EXECUTIVE SUMMARY

ES 1 Project Fact Sheet

ES 1.1 Project Information

Project Name : Semirara Coal Mine Expansion Project

Project	:	Brgy. Semirara, Semirara Island, Municipality of Caluya, Province of Antique (located at the		
Location		northern portion of Semirara Island). The proposed expansion area is located within the northern		
		waters of the island adjacent to the existing Molave and Narra pits.		

Project Type : Coal Mine (covered by Coal Operating Contract (COC) No. 5)

Project Size : <u>Total Footprint Area</u> - Increase from 3,369.25 hectares to 4,369.25 hectares (within the boundaries of the 13,000-hectare amended COC No. 5)

Mine Area (Pit) – Increase in total area from 1,200 hectares to 1,630 hectares.

<u>Previous:</u> Narra pit area: 400 hectarres Panian pit area: 400 hectares Molave pit area: 400 hectares Total: 1200 hectares <u>Proposed:</u> Narra pit area: 550 hectarres Panian pit area: 400 hectares Molave pit area: 680 hectares Total: 1630 hectares

Annual Coal Production - 16 MMT (no changes)

ES 1.2 Proponent's Profile

Proponent	:	Semirara Mining and Power Corporation
Proponent Address	:	<u>Mine Site:</u> Sitio Bagong Barrio, Barangay Semirara, Semirara Island, Municipality of Caluya, Antique <u>Manila Office:</u> 2nd Flr., DMCI Plaza, 2281 Don Chino Roces Avenue Makati City
Contact Person	:	Ma. Cristina C. Gotianun
Designation	:	President
Contact Details	:	
EPRMP Preparer	:	RHR Consult Services, Inc.
Preparer Address	:	9999-A Mt. Pulog St., Umali Subdivision, Brgy. Batong Malake, Los Banos, Laguna
Contact Person	:	Jess M. Addawe
Designation	:	Project Manager
Contact Details	:	Tel No. (049) 536-7480 / +63 917 886 4268 info.rhrconsult@gmail.com

ES 2 Project Description

ES 2.1 Project Location

The Project is to be located at Brgy. Semirara, Semirara Island, Municipality of Caluya, Province of Antique (northern portion of Semirara Island) as shown by Figure ES-1. The proposed expansion area is located within the northern waters of the island adjacent to the existing Molave and Narra pits.

Semirara Island can be accessed by taking an airplane trip or bus trips via Batangas to the Municipality of San Jose, Mindoro Occidental located at the southern tip of Mindoro Island. Daily boat trips carry passengers to and from Semirara Island and the town of San Jose. The boats have a capacity of 6-10 tons and travel time is more or less three (3) hours depending on the sea and weather conditions. The company also charters planes from Royal Star Aviation to service guests and employees to and from Manila. Manila-Semirara flights are usually scheduled on Mondays, Wednesdays and Fridays while Semirara-Manila flights are scheduled on Tuesdays, Wednesdays and Sundays. Upon arrival in the island, company vehicles are available from the airstrip to various destinations via the existing road network. Outside the project area, tricycles are also available for hire to go around the island.



Figure ES-1. Project Location Map of Proposed Semirara Coal Mine Expansion

ES 2.2 Project Technology and Process

The current mining method of "Open Pit" using Excavators matched with 100-Tonner Dump Trucks will be continuously employed to the expansion due to the similarity of geological formation of the Molave, Panian and Narra mine areas.

As recommended by the Seismic Risk Analysis and Storm Surge and Tsunami Risk Assessment (Geotecnica, 2019) conducted for the Molave Mine, to minimize inundation, coastal areas in the Molave Mine Area must be: i) extended 2.0 kilometers seaward; and ii) raised to more than 10.0m amsl elevation to act as storm surge/tsunami barrier. The barrier will also be used by SMPC in its continuous exploration of the Molave mine area.



