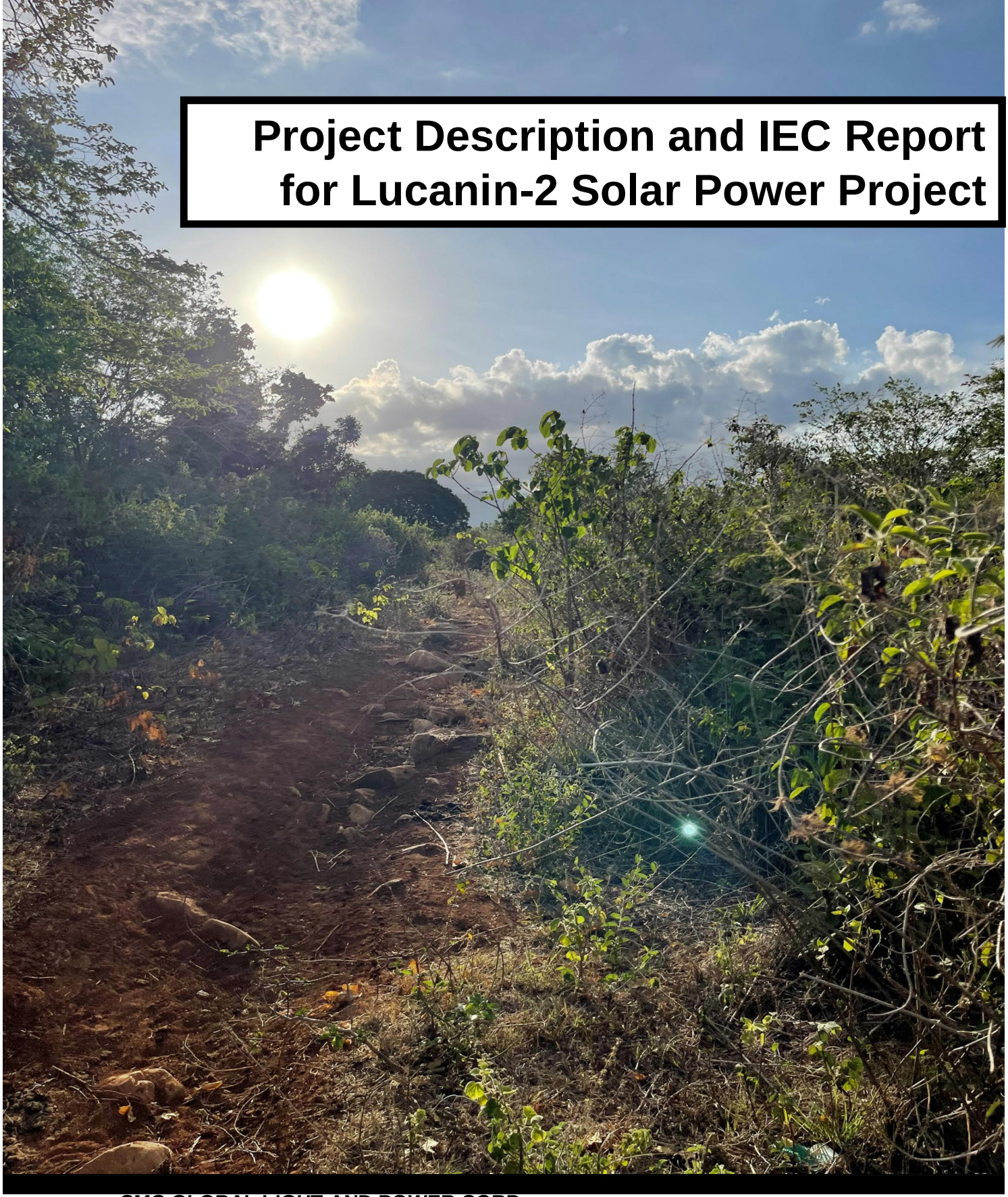
Project Description and IEC Report for Lucanin-2 Solar Power Project



SMC GLOBAL LIGHT AND POWER CORP.

Company Address: 5th Floor, No. 100 Eulogio Rodriguez Jr. Avenue, C5 Road (North Bound), Pasig City, 1604 Metro Manila
Project Site: Freeport Area Bataan Expansion Area
Adjacent Barangays: Brgy. Lucanin and Townsite, Mariveles, Bataan

July 2022

Prepared by: AFA Environmental Engineering Services

SMC GLOBAL POWER

Table of Contents

Figures

Tables

Appendix

1. Project Description

SMC Global Light and Power Corporation (SGLPC) / SMC Global Power Holdings Corp. (SMC Global Power), one of the largest power companies in the Philippines serving as the energy arm of San Miguel Corporation, is proposing to develop the Lucanin-2 Solar Power Project with a capacity of 154 MWp | 123.73 MWac and a total of 236,928 photovoltaic (PV) panels. The solar project is within the jurisdiction of the Freeport Area of Bataan (FAB) located in Mariveles, Bataan particularly in the 112.46 hectares FAB Expansion Area which is adjacent to barangays Lucanin, Townsite and Alion.

Aside from the PV panel, the other major components of this solar farm is the Battery Energy Storage System. SMC Global Power continuously undertakes the expansion of its portfolio of Battery Energy Storage System (BESS) projects that will help improve the reliability and stability of the grid. For this project, the Energy Storage System (ESS) energy is 323.32.8 MWh.

