

EXECUTIVE SUMMARY

1.0 PROJECT FACT SHEET

1.1 Background of the Project

Project Name: **PSC Expansion Project
(Ore Blend Facility and New Berth Facility)**

Nature of Project: **Manufacturing**

Total Area and
Production Capacity: **133 hectares
9 MMTPY (Blend ore)
5 MMTPY (Sintered Ore)
7 MMTPY (Iron Pellet)**

Site Location: **Phividec Industrial Authority, Municipality of Villanueva,
Province of Misamis Oriental**

1.2 Profile of the Proponent

Name of Proponent: **Philippine Sinter Corporation**

Office Address: **23F Oledan Square
6788 Ayala Avenue, Makati City**

Contact Person: **Mr. Nilo C. Sagrado
VP & Resident Manager – Sinter Plant**

Tel No./Fax No.: **(02) 8886-7421/ (02) 85670083 or 86**

1.3 Profile of the EIS Preparer

EIS Preparer: **Gaia South, Inc., *Environmental Consultants***

Office Address: **7th Floor Montepino Bldg., Adelantado cor. Gamboa St.,
Legaspi Village, Makati City**

Contact Person: **Ebert T. Bautista
Project Director**

Tel. No./ Fax No.: **+63 2 88935661 (tel.) / +63 2 88935657 (fax)**



1.4 Project Size

The whole project will have a total area of 133 hectares and will have an annual production capacity of:

- 9 MMTPY (Blend Ore)
- 5 MMTPY (Sintered Ore)
- 7 MMTPY (Iron Pellet)

1.5 Project Components

The proposed ore blending facility is expected to produce approximately 9MMTPY of blend ore. The facility will be composed of various components including the establishment of a new berth facility with a total length of 324m and with a maximum barge capacity of 200kT and loading volume of approximately 14.4 MMTPY. Likewise, four (4) new yards each with a total length of 900m and width of 55m will be developed; three (3) yards beside the existing yard facility and another one in the east side, between the settling pond extending towards the eastside boundary. Other components include three (3) new stack reclaimers with a total capacity of 3,600T/H for stacking and 3,800T/H for reclaiming, a blending stacker with a capacity of 3,800 T/H, two (2) blending reclaimers with each having a capacity of 2,600T/H, and three (3) surge hopper each with a capacity of 80m³. **Table ES1** summarizes the inclusive components of the existing and the proposed expansion of PSC. Please refer also to **Attachment 1** for the copy of the current ECC of PSC.

Table ES1. Summary of project components of the existing and proposed facilities of PSC

Descriptor	Current Operation (ECC No. 0807-021-2711)	Proposed Expansion
Capacity	12 MMTPY	9 MMTPY
Project Area	133 ha	Ore yard: 19.8ha New berth: 324m
ECC issued (Consolidated)	ECC Ref. Code 0807-021-2711 Expansion of the Iron Ore Sintering Facility and Consolidation of ECC of the Existing Operations of the Philippine Sinter Corporation Plant	
Production Process	Downdraft Dwight Lloyd Sintering Process (Process flow in Figure 3.3-1) Grate Kiln Method (Process flow in Figure 3.2-1 and Process block diagram in Figure 3.4-4)	Use of ore blend reclaimer and stacker
Utilities Requirement	Water – 2,705m ³ /day Electricity: For Sintering CEPALCO – 24MW (less generation of SSHR & Generators (usually >10MW) Self generated – Design: 18.6 Actual: 13 MW (max) Sintering – 21.5 MW Power plant – 3 MW For Iron Ore Pellet 23.2 MWH (additional)	Water - 574m ³ /day Electricity: New Berth – 270,000kWh New Common Berth – 160,000 kWh New Yard – 220,000 kWh
Raw Materials/Inputs	Fuel (monthly) for Sintering 806,245.22 liters Bunker C 147,964.58 liters Diesel	Fuel during construction: New Berth – 520,000 L Existing Berth Facility – 720,000L



Descriptor	Current Operation (ECC No. 0807-021-2711)	Proposed Expansion		
	3,617.58 liters Gasoline Fuel (monthly) for Iron Ore Pellet Soft (Bituminous) coal: 14.1 kg Heavy oil: 3.8 kg Diesel: 4.7 kg [note: GK method is chosen due to its energy efficiency. It's estimated that the heat requirement for the GK method will be as low as 292 Mcal/tp as compared to current level of 493 Mcal/tp]	New Yard – 880,000L		
	Raw Materials for Sintering (per ton sintered ore) : 1,029 kg of main iron blend including dolomite 112 kg of limestone; 67.3 kg of carbon source; and 0.76 L of fuel oil/ton SO Typical blend of iron ore: 65% Rio Doce 28% Carajas 7% Dolomite	Same raw materials		
	Raw Materials for Iron Ore Pellet (per ton sintered ore): 957.5 kg of iron 7.5 kg of bentonite 45.8 kg of limestone; 12 kg of dolomite 16.5 kg of Anthracite Coal [note: in addition to the fine ore that can be processed using the current facility/process, the proposed expansion will also be able to process <i>super</i> fine ores]			
Manpower requirement	200 – permanent 640 – contractual	Permanent – 24 Contractual – 30		
Discharges/Emissions	Raw material handling – Suspended particulates Windbox – iron oxides, sulfur oxides, carbonaceous compounds, aliphatic hydrocarbons, and chlorides Sinter Plant – Suspended particulates, CO, NO _x , SO _x and heat, Petroleum products container and contaminated materials Limekiln Operations – Heat, suspended particulates and noise, Petroleum products container and contaminated materials Power generation – Thermal water, sludge from demineralization, Petroleum products container and contaminated materials Administration office – Papers, packaging, office wastes Laboratory – Spent acids, organic and inorganic washings and spills Canteen – Food wastes, packaging materials, contaminated water from oil and grease Motorpool – Petroleum products container and contaminated materials, spent acids, battery			
Main plant components	Current Operation		Proposed Expansion	
	Annual Production rate	Area	Components	Area
Iron Ore Pelletizing Facility (enhanced port, ore yard, sintering facility of 12 MTPY)	7 MMPTY	Yard: 22 ha Jetty: 100 m long Plant: 10.965 ha	No change	
Sintering Equipment and facilities	5 MMPTY	133,445.75	No change	



Descriptor	Current Operation (ECC No. 0807-021-2711)		Proposed Expansion	
<ul style="list-style-type: none"> ○ 14 blending hopper (600 m³ capacity) ○ 1 Dwight Lloyd type sinter machine (715 m² grate area) ○ 1 circular type sinter cooler with 457 m² bed area and 15,000 m³/min capacity ○ 2 mainblower with double suction type with 20,000 m³/min capacity 				
Burnt Lime Facility <ul style="list-style-type: none"> ○ 3 Chisaki kiln ○ 11 sets of belt conveyor ○ 1 burnt lime hopper ○ 1 cage mill type burnt lime crusher ○ 3 sets bucket elevator ○ 2 vibrating feeder ○ 1 screw feeder 	140 MTPD	442.00 m ²	No change	
Project Components	Current Operation		Proposed Expansion	
	Components	Area	Components	Area
	Port/Berth <ul style="list-style-type: none"> ○ 2 rail mounted bulk unloaders (1800 MTPH with an automatic recovery conveyor) ○ Pump and pipeline system ○ Rail mounted shiploaded with movable trimming chute ○ Main berth (351m with 300,000 DWT capacity) ○ Berth No. 2 (230m) 	11,005.00m ²	<ul style="list-style-type: none"> ○ Four (4) yards (900m x 55m) ○ Surge hoppers ○ Main berth expansion of 4 m (total of 355 m) ○ New berth (324m x 31m) ○ Conveyors (8,711 total length) 	198,000m ² 2,000m ² 10,044m ² 13,868m ²
Project Components	Sinter Cooler Waste Heat Recovery <ul style="list-style-type: none"> ○ 1 forced circulation type heat recovery boiler ○ 1 condensing type steam turbine (18,600 kW rated output; 5,100rpm speed; 1.96 Mpa pressure; 345°Ctemperature (valve inlet); 700mm Hg exhaust steam) 	1,174.60m ²	No change	



Descriptor	Current Operation (ECC No. 0807-021-2711)	Proposed Expansion
	vacuum at 84,700 kg/hr rated outlet) <ul style="list-style-type: none"> 1 totally enclosed generator (air cooled, brushless synchronous generator was installed. It has a rated capacity (output) of 23,250 kVA (18,600 kW) and voltage of 11,000V with a frequency of 60Hz and rotating speed of 1,800rpm) 1 water treatment plant (200 m³ feedwater and 5m³/hr make-up water) 	
	Administration Building, Gate and Garage/Terminal	5,971.70m ² No change
	Recreational (park and courts)	13,905.01m ² No change
	Uniflow kitchen	235.00m ² No change
	Laboratory	1,178.50m ² No change
	Warehouse	9,511.30m ² No change
	Maintenance Building and Shops	4,649.90m ² No change
	Waste Holding Station	164.00m ² No change
	Electrical facilities	19,052.26m ² No change
	Hydrated lime plant	125.00m ² No change
	Material Handling Offices/Customs	1,729.92m ² No change
	Cargo Berth Area and Storage Facilities	16,595.70m ² No change
	Roads	67,537.00m ² No change
	Settling ponds (total area including walkway)	66,387.23m ² No change
	Others (fabrication areas/scrap yards)	30,631.00m ² No change
	Ore yard (including conveyors) <ul style="list-style-type: none"> 2 stacker (800TPH potable) 1 rail mounted stack reclaimer (1,800/3,600MTPH) 	265,264.20m ² No change

2.0 PROCESS DOCUMENTATION

2.1 The Environmental Impact Assessment (EIA) Report

As defined in the Revised Procedural Manual of DAO 03-30, EIA is a “*process that involves predicting and evaluating the likely impacts of a project on the environment during construction, commissioning, operation and abandonment*”. EMB Memorandum Circular 2005-14 “*The Revised Guidelines for Coverage Screening and Standardized Requirements under the Philippine EIS System*” classifies the proposed project as Category A or

Environmentally Critical Projects (ECP) based on the threshold for annual production capacity for a manufacturing project applying for amendment.

The sinter facility was covered by ECC No. 9807-004-120, the Hydrated and Burnt Lime Kiln with ECC No. 01-01-028-120, the Sinter Cooler Waste Heat Recovery with ECC No. 10 (43) 06-08 4262-41100, and ECC No. 9207-006-120A for the 5.5 MW stand-by generator set. In 2009, PSC was granted an amended ECC (ECC No. 0807-021-2711) incorporating all of the existing operations including the Iron Ore Pellet Facility. The ECC of PSC was processed and approved by the EMB CO. Thus, this proposed amendment shall be applied at the same office, submitting an EPRMP.

The EPRMP shall contain the following:

- Project Description
- Analysis of Environmental Impacts
- Environmental Management Plan
- Environmental Risk Assessment & Emergency Response Policy and Guidelines
- Social Development Plan & Information, Education, and Communication Framework
- Environmental Compliance Monitoring
- Decommissioning/Abandonment/Rehabilitation Policy
- Institutional Plan for EMP Implementation

Gaia South Inc. a third-party environmental consultancy firm was contracted by PSC to prepare this EPRMP report. Pre-scoping activities such as Information, Education, and Communication (IEC) (**Annex ES1**), Key Informant Interview (KII), and Focus Group Discussion (FGD) were conducted. A Public Scoping Meeting was also held via online on April 12, 2021 (**Annex ES2**). To guide both the Proponent and its EIS Preparer in the conduct of the Environmental Impact Assessment (EIA), a Technical Scoping meeting was also conducted online last April 29, 2021. The EMB Casehandlers, Review Committee members, PSC, and Gaia South Inc. representatives agreed on the coverage of the Technical Scoping Checklist (**Annex ES3**), which will serve as a guide in the preparation of the EPRMP report.

2.2 Limitations of the Study

The preparation of this EPRMP was timed during the pandemic which generally restricted the overall movement of the consultants on site and within the host community. As much as possible, request for data and follow-ups from the barangay and City Government were done online or via phone call to prevent any possible cause of health problems among the Consultants, community participants, and resource persons.

The coverage of the EIA was based on the Technical Scoping Checklist which was agreed by the EMB, PSC, and Gaia South, Inc during the Technical Scoping Meeting. The Checklist enumerates all the parameters and the recommended methodologies; however, some of the information may not be available Experts from different fields of interest prepared this EIS based on the primary data gathered through the actual fieldwork and secondary data sourced from the barangays, LGU, and government agencies such as the National Mapping and Resource Information Authority (NAMRIA), Philippine Institute of Volcanology and

Seismology (PHIVOLCS), Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA), and Mines and Geosciences Bureau (MGB), among others.

2.3 The Project Team

Table ES2 summarizes the experts involved in this EIA. The Accountability Statements of PSC and Gaia South, Inc are attached as **Annexes ES4** and **5** are the Accountability Statements, respectively.

Table ES2. List of EIA team members and their respective field of expertise

Consultant/Researchers	Expertise
Ebert T. Bautista	Project Director/Technical Reviewer
Ernesto dela Cruz, PhD	Technical Team Leader/Water Quality
Liezyl S. Liton-Rellea	Senior Environmental Consultant/ Project Manager
Neil James E. Duran	Senior Environmental Consultant/ Terrestrial Fauna/Land Use
John Michael Galindon, MSc	Terrestrial Flora
Pancho Caculitan	Geology/Geological Risk Assessment
Erwin Kim Mercado	Physical Oceanography/Hydrology/Flood Modeling
Katherine Escalona, PhD	Freshwater and Marine Ecology
Danica Dela Rosa	Senior Technical Associate
Patricia Erika Lim, EnP	Meteorology, Noise and Air Quality
Merlyn Carmelita Rivera, PhD	Socio-economics and Public Health
Thelma Dela Cruz, MSc	Environmental Risk Assessment
Alfredo Guab III	Mapping Specialist
Carla Grace Canaña	Research Assistant

2.4 The EIA Study Schedule and Area

The proposed PSC Ore Blend and New Berth Facilities project will be situated within the existing complex of PSC located within the Phividec Industrial Authority (PIA) in the Municipality of Villanueva, Province of Misamis Oriental.

Table ES3. EIA study schedule

Activity	Period
Pre-scoping study (including IEC, KII, FGD, and pre-scoping household survey)	January to February 22, 2021
Public Scoping Meeting	April 12, 2021
Technical Scoping Meeting	April 29, 2021
Environmental and social fieldwork	May 6-20 and June 3-11, 2021
Draft EIS Report writing	June to August 2021
Submission of EIS to EMB for 1 st Procedural Screening	August 2021
Acceptance of the EIA Report for Substantive Review by the EMB	November 29, 2021
1 st Review Committee Meeting	February 2022



2.5 The EIA Methodology

Various studies for land, water, air as well as the social aspects were conducted in such a way that all the technical, environmental and regulatory requirements dictated in the Technical Scoping Checklist were satisfied. Furthermore, this report is a product of the professional and scientifically acceptable methodologies and procedures by the DENR. **Table ES5** provides the summary of the EIA methodology.

