CHC

Conal Holdings Corporation

Executive Summary for the Public (English Version)

95.2MW In Island Power Plant Project

Ubay, Bohol

Version	:	0.0
Date	:	20-Feb-2022
Prepared by	:	GreenDevelopment Sustainable Solutions, Inc.

Project Fact Sheet

Item	Description
Project Name	**95.2 MW In Island Power Plant**
Project Location	Brgy. Imelda, Ubay, Bohol
Project Type	**Diesel Power Plant** D.4.e Other Thermal Power plant (Diesel,bunker coal, etc.) ≥ 30 MW
Project Capacity	Installed Capacity: 95.2 MW Dependable Capacity: 85.12 MW Contracted Capacity: 83 MW
Diesel Generator	67 units, 5 spare units
Project Area	Approximately 4.29 hectares
Initial Project Cost	EPC cost = Php 986,162,000 Non-EPC cost = Php 366,357,000 O&M cost = Php 112,943,000 Financial Cost = Php 84,849,000
Project Rationale	To meet the 100% dependable capacity requirement specified in the Terms of Reference of the One Bohol Joint Distribution Utilities Competitive Selection Process, the capacity of the in-island (backup) power plant will be equal to the contracted capacity of the power supply. The proposed project, the 95.2 MW Diesel Power Plant, aims to comply with the requirement of the abovementioned. The project is located in Barangay Imelda, Ubay, Bohol.
Proponent's Information	
Name of Proponent	*Conal Holdings Corporation*
Office Address	*4th floor, league one bdlg. Southgate Tower* *2258 Chino Roces Ave. cor EDSA* *Makati, Manila, 1200 Philippines*
Authorized Signatory / Representative	***Tirso G. Santillan – EVP*** *Tel #: (02) 88237225* *4th floor, league one bdlg. Southgate Tower* *2258 Chino Roces Ave. cor EDSA* *Makati, Manila, 1200 Philippines*
Contact Person and Information	***Edgardo L. Bonayon – Permitting Officer*** *Contact number: 09171281892* *Email: elbonayon@alsonspower.com*
Authorized Representative of ECC Application	**Joseph JR Anders Abella – Chief Operating Officer** GreenDevelopment Sustainable Solutions, Inc. (GSSI) Address: jr.abella@greendevsolutions.com Contact Number: 09209221983

Project Proponent

1 The implementation of the project will be carried out by Conal Holdings, Corporation (CHC), a legitimate company based in the Philippines with SEC Registration number of A119710656 as recognized by Securities and Exchange Commision. CHC's headquarters are located in League One Building Southgate Tower, 2258 Chino Roces Ave. cor EDSA, Makati, Manila and is a subsidiary of Alsons Power Group.

Project Type and Size

2 In line with the proposed developments on the Project, CHC plans on the construction and operation of a diesel power plant to be located at Brgy. Imelda, Ubay Bohol. The proposed project area will only cover about 4.29 hectares. The Transfer of Certificate of Title (TCT) numbers are 1076, 5670 and 1159 has an aggregate area of 33,925 sq. meters, 31,511 sq. meters, and 32,649 sq. meters respectively.

Table 1 Project Coordinates (WGS 84)

Corner	Latitude	Longitude
1	10°01'54.917" N	124°30'48.525" N
2	10°01'57.731" N	124°30'52.621" N
3	10°01'53.106" N	124°30'54.787" N
4	10°01'48.784" N	124°30'57.328" N
5	10°01'46.336" N	124°30'53.928" N
6	10°01'51.258" N	124°30'51.846" N
7	10°01'49.653" N	124°30'49.292" N
8	10°01'47.240" N	124°30'45.717" N

Table 2: Project Size

Total Power Generating Capacity	Installed Capacity : 95.2 MW Dependable Capacity: 85.12 MW Guaranteed Capacity: 83 MW
Total Project Area	Approximately 4.29 hectares

Accessibility

3 Generally, the project area is highly accessible for all types of land vehicles. The project area is approximately 12 kilometers from the Ubay Municipal Office. The most common route takes the Col. Mariano Garces road. The road is mostly concrete and has two lanes.

