extracted by contour benching at an average height of three meters using excavator-dump truck combination. Topsoil will be removed, collected and stockpiled in a dedicated stockpiling area that will be later use for rehabilitation.

After all overburden materials are removed, development of mining benches with optimum width of 5 meters and bench height of 3 meters will be undertaken. Bench slope of an angle of 60 degrees but will not exceed 90 degrees will be achieved with an overall pit slope angle around 30 degrees. Generally, the area mined will be established with an on-contour terrace or bench design.

After the mine benches have been developed, extraction of ore ensues. This is done by pre-piling, a process where ore extracted from production benches are pre-piled in a small conical stockpile. It constitutes around 30 to 50 buckets (typically 1 cubic meter bucket of PC-210 back hoes) of ore. The pre-pile is sampled following the established sampling pattern of Grade Control.

Samples are then sent to the Assay laboratory for grade determination. After the grades are released, each pre-pile will be classified according to the established Grade Control Ore Classification system.

After the pre-piles are classified, the ore are ready for hauling. The ore will be loaded by excavators to dump trucks. During loading, boulder segregation is done where the backhoe operators separate oversize boulders (> 200 mm).

The dump trucks will then haul the Nickel Laterite ore material to Bolitoc port for temporary stockpiling and waiting for shipment. ZDMC will utilize the existing mine haul roads that will be properly maintained during the whole project duration. Traffic management will be regularly monitored and improved for efficient flow. Moisture reduction through solar drying is also done in the Bolitoc stockyard.

For the expansion project, the same technology and methodology will be used. No changes or modifications will be added in the process technology.

The schematic flow sheet of Nickel Laterite Mining is shown in **Error! Reference source not found.**