Table ES4. The EIA methodology

Module	Description
Land Use	<ul style="list-style-type: none"> Use of Comprehensive Land Use Plan (CLUP) of Municipality of Villanueva.
Geology and Geomorphology	<ul style="list-style-type: none"> Conduct of field survey and use of available reports, geology literature and information to describe site's existing condition; Use of geological and seismological data lifted from publicly available international and local sources.
Pedology	<ul style="list-style-type: none"> Use of secondary profile from the municipal data. Primary sample collection for physico-chemical analysis.
Terrestrial Flora	<ul style="list-style-type: none"> A 100 percent tree inventory was conducted at the proposed yard facility. The species were photographed using high resolution digital camera to ascertain and validate their genus and/or species. The conservation status of all identified species was determined/confirmed using DENR Administrative Order 2017-11 (DAO 2017-11) and 2017 International Union for the Conservation of Nature (IUCN) Red List of Threatened Species.
Terrestrial Fauna	<ul style="list-style-type: none"> Survey for terrestrial fauna was also conducted together with the study on terrestrial vegetation. Wildlife transects were established to confirm other species existing along other habitats. In cases where the species cannot be identified in the field, pictures were taken using high resolution digital camera to ascertain and validate their genus and/or species.
Hydrology/Flood Modelling	<ul style="list-style-type: none"> Use of data from the National Mapping and Research Information Authority (NAMRIA), Philippine Atmospheric, Geophysical and Astronomical Service Administration (PAGASA), and Mines and Geosciences Bureau (MGB). Use of meteorological data sourced from the PAGASA Science Garden. Flood modeling was conducted using Direct Rainfall Model (DRM) an integrated hydrological and hydraulic modeling computation that directly applies rainfall on the catchment to generate runoff which is simultaneously routed downstream across the topographic 2D grid.
Physical Oceanography	<ul style="list-style-type: none"> Numerical modelling was employed to assess the coastal currents and water movement for different wind speed and directions, as well as different tidal conditions (spring and neap tides), and potential impact on the water quality of the project, specifically changes in the ambient water temperature due to the release of warm water at the outfall. Post-processing of the interpolated bathymetry of the areas covering the project site was conducted using GIS.
Water Quality	<ul style="list-style-type: none"> The assessment made use of the EPRMP 2008 report, Self-Monitoring Reports (SMR for the recent 5 years), Compliance Monitoring Reports (CMR for the recent 5 years), and primary water sampling (5 effluent water, 6 marine water, and 2 groundwater). Used DAO 2016-08 as standard reference.
Marine Ecology	<ul style="list-style-type: none"> For benthic profile, Line Intercept (LIT) method by English et al. (1997). Transects were laid haphazardly on the reef flat by divers in SCUBA. Total length of the transect was set at 100m or until a sand patch is hit. Category of lifeforms under the transect were determined by collecting a series of photos of the transect line with underwater camera set at continuous shooting.



Module	Description
	<ul style="list-style-type: none"> Using the same transect, fish community was determined using Fish Visual Census (FVC). For each of the sampling site, 30L of water was collected at the surface using bucket. The collected water was passed through a 250µm plankton net and collected filtrate at the cod end of the net was transferred to sample bottles, treated with 1% formalin.
Meteorology	<ul style="list-style-type: none"> Use of meteorological data sourced from PAGASA Science Garden. Other relevant information gathered from PAGASA is the climate and typhoon frequency maps and the 2020 and 2050 climate projection (Climate Change in the Philippines, 2011).
Air Quality	<ul style="list-style-type: none"> Two sets of air quality sampling were done to cover both the wet and dry seasons in five (5) stations. 24-hour sampling of Total Suspended Particulates (TSP), NO_x, SO_x, and PM₁₀ and 1-hour sampling for trace metals were employed. The ambient air quality at the Project site was assessed according to the DENR Administrative Order (DAO) 2000-81 or the Implementing Rules and Regulations (IRR) of the Clean Air Act of 1999.
Noise	<ul style="list-style-type: none"> Noise levels were measured in each of the five (5) ambient air stations using a non-integrating type 2 sound level meter. Sixty-four instantaneous noise readings were taken at each station. The minimum, maximum, mean, and median noise values were determined from the readings. The median noise level at each station was compared to applicable noise standards.
People	<ul style="list-style-type: none"> Use of Barangay-level data based on recent barangay profiles and municipal-level data from CLUP of Villanueva and desktop researches. Conduct of Household Perception Survey, Focus Group Discussions (FGD), and Key Informant Interview (KII).

2.6 Public Participation

DAO 2017-15 or the “Guidelines on Public Participation Under the Philippine Environmental Impact Statement (EIS) System” entail projects under the Philippine Environmental Impact Statement System (PEISS) to conduct meaningful public participation in the various stages of the EIA process. The EIA was participated by stakeholders from the host communities of Barangays Katipunan, San Martin, and Poblacion I and leaders of some local organizations.

Pre-scoping activities started in October 2019. The activities include the initial stakeholder identification, conduct of Information, Education, and Communication (IEC), and pre-scoping survey which were conducted in each of the affected areas to determine the level of awareness of the stakeholders about the proposed project.

The Public Scoping Meeting was held on April 12, 2021 from 10:00am to 12:00nn at the San Martin Covered Court, in the Municipality of Villanueva, Misamis Oriental while members of the EMB and Gaia South joined via Zoom. Interest groups invited for the Public Scoping were identified following DAO 2017-15. The meeting documented the issues and concerns of the proposed project by sector: Land, Water, Air, and People. **Annex ES2** includes the Public Scoping Report indicating the analysis of the issues raised during the meeting.



2.7 Delineation of Impact Areas

Based on the proposed site development plan of PSC and its projected operation, the impact area of the proposed Ore Blend and New Berth Facility Project is confined only within the existing site located in Phividec Industrial Estate in the Municipality of Villanueva, Province of Misamis Oriental, Mindanao Island.

3.0 EIA SUMMARY

3.1 Summary of Baseline Characterization

Table ES5 below presents the baseline characterization of the proposed project area and its community.

Table ES5. Summary of the environmental and socio-economic profile

Module	Description
Land Use	<ul style="list-style-type: none"> Based on the CLUP of the Municipality of Villanueva, the proposed project site is within the designated industrial zone, thus there is no conflict in land use.
Pedology	<ul style="list-style-type: none"> Within the PSC project area only one (1) soil type exist - the San Manuel Loam. San Manuel Loam is characterized as a slightly acidic soil with moderate to high fertility but has low organic matter content. Soil reaction is medium acid (pH 6.1). Nitrogen is medium (0.1-0.2%), Organic matter is low (1.96-2.96%), Phosphorus and Potassium is low (0.020-0.026%) and (0.08-0.09%) respectively. The natural fertility of this soil is low to moderate. The analyzed Hg and Cd are below the detection limit. Hexavalent Chromium of the soil is only <0.10 which is way below the contamination level of 2 mg/kg.
Geology/ Geomorphology	<ul style="list-style-type: none"> Five rock units underlie the project area: Upper Miocene Opol Formation, the Pliocene Indahag Limestone, the Pleistocene Bukidnon Formation, and the Recent Cagayan Terrace Gravel and Quarternary Alluvium. The main structural features in the area are two (2) northwest-trending faults along the course of the Tagoloan River. The northern fault is shorter and cuts through rocks of the Cagayan Terrace Gravel that bound the river to the north. The longer, southern fault is referred to in more recent literature as the Cabanglasan Fault. The major landforms that dominate the area: deltaic plain, alluvial terrace and hilly to rigged terrain.
Terrestrial Flora	<ul style="list-style-type: none"> Overall, the diversity within the project site was considered low. The vegetation within the proposed Ore Yards 5, 6 & 7 is generally considered as secondary forest. The proposed new berth facility area is generally open with only about seven (7) trees. The tree inventory revealed a total of 2,272 individuals belonging to 28 species from 14 families. In terms of frequency, the most abundant was alim (<i>Melanolepis multiglandulosa</i>) with 783 counts. The estimated stand volume is 3,454.10 m³. The generated overall Shannon-Weiner (H') diversity value of 2.03 was computed (Fernando Classification, 1998), and is considered low. There were 22 indigenous species recorded in the area. In terms of importance value, antipolo (<i>Artocarpus blancoi</i>) was the most ecologically important species within the proposed ore yards.
Terrestrial Fauna	<ul style="list-style-type: none"> The total number of wildlife recorded is 71 constituting one (1) species of amphibian, 56 avian fauna, five (5) mammals, and nine (9) species of



Module	Description
	<p>reptiles, including bird species observed outside the transects but within or adjacent to the study area.</p> <ul style="list-style-type: none"> • Low species count in the area can be attributed to the existence of a gravel road used by locals and nearby industries. • Notable species of bird observed in the area are the Philippine Duck and Wandering Whistling Duck that were observed in the marshy area on the other side of the PSC fence, protected by the adjoining STEAG. • The total number of mammalian fauna recorded is five (5), belonging to two (2) families constituting five (5) genera. The number of Volant mammals observed consisted of only four (4) species of fruit bat – the rousette fruit bat, greater musky fruit bat (most abundant), short nosed fruit and the lesser musky fruit bat. • Only one (1) species of frogs/toads were noted. The number of reptilian species documented during the survey is only nine (9). • The diversity value (H') of all the transects ranges from 2.42 to 2.68. Low values of dominance index among the transects illustrate improved diverseness along transect sites. • Out of the 71 species of wildlife recorded, about 23% of the wildlife species are endemic to the Philippines, most of which are species of birds. • All the species recorded indicated IUCN conservation status of least concern except for the Philippine Duck, Philippine Collared Dove, and Philippine Sailfin Lizard, which have vulnerable status.
Hydrology	<ul style="list-style-type: none"> • Four drainage systems flow in the vicinity of the project site in a dendritic patterns and discharge at Macalajar Bay – Taganga Creek, Tagbalitang Creek, Pugaan River and Tagoloan River. • With a catchment area covering 168,843 has, the Tagoloan River constitutes the largest river system in the vicinity. • A total of 12 wells were identified. PSC owns Wells 1 to 6, which are located within their premises. • The water-bearing formations in the areas consist of the highly permeable sand and gravel layers within the Quarternary Alluvium and Cagayan Terrace Gravel. These are prolific aquifers capable of producing more than 40 L/s water. • The groundwater level in the deltaic plain, coastal plain and flood plain is generally shallow. The well inventory shows static water levels of less than 10 mbgs, which is substantiated by the shallow depths of the wells.
Physical Oceanography	<ul style="list-style-type: none"> • The model runs revealed that the general trend is that the depth-averaged currents inside the Bay splits into two (2) directions in the areas near the mouth of Tagoloan River. A greater portion of water movement flows southwards following the coastal configuration towards the innermost portion of the Bay then continued along the coasts of Cagayan de Oro, into the area of Laguindingan and back into the open area of Bohol Sea. • Point sources of tracers were continuously released in the coastal vicinity of the proposed jetty port of the project with a discharge rate of 1,000 m³ per hour with concentrations of 10,000mg/L for a one-month period (for both summer and wet season scenarios). • For the <i>amihan</i> wind conditions, the model predicts that the tracer plume propagates in an elliptical pattern with its major axis directing towards the northeast and southwest of the release point. • The spreading of low-concentrated tracer plumes is mainly directed towards the northeastern coastal area of the project.
Water Quality	<ul style="list-style-type: none"> • The results show that none of the heavy metals were detectable in the effluents released to the bay. • Organic pollutants represented by BOD and COD were within the guide



Module	Description
	<p>values, with the latter only showing a range of 9 to 25mg/L.</p> <ul style="list-style-type: none"> • The TSS were below the guide value of 100mg/L, ranging only from 3 to 8mg/L. • Benzene, toluene, and xylene (BTEX), and cyanide were not detected in the effluents. • Overall, PSC's monitoring results show that pollutant parameters which were monitored from January 2017 to March 2021 did not exceed the guideline values for discharge into Class SC water as provided by DAO 2016-08. • For marine water quality, the results indicate that none of the heavy metals analyzed were present in the samples. All other parameters were within the Class SC guide values with exception of fecal coliform which were found to be above 200 MPN/100 ml in most of the stations. • For groundwater quality, presence of heavy metals such as Pb, As, and Hg were not detected. All other parameters such as pH, fecal coliform, TSS, and O&G were within the standards.
Marine Ecology	<ul style="list-style-type: none"> • Total coral cover of MW1 is at 55.24% dominated by massive lifeforms. • The pillar recruits mostly the massive <i>Porites</i> but is also covered almost entirely of algal assemblage and other invertebrates. Although sparse, the recruitment of corals on the pillar indicates presence of viable reproducing coral colonies. • Algal assemblage and abiotic factors occur at the same rate from MW3 with only 24.66% coral cover. • Much of the reef is covered with sediment covered algal assemblage indicating the site is impacted anthropologically. • MW1 has the highest number of fish species among the sites having 36 species in 14 families. • From all sites, there is a limited occurrence of commercially important or target species. These are three (3) species of Scaridae (parrotfish) and a species of Siganidae (rabbitfish). • The Villanueva municipal waters has a reported fish catch of 7.3 tons in 2021. The level went down from 7.5 tons in 2020 and 8.5 tons in 2019. • Looc MPA is the only declared protected area in the municipal waters. • The total abundance of plankton ranges from 80,000 to more than 140,000 cells per liter with about 90% of the abundance being due to Chaetoceros.
Meteorology	<ul style="list-style-type: none"> • Based on PAGASA Lumbia Airport monitoring station, the project site received the greatest amount of rainfall in the months of June of October with about 200mm of rainfall per month. • The normal temperature at the project site ranges from about 21°C to 33 °C. • The normal wind speed at the site is 1 to 4 mps 99% of the time. Wind at the project site comes from the South 45.5% of the time at speed range of 1 to 4 m/s and from the north 30.3% of the time at wind speed range of 1 to 4 m/s. • In the average, the province of Misamis Oriental experiences only one cyclone per annum.
Air Quality and Noise	<ul style="list-style-type: none"> • All results are within the CAA standards for both one-hour and 24-hour averaging time for TSP and PM₁₀. • For 1-hr sampling NO₂ is present in relatively low concentrations while SO₂ was almost undetected with <0.29 µg/Ncm in all stations except for AQ1 during the second sampling while for 24-hour averaging time, SO₂ concentrations in AQ1, AQ2, and AQ3 range from 2 to 5 µg/nm. • Most of the heavy metals were not detected to very low values. The concentration of Pb was detected ranging from 0.08 to 0.12ug/nm, As from <0.09 to 0.07ug/nm, Cr⁺⁶ from <0.1 to 0.04ug/nm, Cd from <0.02