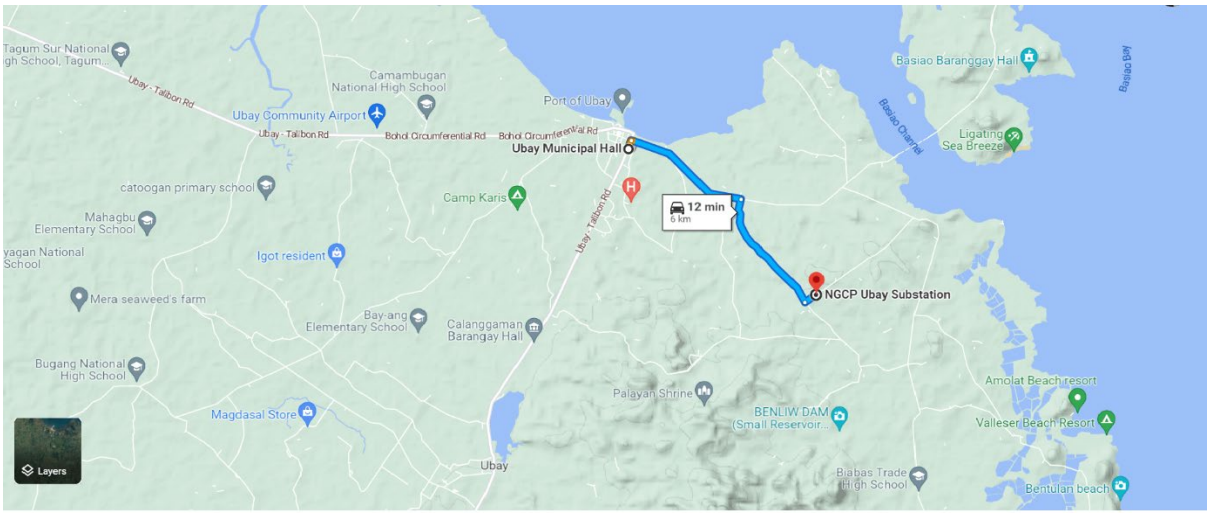

Figure 1 Project Area Accessibility

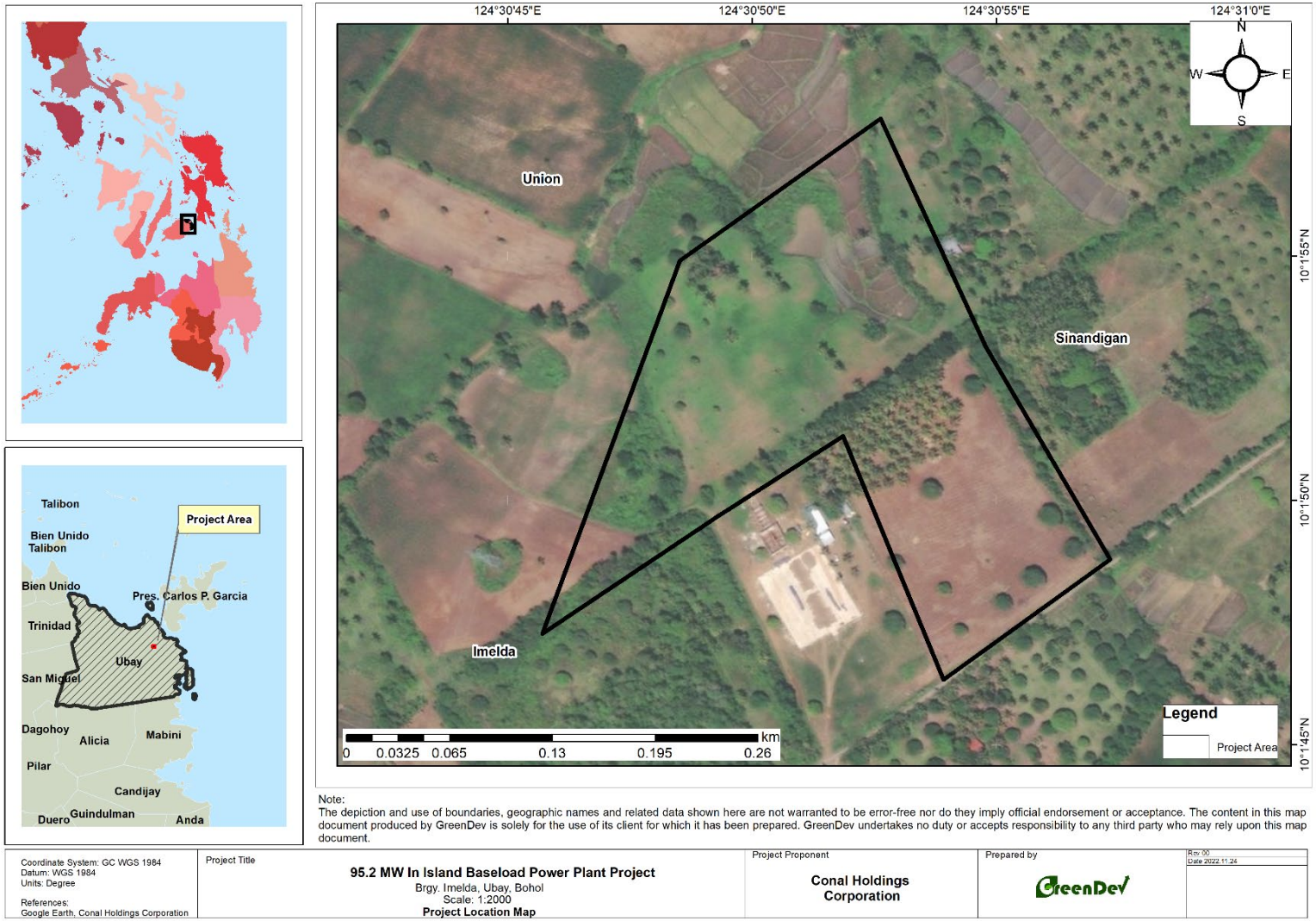

Figure 2 Project Location Map

Project Components

4 The proposed project involves the construction of a 95.2 MW diesel power plant in Barangay Imelda, Ubay, Bohol. To satisfy the 100% dependable capacity requirement specified in the Terms of Reference of the One Bohol Joint Distribution Utilities Competitive Selection Process, the capacity of the on-island (backup) power plant will be equal to the contracted capacity of the power supply.

5 The CHC DPP power plant consists of various systems, including diesel generation, exhaust, instrumentation, fuel, lube oil, cooling water, service water, steam heating, oily water separation, sewage treatment, noise suppression, and fire protection.

Table 3 General Project Components

Particulars		Description / Components
1	Installed Capacity	95.2 MW
2	Dependable Capacity	85.12 MW
3	Guaranteed Capacity	83 MW
4	Diesel Generator	67 operating units and 5 spare units
5	Generator Voltage	13.8 kV, 3 phase, 60Hz, 0.8PF lagging
6	Plant Low Voltage	480/240 Volts, 3phase, 60Hz, 0.8PF lagging
7	Plant HV Switchyard	1X45 MVA Step-up Transformer 1X80 MVA Step-up Transformer
8	Interconnection System / Switching Station	The plant point-to-point interconnection to NGCP grid system: 138kV, 60Hz, 0.8PF lagging. Transmission Line: 1.0 km 138kV, Single Circuit It will be connected to the 138kV Ubay Substation of NGCP, located in Brgy. Imelda, Ubay, Bohol