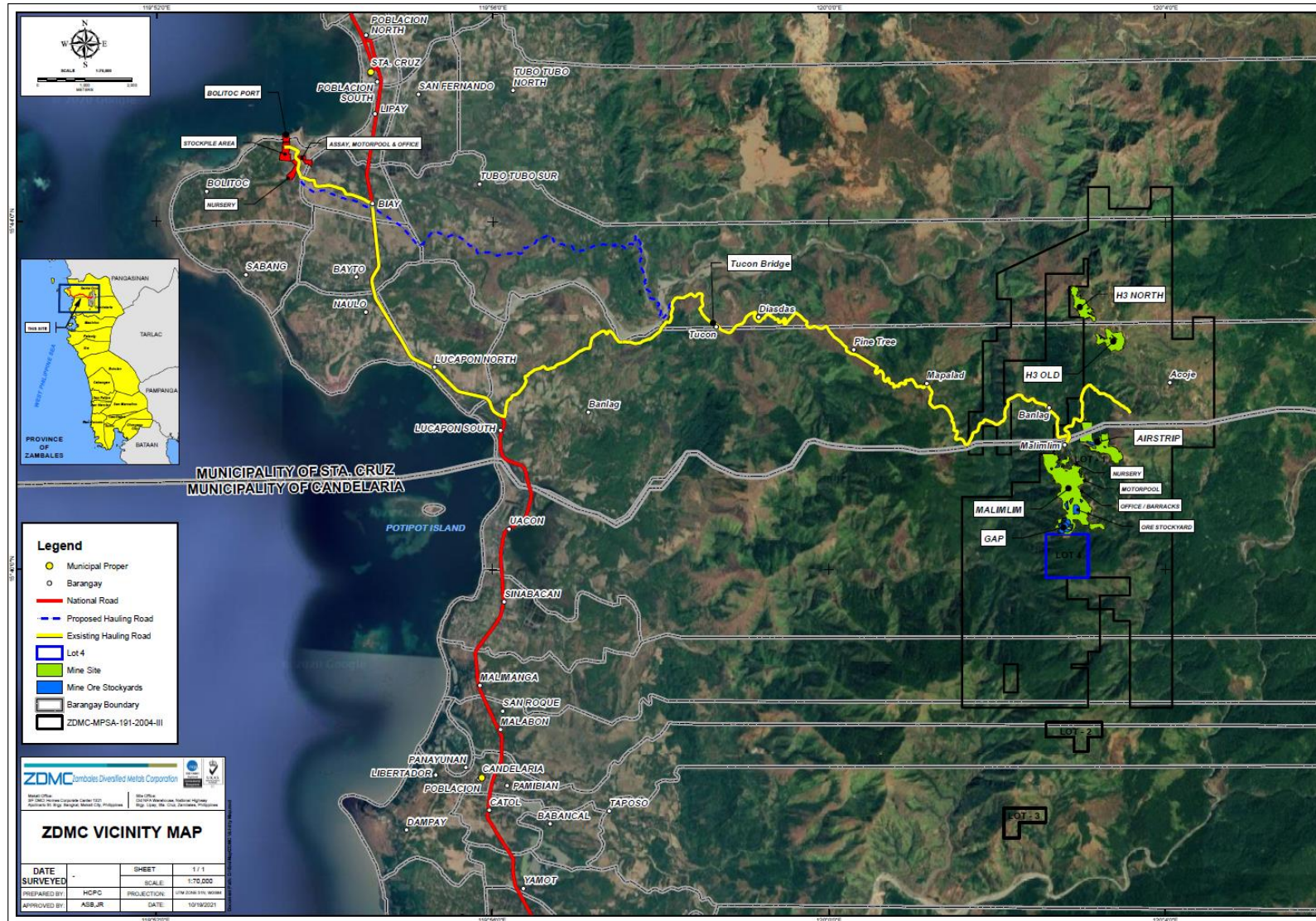


Figure ES-1. Project Location Map

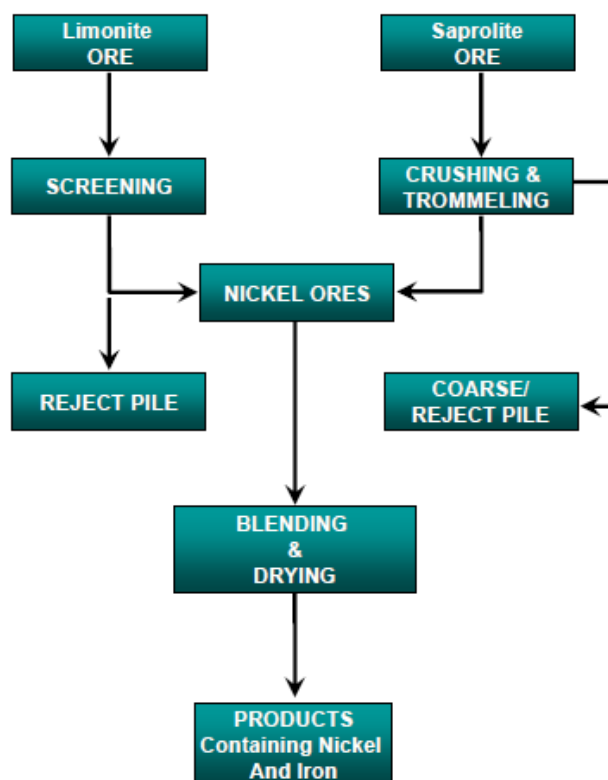


Figure ES-2. Schematic Flowsheet of Nickel Laterite Mining

ES 2.3 Project Components

ES 2.3.1 General Lay-out of the Facilities

The operations for nickel direct shipping ore will be within MPSA areas. **Figure ES-3** shows the target areas for mining for the next 4 years. Development activities at Areas 1 and 2 of Parcel 2 of the Airstrip (Parcel 15B of STCEP) are on-going. Areas 3 and 4 of Parcel 3 of the Airstrip (part of Parcel 15B and Parcel 14 of STCEP) will undergo tree-cutting and development early next year (2021). Lot 4 (previously referred as Lot 6/Parcel 7 of STCEP) will then follow once the inclusion of the area is approved.

ES 2.3.2 Major Components

Proposed changes include expansion in land area and increase in production capacity. A total increase in area of 82.39 ha is being proposed while production capacity is proposed to be increased from 1,000,000 DMT/ yr up to 2,000,000 DMT/yr.

Parameters	Existing	Proposed Changes	Total
Area	3,765.39 ha	82.39 ha	3,847.78 ha
Production Capacity	1,000,000 DMT/ yr	2,000,000 DMT/ yr	2,000,000 DMT/ yr

ES 2.3.3 Mineral Extraction

The proposed project will only entail mineral extraction. Ores acquired shall be shipped and transported to designated mineral processing plants. The proposed expansion project only includes an increase in land area and increase in production capacity.