Environmental Impact Assessment (EIA) Process

SMC Global Power is applying for an Environmental Compliance Certificate (ECC) to the Authority of the Freeport Area of Bataan (AFAB) following the Rules and Regulations Implementing the Provisions of RA 9728, otherwise known as the "Freeport Area of Bataan Act of 2009", as amended by RA 11453. The project IEC and preliminary technical ccoping with AFAB was conducted on 28 April 2022 (see **Appendix A**). Update on the project description for Lucanin-2 project was also coordinated with AFAB on 16 May 2022 which considered the preliminary technical scoping of Lucanin-1 to be the same for Lucanin-2. The preliminary technical scoping discussed the following:

- the policy of the State and Authority of the Freeport Area of Bataan (AFAB) to operate and manage the Freeport Area of Bataan (FAB) as a separate customs territory
- the implementation and enforcement of PD No. 1586, shall be vested on the AFAB including the issuance of ECC
- the revised procedural manual DENR Administrative Order No. 30 Series of 2003 (DAO 03-30) will be used as guidelines or reference in the Environmental Impact Assessment (EIA)

The proposed project is classified into Power Plants – Renewable Energy Projects (Solar). According to "The revised guidelines for coverage and screening and standardized requirements under the Philippine Environmental Impact Statement (EIS) system (EMB Memorandum Circular 005)", the solar power project is covered under Category B: Non-Environmentally Critical Project (Non-ECP). The total power generating capacity is ≥ 100 MW which entails the preparation of Environmental Impact Statement (EIS).

1.1 Project Location

The proposed 112.46 hectares project will be located inside the Freeport Area of Bataan Expansion area in Mariveles, Bataan which is adjacent to three barangays, namely, Lucanin, Townsite and Alion. However, as the EIA study progresses, Barangay Alion will be excluded from the impact areas as the project land parcels falls under Lucanin and Townsite, only. The project is located inside the Lucanin Industrial Estate Project (LIEP) of Ruzena Estates Development Corporation as shown in **Figure 1-1** while the engineering plan are shown in **Figure 1-2**, respectively.