9	Type of fuel/source/delivery/storage	Light Fuel Oil (Diesel). The fuel will be sourced from Cebu (main supply) and Cagayan de Oro (Back up). Fuels will be delivered to the plant by truck lorries via barges Fuel storage is 2 x 2,500 m^3, steel tank
10	Cooling Water / Method	Radiator System
11	Environmental	Emission and Noise standard limits as per Philippine Environmental Standard
12	Standard / Codes	Local Standard: Latest PGC, PEC, NGCP and other Philippine standard & code. International Standard: Latest IEC, ISO, ANSI, ASTM, or with such standard equal or superior.
13	Substation	NGCP Ubay Substation

Process Technology

Technology description

6 The plant operates around the clock with three shifts of 8 hours each. Each shift has a Shift Supervisor, a Control Room Electrical operator, a Control Mechanical operator, and Auxiliary Operators. The Load Dispatcher informs the COE when the plant is needed and the Shift Supervisor commands personnel to be ready. The COE starts the engines according to the load demanded by the dispatcher and the AOs operate auxiliary equipment. The Shift Supervisor monitors engine safety and makes decisions during the shift. Plant operations stop when the Load Dispatcher informs the Control Room that the load demand is zero. Operators measure fuel and lube oil consumption and generate a summary report for all the generations and consumptions during the day. During standby, operators conduct routine cleaning and minor maintenance.