Module	Description
	<p>to 0.20ug/nm, and Hg from <0.01 to 0.004ug/nm.</p> <ul style="list-style-type: none"> • For noise, AQ1 and AQ5 have exceeded the maximum allowable noise levels for Class A areas in all time periods. While the dominant noise sources are pedestrians and passing vehicles which are common to all stations, AQ1 and AQ5 are identified to be particularly areas with high activities (e.g., construction and Zumba activities in AQ1 during the monitoring period. AQ2, AQ3, and AQ4 are within the allowed daytime levels. • Based on the monitoring data of PSC, monitored criteria pollutants and heavy metals are within the prescribed standards for ambient air quality. • For the monitored Heavy metals (Cu, Cr⁶⁺, Ni, Pb, Zn, Fe, and Cd), mostly undetected with the exception of some heavy metals. Cu was detected in 3Q-2016 at the station near the ore yard. Zn was detected in both perimeter boundary and residential monitoring stations during 3Q-2019 and 1Q-2020. Fe was also detected 1Q and 3Q-2016 and 1Q-2020 while Cd was detected 3Q-2019. • For the monitored noise level, the last five (5) years shows that the noise levels at the perimeter is below the maximum allowed levels.
People	<p><u>Municipality of Villanueva</u></p> <ul style="list-style-type: none"> • In a population projection made by the PSA 2015 data, the population of Villanueva will increase to 45,109 by the year 2025. • The Municipality has a 58.84% working population. • Water in the municipality was sourced by the households from their own use faucet community water system (46%) and standard faucet community water system (34%). • The predominant causes of morbidity were bites followed by wounds and acute respiratory infection. The other causes of morbidity were hypertension, cystitis, boils urinary tract infection, impetigo, and tuberculosis. • In 2020, the most common cause of death in the Municipality was the undetermined natural death. Other documented cases are cardiovascular disease, chronic hypertensive vascular disease, and hypertensive vascular disease. • About 97% of the households were served with safe water based on the 2020 data of the RHU every household has access to sanitary toilets. • The crime incidence of Villanueva has gone down from 2013-2017. • The creation of the Phividec Industrial Estate paved the way for allocating almost one third of the land areas of Barangay Tambobong, Balacanas, San Martin, Dayawan and Katipunan for the establishment of industries and businesses. • The LGU operates a Level III local waterworks system which has a total of 3,088 connections with 97% of these as domestic consumers, 2% as commercial and less than 1% as individual users. <p><u>Barangay Katipunan</u></p> <ul style="list-style-type: none"> • The IRA of Brgy. Katipunan exhibited an increasing trend in the years 2017. In 2017, the IRA which was reported to be PhP3,676,000 increased to PhP5,959,368 within a five-year period in 2021. • The 2021 profile showed that there are about 1,883 households in the area with 2,586 families. • The major means of transportation in the barangay are through public utility jeepneys, motorized “sikad” and motorcycle. • The common causes of mortality in the barangay include cardio respiratory arrest, chronic obstructive pulmonary disease (COPD), diabetes mellitus, and accidents. <p><u>Barangay San Martin</u></p> <ul style="list-style-type: none"> • The IRA for 2021 is P6,988,000 while the share they get from real



Module	Description
	<p>property taxes is PhP1.4M.</p> <ul style="list-style-type: none"> • The population in 2021 is 5,568. • About 1,565 families are being served by the Cagayan Electric Power and Light Company, Inc (CEPALCO). • The leading causes of morbidity in 2021 include fever, cough, colds and skin lesions among others. • The leading causes of death include acute cardio-respiratory arrest, COPD, and diabetes. <p><u>Barangay Poblacion I</u></p> <ul style="list-style-type: none"> • Based on the 2020 profile, the barangay's population was 3,750. • About 3% of the population were recipients of 4Ps; 6% belonged to senior citizen, and 2% were classified as PWD. • The means of transportation used by the barangay include jeepney, motorcycle, bus and Bajaj or the three-wheel motorcycle. <p><u>Result of the Perception Survey</u></p> <ul style="list-style-type: none"> • Majority of the respondents from Poblacion 1 (55.56%) and Katipunan (59.46%) were identified as the household heads. • About 68% of the respondents are female. • Sixty-two percent of the respondents belonged to 35-59 years old and are mostly married. • Thirteen percent of the respondents were able to graduate from college. • About 98% of the interviews were Higaonon. • Income source was highest in Brgy. Poblacion I (83.33%). • Majority (16%) reported that they get income from being employed in the barangay or government offices, 10% from businesses, 8% from being employed as professionals. • The monthly income ranges from P7,251 to 10,000 for the majority of the respondents. • The highest expense was for food of more than PhP10,000 (5% of the respondents) and P3,000-5,000 (for 35% of the respondents). • About 51% of the respondents abstracted water from their faucets connected from the local government supply while 9% fetched water from community faucets. • About 85% reported that they were connected to a power source while 15% was not. • Approximately 67% from Poblacion 1, 9% in San Martin , and 11% in Katipunan have flush type toilets. • Ninety-two percent stated that they owned their houses. • About 59% of the respondents stated that the lack of job opportunities in their locality was a concern they faced while 19% mentioned that they did not encounter problems in their barangays. • Majority if the respondents highlighted the good governance of the leaders in their respective communities most especially for San Martin (51.11%) and Katipunan (75.68%). • About 78% of the women in the three (3) barangays were into selling or vending consumer items, 8% from sewing or dress-making, while 5% were employed, and 0.9% in farming activities. • Lack of income opportunities is one of the issues of women in the community. About 52% did not experience any issue or concern. • The possible activities for women as stated during the survey include participation in livelihood programs (43%) while 36% mentioned provision of community service. • The most common causes of mortality in the past five (5) years include hypertension, heart attack, and diabetes.



Module	Description
	<ul style="list-style-type: none"> Majority of the respondents had their waste collected by garbage trucks of the LGU unit. The method of disposal includes burying the trash in the soil (3%), piled or composted (1%) and burned (4%). Segregation is being practiced by 96% of the respondents. Majority of the respondents mentioned that there were no observed changes in the environment in the last five (5) years. The changes which have been observed on water resources focused on poor water quality, low water pressure and occurrence of floods; on air, foul smelling atmosphere, skin allergies, illnesses and warm air temperature. About 44% of the respondents from Poblacion 1 felt contentment with the current attributes of the environment. Majority of the respondents (91%) were aware about PSC.

3.2 Summary of Alternatives

Table ES6 shows the summary of the of project alternatives.

Table ES6. Project alternatives of the proposed PSC Expansion Project

Aspect	Standard Criteria	Options Considered	Assessment
Siting	<ul style="list-style-type: none"> Location Availability Land use Susceptibility to natural occurrences 	<p>The proposed project shall be situated within Phividec Industrial Estate in the Municipality of Villanueva, Province of Misamis Oriental.</p> <p>No other alternative site in Mindanao was chosen.</p>	<p>In spite of the on-going pandemic, the demand on sintered ore is still coping with the requirements of economic development. The existing PSC plant within Phividec is considered superior in terms of location as documented by in the JFE Technical Report¹. The following salient features of the site are:</p> <ol style="list-style-type: none"> Location on shipping routes to Japan for overseas iron ore resources, contributing to excellent transportation efficiency. Deep water port, enabling reduction of freight costs by use of large ships. Mild weather year-round, with virtually no typhoons or other bad weather conditions. Availability of sub-raw materials (limestone, dolomite) from nearby islands. Relationship of trust based on long history with the Philippine government. <p>The current location of PSC is located within an economic zone and have no issues in terms of land ownership or compatibility on the use of land.</p> <p>The project area is predicted to</p>

¹ JFE Technical Report 2009



Aspect	Standard Criteria	Options Considered	Assessment
			<p>be moderately vulnerable to storm surges and high water levels especially since the Bay is exposed and with large wind fetch due to the large surface area of Bohol sea.</p> <p>The project site is however far from areas with moderate to steep slopes and is therefore not under the threat of landslides.</p> <p>The project site may experience respective peak acceleration amplitudes of about 0.35g, 0.25g and 0.20g in soft soil, medium soil and rock conditions. This indicates that slight to moderate ground motion may be expected in the area in the event of an earthquake with magnitude greater than 5.0.</p> <p><u>People</u> Based on the FGDs and KIIs conducted, majority of the respondents perceived that the proposed project will not cause any harm to the communities and its immediate environment. Moreover, they also perceived the need for additional opportunities for the locals including manpower and social projects.</p>
Project type, components, and size	<ul style="list-style-type: none"> • Applicability • Process • Safety 	<p>Blending operation as it is independent from the sinter operation shall produce approximately 9MTPY.</p> <p><u>Blending yard</u> The ore blending will be set-up in four (4) yards, three (3) of which are located right beside the existing yard of PSC. All the necessary measures to ensure safety of workers will be administered. Using computerized system of process monitoring and period maintenance, efficiency and agile response to any mechanical errors will be addressed thus accident and mechanical failure will be avoided.</p> <p><u>New berth facility</u> The existing pier yard will be utilized for the development of the new berth facility. PSC will not construct a new pier area as there is still space to accommodate the new berth.</p>	<p>The proposed project is entirely the development of the ore yard which will only use conveyor systems and its auxillary facilities from the port area, establishment of a new berth facility which will just perk up the capacity of the existing berth operation as well as the improvement of the existing berth for the same purpose.</p> <p>In general, the establishment of the ore blending facility and new berth shall augment the efficiency of the entire operation of PSC.</p>
Process/		PSC considers the conventional use	PSC invests on technological



Aspect	Standard Criteria	Options Considered	Assessment
Technology		<p>of conveyor, stacker, and reclaimer. The process from the unloading of raw materials to the yard will be supported mechanically by these equipment. To ensure that fugitive dust will be suppressed in the entire process, a fully-covered conveyor system will be installed.</p> <p>PSC will use a Distributed Control System (DCS) for monitoring and controlling weight in Weighers along the BC line. On the other hand, Programmable Logic Controller (PLC) will be utilized for sequential running of motors to drive conveyors.</p> <p>The stacker, reclaimers, unloader and shiploader will have its own independent PLC system.</p> <p>The existing radar system of PSC will be utilized to monitor vessel movements not only the Main Berth but also the new berth.</p> <p>PSC maintains a Holding Station (Material Recovery Facility or MRF) used as temporary storage area for recyclable solid waste and a hazardous solid waste storage/disposal area. Hazardous wastes are temporarily stored for treatment by an EMB-accredited treater. Thus, the technical life of the temporary waste disposal facility, which is essentially for asbestos and mercury bulbs only, is approximately 25 years.</p>	<p>advancement leading to constant efficiency of plant operation. The need to acknowledge and adopt an advanced technological system guarantees high quality output.</p> <p>Since the proposed expansion includes only the construction of a new additional berth, improvement of the existing berth, and development of the ore yard facility, discharges of chemical wastes will be mainly generated from the motorpool during the construction and offices during the operations phase. These are mainly asbestos and mercury bulb. Thus, regular waste collection and treatment shall address its proper disposal.</p> <p><u>Hazardous wastes</u> The following are expected to be generated during the operation of the entire facility: Busted fluorescent lamp tubes, empty paint cans, lead-acid-batteries of vehicles, waste Oil generated during change oil of motorcycles, heavy equipment and service vehicles, and empty vulcanizing material during belt installation.</p> <p><u>Electronic wastes</u> Empty cartridge of printer ink used at office and batteries used in cameras are the major electronic wastes in the operation.</p>
Supply of raw materials	<ul style="list-style-type: none"> Source 	<p>The materials will be imported from Brazil, Canada, India, and Australia. PSC is still open to source from other countries such as the Ukraine. The Company is also searching for new source of raw materials but still with uncertainty.</p>	<p>These countries are long time source of raw materials for PSC and will continue to supply the Company as it provides the specifications required by the plant.</p> <p>PSC may consider future options depending on the economy and quality of materials, among others. Due to the very specific requirements of PSC on the raw materials, careful selection must be done to ensure that the same good quality of ore will be produced.</p>
Source of power	<ul style="list-style-type: none"> Availability Total power requirement Source 	<p>PSC generates part of its power requirement mainly through its Sinter Heat Recovery Facility and supplemented by its diesel and dual-fuel generators. The remaining requirement is sourced from power</p>	<p>The existing local supplier is capable of supplying the required power of the new facilities using its current load. Issue on power interruption even at PSC's full operation is not</p>



Aspect	Standard Criteria	Options Considered	Assessment
		<p>utility company CEPALCO (Cagayan Electric Power and Light Company). For this expansion project, a total of 1,400 kW/day of power will be consumed during the operation. During the construction phase, about 1,594,000 kW of electricity will be utilized.</p>	<p>seen to occur.</p>
Water management system	<ul style="list-style-type: none"> • Availability • Total water requirement • Source 	<p>PSC has three (3) functional deep wells within the plant. DW4 and DW6 are used for general plant operation while DW3 is only used during sintered ore loading operation.</p> <p>For this expansion project, the sources of water will only be Deep wells No. 4 and 6. The proposed project will entail a total of 17,220 m³ of water per month enough to be utilized for general cleaning works, dust control, and equipment cooling.</p> <p>Currently, PSC has the following pollution control facilities:</p> <ul style="list-style-type: none"> • Main gas handling equipment • Room dedusting equipment • 1 unit of Electrostatic Precipitator (39,000 m³/min) Lurgi Type • 1 unit of Electrostatic Precipitator (18,000 m³/min) Lurgi Type • Drainage System • Pavement under belt conveyor • Pavement around sinter area • Unloader water spray system • Belt conveyor cover, chute • Main blower silencer • Ignition fan silencer • Water circulating system • Waste Disposal Facility • Hazardous waste storage/disposal area <p>To maximize and ensure that the proposed ore blending and new berth project will cause no significant impacts to the people and environment, a conveyor system shall be installed from the ore blending yard to the berth facility. The main conveyor system will be covered to prevent fugitive dust. PSC will allocate about PhP21.9M for the installation of belt covers to ensure further environmental protection.</p>	<p>Deep wells 4 and 6 will be able to provide the needed water of the additional facility from construction to operation phase. As minimal usage for general maintenance of the ground and equipment, including domestic use, the existing water source will be adequate. Moreover, issue on water competition may be one of the concerns that may be raised by the surrounding communities, which need to be addressed by PSC by ensuring that adequate supply of water will be available in the impact areas even at plant's full operation. Careful study on water availability including discharges must be implemented.</p>
Manpower	<ul style="list-style-type: none"> • Method of hiring • Available positions 	<p>During the operation period, the additional workers for the ore blending and new berth facilities will be hired directly by the Company while others will be engaged thru a manpower agency.</p>	<p>One of the most pressing issues in any kind of development is the need for manpower and benefits of the local community from the project in terms of employment. Especially during the construction period, both skilled</p>



Aspect	Standard Criteria	Options Considered	Assessment
		There will be a total of 22,476 man-months for various workers consisting of mechanical, electrical and civil workers during the construction period. During the operations phase, additional positions such as administrative, maintenance, and engineering, among others will be opened to qualified individuals giving priority to local dwellers.	and non-skilled workers will be needed, PSC must ensure that local dwellers who are qualified to do the job will be properly screened and accepted to do the job. The use of a manpower agency as also considered by the Company must be a venue to guarantee that workers from other areas will be the least priority.

No Project Option

Without the proposed project, PSC will continue with its current operation but with limited capacity and bound to lose the opportunity to improve its competitiveness against domestic sinter plants in Japan resulting to decline of its business operation and activities here in Philippines.