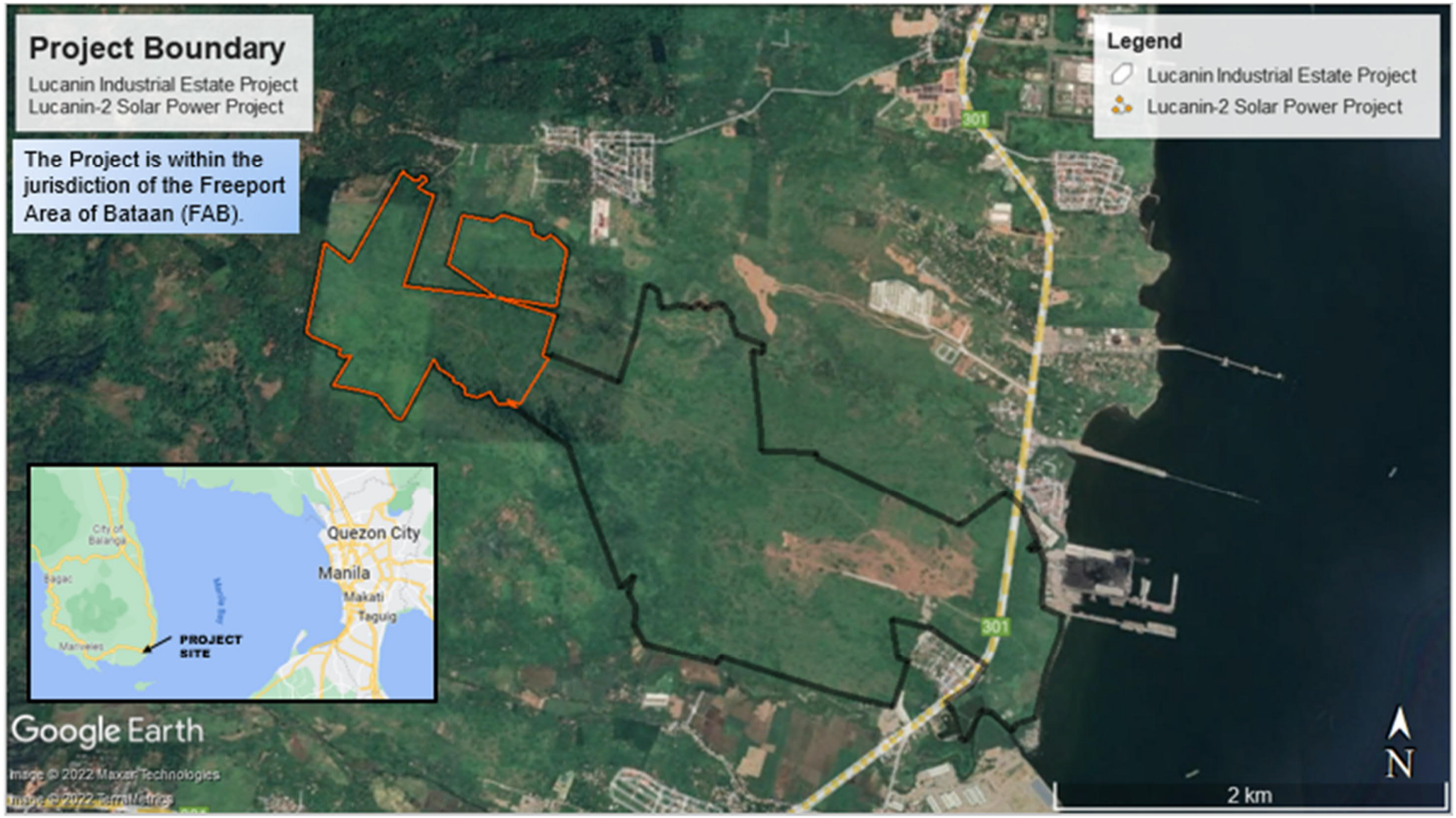


Figure 1-1 Project Site Location

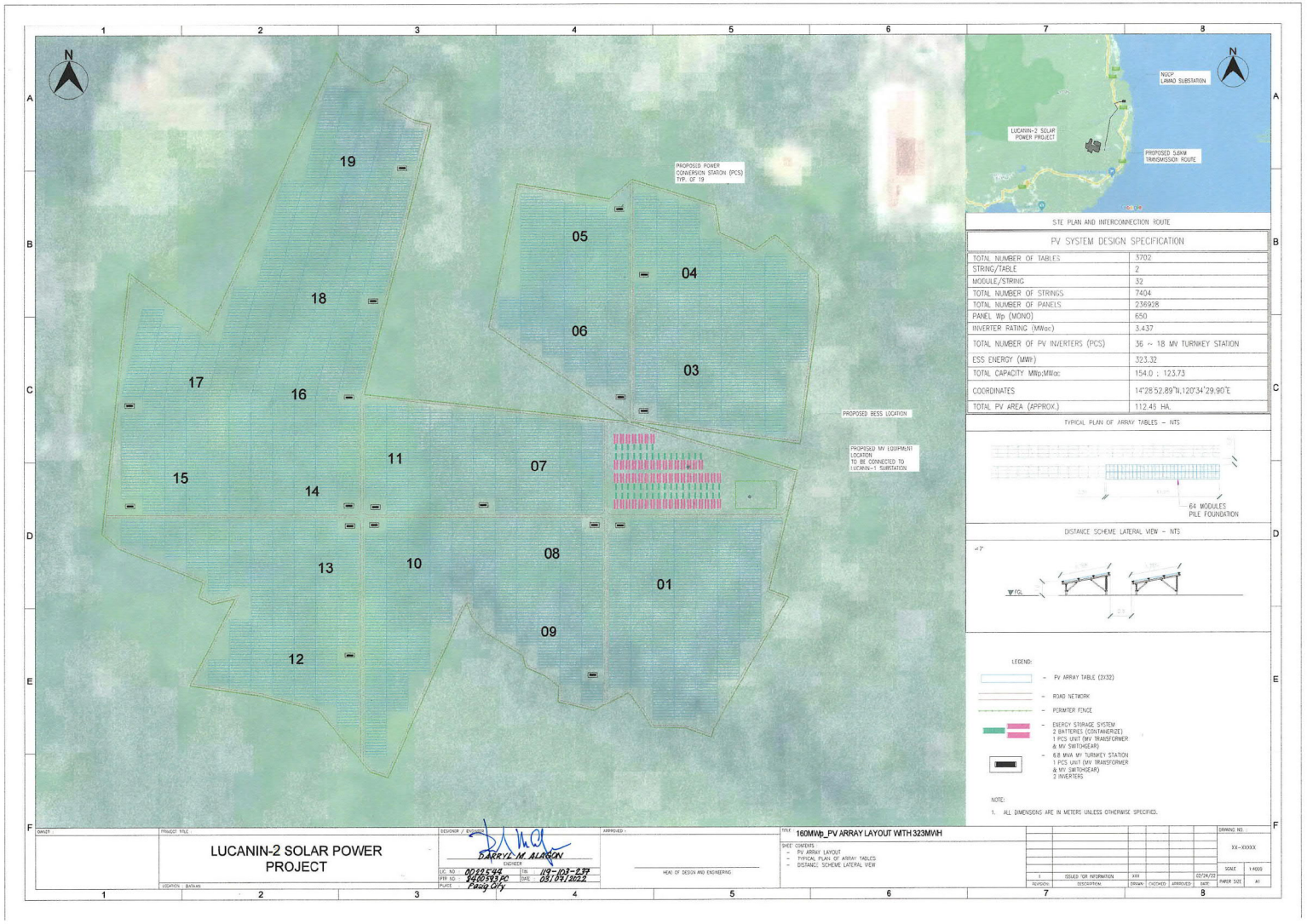


Figure 1-2 Engineering Plan

Direct Impact Areas

The Direct Impact Area (DIA) area for this project in terms of its biophysical impact during construction and operation is the project location itself situated in the FAB expansion Area. Given the nature of the project as solar which has little to no air emission and effluent, the direct impact of the project will be limited to its project location.

Indirect Impact Areas

In terms of biophysical impact, the near adjacent Barangays Lucanin, Townsite and Alion are considered as IIA due to its proximate location to the project site that may potentially be affected by the project if not mitigated or managed properly. Mariveles Municipality and the project neighboring barangays are considered as indirect impact area in terms of social benefits of the project. These barangays will also be the priority recipient of employment, Corporate Social Responsibility (CSR) / social development programs.