Power Generation

7 The process of converting chemical energy to mechanical energy using an Internal Combustion Engine (ICE) principle and then to electricity is described in this passage. Diesel fuel is delivered by tanker and stored in fuel storage tanks. When the plant is operating, the fuel is pumped to the Diesel Power Modules, where it is converted to electrical energy. The electrical energy is stepped up to 13.8kV and then to 138kV by a transformer before passing through a switchyard and transmission line to the NGCP substation.

Lube Oil System

8 Before the engine is started, lube oil is circulated to the engine by the lubricating oil pump. Once the engine starts, the lubricating oil is already circulating in the engine, reducing wear and friction by absorbing heat and providing lubrication in moving parts. The oil is then cooled by flowing through an oil cooler that is in contact with the water-based Radiator System, and this cooling and lubrication process continues until the engine is stopped.

9 The anticipated lifetime of the lubricating oil is 20,000 running hours. If the oil service life is reached, an oil change is performed. The used oil is stored in used oil drums and kept in the Material Recovery Facility, eventually being collected by 3rd party companies for proper disposal.

Water System

10 The extraction of water from the ground in the Plant is accomplished through Deep well water pumps. Groundwater is pumped and stored in two Raw Water Tanks. These Raw Water Tanks serve three primary consumers: (1) the firefighting system, (2) the internal domestic users, and (3) the Workshop.

11 In the event of fire, the firefighting system extracts water. Domestic uses are for the toilets and pantries of employees, and wastes are channeled to septic vaults. Water is mainly extracted for cleaning purposes in the Workshop, and the used water is then passed to an oil/water separator. The separated water is channeled to the waste water discharge pond and eventually to the canals.

Engine's Cooling System

12 The Cooling water system uses demineralized water for cooling engines. Initially, each engine is topped up individually, and the cooling water pump and radiator start when the engine starts. The cooling water absorbs heat from the engine components and passes through pipes to the radiator, composed of a fan and pipe loops. The fan cools the pipes and water, and the water that comes out of the radiator is cold but becomes hot again when it passes through the engine and returns to the radiator. This cooling process is repeated until the engine is stopped. The Deep well water pumps extract groundwater, which is stored in Raw Water Tanks and used for firefighting, internal domestic use, and the Workshop. The used water is passed to an oil/water separator and then channeled to the waste water discharge pond and eventually to the canals.

Maintenance System

13 The Maintenance Department, which consists of the Mechanical, Electrical and Instrumentation and Control sections, handles the plant's preventive, corrective, and breakdown repairs. They conduct maintenance using standard and special tools to ensure safe and efficient work. The Electrical Section maintains the plant's electrical equipment, while the Instrumentation and Control Section handles the sensors and PLC systems. Maintenance activities are categorized as Preventive, Corrective, Breakdown, and Routine, and are usually generated by the Operations Department through a Job Order. Preventive Maintenance is performed based on the running hours of the engines to prevent disruptive failures. Major Preventive Maintenance Services occur at intervals of 20,000 running hours. Both Operations and Maintenance Departments are necessary for the efficient operation of the Plant.

Project Development Timeline

14 The project will consist of four (4) Phases which are Pre-Construction (Pre-Development and Development), Construction, Operation and maintenance, and Abandonment Phases.

15 **Pre-Development**. This stage consists of initiation and planning, which involves the table study stage, site investigation stage, preliminary study stage, and feasibility study stage.

16 **Development**. This stage consists of detailed engineering and preparation of bid/tender documents for both civil works and equipment/machinery, which includes Tendering and Contracting Requirements, General and Special Conditions of the Contract, Technical Specifications, Engineering Plans/Drawings, and Bill of Quantities.