Figure ES-2. Project Production Flow

ES 2.3 Project Components

The major components and support facilities of the proposed Semirara Coal Mine Expansion are presented below:

Table ES-1. Majo	or Project	Components
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Project Component	Description / Specifications		
/ Aspect	Existing / Approved	Proposed Modification / Expansion	
Mine Pit	Combined annual capacity = 16 MMT	No changes Combined annual capacity = 16 MMT	
	Molave Open Pit	Molave Open Pit	
	 Status: Active Total Pit Area = 400 ha Ultimate Pit depth = 300 mbsl Resource = 76 MMT Mineable Reserve = 68.5 MMT West Dike Facilities: 	Status: Active Total Pit Area = 680 has Ultimate Pit depth = 350 mbsl Resource = 120 MMT Reserve = 91 MMT West Dike Eacilities:	

Project Component	Description / Specifications			
/ Aspect	Existing / Approved	Proposed Modification / Expansion		
	Molave ComplexFuel Dispenser	Molave ComplexFuel Dispenser		
	Panian Open Pit Status: Under rebabilitation (South Panian	No changes Panian Open Pit Continuaton of accelerated rebabilitation		
	 Accelerated Rehabilitation (South Fahluh) Backfilling & Planting of trees 	through backfilling & planting of trees.		
	Narra Open Pit ("East Panian") Status: Active Total Pit Area = 400 ha Ultimate Pit depth = 300 mbsl Resource = 72.7 MMT Estimated Reserve = 58.2 MMT East Dike Extension Facilities: Narra Complex Fuel Dispensers	Narra Open Pit ("East Panian") Status: Active • Total Pit Area = 550 has • Ultimate Pit depth = 350 mbsl • Resource = 72.7 MMT • Reserve = 69.7 MMT • East Dike Extension • Facilities: • Narra Complex • Fuel Dispensers		
	Mining Complex = 3,369.25 hectares	Mining Complex = 4,369.25 hectares		
	 Total Pit Area =1,200.00 hectares Panian Pit = 400 ha Narra (East Panian) Pit = 400 ha Molave Pit = 400 ha 	(additional 1,000 ha) Total Pit Area = 1,630.00 hectares		
		(additional 430 ha)		
		 Mining Complex expansion is due to: Widening of sea barrier for safer mining operation and better control of sea water seepage. Increase in pit area Increase in coal reserve by 34MMT (additional 22.5 MMT from Molave pit and 11.5 MMT from Narra Pit) Confirmatory & exploratory drills 		
Coal Auxiliary Stockpile	Panian Auxiliary stockpile with a capacity of 2.5 MMT (Area 16 ha)	To be relocated once conveyor lines are shifted toward Panian pit.		
		Refer to the facility map showing the exact location of the relocation site for Panian Auxiliary Coal Stockpile.		
	Puntod Auxiliary Stockpile with coal capacity of 1.3 MMT	To be relocated once conveyor lines are shifted toward Panian pit.		
	Auxiliary Stockpiles Combined capacity = 3.8 MMT	Refer to the updated facility map showing the exact location of the relocation site for Panian Auxiliary Coal Stockpile.		

Project Component	Description / Specifications			
/ Aspect	Existing / Approved	Proposed Modification / Expansion		
Coal Washing Plant (CWP)	600mt/hr capacity located at Panian	No changes. Shared facility.		
Coal Conveyance System	Conveyor system: Line 1 & 2 from Panian Auxiliary Stockpile to CBS with 4 BWEs & 2 stackers	No changes. Shared facility.		
	Belt Width =1.4m			
	Belt Length = 12.5 kms			
	Proposed Line1 & Line2 rear extension toward Panian Pit area (aka:Molave Auxiliary stockpile).			
	Line1 Extension=1.8km,			
	Line2 Extension =2.3km.			
	Total belt length (Existing +Ext'n) = 16.6 km			
Loading Pier	 Dapdap Pier major components: Shiploaders Reclaimers 11.87km conveyor lines Set of crushers, sampling units and water spraying system 	No changes. Shared facility.		
	Dapdap Wharf, East dike wharf	No changes. Shared facility.		
Coal Blending	Capacity = 140,000.00 MT Area = 7 hectares	No changes. Shared facility.		
	Major components: • Stackers • Coal Shed • Product, Mechanical & Electrical Office • Sampling shack • Electrical Main Station • Coal Silo 1 and 2 for Power Plants			

Table ES-2. Project Support Facilities

Project Component	Description / Specifications		
/ Aspect	Existing / Approved	Proposed Modification / Expansion	
Water Supply	Desalination Plant:	Additional capacity of 4,000 m ³ /day	
	7,000 m ³ /day existing capacity out of the approved 10,000 m ³ /day	New plant capacity = 14,000 m³/day	