3.3 Summary of Impacts and Mitigation

The potential impacts of the projects and the corresponding mitigating measures based on the result of analysis are presented in *Chapter 2* of this EPRMP report. The proposed mitigating measures were integrated into an Impacts Management Plan (IMP) presented in *Chapter 3* as **Table 3.2.1** as well as the findings on residual impacts, defined as impacts that remain after the proposed mitigation measures are implemented is presented as **Table 3.2.2**. An Environmental Monitoring Plan (EMoP) was formulated and presented in Chapter 6 as **Table 6.1.8**. The Project Environmental Monitoring and Audit Prioritization Scheme (PEMAPS) Questionnaire is included as **Annex ES6**. **Table ES7** depicts the impact management plan of PSC.

3.4 Summary of Risks and Uncertainties

The operation of PSC including the proposed expansion, ore blend facility and new berth facility is not expected to cause significant risk to land, air, water and surrounding communities. In fact, the proposed expansion is an enhancement of the existing amenities of PSC to maximize its operations and improve the condition of the berth facilities that will accommodate maximum high volume efficiency for raw materials to the site and delivery of products to other countries.

In terms of geological characteristics, the great distances between the project site and the active volcanoes – Mount Hibok-hibok in the Province of Camiguin (67 to 120km), only the ashfall hazard is discussed herein. At these distances, it is judged that the proposed project site would be within the **low risk zone** when the ash column, in case of violent eruptions, is about 10,000 meters high, in which case the zone may receive less than 1 centimeter thick of ashfall. The thickness of the ashfall over the proposed project site, however, would be dependent on the prevailing wind direction or regional wind circulation pattern at the time of eruption, the height of ash column, as well as the duration of violent eruption.

Records show that Zones 1 to 4 of Katipunan are most likely situated near the river channel northeast and east of PSC compound where Moderate-, High- and Very High flood



susceptibility potentials based on the detailed landslide and flood hazards map of Villanueva (MGB 2015). Moreover, the same reference reflected that PSC Compound is generally classified with low landslide susceptibility and is far from areas with moderate to steep slopes therefore low chances of flooding is expected to occur within the complex.

Emission of particulate matter is expected due to loading/unloading of raw materials and sintered products during the operation phase due to fugitive dust emission from the conveyor belt. However, proper mitigating measures including regular spraying in the area, arc roofing of the conveyor system and maintenance of green corridors in the area will help suppress dust.



Table ES7. Impact management plan of PSC

Activity	Environmental Component Likely to be Affected	Potential Impacts	Enhancement/ Mitigating Measure	Efficiency of Measures	Responsible Entity	Cost	Commitment/ Guarantee
Pre-construction							
<ul style="list-style-type: none"> Application of permits/licenses/clearances from LGUs and national government agencies 	PEOPLE	<ul style="list-style-type: none"> Continuing partnership and coordination with host barangays and LGU of Villanueva 	<ul style="list-style-type: none"> PSC shall continue its IEC efforts and inform/ update respective the barangay councils of the host barangays and the LGU of Villanueva regarding the project and requirements for permits and/or clearances. 	100% compliance to local and national requirements	ComRel PSC HRGA ComRel	Part of the permit application cost	IEC Plan
<ul style="list-style-type: none"> Site clearing of the proposed ore blend yard area including leveling and surveying /Site preparation for new berth facility area 	PEOPLE	<ul style="list-style-type: none"> Safety of the workers/staff within the premises of PSC 	<ul style="list-style-type: none"> Fences shall be installed around the perimeter of the project area. Notice should be placed to inform about the workers/staff on the dangers of falling debris. Security guards shall be stationed at the entry/exit to prevent unauthorized people from entering the construction site. 	100% compliance to PSC's existing Safety Management Protocol – zero LTA and Fatal Accident	PSC Safety	Part of the construction cost	Construction Agreement
Construction							
<ul style="list-style-type: none"> Site clearing and leveling including removal of vegetation Construction of structural foundation for conveyors Installation of equipment at the yard including the conveyor system 	LAND	<ul style="list-style-type: none"> Removal of vegetation cover -a total of 2,421 trees is expected to be felled Change in habitat 	<ul style="list-style-type: none"> A 100% tree inventory within the developable areas was already conducted and PSC will secure tree cutting permit for the trees that will be felled. PSC shall replace a maximum total of 242,100 seedlings in compliance to the provision of DENR DMO 2012-02 that a total of 100 seedlings shall be replaced for every naturally grown tree that is felled. Seedlings will be planted along the remaining open areas within the PSC and along reforestation areas in agreement with DENR's National Greening Program. Restocking and supplementary planting of endemic trees along existing green belts and corridors of PSC. Earthballing and transplanting of Narra trees observed at the proposed ore blending area. Collaboration with other Phividec locators such as STEAG for the continued protection of adjoining forested areas and marsh habitats to serve as refuge for displaced wildlife. 	100% compliance to PD 705 and tree cutting permit conditions	PSC Laboratory & Envi Dept PCO	Part of the construction cost	<ul style="list-style-type: none"> Include in TOR of contractor Tree cutting permit MOA by and between PSC, PHIVIDEC, Province of Misamis Oriental, Villanueva LGU and DENR Region X, PENRO and CENRO and other stakeholders including adjoining municipalities for participation in NGP
<ul style="list-style-type: none"> Site clearing and leveling including removal of vegetation Construction of structural foundation for conveyors Installation of equipment at the yard including the conveyor system (Continuation...) 	LAND	<ul style="list-style-type: none"> Loss of topsoil and occurrence of soil erosion Soil compaction 	<ul style="list-style-type: none"> Preferential scheduling of clearing and excavations works during the drier months (Low rainfall in Type IV areas is during the months of March to May). Maximize cut-and-fill method of site preparation and road construction. Minimal topsoil spoils will be generated since excavation will be limited to structural foundations mainly isolated footings. Spoils shall be hauled to designated run-off- controlled temporary spoil holding/storage area located North northwest of the proposed ore blending facility (N8°34'32.06", E124°45'32.77") with an approximate area of 6,000 m². Immediate re-vegetation of exposed areas, which will not be utilized in subsequent development. Establishment of appropriate erosion control measure such as concreting or use of gabions specifically along the drainage channel (approximately 1,250m in length with a width of 3m and a depth of 2 meters) southwest of the proposed ore blending yard. Limiting the spoil height to 5m and covering the spoils with sacoline or tarpaulin especially during rainy months (June to September in Type IV areas). 	100% compliance to the EMP	<ul style="list-style-type: none"> PSC Lab & Envi Dept PCO PSC Planning Department Contractor 	Part of the construction cost	<ul style="list-style-type: none"> Include in the TOR of the contractor Topsoil storage and management plan SMR
<ul style="list-style-type: none"> Site clearing and leveling including removal of 	LAND	<ul style="list-style-type: none"> Loss of topsoil and occurrence of soil erosion 	<ul style="list-style-type: none"> Utilization of dredged materials from the new berth for backfilling and leveling of the ore blending yard. 	100% compliance to the EMP	<ul style="list-style-type: none"> PSC Lab & Envi Dept PCO 	Part of the construction	<ul style="list-style-type: none"> Include in the TOR of the contractor

Activity	Environmental Component Likely to be Affected	Potential Impacts	Enhancement/ Mitigating Measure	Efficiency of Measures	Responsible Entity	Cost	Commitment/ Guarantee
<ul style="list-style-type: none"> vegetation Construction of structural foundation for conveyors Installation of equipment at the yard including the conveyor system (Continuation...) 		<ul style="list-style-type: none"> Soil compaction 			<ul style="list-style-type: none"> PSC Planning Department Contractor 	cost	<ul style="list-style-type: none"> Topsoil storage and management plan SMR
		<ul style="list-style-type: none"> Generation of construction debris 	<ul style="list-style-type: none"> Construction spoils such as waste concrete/mortar will be brought to the 6,000 m² temporary spoil holding/storage area (N8°34'32.06", E124°45'32.77"). PSC shall look for contractors/entities willing to accommodate the debris for backfilling purposes or other end use. Woodwastes materials, waste rubber and plastic scraps shall be brought to the existing 40m² PSC sorting, storage and disposal facility (N8°34'32.34", E124°45'57.73"). The sorting facility shall classify the waste materials for recycling or for proper disposal. Scrap metals shall be brought to the existing 4,600 m² PSC scrapyard (N8°34'24.93", E124°46'5.14") for temporary storage PSC shall look for third-party scrapyards to broker scrap metals for recycling. 	100% compliance to the EMP	<ul style="list-style-type: none"> PSC Lab & Envi Dept PCO PSC Planning Department Contractor 	Part of the construction cost	<ul style="list-style-type: none"> Include in the TOR of the contractor Construction debris management plan SMR
		<ul style="list-style-type: none"> Solid waste generation 	<ul style="list-style-type: none"> New workers, laborers and contractors shall be oriented on PSC's existing solid waste management protocol (EMP 07 (IM-APX-003-07) for proper waste segregation of solid waste. PSC shall put in place trash bins segregated according to the type of waste (biodegradable, non-biodegradable, recyclable and hazardous waste) in the new project/work area similar to the waste segregated bins set in the existing area. Each bin shall be regularly collected by PSC garbage truck with segregated compartment. The collected solid waste shall be brought to the existing PSC sorting, storage and disposal facility (N8°34'32.34", E124°45'57.73") (N8°34'32.34", E124°45'57.73"). (Please see subsequent management and mitigation process in the solid waste management at the operation of PSC Envi Dept, Laboratory, PSC Solid Waste Sorting Facility and Hazardous Waste Storage Area) 	100% compliance to PSCs EMP and integrated manual in compliance to RA 9003	<ul style="list-style-type: none"> PSC Lab & Envi Dept PCO 	Part of the construction cost	<ul style="list-style-type: none"> PSC Integrated Manual EMP-07 (IM-APX-003-07)
<ul style="list-style-type: none"> Site clearing and leveling including removal of vegetation Construction of structural foundation for conveyors Installation of equipment at the yard including the conveyor system (Continuation...) 	LAND	<ul style="list-style-type: none"> Generation of hazardous wastes <ul style="list-style-type: none"> busted bulbs used oil oil contaminated wastes containers previously containing toxic chemical substances lubrication wastes lead and lead compounds (vehicle batteries, spent battery packs) assorted compounds (dry battery cell) welding butts pathogenic wastes 	<ul style="list-style-type: none"> Set-up of additional hazwaste container bins in identified areas where hazwaste generation is likely to occur such as the temporary facility of contractors. Regular collection of hazardous waste generated during construction to be brought to the PSC sorting facility. Hazardous shall be classified and sorted according to its classification and shall be temporarily stored in the 260 m². PSC hazardous waste storage area (N8°34'31.81", E124°45'59.01") (N8°34'32.34", E124°45'57.73"). (Please see subsequent management and mitigation process in the hazardous waste management at the operation of PSC Envi Dept, Laboratory, PSC Solid Waste Sorting Facility and Hazardous Waste Storage Area) 	100% compliance to PSCs EMP and integrated manual in compliance to RA 6969	<ul style="list-style-type: none"> PSC Lab & Envi Dept PCO PSC Planning Department Contractor 	Part of the construction cost	<ul style="list-style-type: none"> PSC Integrated Manual EMP-03 (IM-APX-003-03) Hazardous Wastes Management, Treatment and Disposal Program Hazwaste Generator ID Hazwaste Treater and EMB Certificate of Treatment including Hazwaste Transport Permit
	WATER	<ul style="list-style-type: none"> Increase in surface run-off and silt deposition 	<ul style="list-style-type: none"> Construction of a 1.6 hectares (4-chambered) new south settling pond (N8°34'28.68", E124°45'29.71") with an approximate water holding capacity of 66.58m³ prior to the start of site grading and leveling of the area intended for the ore blending yard. Improvement of southern drainage channel (approximately 	100% compliance to PSCs EMP in compliance to RA 9275	<ul style="list-style-type: none"> PSC Lab & Envi Dept PCO PSC Planning Department Contractor 	Part of the construction cost	<ul style="list-style-type: none"> Include in TOR of contractor PSC Run-off Water and drainage Mgmt. Plan



Activity	Environmental Component Likely to be Affected	Potential Impacts	Enhancement/ Mitigating Measure	Efficiency of Measures	Responsible Entity	Cost	Commitment/ Guarantee
			<p>1,250 meters in length with a width of 3m and a depth of 2m) and run-off canals within the periphery of the construction area for ore blending area (Yard 5,6&7).</p> <ul style="list-style-type: none"> Construction of a new drainage channel (approximately 900 min length with a width of 3m and a depth of 2m) in the northern side to collect run-off emanating from the proposed Yard 8. The southern drainage channel will eventually be connected by PSC to the proposed new south settling pond as the existing south settling pond will be condemned once ore blending yard is established while the new northern drainage channel will be connected to the existing northern settling pond (N8°34'41.10", E124°45'51.01"). Establishment of peripheral berm within the ore yard to prevent run-off from directly discharging to the nearest discharge channel. Construction of slightly slope ore blending yard with the inclination towards the center to collect run-off allowing the flow towards southeast first to the drainage channel to give ample time for the run-off laden with soil and ore particles to settle and diverted to a sump pit (N8°34'3.49", E124°45'53.44") thereby collecting silt materials and particles thereby before meandering the drainage channel. In the northern drainage channel, sump pit will be established prior to confluence with the 1st chamber of the northern settling pond (N8°34'34.82", E124°45'59.01"). PSC is encouraged to consider construction of additional collector sumps or silt fences especially during the construction phase of the ore blending yards. Secure the necessary discharge permit for the development of the new south settling pond. 				
	WATER	<ul style="list-style-type: none"> Water Pollution 	<ul style="list-style-type: none"> New workers, laborers and contractors shall be oriented on PSC's existing wastewater management program (EMP 04 (IM-APX-003-04). Set-up of three (3) portalets for the contractors and laborers temporary facility near the construction area for the ore blending yards and conveyor system For sanitary purposes, civil contractors shall be tasked to maintain cleanliness and ensure that accumulated wastewater shall be collected and treated before it reaches full capacity. Wastewater that will be generated from the said portalets will be hauled and treated by a third party pozo negro siphoning service provider. The service provider will be monitored as to the treatment and disposal and will be compelled to follow PSC Wastewater Mgmt Plan Protocol. PSC also has several existing toilets connected to septic tanks that were located the vicinity. The said toilets can be utilized by workers and employees involved in the construction. Aquatic plants and reeds were allowed to grow in the existing northern settling pond to facilitate phytoremediation. This practice shall also be introduced in the new southern settling pond once established. The existing material handling area has two (2) existing oil and water separator with a total holding capacity of 5.88m³ sufficient to trap oil that may spill near the construction area. PSC also has an installed oil and water separator with a 	100% compliance to PSCs EMP in compliance to RA 9275 and RA 6969	<ul style="list-style-type: none"> PSC Lab & Envi Dept PCO PSC Planning Department Contractor 	Part of the construction cost	<ul style="list-style-type: none"> PSC Integrated Manual EMP-04 (IM-APX-003-04) Include in TOR of contractor Discharge Permit Phil Coast Guard approved Oil Spill Contingency Plan