Indicated Resource estimates is presented in the following:

Resource Category	Limonite			Saprolite			Total		
	Tonnage	Ni	Fe	Tonnage	Ni	Fe	Tonnage	Ni	Fe
Indicated	461,040	1.10	31.95	660,721	1.14	17.33	1,121,761	1.12	24.64

ES 2.3.4 Support Facilities and Infrastructure Requirements

The existing power and water sources will be used for the expansion and no alternative sources were considered since additional facilities and structures will not be constructed. For power sources, requirements of the operation are estimated to be greater than 270 KW. This includes ongoing supply requirements for all existing structures such as accommodations, health facilities, recreational facilities, motor pool, maintenance workshops, assay lab, water supply pumps and lighting. Water requirements on the other hand will be for domestic use, vehicle maintenance, assay lab and for dust suppression. Water will be sourced from the L1250, L1000 portals and the creeks. Flows from measuring points indicate low flow volume of 37 l/sec which more than satisfies the projected needs of the operation. Water required for dust suppression may be alternatively sourced from sediment control dams that have the capacity to store water.

ES 2.5 Project Size

This application for ECC amendment covers the following, to wit:

1. Increase of the MPSA or project area from 3,765.39 hectares to 3,846.39 hectares relative to the inclusion of the 81 hectares of Lot 4.
2. Remove the ECC conditions on Heap Leach Processing (HLP) plant and Sulfuric Acid Plant (SAP), respectively, under ECC 0910-003;
3. Consolidate the conditions of ECC 0910-003 and ECC 0708-020-215 maintaining the extraction rate of Nickel Laterite Ore at 2,000,000 DMT per year and the surface and underground mining rate of 415,800 MT per year of Chromite Lode (lumpy and milling grade) and 315,000 MT per year of Chromite Laterite Ore respectively.

ES 2.6 Project Cost

The estimated annual production cost is at 1.367 billion pesos.

ES 2.7 Project Development Phases

The implementation of the expansion of the MPSA area will only have an impact in the extraction of Nickel laterite ore, to cover the following:

ES 2.7.1 Pre-mining Phase/Site Development

The Permitting and Pre-Construction phase covers the active participation of the proponent in securing the necessary regulatory compliances and approvals in order to secure the amendment of MPSA No. 191-2004-III with MGB for the inclusion of Lot 4 (*formerly identified as Lot 6 during the conduct of the Information, Education and Communication (IEC) campaign*). Relevant pre-requisite approvals will be secured at this phase to include close coordination with the various stakeholders in the project area both in the identified Direct Impact Areas (DIA) and Secondary Impact Areas (SIA). Careful planning, documentation and coordination effort will be undertaken by the project proponent to secure all the required permits, clearances and the necessary engagements. Securing the amended ECC is one of the many approvals needs to be in placed prior to the project implementation.

Also, at this stage the survey, planning and design will be finalized to supplement the existing mining operation and structures of the project. At this point, utilities will be sourced from the existing operation and will be upgraded as deemed necessary.

Further, the manpower complement will also be determined during this phase. Local hire will be given preference so long they are qualified for the available position.

ES 2.7.2 Operation Phase

The Sta. Cruz and Candelaria mining project has been operational since 2007. However, mining and shipping operations for Nickel ore commenced last CY 2020 after its suspension was lifted on the latter part of 2019. The chromite project is still in the exploration stage for confirmation of the remaining chromite deposit and it will commence once the necessary permits are secured.

Relative to this ECC amendment, additional settling ponds or environmental control structure will be added to the existing structures of the mining facility.

Existing methods include clearing and stripping which will be done in discrete parcels to minimize ground disturbance. Overburden thickness over the areas vary from near zero to three meters. This will be extracted by contour benching at an average height of three meters using excavator-dump truck combination. Topsoil will be removed, collected and stockpiled in a dedicated stockpiling area that will be later used for rehabilitation.

ES 2.7.3 Decommissioning/Abandonment/Rehabilitation

ZDMC will submit to MGB for approval the Final Mine Rehabilitation and Decommissioning Plan (FMRDP). This will serve as the guiding document of ZDMC as it undertakes mine closure. The FMRDP will give due consideration on the Environmental Impact Statement (EIS) and the updated Environmental Management Plan (EMP).

The plan shall include the following information:

- Alternatives for future use of the land, consistent with long term zoning and land use of the municipality
- Dismantling and proper turn-over of facilities,
- Decontamination plan on affected areas, and
- Land restoration

ES 3 Analysis of Key Environmental Impacts

ES 3.1 Methodology

The approach and methodology adopted to complete this EIS is in accordance with the prescribed methods of EMB and the procedural manual for DAO 2003-30. The table below provides the methodology used for each module.