Project Component	Description / Specifications			
/ Aspect	Existing / Approved	Proposed Modification / Expansion		
	 Reservoirs: Sanglay 1& 2, Himalian, Binaroto 	No changes. Shared facility.		
	 Springs/Deepwells: Bunlao Spring, Panian Deep Wells and fresh water (FW#4) at spring 	No changes. Shared facility.		
	 Water Filtration Facilities Water Tanks at Wild B (Total 15.5 Million Capacity) 	No changes. Shared facility.		
Power Supply	Generator set Mirrlees 1 x 4.2 MW Wartsila 1 x 5.7 MW 	 Wartsila 3 x 6.3MW = 18.9 MW 		
	Coal Fired 2x7.5 MW Stocker type (Reconditioned) 1 x 15MW CFBC (1 st unit)	No changes. Shared facility.		
	The second unit 1x15MW CFBC shall be built to supply power for the growing demand of electricity. This is covered by existing ECC for a 30 MW-capacity CFBC power plant.			
	Total Projected Capacity (Coal-fired): 45MW			
Housing	 300 housing units (Panian, Narra) 400 housing units (Molave) 400 housing units (Molave Expansion) 	 Additional 500 housing units to cater increase in manpower 		
	Total Housing Units = 1,100	Total Housing Units = 1,600.00		
Laboratories	 Coal analysis Oil, fuel, soil, CaO & H₂O analysis 	No changes. Shared facility.		
	Upgrading of facilities to accommodate increase in Coal, Oil, Fuel, Soil, CaO& H2O samples			
	Geotechnical Laboratory and core sampling facility	No changes. Shared facility.		
Pit Shops	Pitshop at Narra PitPitshop at Molave Pit	No changes. Shared facility.		
Main Work Shop (MWS)	Tire ShopAdmin and HRD Bldg.Warehouse & Extension	No changes. Shared facility.		
Plants	Oxy-ace Plant	No changes. Shared facility.		

Project Component	Description / Specifications		
/ Aspect	Existing / Approved	Proposed Modification / Expansion	
	 Batching Plant/ Aggregate Stockpiles/ Culvert fabrication Proposed Cement Plant with approved ECC 		
Infrastructures and other facilities	Other Support facilities (Mining, Shipping and Environment) Hazmat Marine Hatchery and Laboratories Aviary Siltation Ponds and pocket sumps Fuel Farm Fabrication Area/Sandblasting Facilities, Gantry, Shipping office Slipway/Drydocks, and Ship Building Pottery Humic Acid Plant Limestone Crush and Lime plant Dynamite Magazine Cell Site Towers Pinagpala Pier	No changes. Shared facility.	
	 Community Support Divine Word School of Semirara Island Incorporated Semirara Training Center K-12 school bldg. Community Pier Ice Plant Sewerage Treatment Plant Hospital Sports Complex @ 42 has Air strip and Hangar @ 23 has Semirara Market, Bus Terminal, Churches, Foodcourt and Mess hall/Plaza Multi-purpose gyms 	No changes. Shared facility. No changes. Shared facility.	
	 Library 		

ES 2.4 Manpower Requirement

Manpower requirement is expected to increase by 492 employees during the construction phase while additional manpower of 720 is estimated during the operation phase. Table ES-3 presents the existing Molave workforce while Table ES-4 presents the additional manpower requirement for the Molave Expansion.

Table ES-S. Molave Existing workforce			
Department	No of staff		
Mining Department			
Accounting	16		
Admin Division	3		
Analytical Laboratory	24		
Electrical	108		
Drilling	205		
Geology	123		

Department	No of staff
Human Resource	14
Internal Audit	41
Security	310
Materials Control	88
Mechanical Services	277
Mine Planning & Engineering	30
Mobile Maintenance	504
Power Plant	119
Product	124
Resident Manager's Office	5
Safety	61
Mine Truck & Shovel Operation	1,138
Sub-Total	3,190
Non-Mining Department	
Coal Handling	116
Civil Works Department	79
Commissary	21
Community Relation Office	5
Foodmatch Canteen	25
HRD Cooperative	9
Medical Section	27
Pottery	23
Marine Biology	10
Ice Plant	5
Humic Acid Plant	10
Admin-ASD	148
Semirara Training Center	6
Shipping	380
Sub-Total	864
TOTAL	4,054

Table ES-4. Proposed Additional Workforce

Department	No of staff
Construction Phase	
Electrical	21
Security	62
Mechanical Services	55
Mobile Maintenance	100
Safety	12
Mine Truck & Shovel Operation	227
Civil Works Department	15
Sub-Total	492
Operation Phase	
Analytical Laboratory	4
Electrical	21
Drilling	41
Geology	24
Security	62
Materials Control	17
Mechanical Services	55
Mine Planning & Engineering	6
Mobile maintenance	100

Department	No of staff
Product	24
Safety	12
Mine Truck & Shovel Operation	227
Civil Works Department	15
Community Relation Office	1
Medical Section	5
Admin-Asd	30
Shipping	76
Sub-Total	720
TOTAL	1, 212

ES 2.5 Project Size

The major amendment for the project is the increase of the total mining complex area from 3,369.25 hectares to 4,369.25 hectares. The entire project is still within the 13,000 hectare amended COC area granted to SMPC. Summary of project size is presented in the table below.