Activity	Environmental Component Likely to be Affected	Potential Impacts	Enhancement/ Mitigating Measure	Efficiency of Measures	Responsible Entity	Cost	Commitment/ Guarantee
			total holding capacity of 4.52m ³ at the Motorpool Facility in Material Handling Dept. where PMS and repair for vehicles is done. The facility shall also be utilized during the construction of the ore yard and conveyor system. <ul style="list-style-type: none"> Oil and water separators are regularly monitored and maintained by PSC to ensure its effectivity and functionality. PSC practices putting bins containing saw dust and sand that can be sprinkled in case of accidental spillage of soil. PSC also practices lining of limestone and HDPE in the final discharge of the northern settling pond and this shall also be implemented in the new southern settling pond. An existing oil spill management protocol is being implemented by PSC and this shall be strictly implemented during the construction of the ore blending yard and conveyor system. PSC also has procured universal spill kits and sorbents such as polypropelene as well as oil containment boom that can be utilized for any untoward oil spillage. 				
<ul style="list-style-type: none"> Site clearing and leveling including removal of vegetation Construction of structural foundation for conveyors Installation of equipment at the yard including the conveyor system (Continuation...) 	AIR	<ul style="list-style-type: none"> Dust Generation 	<ul style="list-style-type: none"> Regulation of vehicle speed to 40km/hr within the construction areas. Strict implementation of tarpaulin covering for delivery and haul trucks within and outside the construction area. Wind barriers or covering of tarpaulin or sacoline materials shall be installed over excavated and dredged spoils. Sprinkling of water along exposed areas especially during dry seasons. PSC has two (2) water trucks to perform this activity with a capacity of 5.5kL per water truck. Water spraying activity will be done once in the early morning and once in the mid-afternoon. During drier days, additional spraying can be done before noon. The expected water requirement for the activity is 22,000 to a maximum of 33,000L per day. The deepwell pumps of PSC have a capacity of 176,000L per day. PSC however has an option to utilize the impounded water at the settling ponds to lessen abstraction of water from their deepwell. 	100% compliance to PSCs EMP in accordance with RA 8749	<ul style="list-style-type: none"> PSC Lab & Envi Dept PCO PSC Planning Department Contractor 	Part of the construction cost	<ul style="list-style-type: none"> PSC Integrated Manual EMP-01 (IM-APX-003-01), EMP-01A (IM-APX-003-01A), EMP-02 (IM-APX-003-02) Include in TOR of contractor
	AIR	<ul style="list-style-type: none"> Increase in gaseous emission 	<ul style="list-style-type: none"> Regular maintenance of vehicles and construction equipment. Designating a PSC envi staff and security guards to monitor and record heavy equipment during construction for smoke belchers Identified smoke belchers shall be brought to the Motorpool Maintenance Facility for immediate overhaul of vehicles and heavy equipment. Conduct of periodical smoke emission testing for vehicles and construction equipment. Orientation of new employees and contractors regarding air quality management program included in EMP 01A (IM-APX-003-1A). PSC shall require contractor that vehicles and heavy equipment that will be used on site are Euro 4 or Euro 5 compliant machine. 	100% compliance to PSCs EMP in accordance with RA 8749	<ul style="list-style-type: none"> PSC Lab & Envi Dept PCO PSC Planning Department Contractors 	Part of the construction cost	<ul style="list-style-type: none"> PSC Integrated Manual EMP-01 (IM-APX-003-01), EMP-01A (IM-APX-003-01A), EMP-02 (IM-APX-003-02) SMR EMB Permit to Operate Include in TOR of contractor
		<ul style="list-style-type: none"> Increase in noise level 	<ul style="list-style-type: none"> Maintain equipment deployment schedule. Regular maintenance of vehicles and construction equipment. Use of mufflers for heavy equipment, trucks and machines. Immediate overhaul at the warehouse for all vehicles emitting severe noise. Orientation of new employees and contractors regarding 	100% compliance to PSCs EMP in accordance with NEPC standard	<ul style="list-style-type: none"> PSC Lab & Envi Dept PCO PSC Planning Department Contractors 	Part of the construction cost	<ul style="list-style-type: none"> PSC Integrated Manual EMP-08 (IM-APX-003-08) SMR Include in TOR of contractor



Activity	Environmental Component Likely to be Affected	Potential Impacts	Enhancement/ Mitigating Measure	Efficiency of Measures	Responsible Entity	Cost	Commitment/ Guarantee
			noise management program included in EMP 08 (IM-APX-003-08).				
<ul style="list-style-type: none"> Pile driving and dredging at the new berth facility Construction of new berth Installation of material handling equipment Installation of rubber dock fenders, bollards, signages etc 	LAND	<ul style="list-style-type: none"> Generation of solid waste, dredged materials and hazardous wastes <ul style="list-style-type: none"> busted bulbs used oil oil contaminated wastes containers previously containing toxic chemical substances lubrication wastes welding butts 	<ul style="list-style-type: none"> New workers, laborers and contractors shall be oriented on PSC's existing solid waste management protocol (EMP 07 (IM-APX-003-07) for proper waste segregation of solid waste. PSC shall put in place trash bins segregated according to the type of waste (biodegradable, non-biodegradable, recyclable and hazardous waste) in the new berth construction area similar to the waste segregated bins set in the existing area. Each bin shall be regularly collected by PSC garbage truck with segregated compartment. The collected solid waste shall be brought to the existing PSC sorting, storage and disposal facility (N8°34'32.34", E124°45'57.73"). <i>(Please see subsequent management and mitigation process in the solid waste and hazardous waste management at the operation of PSC Envi Dept, Laboratory, PSC Solid Waste Sorting Facility and Hazardous Waste Storage Area)</i> 	100% compliance to PSCs EMP in compliance to RA 9003, and RA 6969	<ul style="list-style-type: none"> PSC Lab & Envi Dept PCO PSC Planning Department Contractors 	Part of the construction cost	<ul style="list-style-type: none"> PSC Integrated Manual EMP-04 (IM-APX-003-04) EMP-05 (IM-APX-003-05) EMP-07 (IM-APX-003-07) Include in TOR of contractor Hazardous Waste Generators ID Phil Coast Guard approved Oil Spill Contingency Plan
	WATER	<ul style="list-style-type: none"> Wastewater generation 	<ul style="list-style-type: none"> New workers, laborers and contractors shall be oriented on PSC's existing wastewater management program (EMP 04 (IM-APX-003-04). Set-up of one (1) portalet for the contractors and laborers temporary facility near the construction area for the new berth. For sanitary purposes, civil contractors shall be tasked to maintain cleanliness and ensure that accumulated wastewater shall be collected and treated before it reaches full capacity. Wastewater that will be generated from the said portalet will be hauled and treated by a third party pozo negro siphoning service provider including the three (3) portalets at the construction area for the ore blending facility. The service provider will be monitored as to the treatment and disposal and will be compelled to follow PSC Wastewater Mgmt Plan Protocol (PSC EMP-04 (IM-APX-003-04). PSC also has existing toilets connected to septic tanks that were located near the existing berth and BBASI Office. The said toilets can be utilized by workers and employees involved in the construction. 	100% compliance to PSCs EMP in compliance to RA 9275 and RA 6969	<ul style="list-style-type: none"> PSC Lab & Envi Dept PCO PSC Planning Department Contractors 	Part of the construction cost	<ul style="list-style-type: none"> PSC Integrated Manual EMP-04 (IM-APX-003-04), EMP-05 (IM-APX-003-05), E9MP-09 (IM-APX-003-04) Include in TOR of contractor Discharge Permit Phil Coast Guard approved Oil Spill Contingency Plan
	WATER	<p>Marine Ecology</p> <ul style="list-style-type: none"> Marine habitat disturbance Increased turbidity of adjacent marine waters due to possible deposition of debris and silt from construction Dredging activities stir up fine sediment which increases turbidity. This reduces light penetration which in turn reduces photosynthetic rates lowering DO concentration in the water column Resuspension of heavy metals and other persistent 	<ul style="list-style-type: none"> Proper delineation of construction boundaries for the new berth ensures that construction shall be confined to that area alone and will not damage the adjoining marine habitat. PSC shall use silt or turbidity curtains to contain water suspended silt within the dredging/piling area. The silt curtain can be made of vinyl barrier with float above and chain ballast below and shall be anchored in the benthic zone or the marine bottom. Dredging shall be done in two phases enclosing it in a 300 to 400-m silt curtain (perimeter), the said protective measure will be transferred to the second phase once piling and dredging is done in the first phase. Dredged materials shall be brought to a temporary spoil holding/storage area (N8°34'32.06", E124°45'32.77"). approximately 450m southwest of the proposed new berth Monitoring of turbidity outside the dredging area using 	100% compliance to PSCs EMP in compliance to RA 9275	<ul style="list-style-type: none"> PSC Lab & Envi Dept PCO PSC Planning Department Contractors 	Part of the construction cost	<ul style="list-style-type: none"> PSC Silt Curtain Deployment Plan PCG approved Oil Spill Contingency Plan PSC Silt and Dredged Materials Management Plan



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		pollutants trapped in sediments; may also result to algal blooms as a result of nutrient release due to silt suspension.	Secchi disk to check the effectiveness of silt curtain. <ul style="list-style-type: none"> PSC shall also consider establishing a temporary settling pond (N8°34'40.77", E124°45'40.48") to pump out and collect settled silts in case of heavy turbidity. This will ensure that re-suspended silt, heavy metals and persistent pollutant are arrested and transferred to the storage area. Mitigation measures to minimize siltation (cited above) will also reduce the impact on dissolved oxygen. Wave action also naturally increases the DO in the marine water. Since the silt curtain has an installed float/pontoon above the water and enclosing the whole dredging/piling area, the float can effectively contain oil slick and sheen from accidental spillage and prevent it from spreading into adjoining areas. A staff from the PSC Laboratory & Envi Dept shall be tasked to monitor the environmental condition within and adjacent to the dredging/piling area. PSC already have universal spill kits, oil recovery equipment and sorbent dispersants that they can immediately use in case of oil spillage. PSC is on the process of securing an approval from the Philippine Coast Guard (PCG) for their Oil Spill Contingency Plan. PSC shall limit activities on pillar thrusting to daytime to allow settlement of organisms within the adjacent area. This will also build behavioral response among mobile species to seek refuge in the area at night and move out during the day. 				
	AIR	<ul style="list-style-type: none"> Increase in gaseous emissions 	<ul style="list-style-type: none"> New workers, laborers and contractors shall be oriented on PSC's existing air quality management program (EMP 01A (IM-APX-003-01A)). Regular maintenance of tug boats, vehicles and construction equipment. Prior to deployment of dredger and pile driving machine, PSC will inspect the pile driving machine and will secure certificate of assurance from the contractor that the machine is in good working condition. Maintain equipment deployment schedule. Proper operation of pile driving machine, dredger, tugboat and heavy equipment/vehicle. PSC shall require contractor that vehicles and heavy equipment that will be used on site are Euro 4 or Euro 5 compliant machine. 	100% compliance to PSCs EMP in accordance with RA 8749	<ul style="list-style-type: none"> PSC Lab & Envi Dept PCO PSC Material Handling PSC Mechanical Department Contractor 	Part of the construction cost	<ul style="list-style-type: none"> PSC Integrated Manual EMP-01 (IM-APX-003-01), EMP-01A (IM-APX-003-01A), EMP-02 (IM-APX-003-02) SMR EMB Permit to Operate Include in TOR of contractor
		<ul style="list-style-type: none"> Increase in noise level 	<ul style="list-style-type: none"> Maintain equipment deployment schedule. Regular maintenance of vehicles and construction equipment. Use of mufflers for heavy equipment, trucks and machines. Immediate overhaul at the mechanical repair shop for all vehicles emitting severe noise. Orientation of new employees and contractors regarding noise management program included in EMP 08 (IM-APX-003-08). 	100% compliance to PSCs EMP in accordance with NEPC standard	<ul style="list-style-type: none"> PSC Lab & Envi Dept PCO PSC Mechanical Department Contractor 	Part of the construction cost	<ul style="list-style-type: none"> PSC Integrated Manual EMP-08 (IM-APX-003-08) SMR PSC OHS Include in TOR of contractor
	PEOPLE	<ul style="list-style-type: none"> Occupational awareness 	<ul style="list-style-type: none"> Promote training/Orientation of new employees, laborers and contractors. 	100% compliance to PSCs OHS	<ul style="list-style-type: none"> PSC Safety Office 	Part of the construction cost	<ul style="list-style-type: none"> Include in TOR of contractor PSC OHS Manual
		<ul style="list-style-type: none"> Occupational risk 	<ul style="list-style-type: none"> Posting of safety warning and danger signs in strategic locations within the construction site. 				
		<ul style="list-style-type: none"> Health Risk in relation to Covid-19 	<ul style="list-style-type: none"> Regular testing of workers from Covid-19. Immediate quarantine/isolation of workers with symptoms. 	100% compliance to PSCs Covid	<ul style="list-style-type: none"> PSC Safety Office, Security and Clinic 	Part of the construction	<ul style="list-style-type: none"> Include in TOR of contractor