EIA Methodology per Module

Modules	Methodologies Used and Data Sources
LAND	
Land Use and Classification	Gathering/Review of secondary data
Geology and Geomorphology	Gathering/Review of secondary data (EIS 2007, PHIVOLCS)
Pedology	Gathering/Review of secondary data (EIS 2007)
Terrestrial Ecology	- Gathering and validation of secondary data - Monitoring data (2017 - 2021) - Quadrat Sampling Method, Transect Walk Method, Mist Netting, Trapping
WATER	
Hydrology and Hydrogeology	Gathering/Review of secondary data (EIS 2007)
Water Quality	Review of monitoring data (SMRs, CMRs and CMVRs)
AIR	
Climate	Gathering of secondary data from PAGASA
Air Quality and Ambient Noise	Review of ZDMC monitoring data (SMRs, CMRs, MPPCL Monitoring Reports)
PEOPLE	
Socio-economic Profile	- Site visit/preliminary survey - Secondary data gathering - Public Scoping - Perception Survey - Random Sample Interviews

ES 3.2 Public Participation

Stakeholder participation for the project was ensured to determine and evaluate the previous and current situation of the affected residents, including the issues and concerns they are experiencing in their community. Public participation in the EIA process was achieved through the conduct of public scoping, household and perception survey, Information, Education and Communication (IEC) activities, Key Informant Interview (KII) and Focus Group Discussions (FGD) with the various stakeholders. The table below details the schedule, location, and participants of the public participation activities conducted.

Public Participation Activities

IEC Activity	DATE	VENUE/LOCATION
Information, Education and Communication Campaign*	8 March 2021	Brgy. Uacon Session Hall
	9 March 2021	Sitio Mapalad, Pine Tree and Banlag Brgy. Taposo
	10 March 2021	Brgy. Luis Session Hall
	11 March 2021	Brgy. Malabon
	11 March 2021	Brgy. Pinagrealan Session Hall
	12 March 2021	Brgy. Sinabacan Session Hall
	12 March 2021	Brgy. Malimanga Session Hall
	13 March 2021	Brgy. Tapos Session Hall
	13 March 2021	Brgy. Yamot Session Hall
	15 March 2021	Brgy. Biay Session Hall
	16 March 2021	Brgy. Pamibian Session Hall
	16 March 2021	Brgy. Bolitoc Session Hall
	18 March 2021	Brgy. Lucapon North Session Hall
	18 March 2021	Brgy. Naulo Session Hall
	19 March 2021	Brgy. Bayto Session Hall
22 March 2021	Brgy. Lucapon South Session Hall	
22 March 2021		
Public Scoping	26 March 2021	Public Scoping
Perception Survey	24-29 June 2021	Barangays Bayto, Biay, Bolitoc, Lucapon North, Lucapon South, Naulo, and Uacon.
Key Informant Interview (KII)	23-26 June 2021	Key Informant Interview Barangays Bayto, Biay, Bolitoc, Lucapon North, Lucapon South, Naulo, and Uacon, Malimanga and Sinabacan
Focus Group Discussion (FGD)	23-25 June 2021	Focus Group Discussion (FGD) Barangays Bayto, Biay, Bolitoc, Lucapon North, Lucapon South, Naulo, and Uacon.

* Requirements Prior to the Public Scoping in compliance with DAO 2017-15 or the Guidelines on Public Participation under the Philippine Environmental Impact Statement System

ES 4 EIS Summary

Summary of key impacts on land, water, air, and people, and the corresponding proposed mitigating measures are presented in the table below.

Table ES-13. Summary of Identified Key Impacts with Mitigation/Enhancement Measures and Residual Effects

Activities	Environmental Aspect	Environmental Impact	Prevention or Mitigation or Enhancement
Development / Mining Phase			
<input type="checkbox"/> Site preparation (clearing, grubbing, and stripping of topsoil) <input type="checkbox"/> Construction of haul roads <input type="checkbox"/> Stockpiling of topsoil	Land	<input type="checkbox"/> Loss of topsoil due to ground / site preparation activities <input type="checkbox"/> Induced landslides and mass washings due to construction activities on high angle slopes	<input type="checkbox"/> The stockpile will be graded to a stable relief <input type="checkbox"/> The established safe working slopes will be implemented
	Flora and Fauna	<input type="checkbox"/> Reduction of vegetative cover and fauna disturbance / displacement	<input type="checkbox"/> Replanting of surrounding area after construction, preferably with indigenous plants <input type="checkbox"/> Vegetation removal will still be kept at minimum such that only necessary / planned clearings would be undertaken
	Water Quality	<input type="checkbox"/> Sedimentation of nearby water body(ies)	<input type="checkbox"/> Access roads will be provided with drains to contain and limit sedimentation
	Air Quality	<input type="checkbox"/> Air pollution due to fugitive dust from ground clearing operations	<input type="checkbox"/> Regular spraying of water in areas where a land development activity is concentrated <input type="checkbox"/> Replacement of vegetation in non-structure areas <input type="checkbox"/> Compacting of exposed soil <input type="checkbox"/> Provision of tarpaulin cover on trucks loaded with construction materials <input type="checkbox"/> Immediate hauling of spoils <input type="checkbox"/> Impose speed restrictions for trucks
		<input type="checkbox"/> Air pollution due to SO _x , NO _x , and TSP emissions from heavy equipment	<input type="checkbox"/> Regular maintenance of heavy equipment and motor vehicles