Draiget Aspect	Description / Specifications			
Project Aspect	Existing	Proposed Modification / Expansion		
Total Project Area (Land area amended COC No. 5 Contract Area, Semirara Island)	The area bound by the geographic coordinates of the amended COC No. 5 for Semirara Island (Project Area) includes both coastal and land areas. Based on the technical description of COC No. 5, within the contract area is a land area of 13,000 hectares , more or less.	None. The proposed expansion is still within the boundaries of amended COC No. 5.		
Total Project Footprint	The existing total footprint area is 3,369.25 hectares which is within the boundaries of COC No. 5	The proposed expansion will involve an increase in mining complex of about 1,000 hectares resulting to a total project area of 4,369.25 hectares , still within the boundaries of the amended COC No. 5.		
Mine area (pit)	1,200 hectares - Panian = 400 ha - Narra (East Panian) = 400 ha - Molave = 400 ha	Additional 430-hectare mine pit area - Narra (East Panian) + 150 ha = 550 has - Molave + 280 ha = 680 has		
Total Coal Production Capacity (Annual)	16 MMT	No changes.		

Table ES- 5. Existing and Proposed Modification in Project Size

ES 2.6 Project Cost

The estimated annual production cost is at 24 billion pesos.

ES 2.7 Project Development Phases and Timeframes

ES 2.7.1 Pre-mining Phase/Site Development

The usual support equipment such as dozers, small power shovels and graders will be increased as well to fully support the activities in the mine. Upgrading of support facilities (to mining operation) will also start during this phase. The Molave and Narra pits will have a depth of 350 mbsl each and an area of approximately 680 hectares and 550 hectares, respectively. Basically, the primary objective of site development is to control seawater intrusion and to protect the pit from getting swamped by high waves. The following seawater control measures are therefore necessary prior to the operation phase:

- A sea barrier to protect the mine from getting swamped by high waves, as well as to seal off or minimize the hydraulic connection between the sea and the substratum between the reefs.
- A cut-off wall through the coral line sand and gravel on the periphery of the mine to serve as an impermeable barrier against seawater seepage.
- Dewatering wells will be drilled after the construction of the cut-off wall. It will be used primarily to
 depressurize the area by lowering the ground water level to reduce the weight and stabilize the slope during
 mine operation.
- A surface dewatering system consisting of pumps, pontoons and pipelines will be put in place to pump out accumulated water in the pit and to dry up working areas during the wet season.

ES 2.7.2 Operation Phase

The current mining method of "Open Pit" using Excavators matched with 100-Tonner Dump Trucks shall be continuously employed to the project due to the similarity of geological formation of the newly discovered deposit with the Panian and Narra mine areas. Subsequent detailed drilling within the 138-hectare most promising area of Molave Pit has confirmed a substantial coal resource suitable for open pit mining.

ES 2.7.2.1 Explorations and Drilling Program

Commercial operation of the Molave mine is expected to end in 2023 while Narra mine will be much later. These mining activities require a very dynamic drilling program and a vigorous exploration campaign not only to cope with the safety, geotechnical, and hydrogeological aspects of mining areas but equally important is also to discover additional coal resources that would replenish mined-out reserves. This will offset rapid depletion of coal reserves and ensure long-term sustainability of the Semirara Mining and Power Corporation (SMPC) business.

The exploration and drilling program includes the following activities within SMPC's coal contract area in Semirara Island, Caluya, Antique:

- Exploration of potential extensions of coal seams within the adjacent areas of identified coal deposits and deeper coal resources for underground mining;
- Drilling requirements of the open pit mines (i.e. Molave and Narra) to address concerns on slope stability, water seepage, groundwater monitoring, and coal continuity thru confirmatory drilling;
- Seismic surveys (if necessary) to gather/enhance sub-surface geological and structural data of underexplored areas and identified coal deposits; and
- Studies on coal bed methane potential of Semirara Island.