Project Site Accessibility

The project site is approximately 145 km land travel in 2 hr and 46 minutes via R-8 and Bataan Provincial Hwy/Roman Superhighway from the capital city of the Philippines, Manila as shown in **Figure 1-3**. It can also be reached via mixed ferry and land travel: boat in 2 hours from Port of Manila to Mariveles then a 25 minutes land travel from Mariveles Harbour to the project site via Baseco-Sisiman Hwy/Mariveles Diversion Rd and Bataan Provincial Hwy/Roman Superhighway. From the provincial highway, a two kilometre access road as part of the Lucanin Industrial Estate Project will be constructed to reach Lucanin-2 Solar Power project.

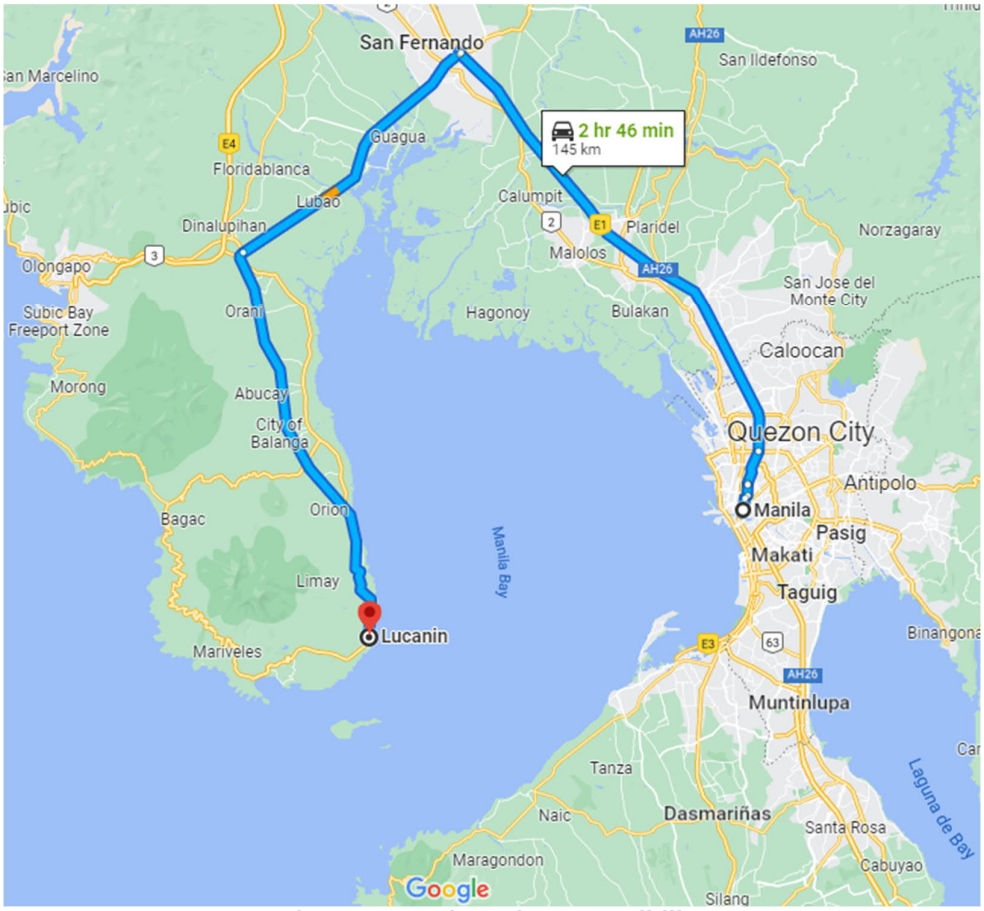


Figure 1-3 Project Site Accessibility

1.2 Project Rationale

The solar project would contribute to the supply of energy in Mariveles, Bataan in order to cater the demand of the ongoing developments, growing population and industrialization in the area. According to the Department of Energy, the country's peak demand increases by almost four-folds with 6.6 percent annual increment for the 20-year period, from 15,282 megawatt (MW) in 2020 to 54,655 MW in 2040. With greater economic growth prospects based on the projected gross regional domestic (GRDP), the annual growth rate in Luzon at 6.2 percent.

The project hereby support the Philippine Energy Plan (PEP) 2020-2040 of the Department of Energy (DOE) to attain an inclusive and equitable economic growth made possible through the provision of secure, sustainable and resilient energy strategies. The plan also reiterates the energy sector's goal to chart a transformative direction towards attaining a clean energy future.

The project contributions are summarized below.

- Contribute to the Clean Energy Scenario target of 35.0 percent and 50.0 percent RE share in the power generation mix by 2030 and 2040
- Regulate fluctuations in the national grid with zero emissions
- Help the country achieve a carbon-neutral economy
- Deliver competitive and reliable power
- Reduce dependence on imported fossil fuels, and mitigate the impacts of climate change
- Solar power projects together with the Battery Energy Storage System (BESS) offer storage that could not be injected into the grid and would have been diminished.
- BESS can help in supporting the grid frequency that can provide backup power during an electrical disruption.
- Local employment during construction and operation
- Financial Benefits to Host Communities or the LGU of Mariveles Pursuant to ER 1 – 94

The project is also subject to a five percent final tax on gross income earned, of which 1 percent goes to the national government, 1 percent to the province of Bataan, one percent to the host LGU, and 2 percent to the Authority of the Freeport Area of Bataan (AFAB).