	Sound Levels	<input type="checkbox"/> Noise due to the increase in sound levels from construction activities	<input type="checkbox"/> Regular maintenance of motor mufflers <input type="checkbox"/> Provision of barriers and shielding stationary vibrating equipment <input type="checkbox"/> Provision of ear mufflers to workers
	People	<p>Psycho-social</p> <input type="checkbox"/> Fear of landslide	<input type="checkbox"/> IEC on the nature and operation of mining and mitigating measures
		<p>Economic</p> <input type="checkbox"/> Generation of employment <input type="checkbox"/> Generation of livelihood opportunities spurred by the multiplier effect of the mining activities	<input type="checkbox"/> Local hiring priority for qualified barangay residents <input type="checkbox"/> Barangay consultation on job requirements and qualification <input type="checkbox"/> Training to upgrade local skills of residents who can hired by the project
		<p>Health and Safety</p> <input type="checkbox"/> Health problems due to diseases, overuse of public utilities / services <input type="checkbox"/> Competition of resources <input type="checkbox"/> Social conflicts, peace and order <input type="checkbox"/> Increase in population due to solid and liquid waste	<input type="checkbox"/> Health certificate for workers prior to hiring into the project <input type="checkbox"/> Partner with LGU the implementation of the Social and Development Program <input type="checkbox"/> Sprinkling of roads during dry season <input type="checkbox"/> Management of entry of migrant workers <input type="checkbox"/> Increase and train Barangay Tanod to be deployed in areas where migrant workers reside
		<p>Peace and order</p> <input type="checkbox"/> Economic activities and other services near the mining area might cause problems of congestion, peace and order and security breaches	<input type="checkbox"/> Coordination with the Barangay LGU to ensure authorized establishments and control of unauthorized entry of outsiders as well as the management of waste

Operation			
Mining	Land	<input type="checkbox"/> Landslides and mass washings maybe induced by operation activities at high angle slopes	<input type="checkbox"/> The stockpile will still be graded to a stable relief <input type="checkbox"/> The established safe working slopes will still be implemented <input type="checkbox"/> Installation of landslide control structures
	Water	<input type="checkbox"/> Increase in surface runoff and down slope sedimentation <input type="checkbox"/> Decline in river carrying capacity due to siltation	<input type="checkbox"/> Site water management will be implemented to mitigate any change in water quality this include strengthen water monitoring system by installing water meters at source points and keeping a record daily water extraction and consumption
	Ambient air quality	<input type="checkbox"/> Fugitive particulate pollution	<input type="checkbox"/> Installation, proper operation, and maintenance of the appropriate air pollution control device <input type="checkbox"/> Provide adequate PPEs for workers <input type="checkbox"/> Water spraying to exposed areas during high winds <input type="checkbox"/> Optimize active extraction areas at the mining
		<input type="checkbox"/> Fugitive particulate pollution (from mining hauling roads)	<input type="checkbox"/> Vehicle restrictions that limit the speed, weight or number of vehicles on the road <input type="checkbox"/> Surface improvement by paving or adding gravel or slag to a dirt road
	Ambient sound level	<input type="checkbox"/> Generation of noise	<input type="checkbox"/> Incorporation of noise criteria in the specifications and selection of equipment <input type="checkbox"/> Provision of ear plugs to workers <input type="checkbox"/> Planting of the appropriate vegetation as buffer
	People	<input type="checkbox"/> Safety and health risks to workers	<input type="checkbox"/> Continue provision of PPE to every personnel <input type="checkbox"/> Continue conduct of safety orientation and training

ES 5 Availability of the EPRMP

The draft Environmental Performance Report and Management Plan, and this ESP will be posted in the EMB website (www.emb.gov.ph) at least 10 days before the public hearing. Upon completion of the review, a copy of the final EPRMP will be available to the public from the following government units and agencies:

Agency	Address
DENR-EMB	DENR Compound, Visayas Avenue, Diliman, 1100 Quezon City, Philippines Telephone number: 927-15-17, 928-37-42 EMB Website: http://www.emb.gov.ph