17 **Construction Phase**. This stage consists of the procurement of equipment, machinery, and construction materials for the Project. Moreover, site development and related power structures and facilities shall be constructed.

18 **Operations and Maintenance**. The power plant is expected the generate electricity for an estimated of ten (10) years contract with EDC. All activities about the operational stage will focus on efficient operation and maintenance of the prime movers and their auxiliaries, including the power plant facilities, which translate to environmental compliance with respect to the pollutants limit set by the DENR-EMB regulations.

19 **Abandonment**. The 95.2 In Island Power Plant will have an estimated operating life of at least thirty (30) years. This is a conservative assumption as properly designed, operated, and maintained Diesel Power Plants are able to reach Fifty (50) years of service. Decommissioning shall only be initiated upon the termination of the Environmental Compliance Certificates (ECC). The procedure shall follow the condition stipulated in the ECC. Facilities may be decommissioned after ten years of operation when the contract expire but it is still subject to the present electrical load requirement of Bohol Island.

ID	Name	Start	Finish
1	One-Bohol Modular Power Project	10/18/2021	12/26/2023
2	Signing of PPA with EDC	09/27/2022	09/27/2022
3	Environmental Impact Study / ECC	02/11/2022	01/07/2023
4	DIS/FS	12/11/2022	12/03/2023
5	Signing of Contract with Provider	01/06/2023	01/06/2023
6	LGU/Provincial Govt. endorsements	10/18/2021	11/15/2022
7	DAR (Land Use Conversion)	12/27/2021	02/07/2023
8	Signing of Contract with local contractor	01/07/2023	01/07/2023
9	NTP For Local Contractor	01/09/2023	01/09/2023
10	Site preparation	01/31/2023	05/06/2023
11	Civil Works	03/02/2023	05/30/2023
12	Mechanical Works	04/19/2023	07/03/2023
13	Electrical Works	03/21/2023	07/29/2023
14	138kV Substation	06/20/2023	11/04/2023
15	NGCP 138kV Substation	09/27/2023	12/22/2023
16	138kV Transmission Line	04/10/2023	11/23/2023
17	138kV Energization	12/04/2023	12/04/2023
18	Provisional acceptance	12/04/2023	12/04/2023
19	Mobilization & Shipping of APR units	08/25/2023	10/20/2023
20	Installation of Main Equipment & Facility	09/01/2023	12/15/2023
21	Load testing	12/21/2023	12/22/2023
22	Provisional acceptance of Plant	12/26/2023	12/26/2023
23	COD	12/26/2023	12/26/2023