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			<ul style="list-style-type: none"> Periodic Health Awareness on Covid-19 prevention. Strict monitoring of visitors (with proper Covid-19 testing) prior to access to PSC facilities. 	Action Plan		cost	<ul style="list-style-type: none"> IATF approve Covid Safety Protocol Manual
		<ul style="list-style-type: none"> Increase in local employment 	<ul style="list-style-type: none"> Prioritization of local hiring. 	100% compliance to PSCs Hiring Plan	PSC	Part of the construction cost	<ul style="list-style-type: none"> HR Hiring Procedure Manual
		<ul style="list-style-type: none"> Generation of government taxes 	<ul style="list-style-type: none"> Prompt payment of correct and proper taxes and appropriate of necessary permits. 	100% compliance based on applicable local and national laws	PSC	Part of the construction cost	<ul style="list-style-type: none"> Proof of Tax payment
		<ul style="list-style-type: none"> Increased traffic due to hauling trucks, vehicles and equipment going to and from the site 	<ul style="list-style-type: none"> Installation of safety barriers (e.g. fence) and signages. Drafting and implementation of Traffic management plan(including ingress/egress of vehicles at construction site), including properly trained personnel to manage traffic flow. Implement pedestrian walkways near the construction site. Ensure that contractor's vehicles, trucks and equipment are of good working condition through timely inspections. Ensure that the contactor employs properly trained crew and operators, especially drivers of large equipment like cranes and earth moving vehicles. 	100% compliance to PSCs traffic management plan	PSC Safety Office and Security	Part of the construction cost	<ul style="list-style-type: none"> Compliance Monitoring Report Traffic Management Plan
Operation							
Operation of the following: <ul style="list-style-type: none"> Existing Berth New Berth facility Ore Stockyard (Existing 1 to 4) Ore-blending Yard (5 to 8) Conveyor Systems (Existing and new) 	LAND	<ul style="list-style-type: none"> Generation of solid waste, raw material spoil, lumpy ores and pellets 	<ul style="list-style-type: none"> Strict implementation of PSC's existing solid waste management protocol (EMP 07 (IM-APX-003-07)). Periodic re-orientation of workers, laborers and contractors on PSC's EMP 07 (IM-APX-003-07) for proper waste segregation and handling of generated solid waste in the berthing facility, raw material yard, ore blending area and contractors facility. PSC Lab & Envi Dept has put in place trash bins segregated according to the type of waste (biodegradable, non-biodegradable, recyclable and hazardous waste) in each work area. Regular inspection of collection bins and replacement of worn-out solid waste collection drums to fiber glass containers. Each bin shall be regularly collected by PSC garbage truck with segregated compartment. The collected solid waste shall be brought to the existing PSC sorting, storage and disposal facility (N8°34'32.34", E124°45'57.73"). <i>(Please see subsequent management and mitigation process in the solid waste management at the operation of PSC Envi Dept, Laboratory, PSC Solid Waste Sorting Facility and Hazardous Waste Storage Area)</i> Installation of diverter plates with automatic recovery conveyor on the uploaders. Manual gathering of accumulated spillage materials after completion of unloading. Installation of strainers at discharge end to filter spilled solids. Provision of revetments and embankments at raw material yard (1-4) and ore blending (5-8). Manual collection of spillage at the conveyor route. 	100% compliance to PSCs EMP in compliance to RA 9003	<ul style="list-style-type: none"> PSC Lab & Envi Dept PCO PSC Planning Department Contractor 	Part of the operation cost	<ul style="list-style-type: none"> PSC Integrated Manual EMP-07 (IM-APX-003-07) Include in TOR of contractor
	LAND	<ul style="list-style-type: none"> Generation of Hazardous Wastes <ul style="list-style-type: none"> busted bulbs used oil 	<ul style="list-style-type: none"> Regular collection of hazardous waste generated in the daily operation to be brought to the PSC sorting facility. Hazardous wastes shall be classified and sorted according to its classification and shall be temporarily stored in the 	100% compliance to PSCs EMP in compliance to RA 9275 and RA 6969	<ul style="list-style-type: none"> PSC Lab & Envi Dept PCO PSC Planning Department Contractor 	Part of the operation cost	<ul style="list-style-type: none"> PSC Integrated Manual EMP-04 (IM-APX-003-04), EMP-05 (IM-APX-003-05), E9MP-09 (IM-APX-



Activity	Environmental Component Likely to be Affected	Potential Impacts	Enhancement/ Mitigating Measure	Efficiency of Measures	Responsible Entity	Cost	Commitment/ Guarantee
		<ul style="list-style-type: none"> oil contaminated wastes containers previously containing toxic chemical substances lubrication wastes welding butts 	260m ² . PSC hazardous waste storage area (N8°34'31.81", E124°45'59.01"). (Please see subsequent management and mitigation process for hazardous wastes indicated in the operation of PSC Envi Dept, Laboratory, PSC Solid Waste Sorting Facility and Hazardous Waste Storage Area)				003-04) <ul style="list-style-type: none"> SMR Hazwaste Generators ID Include in TOR of contractor
	WATER	<ul style="list-style-type: none"> Water Pollution 	<ul style="list-style-type: none"> Periodic re-orientation of workers, laborers and contractors on PSC's EMP 04 (IM-APX-003-04) on wastewater management program and EMP 04 (IM-APX-003-06) water conservation program in the berthing facility, raw material yard, ore blending area and contractors facility. Periodic inspection of drainage and collector's sump pit in the existing berth facility. Installation of drainage and collector's sump pit in the new berth facility to collect silt and divert run-off water. Periodic inspection of two (2) oil/water separator with a total holding capacity of 5.88m³ at the raw material handling station. Installation of an additional oil/water separator with a total holding capacity of 2.94m³ at the new berth facility. All run-off water emanating from Yard 8 shall be diverted to North Settling Pond. While all run-off water emanating from Yards 1-7 shall be diverted to the new South Settling Pond. Periodic inspection of north and south settling pond for its condition including water depth, access road, influent and effluent canals, filtering weir material replacement. Quarterly monitoring of essential effluent parameters (relative to the operation of PSC) discharging from the North Settling Pond and New South Settling Pond shall be monitored monthly. Periodic re-orientation of workers, laborers and contractors on PSC's EMP 05 (IM-APX-003-05) on Oil Spill Containment, Recovery and Clean-up Program. Use of floats and pontoons to contain oil slick and sheen in case of accidental spillage and prevent it from spreading into adjoining areas. A staff from the PSC Envi Dept shall be tasked to monitor the environmental condition within and adjacent to the berth facilities. PSC already have universal spill kits, oil recovery equipment and sorbent dispersants that they can immediately use in case of oil spillage, additional procurement of such kits for the new berth facility. PSC also has existing toilets connected to septic tanks that were located near the existing berth and BBASI Office that can be also be utilized by the workers assigned at the new berth facility. PSC shall require all berthing vessels that in case of offloading sewage waters, the chartered vessel will coordinate with PSC for tapping an accredited wastewater treater. Since majority of the vessels are delivering raw materials, de-ballasting will not take place in the berth facility but instead they will intake ballast water. For chartered vessels that will deliver the sintered ore, pellets and blended ores, PSC may request the chartered vessel to conduct partial de-ballasting at the international waters prior to entry at the country's maritime waters in accordance with the IMO protocol. 	100% compliance to PSCs EMP in compliance to RA 9275 and RA 6969	<ul style="list-style-type: none"> PSC Lab & Envi Dept PCO PSC Planning Department Contractor 	Part of the operation cost	<ul style="list-style-type: none"> PSC Integrated Manual EMP-04 (IM-APX-003-04), EMP-05 (IM-APX-003-05), E9MP-09 (IM-APX-003-04) Include in TOR of contractor Discharge Permit Phil Coast Guard approved Oil Spill Contingency Plan



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			<ul style="list-style-type: none"> PSC shall collate information on the chartered vessel ballast water treatment system and request for record of de-ballasting activity in accordance with the IMO protocol. In the event of de-ballasting at the berth facilities, PSC shall monitor the activity provided that the chartered vessel has an installed ballast water treatment system. For vessels that have chemical ballast treatment system, PSC may require information on the chemicals used for treatment and ensure that the chemicals are included in the PCL list. PSC may request in advance information on such prior to the chartering date. 				
	AIR	<ul style="list-style-type: none"> Air Pollution 	<ul style="list-style-type: none"> Periodic re-orientation of workers, laborers and contractors on PSC's EMP 01 (IM-APX-003-01), EMP 01A (IM-APX-003-01A) and EMP 02 (IM-APX-003-02) on air quality management program for point source dust, ambient gas and ambient dust. Operation of unloader spray system (10m³ per hour) during unloading activity. Installation of another unloader water spray system (10m³ per hour) at the new berth facility. PSC has an existing 85 conveying lines, 79 of which are covered by arc roofing. PSC emphasizes on covering the conveyors that are used for transporting dry and fine materials. PSC shall also install arc roofing for all the conveying route of the conveying system for ore blending as it is projected to convey dry and fine materials to and from the chartered vessels. Covering of tarpaulins or sacoline of raw materials, ore blended stockpiles and lumpy ores and pellets during drier months. Periodic inspection of/survey/replacement of defective/worn out conveyor belt rubber hood curtain plate to ensure that it is functioning properly and prevent spillage that may generate fugitive dust. Regular maintenance of belt conveyor tip cleaner /head scraper. Use of non-stick belt conveyor to reduce raw material mix spillage. Paving of conveying route for easy maintenance especially during collection of unwarranted spillage. Manual collection in case of spillage for all the conveying lines. Periodic washing and spraying along paved and unpaved roads and grounds especially during dry season. Continued use of industrial mobile vacuum cleaner. Periodic inspection/ survey/ replacement of damaged water spray. Quarterly monitoring of PM₁₀. Use of low sulfur fuel oil for tugboats. Use of Euro 4 or Euro 5 fuel for service vehicles. Conduct of Ringelmann test for emission of all vehicles utilized in the operation of berthing facilities and conveyor system. Immediate overhaul of smoke belching vehicles at the mechanical area. 	100% compliance to PSCs EMP in compliance to RA 8749	<ul style="list-style-type: none"> PSC Lab & Envi Dept PSC Material Handling PSC Mechanical Department 	Part of operation cost	<ul style="list-style-type: none"> PSC's EMP 01 (IM-APX-003-01), EMP 01A (IM-APX-003-01A) and EMP 02 (IM-APX-003-02) SMR Permit to operate
	AIR	<ul style="list-style-type: none"> Noise generation 	<ul style="list-style-type: none"> Periodic re-orientation of workers, laborers and contractors on PSC's EMP 08 (IM-APX-003-08) for noise management program including use of ear muffs in noise prone areas. 	100% compliance to PSCs EMP in accordance with NEPC standard	<ul style="list-style-type: none"> PSC Lab & Envi Dept PCO PSC Material Handling Dept. 	Part of the operation cost	<ul style="list-style-type: none"> PSC Integrated Manual EMP-08 (IM-APX-003-08)



Activity	Environmental Component Likely to be Affected	Potential Impacts	Enhancement/ Mitigating Measure	Efficiency of Measures	Responsible Entity	Cost	Commitment/ Guarantee
			<ul style="list-style-type: none"> Regular maintenance of vehicles and heavy equipment. Installation of mufflers for heavy equipment, trucks and machines. Immediate overhaul at the mechanical repair shop for all vehicles emitting severe noise. 		<ul style="list-style-type: none"> PSC Mechanical Department Contractor 		<ul style="list-style-type: none"> SMR PSC OHS Include in TOR of contractor
	PEOPLE	<ul style="list-style-type: none"> Occupational awareness Occupational risk Health risk in relation to Covid-19 	<ul style="list-style-type: none"> Promote Training/Orientation of new workers and employees. Posting of safety warning and danger signs. Prioritization of local hiring. Regular testing of workers from Covid-19. Immediate quarantine/isolation of workers with symptoms. Periodic Health Awareness on Covid-19 prevention. Strict monitoring of visitors (with proper Covid-19 testing) prior to access to PSC facilities. 	100% compliance to PSCs OHS	PSC Safety PSC HRGA	Part of operation cost	<ul style="list-style-type: none"> EMS SMR IEC IATF approved Covid 19 safety Protocol
Operation of the following: <ul style="list-style-type: none"> Sintering Facility Burnt Lime Facility Pelletizing Ore Facility (for development) 	LAND	<ul style="list-style-type: none"> Generation of solid waste and hazardous wastes 	<ul style="list-style-type: none"> Strict implementation of PSC's existing solid waste management protocol (EMP 07 (IM-APX-003-07)). Periodic re-orientation of workers, laborers and contractors on PSC's EMP 07 (IM-APX-003-07) for proper waste segregation and handling of generated solid waste in the sintering facility, burnt lime facility and the proposed pelletizing ore facility. PSC has put in place trash bins segregated according to the type of waste (biodegradable, non-biodegradable, recyclable and hazardous waste) in each work area. Regular inspection of collection bins and replacement of worn-out solid waste collection drums to fiber glass containers. Each bin shall be regularly collected by PSC garbage truck with segregated compartment. The collected solid waste shall be brought to the existing PSC sorting, storage and disposal facility (N8°34'32.34", E124°45'57.73"). Regular collection of hazardous waste generated in the daily operation to be brought to the PSC sorting facility. Hazardous wastes shall be classified and sorted according to its classification and shall be temporarily stored in the 260 sq.m. PSC hazardous waste storage area (N8°34'31.81", E124°45'59.01"). <i>(Please see subsequent management and mitigation process for hazardous wastes indicated in the operation of PSC Envi Dept, Laboratory, PSC Solid Waste Sorting Facility and Hazardous Waste Storage Area)</i> 	100% compliance to PSCs EMP in compliance to RA 9003, and RA 6969	<ul style="list-style-type: none"> PSC Lab & Envi Dept PCO PSC Planning Department Contractor 	Part of the operation cost	<ul style="list-style-type: none"> PSC Integrated Manual EMP-04 (IM-APX-003-04) EMP-05 (IM-APX-003-05) EMP-07 (IM-APX-003-07) Include in TOR of contractor Hazardous Waste Generators ID Phil Coast Guard approved Oil Spill Contingency Plan
		Water Pollution	<ul style="list-style-type: none"> Periodic re-orientation of workers, laborers and contractors on PSC's EMP 04 (IM-APX-003-04) on wastewater management program and EMP 04 (IM-APX-003-06) water conservation program in the Sintering Facility, Burnt Lime Facility and Pelletizing Ore Facility (for development). Periodic inspection of drainage and collector's sump pit in the perimeters of the existing Sintering Facility and Burnt Lime Facility and for the Pelletizing Ore Facility once established. Periodic inspection and cleaning of the following oil/water separator. <ul style="list-style-type: none"> Sintering facility with 1.13m³ capacity Burnt lime facility with 0.20m³ capacity. All run-off water emanating from sintering facility and burnt lime facility shall be diverted to North Settling Pond to allow run-off laden with silt to settle. Periodic inspection of north and south settling pond for its 	100% compliance to PSCs EMP in compliance to RA 9275 and RA 6969	<ul style="list-style-type: none"> PSC Lab & Envi Dept PCO PSC Planning Department Contractor 	Part of the operation cost	<ul style="list-style-type: none"> PSC Integrated Manual EMP-04 (IM-APX-003-04), EMP-05 (IM-APX-003-05), E9MP-09 (IM-APX-003-04) Include in TOR of contractor Discharge Permit Phil Coast Guard approved Oil Spill Contingency Plan



Activity	Environmental Component Likely to be Affected	Potential Impacts	Enhancement/ Mitigating Measure	Efficiency of Measures	Responsible Entity	Cost	Commitment/ Guarantee
			condition including water depth, access road, influent and effluent canals, filtering weir material replacement. <ul style="list-style-type: none"> Annual desilting of the north settling pond. Silt and spoils shall be deposited temporarily near the first compartment of the North Settling Pond (N8°34'33.56", E124°45'59.13"). Quarterly monitoring of essential effluent parameters (relative to the operation of PSC) discharging from the North Settling Pond and New South Settling Pond shall be monitored monthly. Periodic re-orientation of workers, laborers and contractors on PSC's EMP 05 (IM-APX-003-05) on Oil Spill Containment, Recovery and Clean-up Program. Periodic inspection and maintenance including siphoning of sludge of septic tanks in the sintering facility and the burnt lime facility. PSC practices putting bins containing saw dust and sand that can be sprinkled in case of accidental spillage of soil in work areas. PSC also practices lining of limestone and HDPE in the final discharge of the north settling pond. An existing oil spill management protocol is being implemented by PSC and this shall be strictly implemented. PSC also has procured universal spill kits and sorbents such as polypropylene as well as oil containment boom that can be utilized for any untoward oil spillage. 				
		Air pollution - Point Source Dust - Gaseous Emission - Ambient Dust	<ul style="list-style-type: none"> Periodic re-orientation of workers, laborers and contractors on PSC's EMP 01 (IM-APX-003-01), EMP 01A (IM-APX-003-01A) and EMP 02 (IM-APX-003-02) on air quality management program for point source dust, ambient gas and ambient dust. Continuous monitoring of Sintering machine bed surface condition. Regular cleaning of burner guns Monitoring on the improvement of sintering process operation with emphasis on complete combustion of bunker oil Continuous operation, rehabilitation and maintenance of the following air pollution control measures <ul style="list-style-type: none"> Main gas handling equipment <ul style="list-style-type: none"> Waste gas main duct Waste Gas Cyclone Main Blower Double damper Room dedusting cyclone (Cooler dedusting) <ul style="list-style-type: none"> Room dedusting equipment (8 multi cyclones) Cooler dedusting equipment (4 units dry type) Vertical double dampers for room dedusting cyclone (12 sets) 1 unit electrostatic precipitator (Main) 2 units electrostatic precipitator (Room EP) stack Main EP Smoke Stack (70 meters) Periodic declogging of VDDs, dedusting cyclones dust chamber. Patching of holes and replacement of deteriorated ducts. Periodic inspection/survey/replacement of defective room dedusting system dust dropper damper/seals. Periodic replacement of Bag Filter of Kiln # 1, #2 and #3. Standardize automatic operation of REP Hopper Auto 	100% compliance to PSCs EMP in compliance to RA 8749	<ul style="list-style-type: none"> PSC SNT Mgr PSC Envi Dept PCO PSC Production Dept (QA/QC) PSC Mechanical Department 	Part of operation cost	<ul style="list-style-type: none"> PSC's EMP 01 (IM-APX-003-01), EMP 01A (IM-APX-003-01A) and EMP 02 (IM-APX-003-02) SMR Permit to operate PSC Rehabilitation Plan