1.3 Project Alternatives

No Project Scenario

The project site will stay as scrubland with fragments of orchards. The project will remain under FAB expansion area on which other developments might arise. There will be no new energy / power source to cater the demand of new and existing developments in the area.

With Project Scenario

The project site will be used as energy generation from a renewable energy source which is green and cleaner as compared to other energy projects. The project site is open to sunlight, receives irradiation higher than the average of the Philippines, and far from any elevated structures/ obstruction (no shading effect) which is very suitable to the development. **Table 1-1** shows the advantages and disadvantages of the proposed project to other types of development.

Table 1-1 Advantages and Disadvantages of a Solar and Battery Storage System Power Project to Other Developments

Projects	Disadvantage	Advantage of Solar Power Project
No project scenario	No new energy / power source to cater the demand of new and existing developments Other manufacturing or energy projects may be established which may potentially produce more harm to the environment as compared to solar project The project site will stay as a scrubland with fragments of orchards The project site will remain under FAB expansion area	The project is generally flat Climate condition – The irradiation in Mariveles is higher than the average of the Philippines No shading effect (like mountains, hills, buildings or structures) The project area is shadow free The project site is open to sunlight and far from any elevated structures/ obstruction
Other Energy Projects	Energy generation is limited during daylight Larger project footprint	Does not require offshore No combustion / Cleaner source of energy Lesser to no air emission Least maintenance
Poultry and Piggery	Near to sensitive receptors (community) Odor	No Odor No wastewater (water used for cleaning is safe and can be absorbed by ground and evaporated)

1.4 Project Technology and Project Components

Process Technology

The photovoltaic (PV) modules operates by harnessing the irradiation form the sun (**Figure 1-4**) that generates electron movement through photovoltaic (PV) effect that generates electric charge. These panels are made of semiconducting materials such as silicon materials doped with impurities such as boron and phosphorus. The surface is secured by a non-reflecting and durable fabric such as tempered glass to ensure the cell from other outside variables such as climate, breakage, soil, dust, and other physical dangers.

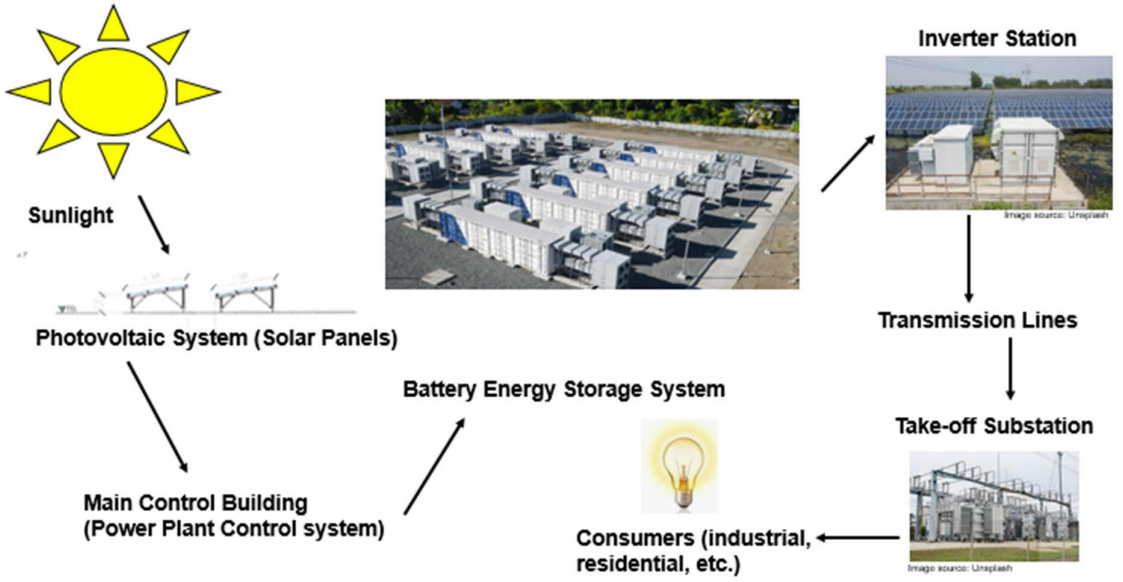


Figure 1-4 Process Technology

From the photovoltaic systems, the electric charge will go to the inverter which convert the direct current (DC) to alternating current (AC) form of electricity. The AC power will be transported to a high- voltage substation through the transmission lines. From the grid, the local distribution utilities deliver the electricity to its potential consumers.

Project Components

The facilities and components presented in **Figure 1-2** are the common components of a large-scale solar power plant project. Final details and specifications will be finalized during the pre-construction phase of the project which will undergo technical deliberation by SGLPC and its engineering contractor.

I. Photovoltaic Modules

This will collect mainly and convert the solar radiation into DC power through the photovoltaic effect. The PV effect is a semiconductor effect whereby solar radiation falling onto the semiconductor PV cells generates electron movement. The PV system contains many cells connected in modules and many modules connected in strings to produce the required DC power output.

II. Inverter Station

The inverters, operating under one of its various modes, converts the DC power into AC power to deliver useful AC power to the grid.

III. Mounting Structures

These allow PV modules to be securely attached to the ground at a fixed tilt angle, or on sun-tracking frames. The proposed mounting structures is shown in **Figure 1-5**.