ES 2.7.3 Decommissioning/Abandonment/Rehabilitation

The implementation of Rehabilitation Plan in Panian Pit started in southern portion on 2017. As the Southern Panian Pit has reach to its backfilling final stage, reforestation will commence during rainy season and in-pit backfilling will advance in the North Panian Pit. Throughout the rehabilitation operation, it will employ the same method of backfilling and reforestation. Rehabilitation program for North Panian is submitted to DOE for approval. FMRDP identifies which facilities will be dismantled for retrieval and which will be retained and turned over to local government.

ES 2.7.3.1 2019 Rehabilitation

<u> January – June</u>

A total of 32M bcm overburden materials will be backfilled in South Panian with an elevation of +5 meter. The earth materials that was directed in the South Panian Pit came from the operation of Molave Pit. No additional equipment will be acquired during the progressive rehabilitation. At the end of the backfilling at South Panian, a rolling topography from +5 to +8 meter will be in place.

<u> July – December</u>

By this time, backfilling of the South Panian has already completed with a total area of 168 has. Reforestation will commence in this rainy season to ensure the survival of the newly planted trees. The reforestation activity will be conducted in a fast pace taking advantage of the favorable weather to plant new trees. Reforestation covers the planting and the maintenance of the planted trees.

The areas will be revegetated with Beach Agoho, establishing newly cultivated crops in which categorized as the first batch of seedlings that will be a great help in conditioning the soil. Beach Agoho will be the only plant to propagate in the area until by the end of 2019 since the soil will become good enough to accommodate native trees caused by the reverting back of the nutrients once loss when hauled, thus, cultivating of high value trees will be possible. While reforestation is implemented in southern part, in-pit backfilling will advance in the North Panian Pit. The earth materials that will be dumped in the northern portion will come from the nearest area of Molave Pit where excavation is actively conducted. Simultaneously, Tungao Area will also be backfilled of about 20M BCM mainly for exploration purposes.

ES 2.7.3.2 2020 Rehabilitation

Backfilling activities will be continuously conducted in the North Panian Pit; the earth materials that will be directed to the northern portion of Panian Pit will come from the Molave Pit as this time of year it will be the only active pit mining operation. More or less the level of +10meter will be maintained in the backfilled area. Likewise, dumping in 215 block or the northern side of Molave Pit will be accomplished for sea barrier purposes essentially to protect the mine pit from seawater seepage. Maintenance of planted trees in South Panian will also be actively conducted.

ES 2.7.3.3 2021 Rehabilitation

To further advance the rehabilitation operation, continuous in-pit backfilling will be implemented in the North Panian Pit with the overburden materials coming from the nearest excavation site of Molave Pit. The rehabilitated areas will be maintained at +10-meter level.

This year, dumping of earth materials in 254 block will be accomplished to serve as sea barrier for the protection of the western side of Molave Pit. Alongside of the backfilling in 254 block, construction of 2.5 km West Dike will be planned out to control silt from spreading as carried by waves and sea current and affecting nearby protected areas like Tabunan Marine Santuary.

ES 2.7.3.4 2022-2023 Rehabilitation

Continuous in-pit backfilling of the remaining northern portion of Panian Pit to rehabilitate the mined-out pit. In addition, backfilling in 214, 215 and 254 blocks will be conducted to extend the sea barrier. Some of the areas around North Panian were still unplanted with trees, so another objective of this year is to have the remaining part of the areas that were not accommodated in the previous year to rehabilitate. The Narra pit will starts its operation upon exhaustion of coal in Molave Pit. While actively mining the Narra Pit, reforestation and maintenance of blocks 214, 215 & 254 will be simultaneously conducted. Narra Pit Operation is estimated to be completed by year 2027 "depends on the coal release" and by this period also, the abandonment and decommissioning plan will be fully implemented.

ES 2.7.3.5 Reforestation Activity

Table ES-10. Reforestation Activities in South Panian

Month	Seedlings Collection	Seedlings Preparation	Reforestation/ Revegetation
Jan	15 kg		
Feb	15 kg	105,000 hills	
Mar	15 kg	105,000 hills	
Apr		105,000 hills	
May		105,000 hills	
Jun		84,000 hills	105,000 hills
Jul			105,000 hills
Aug			105,000 hills
Sep			105,000 hills
Oct			42,000 hills
Nov			42,000 hills
Dec			