Activity	Environmental Component Likely to be Affected	Potential Impacts	Enhancement/ Mitigating Measure	Efficiency of Measures	Responsible Entity	Cost	Commitment/ Guarantee
			<ul style="list-style-type: none"> Vibrator Control. Periodic monitoring of rapping insulator at MEP and REP. Installation of level indicator alarm at dust hopper. Installation of sampling point at Sinter Pot Machine Stack. Installation of three (3) sets of multi cyclone and 3 sets of electrostatic precipitator for the process emission control of the proposed pelletizing plant. Installation of hoods and suction ducts in Room EP for the proposed pelletizing plant. Use of low sulfur BFO (Sinter, Kilns) and Carbon (Sinter, Kilns). Continued use of burnt lime in sintering for SO₂ gas removal in flue gas. Continued use of Fuel Catalyst at BLM Kiln/ SM IF. Use of fuel catalyst for PSC tugboats & heavy mobile equipment. Performance test of ORSAT Gas Analyzer @ main stack. Measurement of Sulfur & FC content for Anthracite Coal. Periodic conduct of stack sampling with RATA. Periodic repair/rehabilitation of SM Ignition Furnace Hood. Continued crushing of burnt lime in enclosed area. Reduction of gas temperature using a heat exchanger in the burnt lime facility prior to release into the atmosphere. Periodic monitoring of bag filters in the burnt lime facility to capture dust carried by the emitted gas. Quarterly monitoring of ambient air concentration (PM₁₀, SO₂, NO_x and CO). Regular conduct of studies and research that could optimize operation of sintering, burnt lime and pelletizing. Manual collection in case of spillage in the sintering in burnt lime facility . Periodic washing and spraying along paved and unpaved roads and grounds especially during dry season. Continued use of industrial mobile vacuum cleaner. Periodic inspection/ survey/ replacement of damaged water spray. Use of Euro 4 or Euro 5 fuel for service vehicles. Conduct of Ringelmann test for emission of all vehicles utilized in the operation of berthing facilities and conveyor system. Immediate overhaul of smoke belching vehicles at the mechanical area. 				
		<ul style="list-style-type: none"> Noise Generation 	<ul style="list-style-type: none"> Periodic re-orientation of workers, laborers and contractors on PSC's EMP 08 (IM-APX-003-08) for noise management program including use of ear muffs in noise prone areas. Continued maintenance of main blower and ignition fan silencer for noise attenuation that effectively reduce to <80dB. Cleaning of CLF during preventive maintenance shutdown. Regular maintenance of vehicles and heavy equipment. Installation of mufflers for heavy equipment, trucks and machines. Immediate overhaul at the mechanical repair shop for all vehicles emitting severe noise. 	100% compliance to PSCs EMP in accordance with NEPC standard	<ul style="list-style-type: none"> PSC Lab & Envi Dept PCO PSC Mechanical Department Contractor 	Part of the operation cost	<ul style="list-style-type: none"> PSC Integrated Manual EMP-08 (IM-APX-003-08) SMR PSC OHS Include in TOR of contractor
	PEOPLE	<ul style="list-style-type: none"> Occupational awareness Occupational risk Health risk in relation to Covid-19 	<ul style="list-style-type: none"> Periodic re-orientation of workers, employees and contractors. Posting of safety warning and danger signs. Regular testing of workers from Covid-19. Immediate quarantine/isolation of workers with symptoms. 	100% compliance to PSCs OHS	PSC Safety	Part of operation cost	<ul style="list-style-type: none"> EMS SMR IEC IATF approved Covid 19 safety



Activity	Environmental Component Likely to be Affected	Potential Impacts	Enhancement/ Mitigating Measure	Efficiency of Measures	Responsible Entity	Cost	Commitment/ Guarantee
			<ul style="list-style-type: none"> Periodic Health Awareness on Covid-19 prevention. Strict monitoring of visitors (with proper Covid-19 testing) prior to access to PSC facilities. 				Protocol
Operation of Heat Recovery Boiler, Steam Turbine, Generator Set and Tank farm		<ul style="list-style-type: none"> Generation of solid waste and hazardous wastes 	<ul style="list-style-type: none"> New workers, laborers and contractors shall be oriented on PSC's existing solid waste management protocol (EMP 07 (IM-APX-003-07) for proper waste segregation of solid waste. PSC shall put in place trash bins segregated according to the type of waste (biodegradable, non-biodegradable, recyclable and hazardous waste) in the SHR and back up genset area. Each bin shall be regularly collected by PSC garbage truck with segregated compartment. The collected solid waste shall be brought to the existing PSC sorting, storage and disposal facility (N8°34'32.34", E124°45'57.73"). Regular collection of hazardous waste generated during construction to be brought to the PSC sorting facility. Hazardous shall be classified and sorted according to its classification and shall be temporarily stored in the 260 m². PSC hazardous waste storage area (N8°34'31.81", E124°45'59.01"). <i>(Please see subsequent management and mitigation process for hazardous wastes indicated in the operation of PSC Envi Dept, Laboratory, PSC Solid Waste Sorting Facility and Hazardous Waste Storage Area)</i> 	100% compliance to PSCs EMP in compliance to RA 9003, and RA 6969	<ul style="list-style-type: none"> PSC Lab & Envi Dept PCO PSC Planning Department PSC Mechanical Dept PSC ELE Dept WHSE Powerplant Dept Sinter Dept. Material Handling Administration Sub-Contractor 	Part of the operation cost	<ul style="list-style-type: none"> PSC Integrated Manual EMP-04 (IM-APX-003-04) EMP-05 (IM-APX-003-05) EMP-07 (IM-APX-003-07) Include in TOR of contractor Hazardous Waste Generators ID
		<ul style="list-style-type: none"> Water Pollution 	<ul style="list-style-type: none"> Periodic re-orientation of workers, laborers and contractors on PSC's EMP 04 (IM-APX-003-04) on wastewater management program and EMP 04 (IM-APX-003-06) water conservation program in the SHR Facility and back-up generator sets powerhouse work area. Periodic inspection and cleaning of the following oil/water separator: <ul style="list-style-type: none"> WHSE Tank Farm #1 with 1.29 m³ capacity WHSE Tank Farm #2 with 1.28 m³ capacity WHSE Tank Farm #3 with 0.96 m³ capacity Diesel Storage with 0.34 m³ capacity Recycling of used oil, filtering and blending with heavy fuel oil at sinter day tank for use at the sinter plant. All run-off water emanating from SHR Facility and back-up generator sets powerhouse work area shall be diverted to North Settling Pond. Quarterly monitoring of essential effluent parameters (relative to the operation of PSC) discharging from the North Settling Pond and New South Settling Pond shall be monitored monthly. Periodic re-orientation of workers, laborers and contractors on PSC's EMP 05 (IM-APX-003-05) on Oil Spill Containment, Recovery and Clean-up Program. Periodic inspection and maintenance including siphoning of sludge of septic tanks in the SHR Facility and back-up generator sets powerhouse. PSC practices putting bins containing saw dust and sand that can be sprinkled in case of accidental spillage of soil specifically in back-up diesel genset powerhouse. An existing oil spill management protocol is being implemented by PSC and this shall be strictly implemented. PSC has procured universal spill kits and sorbents such as polypropelene as well as oil containment boom that can be utilized for any untoward oil spillage. 	100% compliance to PSCs EMP in compliance to RA 9275 and RA 6969	<ul style="list-style-type: none"> PSC Lab & Envi Dept PCO PSC Planning Department PSC Mechanical Dept PSC ELE Dept WHSE Powerplant Dept Sinter Dept. Material Handling Administration Sub-Contractor 	Part of the operation cost	<ul style="list-style-type: none"> PSC Integrated Manual EMP-04 (IM-APX-003-04), EMP-05 (IM-APX-003-05), EMP-09 (IM-APX-003-04) Include in TOR of contractor Discharge Permit Phil Coast Guard approved Oil Spill Contingency Plan



Activity	Environmental Component Likely to be Affected	Potential Impacts	Enhancement/ Mitigating Measure	Efficiency of Measures	Responsible Entity	Cost	Commitment/ Guarantee
			<ul style="list-style-type: none"> Regular monitoring of thermal water not to exceed the 3 degrees Celsius allowed in the DAO 2016-08. Periodic inspection of HFO storage facilities including the issuing and receiving pipelines. 				
		<ul style="list-style-type: none"> Increase in gaseous emission 	<ul style="list-style-type: none"> Periodic re-orientation of workers, laborers and contractors on PSC's EMP 01 (IM-APX-003-01), EMP 01A (IM-APX-003-01A) and EMP 02 (IM-APX-003-02) on air quality management program for point source dust, ambient gas and ambient dust. The sinter waste heat recovery plant is a positive innovation of PSC operation as it utilizes the heat from the sintering process operation to be converted into electrical energy instead of releasing the waste heat directly into the atmosphere. Periodic maintenance of the SHR and back-up genset to ensure efficiency. Use of low sulphur fuel for the back-up diesel genset. 	100% compliance to PSCs EMP in compliance to RA 8749	<ul style="list-style-type: none"> PSC Lab & Envi Dept PCO PSC Planning Department Sinter Dept Powerplant Dept PSC Mechanical Dept PSC ELE Dept Material Handling Dept Sub-Contractor 	Part of operation cost	<ul style="list-style-type: none"> PSC's EMP 01 (IM-APX-003-01), EMP 01A (IM-APX-003-01A) and EMP 02 (IM-APX-003-02) SMR Permit to operate PSC Rehabilitation Plan
		<ul style="list-style-type: none"> Noise Generation 	<ul style="list-style-type: none"> Periodic re-orientation of workers, laborers and contractors on PSC's EMP 08 (IM-APX-003-08) for noise management program including use of ear muffs in noise prone areas. Installation of silencer and noise attenuators in the SHR facility. Regular maintenance of SHR facility and diesel gensets. Installation of mufflers for the diesel genset. Conduct of periodic preventive maintenance . Cleaning of CLF primarily during preventive maintenance shutdown. 	100% compliance to PSCs EMP in accordance with NEPC standard	<ul style="list-style-type: none"> PSC Lab & Envi Dept PCO PSC Planning Department Sinter Dept Powerplant Dept PSC Mechanical Dept Material Handling Dept PSC ELE Dept Sub-Contractor 	Part of the operation cost	<ul style="list-style-type: none"> PSC Integrated Manual EMP-08 (IM-APX-003-08) SMR PSC OHS Include in TOR of sub-contractor
	PEOPLE	<ul style="list-style-type: none"> Occupational awareness Occupational risk Health risk in relation to Covid-19 	<ul style="list-style-type: none"> Periodic re-orientation of workers, employees and contractors. Posting of safety warning and danger signs. Regular testing of workers from Covid-19. Immediate quarantine/isolation of workers with symptoms. Periodic Health Awareness on Covid-19 prevention. Strict monitoring of visitors (with proper Covid-19 testing) prior to access to PSC facilities. 	100% compliance to PSCs OHS	PSC Safety	Part of operation cost	<ul style="list-style-type: none"> EMS SMR IEC IATF approved Covid 19 safety Protocol
Operation of mechanical maintenance shop, electrical building and warehouse	LAND	<ul style="list-style-type: none"> Generation of solid and hazardous wastes <ul style="list-style-type: none"> busted bulbs Lead and lead compounds (vehicle batteries, UPS, spent battery packs) used oil oil contaminated wastes containers previously containing toxic chemical substances lubrication wastes welding butts WEEEs Assorted compounds (dry cell batteries) 	<ul style="list-style-type: none"> New workers, laborers and contractors shall be oriented on PSC's existing solid waste management protocol (EMP 07 (IM-APX-003-07)) for proper waste segregation of solid waste. PSC shall put in place trash bins segregated according to the type of waste (biodegradable, non-biodegradable, recyclable and hazardous waste) in the new berth construction area similar to the waste segregated bins set in the existing area. Each bin shall be regularly collected by PSC garbage truck with segregated compartment. The collected solid waste shall be brought to the existing PSC sorting, storage and disposal facility (N8°34'32.34", E124°45'57.73"). Regular collection of hazardous waste generated during construction to be brought to the PSC sorting facility. Hazardous shall be classified and sorted according to its classification and shall be temporarily stored in the 260 sq.m. PSC hazardous waste storage area (N8°34'31.81", E124°45'59.01"). <p><i>(Please see subsequent management and mitigation process for hazardous wastes indicated in the operation of PSC Envi Dept, Laboratory, PSC Solid Waste Sorting Facility and Hazardous Waste Storage Area)</i></p>	100% compliance to PSCs EMP in compliance to RA 9003, and RA 6969	<ul style="list-style-type: none"> PSC Lab & Envi Dept PCO PSC Planning Department Sinter Dept Powerplant Dept PSC Mechanical Dept PSC ELE Dept Material Handling Dept Administration Sub-Contractor 	Part of the operation cost	<ul style="list-style-type: none"> PSC Integrated Manual EMP-04 (IM-APX-003-04) EMP-05 (IM-APX-003-05) EMP-07 (IM-APX-003-07) Include in TOR of contractor Hazardous Waste Generators ID