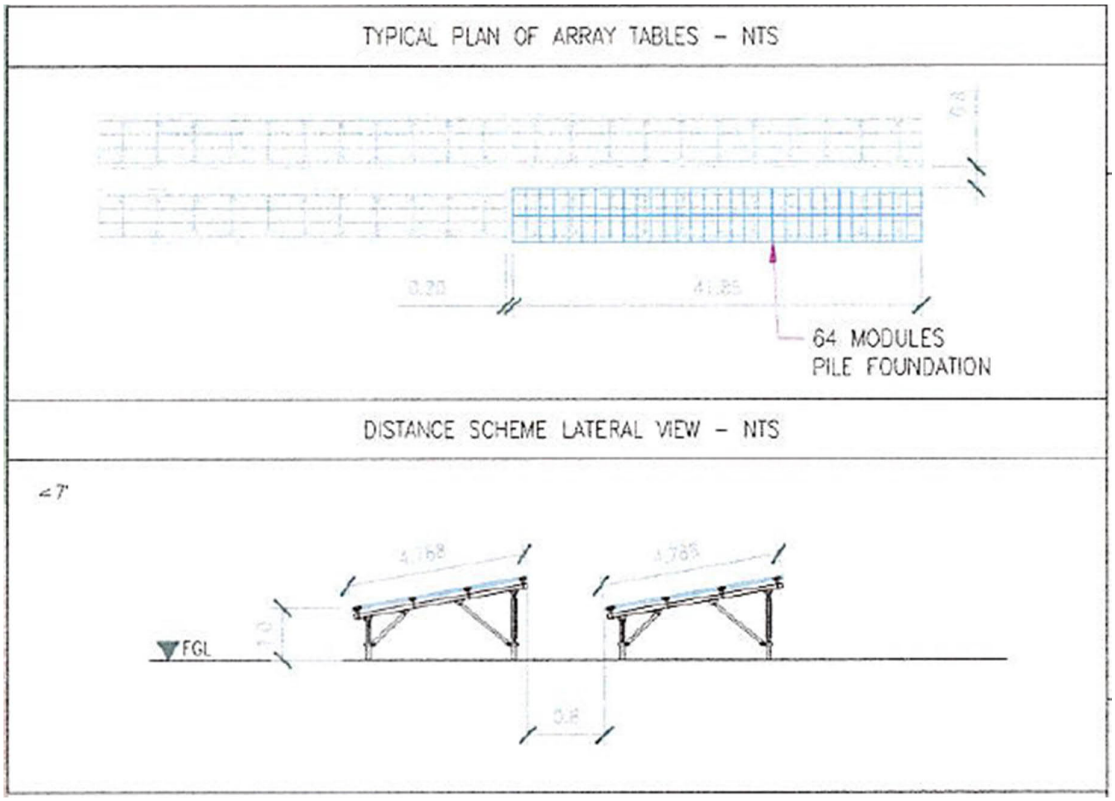


Figure 1-5 PV Arrangement and Mounting Angle

IV. Main Control Building

This houses the Power Plant Control (PPC) system and medium voltage switchgear along with the corresponding communication systems and other peripherals.

V. Take-off Substation

This converts medium voltage to the compatible line voltage in preparation for delivery of generated power to grid. Common substation component include a power transformer, circuit breaker, current and voltage transformers, surge arresters and a take-off gantry tower.

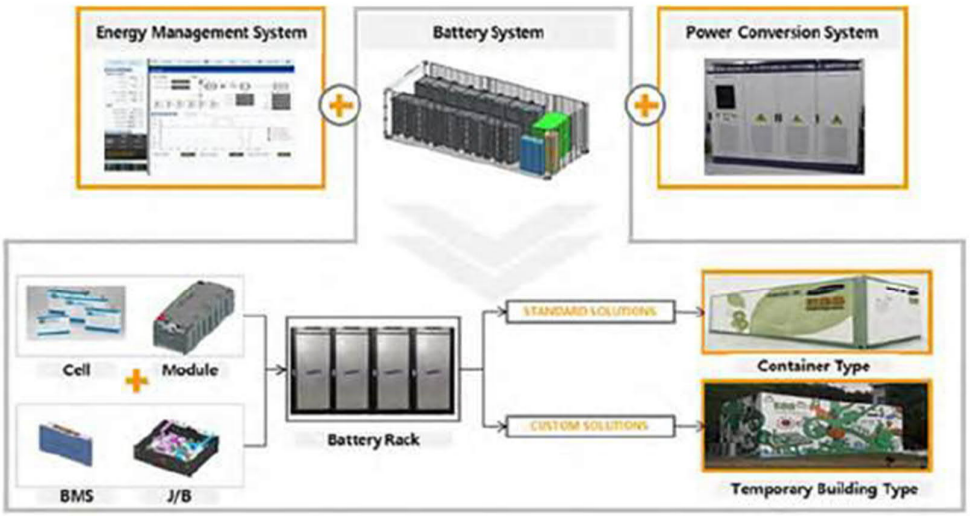
VI. Transmission Line

A conductor or conductors designed to carry electricity or an electrical signal over large distances with minimum losses and distortion. The transmission line will transport power from the take-off substation to the National Grid Corporation of the Philippines (NGCP) Lamao Substation (**Figure 1-6**) connection point.