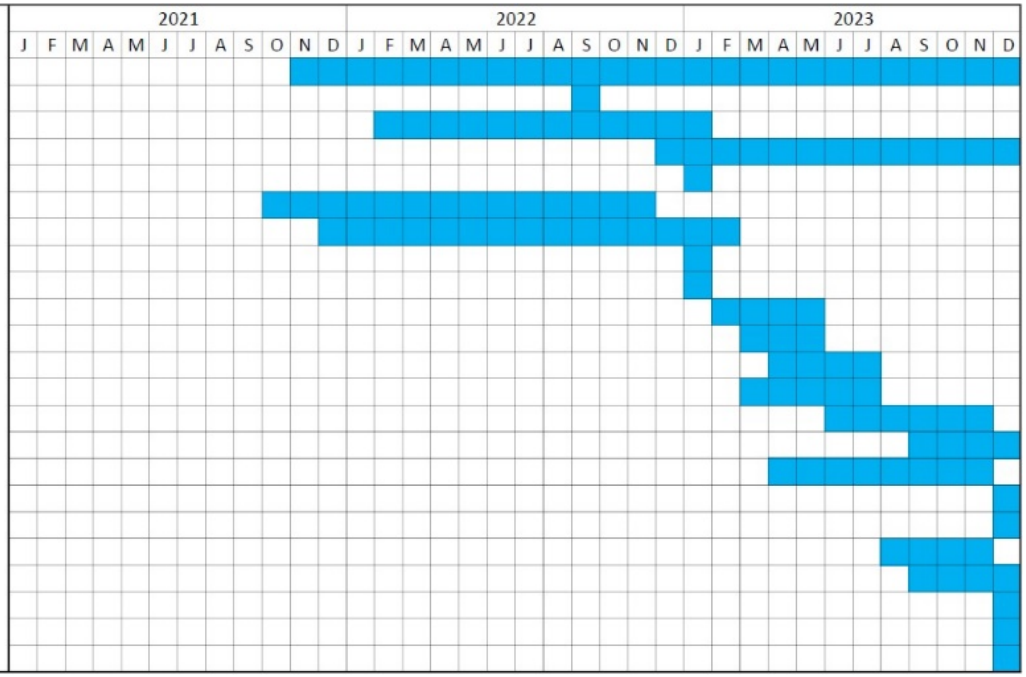

Figure 3 Project Timeline

Summary of Alternatives Considered in terms of Siting, Technology Selection/Operation Processes and Design

Category	Considerations
Technology Selection	
Fuel Type.	The project looked at two types of fuel: diesel and bunker fuel. Bunker fuel contains sulfur, while diesel is made up of hydrocarbons from petroleum. To comply with the Clean Air Act and for economic reasons, diesel fuel will be used due to its lower sulfur emission.
Engine Type	The decision regarding the engine type for the power generation project considered both fuel type and engine type options. Two options were assessed: relocating heavy Wartsila V32 engines that required land preparation or purchasing lighter MTU modular generators that did not require land preparation. The flexibility of individual capacity was also taken into account.
Cost	The difference between costs of either setting up, operation and maintenance is also considered for the project
Flexibility of Operation	The project aims to back up the required electricity demand on the Island. To make it more economical, the operation should have flexibility, allowing easy modification in the number of gensets operating to supply a specific amount of electricity.
Siting	
Location	The project site is located next to a concrete road that is about 1 km away from the Ubay municipal road in Brgy. Imelda. It is easily accessible by public transportation such as tricycles, pedicabs, and motorbikes. The site location also takes into account any public structures that might be affected by the project's operations and construction. The site is 1.5 km away from Imelda Elementary School and Barangay Hall, and a few kilometers away from churches and chapels.
Terrain	The area has uneven slopes, but they can be flattened, compacted, and graded during site development. Some portions of the area will not be disturbed and will be planted with trees, which will serve as noise barriers.
Buildings / structures location	The buildings and structures are designed and located in a way that will not obstruct the normal operation of the plant or the construction process. The access roads from the barangay road to the site will be widened from 6 meters to 10 meters to accommodate large and heavy construction equipment and generating units.

Concise Integrated Summary of the Main Impacts and Residual Effects after Applying Mitigation

20 The concise integrated summary of the main impacts and residual effects after mitigation is presented in a table the following page.

Project Proponent's Statement of Commitment and Capability to Implement Necessary Measures to Prevent Adverse Impacts

21 Conal Holdings Corporation commits to following the guidelines outlined in the Environmental Management Plan (EMP), Environmental Monitoring Plan (EMoP), and Environmental Compliance Certificate (ECC) during all phases of the project. We take our environmental responsibilities seriously and are dedicated to ensuring that all measures taken to address potential impacts are in accordance with relevant laws, policies, guidelines, and standards. Our goal is to meet the target level of efficiency and performance outlined in the EMP to guarantee that the protective and mitigating measures we implement are adequate and meet the project's requirements.

Table 4 Summary of Potential Impacts, Mitigating Measures and Target Efficiency

Project Activity	Potential Impacts	Mitigating Measures	Target Efficiency	Residual Measures
Pre-construction Phase				
Pre-construction phase covers planning activities, feasibility study, outlining of plans and permits procurement.			Non-commencement of construction phase until compliance and completion of required permits	None
Construction Phase				
Hiring of construction workers	Increase income for the residents	• Positive impact; No mitigation measure required.	100% priority hiring of qualified local residents	None
	Spread of communicable diseases from migrant workers	• Conduct of medical examinations of workers prior to hiring. • Provision of COVID-19 health and safety protocol. • Conduct of Environmental Health and Safety Briefing to workers and communities prior to construction.	100% compliant with the COVID-19-related policies and guidelines of the DOH	Provision of medical services to employees and nearby communities.(as applicable)
	Construction related hazards to the public and workers	• Conduct of Environmental, Health and Safety (EHS) Training prior to construction	100% efficient implementation of EHS training	Provision of medical services to employees and nearby communities
Construction of project facilities: • Main plant components • Support facilities • Pollution control devices/ systems	Change in subsurface underground geomorphology	• Formulate appropriate design measures for the protection on slopes and banks, soil improvement/ ground reinforcement to minimize ground failure	100% efficient implementation of engineering interventions for unstable slopes	None
	Soil Contamination	• Proper handling of fuels, lubricants and chemicals • Implementation of solid waste management program that shall include	100% efficient materials handling and implementation of Solid Waste Management Program of EERI.	Provision to conduct remediation of the soil to eliminate petroleum contamination.