Activity	Environmental Component Likely to be Affected	Potential Impacts	Enhancement/ Mitigating Measure	Efficiency of Measures	Responsible Entity	Cost	Commitment/ Guarantee
	WATER	<ul style="list-style-type: none"> Water Pollution 	<ul style="list-style-type: none"> Periodic re-orientation of workers, laborers and contractors on PSC's EMP 04 (IM-APX-003-04) on wastewater management program and EMP 04 (IM-APX-003-06) water conservation program in the mechanical maintenance facility, warehouse and ELE work area. Periodic inspection and cleaning of the following oil/water separator: <ul style="list-style-type: none"> 4 units of same dimension (1.0mx1.0mx1.13m) with a total capacity of 4.52m³ ELE with a total capacity of 0.74m³ Garage with a total capacity of 3.22m³ Recycling of used oil including those scooped from the oil and water separator by filtering and blending with heavy fuel oil at sinter day tank for use at the sinter plant. All run-off water emanating from warehouse shall be diverted to North Settling Pond. Quarterly monitoring of essential effluent parameters discharging from the oil & water separator specifically oil & grease parameter. Periodic re-orientation of workers, laborers and contractors on PSC's EMP 05 (IM-APX-003-05) on Oil Spill Containment, Recovery and Clean-up Program. Periodic inspection and maintenance including siphoning of sludge of septic tanks in the mechanical maintenance shop and warehouse and ELE. PSC practices putting bins containing saw dust and sand that can be sprinkled in case of accidental spillage of oil. A lot of this were observed in the Mechanical maintenance shop. An existing oil spill management protocol is being implemented by PSC and this shall be strictly implemented PSC has procured universal spill kits and sorbents such as polypropelene and a dedicated kit is supplied in the Mechanical maintenance shop. Implementation of waste exchange program with a cement plant to be used as fuel feed for the cement kilns Strict implementation of car and service vehicle designated at the mechanical maintenance area to ensure that accidental spillage of oil or grease shall be captured by the oil&water separator Periodic monitoring on the effectiveness of the oil and water separator as well as cleaning and maintenance 	100% compliance to PSCs EMP in compliance to RA 9275 and RA 6969	<ul style="list-style-type: none"> PSC Lab & Envi Dept PCO PSC Planning Department Sinter Dept Powerplant Dept PSC Mechanical Dept PSC ELE Dept Material Handling Dept Administration Sub-Contractor 	Part of the operation cost	<ul style="list-style-type: none"> PSC Integrated Manual EMP-04 (IM-APX-003-04), EMP-05 (IM-APX-003-05), EMP-09 (IM-APX-003-04) Include in TOR of contractor Discharge Permit Phil Coast Guard approved Oil Spill Contingency Plan
	AIR	<ul style="list-style-type: none"> Increase in gaseous emission 	<ul style="list-style-type: none"> Periodic re-orientation of workers, laborers and contractors on PSC's EMP 01 (IM-APX-003-01), EMP 01A (IM-APX-003-01A) and EMP 02 (IM-APX-003-02) on air quality management program for point source dust, ambient gas and ambient dust. Strict conduct of Ringelmann test for emission of all vehicles entered in the facility for repair. Routine conduct of mechanical check-up and maintenance of all PSC vehicles, trucks, heavy equipment and diesel generator sets. Immediate overhaul of smoke belching vehicles at the mechanical area. 	100% compliance to PSCs EMP in compliance to RA 8749	<ul style="list-style-type: none"> PSC Lab & Envi Dept headed by PCO PSC Planning Department PSC Mechanical Dept PSC Electrical Dept Material Handling Dept Sub-Contractor 	Part of operation cost	<ul style="list-style-type: none"> PSC's EMP 01 (IM-APX-003-01), EMP 01A (IM-APX-003-01A) and EMP 02 (IM-APX-003-02) SMR Emission test
		<ul style="list-style-type: none"> Noise generation 	<ul style="list-style-type: none"> Periodic re-orientation of workers, laborers and contractors on PSC's EMP 08 (IM-APX-003-08) for noise management program including use of ear muffs in noise prone areas. Installation of mufflers for the heavy equipment, trucks and service vehicles. 	100% compliance to PSCs EMP in accordance with NEPC standard	<ul style="list-style-type: none"> PSC Lab & Envi Dept PCO PSC Planning Department PSC Mechanical Dept PSC ELE 	Part of the operation cost	<ul style="list-style-type: none"> PSC Integrated Manual EMP-08 (IM-APX-003-08) SMR PSC OHS



Activity	Environmental Component Likely to be Affected	Potential Impacts	Enhancement/ Mitigating Measure	Efficiency of Measures	Responsible Entity	Cost	Commitment/ Guarantee
Operation of Admin Building, Kitchen (Uniflow), clinic and other offices		<ul style="list-style-type: none"> • Generation of solid and hazardous wastes <ul style="list-style-type: none"> – busted bulbs – Lead and lead compounds (UPS, spent battery packs) – containers previously containing toxic chemical substances – WEEEs – Assorted compounds (dry cell batteries) 	<ul style="list-style-type: none"> • Re-orientation of workers, laborers and contractors shall be oriented on PSC's existing solid waste management protocol (EMP 07 (IM-APX-003-07)) for proper waste segregation of solid waste. • PSC shall put in place trash bins segregated according to the type of waste (biodegradable, non-biodegradable, recyclable and hazardous waste) in the admin area. • Each bin shall be regularly collected by PSC garbage truck with segregated compartment. • The collected solid waste shall be brought to the existing PSC sorting, storage and disposal facility (N8°34'32.34", E124°45'57.73"). • Regular collection of hazardous waste generated in the regular operation shall be brought to the PSC sorting facility. • Hazardous shall be classified and sorted according to its classification and shall be temporarily stored in the 260 m². PSC hazardous waste storage area (N8°34'31.81", E124°45'59.01"). <i>(Please see subsequent management and mitigation process for hazardous wastes indicated in the operation of PSC Envi Dept, Laboratory, PSC Solid Waste Sorting Facility and Hazardous Waste Storage Area)</i> • PSC shall continue to practice Environmentally Preferable Purchasing (EPP) via Procurement Department in coordination with the Envi Dept. • PSC shall also continue to implement Product Stewardship Program as part of its ISO 14001 compliance. 	100% compliance to PSCs EMP in compliance to RA 9003, and RA 6969	<ul style="list-style-type: none"> • Material Handling Sub-Contractor • PSC Admin • Clinic • PSC Lab & Envi Dept • PCO • PSC Planning Department • Sub-Contractor 	Part of the operation cost	<ul style="list-style-type: none"> • PSC Integrated Manual EMP-04 (IM-APX-003-04) • EMP-05 (IM-APX-003-05) • EMP-07 (IM-APX-003-07) • Include in TOR of contractor • Hazardous Waste Generators ID
		<ul style="list-style-type: none"> • Water Pollution 	<ul style="list-style-type: none"> • Periodic re-orientation of workers, laborers and contractors on PSC's EMP 04 (IM-APX-003-04) on wastewater management program and EMP 04 (IM-APX-003-06) water conservation program in the SHR Facility and back-up generator sets powerhouse work area. • Periodic inspection and cleaning of the oil & grease separator at the Uniflow kitchen with a total capacity of 6.48 m³. • The admin building has a septic tank capable of accommodating all the wastewater emanating from the admin building including the water from Uniflow kitchen. • Regular conduct of wastewater analysis of Uniflow kitchen drainage including surfactant, ammonia, nitrate and phosphate to ensure that no exceedance will come from the kitchen wastewater. • Periodic dredging of drainage canals of uniflow kitchen to remove accumulated grease and siphoning of sludge from the septic tank by a third party wastewater and sludge treater. 	100% compliance to PSCs EMP in compliance to RA 9275 and RA 6969	<ul style="list-style-type: none"> • PSC Admin • Clinic • PSC Envi Dept headed by PCO • PSC Engineering Dept • Sub-Contractor 	Part of the operation cost	<ul style="list-style-type: none"> • PSC Integrated Manual EMP-04 (IM-APX-003-04), EMP-05 (IM-APX-003-05), EMP-09 (IM-APX-003-04) • Include in TOR of contractor • Discharge Permit
Operation of PSC Envi Dept Office, Laboratory, Solid waste management sorting facility and hazardous waste storage area	LAND	<ul style="list-style-type: none"> • Generation of solid waste 	<ul style="list-style-type: none"> • Envi dept shall spearhead the re-orientation of workers, laborers and contractors on PSC's existing solid waste management protocol (EMP 07 (IM-APX-003-07)) for proper waste segregation of solid waste. • The dept shall ensure that all work places shall have trash bins segregated according to the type of waste (biodegradable, non-biodegradable, recyclable and hazardous waste). • Each bin shall be regularly collected by PSC garbage truck with segregated compartment. 	100% compliance to PSCs EMP in compliance to RA 9003	<ul style="list-style-type: none"> • PSC Envi Dept headed by PCO 	Part of the operation cost	<ul style="list-style-type: none"> • PSC Integrated Manual EMP-04 (IM-APX-003-04) • EMP-05 (IM-APX-003-05) • EMP-07 (IM-APX-003-07) • Include in TOR of contractor • Hazardous Waste



Activity	Environmental Component Likely to be Affected	Potential Impacts	Enhancement/ Mitigating Measure	Efficiency of Measures	Responsible Entity	Cost	Commitment/ Guarantee
			<ul style="list-style-type: none"> The collected solid waste shall be brought to the existing PSC sorting, storage and disposal facility (N8°34'32.34", E124°45'57.73"). The envi dept has dedicated workers trained to classify waste accordingly and recover recyclable materials as well as handle hazardous wastes. Biodegradables are sorted, brought to the existing PSC compost pit located adjacent to the sorting facility. Non-biodegradables are temporarily stored but are regularly collected by a third-party solid waste collector and transport it to their MRF for further sorting prior to disposal at a landfill facility. PSC shall continue to practice Environmentally Preferable Purchasing (EPP) in coordination with the procurement department. PSC shall also continue to implement Product Stewardship Program as part of its ISO 14001 compliance. Provision of training for solid waste sorters on new techniques and technology of composting such as vermiculture. Utilization of compost and vermicast as fertilizer additive for PSC reforestation program. 				Generators ID
		<ul style="list-style-type: none"> Generation storage of hazardous wastes and storage of hazardous wastes – Barium from laboratory wastes – Mercury compound COD/SO2 gas analysis waste – busted bulbs – Lead and lead compounds (vehicle batteries, UPS, spent battery packs) – used oil – oil contaminated wastes – containers previously containing toxic chemical substances – lubrication wastes – welding butts – WEEEs – Assorted compounds (dry cell batteries) – Asbestos compound from the dismantling and rehabilitation of sintering facility in year 2000 	<ul style="list-style-type: none"> Regular collection of hazardous waste generated during operation shall be brought to the PSC sorting facility. Hazardous shall be classified and sorted according to its classification and shall be temporarily stored in the 260 m². PSC hazardous waste storage area (N8°34'31.81", E124°45'59.01"). Recycling of used oil including those scooped from the oil and water separator by filtering and blending with heavy fuel oil at sinter day tank for use at the sinter plant. Pathogenic wastes such as RBS strips, sharps, contaminated cottons, needles, syringe and lancet shall be disinfected and deposited in the PSC chambered underground entombment facility. Asbestos compound were also entombed in the underground facility in a separate compartment. The added safeguard is that the chamber is lined with limestone while the asbestos materials are inside a container covered by HDPE. Mercury wastes are also entombed enclosed in specialized containers and covered by HDPE. Used facemask shall also be disinfected prior to disposal PSC has an existing agreement with a DENR-accredited waste treater for hazardous waste transporting, treatment and disposal. PSC shall ensure that disposal of accumulated hazardous shall not exceed 6 months as prescribed in RA 6969 and its IRR. Compilation off Certificate of Treatment for every batch of hazardous waste that were hauled and treated and regular reporting in the SMR submitted to EMB. 	100% compliance to PSCs EMP in compliance to RA 6969	<ul style="list-style-type: none"> PSC Lab & Envi Dept PCO Warehouse HRGA 	Part of the operation cost	<ul style="list-style-type: none"> PSC Integrated Manual EMP-04 (IM-APX-003-04), EMP-05 (IM-APX-003-05), EMP-09 (IM-APX-003-04) Include in TOR of contractor Discharge Permit
	WATER	<ul style="list-style-type: none"> Water Pollution 	<ul style="list-style-type: none"> Periodic re-orientation of workers, laborers and contractors on PSC's EMP 04 (IM-APX-003-04) on wastewater management program and EMP 04 (IM-APX-003-06) water conservation program in the SHR Facility and back-up generator sets powerhouse work area. The laboratory has a septic tank capable of accommodating all the wastewater emanating from the laboratory with acid and organics waste pit. 	100% compliance to PSCs EMP in compliance to RA 9275	<ul style="list-style-type: none"> PSC Lab Envi Dept PCO HRGA 	Part of the operation cost	<ul style="list-style-type: none"> PSC Integrated Manual EMP-04 (IM-APX-003-04) Include in TOR of contractor Discharge Permit



Activity	Environmental Component Likely to be Affected	Potential Impacts	Enhancement/ Mitigating Measure	Efficiency of Measures	Responsible Entity	Cost	Commitment/ Guarantee
			<ul style="list-style-type: none"> Regular conduct of wastewater analysis of laboratory waste shall be conducted with implementation on neutralization of laboratory wastes before it is discarded. Periodic dredging of drainage canals of unflow kitchen to remove accumulated grease and siphoning of sludge from the septic tank by a third party wastewater and sludge treater. 				
Abandonment Phase							
<ul style="list-style-type: none"> Abandonment of all buildings including offices, plant facilities, port facilities Demolition of buildings or dismantling of facilities 	LAND	<ul style="list-style-type: none"> Devaluation of land value as result of improper solid and hazardous waste management and other related impacts 	<ul style="list-style-type: none"> PSC should include in the TOR of the contractor the collection, hauling and proper disposal of debris, solid waste and hazardous wastes generated. Rehabilitation of the area until its safe and acceptable for the construction of a new building/facilities. 	100% compliance to PSCs Abandonment Plan	PSC	Part of the Abandonment cost	<ul style="list-style-type: none"> Include in TOR of contractor EMB Approved Abandonment Plan
	WATER	<ul style="list-style-type: none"> Sedimentation / siltation of drainage or waterways during dismantling activities or demolition activities 	<ul style="list-style-type: none"> PSC should include in the TOR of the contractor the protection of the drainage or waterways within or nearby the site. 	100% compliance to PSCs Abandonment Plan	PSC	Part of the Abandonment cost	<ul style="list-style-type: none"> Include in TOR of contractor EMB Approved Abandonment Plan
	AIR	<ul style="list-style-type: none"> Generation of dust Degradation of air quality due to use of heavy equipment 	<ul style="list-style-type: none"> Set-up fences around the site to act as wind barrier . Hauling trucks should be covered with canvass. Proper maintenance of equipment and vehicles. 	100% compliance to PSCs Abandonment Plan	PSC	Part of the Abandonment cost	<ul style="list-style-type: none"> Include in TOR of contractor EMB Approved Abandonment Plan
	PEOPLE	<ul style="list-style-type: none"> Occupational health and safety of workers hired by the contractors Risk to the safety of workers/staff and community 	<ul style="list-style-type: none"> Set-up fences around the site to prevent unauthorized person near the site. Placing visible warning signs. 	100% compliance to PSCs Abandonment Plan	PSC	Part of the Abandonment cost	<ul style="list-style-type: none"> Include in TOR of contractor EMB Approved Abandonment Plan