Figure 1-6 Transmission Line from Lucanin-2 Solar Power Project to NGCP Lamao Substation

VII. Battery Energy Storage Systems (BESS)

The Battery Energy Storage Systems or BESS (**Figure 1-7**) is consist of battery system (battery containers), power conversion system (inverters), energy management system (power plant controller) and balance of plant including necessary transformer and protection system. The battery containers include battery racks, batteries and control system hardware with integrated fire suppression and detection system. Battery racks are composed of battery modules, which are further composed of battery cells. As such, if the batteries reach end-of-life or are damaged, no complete shutdown of the entire BESS is required as the modules can be easily pulled out and replaced.



BMS = battery management system, J/B = Junction box.
Source: Korea Battery Industry Association 2017 "Energy storage system technology and business model".

Figure 1-7 Battery Energy Storage Systems (BESS) Process Technology

For the batteries, the BESS shall utilize lithium-ion batteries which have the highest energy density, are generally safe and are the most eco-friendly among other battery technologies. Further, said batteries have long cycle and extended shelf life (up to 15 years). Lithium-ion batteries are the same batteries used in common electronic devices such as computers, mobile phones and calculators.

BESS will be connected to the medium voltage switchgear of the solar plant.

VIII. Access Roads

REDC or the proponent for LIEP will initially construct a 15-meter road to provide access from Ramon Super highway into the proposed Lucanin-2 Solar Power Project. In addition, roads are well distributed across and within the boundary of the solar project as shown in **Figure 1-2**.

IX. Perimeter Fencing

The entire solar project will have its own perimeter fencing for security purposes and to avoid stray and farm animals.

X. Security services

Crime rates such as metal steel bar stealing is reported in both barangays during the past year which include minors. As such, security services will be made available in designated locations such as closed-circuit television (CCTV) and guards on duty to ensure security.

XI. LIEP Support Facilities

LIEP support facilities which are outside the boundary of the solar project are shared through its locators such as parking for vehicles, fire station, evacuation area, main and security post, security cameras, and Materials Recovery Facility (MRF).

Water Requirement and Maintenance Activity

Solar PV modules requires cleaning at least once a month to remove unnecessary dust and tall grasses that may potentially limit the absorption of solar energy. Grass cutting activities will be conducted at least once or twice a month per section of the plant via group of locally hired personnel. While cleaning the solar panels will be conducted daily until all solar panels have been cleaned at least once a month. The water requirement for cleaning the solar panels is summarized in **Table 1-2**. Cleaning the solar panels will require 2 to 5L per panel per month. The maximum water requirement per month for all the solar panel is 1,184,640 L.

Table 1-2 Water Requirement for Cleaning the Solar Panels

Parameter	
No. of Solar Modules	236,928 units
Water requirement per panel	2 to 5L per panel per month
Water requirement, per month	473,856 to 1,184,640 L
Daily water requirement (assuming 1 month: 30 days)	15,795.2 to 39,488 L / day

The locally hired personnel for cleaning the solar panel will be trained to conduct wiping method for cleaning the PV modules instead of sprinkle system. This method reduce water consumption and discharge which conserve more water than the sprinkler system. The water use for cleaning the panel is solely water and does not contain any chemical or hazardous treatment, hence no treatment or drainage canal is required. Water runoff / discharge from the solar modules will be likely absorbed by the ground and or evaporated after a few minutes or an hour.

The proposed water sources for the project are as follows:

Option 1 – Rain water harvesting pond located at Lucanin Industrial Estate Project (LIEP). There will be a storm drainage system designed to collect and convey rainwater to the

harvesting pond. The collected rain water will go to the LIEP centralized sewage treatment plant which is a recirculating water treatment facility.

Option 2 – Surface water from the nearby river (Amo and Lucanin rivers). A water permit will be applied to AFAB.

Option 3 – Mariveles Water District

Wastewater Treatment

The LIEP on which the project is one of the locators has its own Wastewater Treatment Plant (WTP) which is also connected to the storm drainage and rain water collection pond. This will treat the water collected from the rain and from their locators. The WTP is a recirculating treatment facility that would treat and recycle back the water to its locators.

Power Requirement

The power requirement of the solar farm and its office building will be sourced from its self-generated electricity and through its Battery Energy Storage Systems. Alternative source of energy will be sourced from the Peninsula Electric Cooperative, Inc. (PENELCO), and or a standby generator.

Solid Waste Management

Construction Phase

Construction campsite

Solid wastes will be strictly managed to comply with the RA 9003 and RA 6969. Proper orientation by the contractor to its employees will be conducted that include waste segregation, proper housekeeping and proper sanitation. Domestic wastewater from the construction site is expected to be generated during this phase. The project contractor will be required to provide sufficient number of portable toilets for its work force in the construction site. A Pollution Control Officer or Health, Safety and Environmental officer will be assigned to monitor cleanliness and good practice of the workers, construction areas and campsites. A private or government waste collector will be coordinated to collect residual wastes once or twice a week.

Solid Waste and Spoils disposal area

The construction activities will involve removal of vegetation and spoils will be generated from land clearing activities and excavation. A spoils disposal area (SDA) that would accommodate the spoils will be designated prior to construction activities. These spoils will either be reused as filling materials or given to the community/ LGU or person/ office of interest. Proper hauling, speed limits and truck cover will be considered and practiced by the contractors to minimise dusts. The location of spoils disposal area and or stockpile will avoid sensitive receptors. Solid wastes will be stored safely at their designated areas and all leftover materials will be completely removed off-site upon. Disposal and treatment of hazardous waste to DENR-accredited haulers and treaters will be practice if applicable.