Project Activity	Potential Impacts	Mitigating Measures	Target Efficiency	Residual Measures
		proper waste segregation and good housekeeping • Provision of garbage bins for domestic solid wastes		
	Increased turbidity and suspended sediment levels	• Provision of canals and impoundments/ siltation ponds around the facility to trap erosion • Cover stockpiles with simple covers	100% compliant with DAO 2016-08 except for baseline data that exceeded the abovementioned standard.	None
	Increase in greenhouse gas emissions	• Minimize vegetation removal and alteration of topography, if possible • Implement regular inspection and preventive maintenance of heavy equipment, machineries and service vehicles to meet the DENR Emission Standard • Use electric or fuel-efficient equipment, machineries and vehicles and maximize its operation if possible	100% compliant with RA 8749 and DAO 2000-81	Conduct of study and formulate appropriate design measures to reduce greenhouse emissions.
	Dust generation/ increase of suspended particles during construction	• Minimize alteration of topography and removal of vegetation to lessen earthworks • Conduct regular cleaning and clearing of construction access /sites and the surfaces of spoils and debris from construction equipment and vehicles and wetting of ground soil in the	100% compliance with RA 8749 and DAO 2000-81	None

Project Activity	Potential Impacts	Mitigating Measures	Target Efficiency	Residual Measures
		construction site when necessary • Store excavated materials at designated disposal area. Stock pile construction and trucks loaded with spoils shall be covered • Undertake daily cleaning of paved routes around the construction sites • Control vehicle movement maintaining the speed limit within the construction site to <10 kph. • Store excavated materials outside road reserve, but where there is no area, spoils shall be loaded and transported immediately • Plant vegetation on bare ground as early as possible and create vegetated buffer zone where possible		
	Increase concentration of gas emission from vehicles/ trucks	• Undertake regular preventive maintenance of heavy equipment, machineries and service vehicles to meet the DENR Emission Standards. Wherever possible, use electrically powered equipment.	100% compliant with RA 8749 and DAO 2000-81 standards	None

Project Activity	Potential Impacts	Mitigating Measures	Target Efficiency	Residual Measures
		• Minimize vehicle transport by maximizing the use of site-generated materials		
	Increase of noise level due to vehicles & equipment	• Provision of silencers or mufflers of vehicles • Restriction of noise producing activities to daytime hours	100% compliance with the NPCC noise standards for construction activities	None
	• Threat to abundance, frequency and distribution of species of flora and fauna • Loss of habitat	• Minimization of vegetation/tree removal, if possible. • Formulation and implementation of tree/vegetation planting program to offset the vegetation and trees removed.	100% efficient implementation of proposed mitigations	None
Operations Phase				
Hiring of Workers for Operation Phase	Susceptibility of public and plant workers to health hazards and communicable disease	• Establishing better workplace condition. • Conduct of medical examination of workers prior to hiring. • Provision of COVID health and safety protocols. • Provide training on. occupational health for workers Provide proper communication to increase awareness of public on potential hazards	100% efficient implementation of proposed mitigations.	Provision of medical services to employees and nearby communities
Operation of proposed 95.2 MW In Island Power Plant	Soil contamination due to accidental spillage of fuel, lubricants and chemicals	• Provisions to immediately collect and contain spilled fuel, lubricants and chemicals	100% efficient implementation of proposed mitigations.	Provision to conduct soil contamination analysis and formulate appropriate revisions to the existing measures.