Figure ES-3. Reforestation Project as of December 2018

ES 2.7.3.6 Decommissioning Plan

The existing 2x7.5MW coal power plant shall be subjected for decommissioning once the second unit of 1x15MW CFBC coal fired power plant is operational. The preparation of the decommissioning plan shall be based on the following strategy:

- Formation of company management organization whose duties and responsibilities are to plan and supervise the activities of the rehabilitation and decommissioning program;
- Selection of qualified personnel required in the implementation of rehabilitation / decommissioning;
- Inventory and assessment of equipment / machineries;
- Assessment of the suitability of the equipment, buildings and other facilities for further rehabilitation/restoration, reuse elsewhere or turnover to the community.
- Removal of reusable equipment, building parts, and/or facilities from the site and demolition of condemned structures.
- Turnover of reusable buildings and other facilities not used to the community upon its request or concurrence.
- Implementation of decommissioning activities with close supervision from the management team;
- Physical assessment of the team on the accomplishment of the decommissioning of facilities and equipment;
- Recommend for rehabilitation of the areas affected by the decommissioning activities.
- Description of any special procedures or precautions to be used to ensure safety during decommissioning;
- All facilities shall be decommissioned with precautionary measures in handling remaining stocks of chemical reagents and delicate laboratory instruments.
- Safety procedures in handling and storing chemical reagents are indicated in the material data sheet (MDS) and therefore shall serve as guide during decommissioning of the plant facilities and the stored chemicals. The company's chemist shall take the responsibility in the supervision of the activity. After collecting the remaining chemical reagents and transported the same to a safe location and final destination, dismantling of the building structures will follow.
- Currently, the community has their own source and water distribution sytem independent of the company. The desalination plant provides water to company offices, equipment and housing facilities only. At decommissioning stage, the desalination plant shall be dismantled and be retrieved by SMPC.

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.

Modules	Methodologies Used for Assessment
LAND	
Land Use and Classification	 Gathering/Review of secondary data Site observation/validation
Geology and Geomorphology	 Gathering/Review of secondary data (SMPC 5 year Work Program; Coal Resource Estimate) Site observation SMPC Data/Studies
TERRESTRIAL	
Pedology	-Gathering/ Review of secondary data
Terrestrial Ecology	- Gathering and validation of secondary data of the following terrestrial ecosystems assessments (EIS, 1997; EPRMP Eat Panian Expansion, 2009; EPRMP

Table ES-11. EIA Methodology per Module

Modules	Methodologies Used for Assessment	
	Molave Expansion Project, 2015) and the semi-annual terrestrial monitoring	
	activities in 2018.	
	- Site observation, Random Plot Method, Transect Walk Method, Strip-Census	
	Method	
WATER		
Hydrology and Hydrogeology	- Site observation	
	- Gathering of secondary data	
	- Data from SMPC	
Water Quality	- Site observation	
	- Gathering and review of data from SMR and CMR Reports	
Marine Ecology	-Gathering and review of secondary data from study done for the Semira	
	West Panian Project in 2015	
	-Marine ecology baseline assessment conducted on 22-25 May 2019: Manta	
	Tow Survey Method and Line Intercept Method	
AIR		
Climate	- Gathering of secondary data from PAGASA/MM5	
Air Quality	- Secondary data gathering from SMPC monitoring reports	
Ambient Noise	- Gathering and review of data from ambient noise data from SMR reports	
PEOPLE		
Socio-economic Profile	- Review of secondary information	
	- Household and perception survey	
	- Focus Group Discussion (FGD)	
	- Key Informant Interview (KII)	

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, and Focus Group Discussions (FGD) with the various stakeholders. The table below details the schedule, location, and participants of the public participation activities conducted.

Table ES-12. Public Participation Activities

Activity	Date	No. of Participants
IEC Activity*	November 02, 2018	83
Perception Survey*	November 02, 2018	52
Public Scoping	February 27, 2019	205
Perception Survey*	May 02, 2019	30
Random Informant Interviews	May 02, 2019	6

* 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 EIA Summary

The proposed Semirara Coal Mine Expansion was based mainly on the Seismic Risk Analysis and Storm Surge and Tsunami Risk Assessment conducted for the Molave Mine. These studies had the following findings/conclusions:

- a) The design Operating Basis Earthquake (OBE) for the Molave Open Cast Mine is estimated at magnitude M5.5 with a recurrence period of 15 years, which is the expected life of the SMPC mining operation. The PHGA for the in-situ rocks is equal to 0.17g. On the other hand, for the shallow, weak and loose soils, i.e., backfill, coral sands and claystones, the PHGA of 0.17g is magnified to 0.24g by the seismic amplifier coefficient of 1.39.
- b) Of the three (3) main walls of the Molave Open Cast Mine, the north and west walls are stable in both static and pseudostatic conditions. In the east wall, all sections are stable in static condition. However, sections E2, E5 and -NE2 have FS = 1.0, which is below the required marginal pseudostatic FS of 1.1.
- c) Using the four (4) criteria for liquefaction, the soils from Molave Mine are not prone to liquefaction.
- d) The Molave Mine is categorized as "Safe Zone" since there is no active volcano within 200km radius of the Semirara Island. In this safe zone area, the volcanic risk to life and property is almost negligible.
- e) Due to potential landslides during a M5.5 earthquake, unstable slopes in the backfill areas that have a Factor of Safety equal to 1.0 are recommended for unloading or removal of the backfill and coral sands at the crest of the slope sections -E2, -E5 and -NE2.
- f) To minimize inundation, coastal areas must be i) extended 2.0 kilometers seaward; and ii) raised to more than 10.0m masl elevation to act as storm surge/tsunami barrier. Specifications on the backfilling are below:

Molave area to be backfilled-	1050 hectares
Molave backfilling volume-	420 million BCM
Narra area to be backfilled-	520 hectares
Narra backfilling volume-	208 million BCM

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 Identifie	ed Key Impacts with Mitigation/Enhancem	nent Measures and Residual Effects
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IMPACT	PREVENTION, MITIGATION OR ENHANCEMENT MEASURES	RESIDUAL EFFECTS
LAND		
Vegetation removal within the additional Mining Complex (1,000 hectares) and additional Pit Area (430 hectares)	 Planted trees throughout the reforested/forested land areas are maintained by brushing and clearing along 1m radius of the new planted seedlings and/or grown trees. Continue planting of trees outside the mining site (e.g. existing open and brushlands, grassland areas, along and within the perimeter/ buffer zones. Earthballing/collection of wildlings and seeds of affected vegetation and replanting it outside project area 	Vegetation removal will be expected as the project expansion proceeds. Loss of habitat due to clearing activities of mostly reforestation and grassland areas will be inevitable to give way for the proposed development. Loss of important local species is unlikely but individual mortalities might be encountered during the clearing works. Fauna species (i.e. birds and mammals) recorded in the area will be displaced during vegetation clearing for the construction of access roads, pit and other facilities thereby limiting or affects species' movements
 Change in surface landform/ geomorphology/ topography/ terrain/ slope Pit slope failure / slide 	 Implement maximum of 25° overall pit slope for in-situ while maximum 20 degrees pit slope for backfill materials. Bench slope shall have maximum of 60° slope for in-situ while maximum 45° slope for backfill materials. Protocol for slope benching for in-situ and backfill materials are strictly implemented throughout the mine pit. Installation of cut-off walls and dewatering wells. Sub-surface dewatering wells were installed on areas where seawater seepage is high. Slope stability measures include ground water management, slope stability monitoring using the Robotic Total Station and GeoMos software, Slope Stability Radar to monitor ground movement and possible ground fracture, geotechnical evaluation of the ground in order to determine pit slope angle on pit design, drawing out ground water that exerts pressure onto the wall and monitoring of pressure and preventing entry of seawater through the sea barrier 	Permanent changes in topography
WATER		
Changes in hydrology/hydrogeology due to mine pit dewatering, artificial reservoirs, groundwater extraction	 Continue planting of trees outside the mining site (e.g. existing open and brushlands, grassland areas, along and within the perimeter/ buffer zones to promote groundwater recharge 	Permanent changes in inland surface water bodies due to changes in topography