Project Activity	Potential Impacts	Mitigating Measures	Target Efficiency	Residual Measures
		• Bunding all storage tanks for fuel and chemicals • Cementing of fuel tanks area		
	Depletion of water resources/ competition in water use	• Surface water will not be used for the project	100% efficient implementation of proposed mitigations	None
	Degradation of water quality	• Installation of Sewage treatment through septic tank and interception of oil-contaminated wastewater to oil-water separator for oil recovery prior to disposal • Proper maintenance and operation of the wastewater treatment facility • Regular monitoring of effluent	100% efficient implementation of proposed mitigations. 100% compliant with DAO 2016-08 General Effluent Standards	Provision to conduct water analysis and formulate necessary measures to address the degradation of water quality / contamination of water.
	Water contamination due to accidental release of fuel, lubricants and chemicals	• Regular maintenance of equipment to avoid fuel/oil leaks • Provision of spill containment measures such as oily water drains in turbine building area and transformer bay; and concrete spill containment dikes at fuel oil and chemical storage areas.	100% efficient implementation of proposed mitigations.	
	Increase in greenhouse gas emissions	• Planting of vegetation as much as possible to open areas at the facility and in the buffer zone.	100% efficient implementation of proposed mitigations.	• Planting of vegetation as much as possible to open areas at the facility and in the buffer zone.

Project Activity	Potential Impacts	Mitigating Measures	Target Efficiency	Residual Measures
		• Implementation of Energy/water conservation program such as use energy efficient products (i.e. LED lights) and carbon footprint monitoring. • Regular inspection and proper maintenance of structural facilities, equipment, and machinery.		• Provision to conduct analysis on the Greenhouse gas emissions and prepare an action plan, if needed.
	Degradation of ambient air quality due to emissions from fuel-based power generation	• Proper maintenance and operation of pollution control devices • Regular maintenance of generators • Conduct of ambient air quality monitoring and source emission testing	100% efficient implementation of proposed mitigations. 100% compliant with DAO 2000-81	Planting of vegetation as much as possible to open areas at the facility and in the buffer zone.
	Air pollution from generators and vehicle emissions	• Regular maintenance of generators • Implementation of a motor vehicle maintenance program, including emission testing	100% efficient implementation of proposed mitigations	• Reduction of frequency of use of the generators and vehicles. • Planting of vegetation as much as possible to open areas at the facility and in the buffer zone.
	Increase in occupational and ambient sound levels due to vehicles & equipment/facilities	• Equip engines with silencers, maintain in proper condition and use in accordance with the manufacturer's recommendations • Installation of barriers or sound protection panels if noise levels exceed NPCC Noise standards	100% efficient implementation of proposed mitigations.	Establishment of a green belt around the project site especially in the vicinity of an inhabited area with the highest noise level recorded Repair and replace defective equipment/parts with abnormal noise and/or vibration

Project Activity	Potential Impacts	Mitigating Measures	Target Efficiency	Residual Measures
		• Enclose sources of noise that exceed the NPCC Noise Standards • Provision of personal protective equipment to machine operators		
Abandonment Phase				
Decommissioning	Soil contamination with heavy metals	• Abandonment Plan of the Project will be strictly followed with emphasis on the strategy of sustaining erosion/ sedimentation control within and adjacent vicinity of the Project and rendering the Project area free of soil contamination	100% efficient implementation of Abandonment Plan	Provision to conduct soil contamination analysis and formulate appropriate actions to address the contamination, if needed.
	Disposal of wastes may lead to possible impacts from spills and discharges of contaminants affecting water quality	• Collection of spills • Removal and/or neutralization of chemicals • Regular monitoring of water quality	100% efficient implementation of proposed mitigations 100% efficient implementation of Decommissioning Impact Management Plan	Provision to conduct water contamination analysis and formulate appropriate actions to address the contamination, if needed.
	Generation of noise, dusts and exhaust emissions during dismantling which could affect workers, vegetation and wildlife	• Watering during dismantling to minimize dust • Proper maintenance of vehicles and equipment • Use of noise suppressors/mufflers • Limiting of noisy activities during night time		Provision to conduct emission analysis and formulate appropriate actions to address the adverse effect of noise, dusts and exhaust emissions during dismantling, if needed.