IM	PACT	PR	EVENTION, MITIGATION OR ENHANCEMENT MEASURES	RESI	DUAL EFFECTS
		-	Maintenance of drainage canals within the mine site to manage surface	Poss	ible changes in groundwater hydrology during and
			runoff	after	r the project implementation
-	Degradation of marine water quality due	-	Construction of breakwater/barriers to minimize/prevent sediment	-	Permanent changes in drainage morphology due to
	to siltation brought about by mining and		transport especially towards the marine protected area (i.e. proposed		changes in topography.
	all other associated activities (i.e.		West Dike)		
	hauling, stockpiling, backfilling etc.)	-	East dike is laid down perpendicular to the coast that serves as barrier to	-	Siltation of coastal waters during extreme events.
			arrest flow of silt towards Brgy. Semirara Coastal Area.		
-	Increase in siltation/ sedimentation	-	Maintenance of existing silt ponds		
	loading in coastal waters	-	Continuous in-pit dumping as part of the Panian pit rehabilitation.		
		-	Planting of trees in areas outside the mining site (e.g. open and brushland		
			areas, grassland areas, along and within the perimeter/buffer zones) to		
			minimize erosion and siltation.		
-	Thermal pollution	-	The existing discharge canal (also for cooling) allows sufficient drop in	Non	е.
			temperature of cooling water before reaching Suja Canal and the		
-	Siltation from the cleaning process of		receiving seawater body. Water is being sampled quarterly to check its		
	the power plant		temperature and the area is monitored regularly for any changes in the		
			environment.		
		-	Monthly water quality monitoring at the condenser intake, power plant		
			discharge and mixing zone		
		-	Maintenance of cooling settling ponds through desilting		
		-	Maintenance of the cooling water canal		
-	Marine Ecology	-	Improving the company's sediment sequestration measures, reinforced	Silta	tion of coastal waters during extreme events.
			with a stronger integrated coastal management program		
-	Earthmoving and construction activities	-	Expand conservation areas where growth, maturation and recruitment of		
	will likely lead to the addition of		corals and its associated marine fauna can be enhanced.		
	sediment spills if controls are not	-	Installation of sediment sequestration screens in strategic areas such as		
	effectively adopted.		silt curtains, floating wave deflectors, and wave breakers.		
		-	Construction of West Dike and further improvement of East Dike to		
-	Possible silt and sediment streams		ensure that silt will not reach critical areas such as the marine sanctuary		
	affecting the marine sanctuary located		and the community.		
	about 4 km from the main expansion	-	The company will further undertake mangrove reforestation in new areas		
	area that may blanket sensitive benthic		and enrichment in existing mangrove plantation projects to further		
	environments (i.e. corals) especially		enhance natural sediment accretion, especially near the Semirara Marine		
			Sanctuary and in suitable areas further north in Casay bay; and		

IMPACT	PREVENTION, MITIGATION OR ENHANCEMENT MEASURES	RESIDUAL EFFECTS
during strong, wind-driven currents during the northeast monsoon season.	 Continuous support for mangrove rehabilitation projects by sustaining existing and employing new community-based stewardship agreements. Mangrove reforestation and protection shall be at the forefront of the 	
 Surveys results show that the seawater in the area are already tainted with suspended silt and particulate matter and this factor is the principal stressor that may cause coral mortality over the 	mining company's environmental impact mitigating strategies as the benefits of mangrove management will be felt over the longer term. Community participation in mangrove rehabilitation and management will be the principal tool for engaging stewardship and conservation arrangements.	
long run.		
AIR		
Air pollution from fugitive dust resulting from ground clearing operations, site preparation, structure erection, and vehicle movement.	 The Company has provided five (5) water trucks to water spray the roads during dry season, hauling, and operation. Water spraying is conducted 24 hours depending on the condition of the operation. Constant watering 	Re-suspension of dust
 Air pollution from stockpiles, conveyor and power plant stacks as a result of 	on busy and haul roads and minimal to non-traffic road. Constant watering on hauling road is every 30 minutes.	None.
 operation, and generation due to mobile sources (i.e. heavy equipment) Emission of fugitive particles such as 	 Maintenance of coal shed for Coal Blending Stockpiles Maintenance of two units atomizer that is used to spray atomized water into the transfer chute to minimize generation of dust during reclaiming. 	
dust (TSP), SO ₂ , NO ₂ , Noise pollution	- Imposing of speed restrictions/limits and proper signage. Speed of trucks is limited to 35 kph on downhill and 40kph on flat road as standard procedure.	
	 IEC/training of workers involved in the operating heavy equipment/ vehicle drivers. Appropriate Basic Driving Training is regularly conducted to heavy and light vehicles drivers and operators 	
Air pollution from SO_2 and NO_2 emissions	All Heavy & Light equipment/ vehicles undergone Preventive Maintenance	None.
from heavy equipment used in site	Schedule (PMS) to maintain and prevent equipment from failure and	
preparation.	breakdowns and installed muffler to minimize noise pollution and smoke	
	belching.	

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
Department of Energy	Department of Energy, 2F PNOC Building V.
	Energy Center,
	Rizal Drive, 34th St. Taguig, 1632 Metro Manila
Provincial Government of Antique	
Barangay Office of Semirara	