Domestic solid wastes from the workers and construction activities will be managed properly by implementing solid waste management system. This will be put in proper container or plastic prior to collection.

Dust will also be generated from land clearing and earthworks. High dust level in the area can affect the health of the workers and nearby communities. Contractors may be required to conduct dust suppression measures especially when windy such as water spraying on the ground and covering of stockpiles, exposed soils and implementation of vehicle speed limits.

Operation Phase

The major types of waste for the solar project are the domestic waste from the control room or admin building and the cut grass/ fallen leaves. The project will iimplement solid waste reduction, recycling and collection/disposal system in accordance with RA 9003, hazardous waste management with RA 6969. A solid waste management system will be implemented:

- Solid wastes will be transferred to LIEP's Materials Recovery Facility (MRF) for proper segregation
- Recyclable wastes will be sold or given to recyclers
- Residual wastes will be transfer to AFAB transfer station with corresponding disposal fee.
- Broken solar panels and busted lamps will be disposed via accredited AFAB/DENR hazardous waste collector
- A composting facility is recommended in coordination with the LGU to turn utilize biodegradable wastes into fertilizer. The compost will be used for the landscaping activities of the LGU, if any.

1.5 Project Size

The capacity of the solar and battery energy storage project is summarized in **Table 1-3**.

Table 1-3 Project Capacity

Item	Capacity
Capacity	154 MWp | 123.73 MWac
Energy Storage System (ESS) Energy	323.32 MWh
Project Area	112.46 ha
Total Number of Tables	3,702
String/Table	2
Module/String	32
Total number of strings	7,404
Total number of solar panels	236,928
Panel Wp (MONO)	650
Inverter rating	3,437 MWac
Total Number of PV Inverters (PCS)	52 ~ 26 MV Turnkey Station

1.6 Development Plan, Description of Project Phases and Corresponding Timeframes

1.6.1 Pre-development Phase

The technical studies, design engineering and drawings and geotech studies such as the Engineering Geological and Geohazard Assessment are prepared on this project phase. These documents are used to secure necessary permits and clearances from the Authority of Freeport of Bataan (AFAB) which has the jurisdiction over the Freeport Area of Bataan Expansion Area under the Rules and Regulations Implementing the Provisions of RA 9728, otherwise known as the "Freeport Area of Bataan Act of 2009", as amended by RA 11453. Permits such as the FAB registration, Environmental Compliance Certificate (ECC) and tree cutting permit are mandated to be issued by AFAB. Other requirements required by AFAB from concerned LGUs or offices will also be coordinated and secured.

1.6.2 Construction Phase

The major activities during the construction phase are the following:

- Perimeter fencing
- Access road and drainage construction
- Tree cutting and Land clearing
- Construction of camp sites
- Earthworks/ Excavation
- Soil and slope compaction
- Transport of materials
- Structural works (mounting of steel structures and foundation)
- Installation of PV modules

- Installation of AC/DC cables/connectors
- Instrumentation
- BESS, control unit and substation construction
- Painting and finishing
- Clean-up and landscaping

The construction works of the project is estimated to be completed approximately in 1 year.

1.6.3 Operation

The project is expected to operate for 25 years. The manpower requirements during operation as shown in (**Table 1-5**) is composed of the Regional Operation and Maintenance Engineer, Plant Manager, Environment, Health and Safety Officer, Operation and Maintenance Engineer, Operation and Maintenance Technician, Business Development, Administrative (Office, HR, Finance, Janitor), Security Guards (24 hr) and maintenance personnel such as Grass cutters/ Gardening and Wipers (PV Module Cleaning).

Maintenance activities will be conducted during workweek by locally hired grass cutters and wipers to ensure the maximum energy capacity of each panel. Due to its large scale and large area of the project, maintenance activities will be conducted per section or per area in order to run over each of the 341,120 pv modules for atleast once a month.

The process technology utilized for the project is discussed in **Section 1.4**.

1.6.4 Decommissioning Phase

The project lifespan is 25 years and the project proponent will continue to comply with the requirements and validity of the EMP and ECC's required monitoring/ reporting. Solar and Battery Energy Storage project is a renewable energy project and essential to the growth and development of Mariveles. In addition, the irradiation of the sun in this area is higher than the average in the Philippines which suits the area in a solar power generation plant. The project will continue to be with its own nature in the future and there are no or little chances of abandoning the project in the future. Abandoning the project may lead to lack of power source from its consumers. Changing the pv modules into modern panels once it reaches its endpoint is more probable than abandonment.

However, should there be a need to abandon, change ownership or to rehabilitate the project, or change in LGU land use plan, necessary permits and approval will be secured to the Authority of the Freeport of Bataan (AFAB). The project will be properly rehabilitated following the guidelines followed by AFAB which is the revised procedural manual of DAO 2003-30 or whatever that is available at the time of decommissioning. A letter of request to relief the ECC, including the decommissioning/ abandonment/ rehabilitation plan will be prepared and submitted to AFAB for at least six months prior to its abandonment.

The abandonment plan will composed of the following activities:

- Permitting and clearances
- Information disclosure to customers and nearby community
- Removal of PV modules, inverters, mounting structures and battery storage devices and proper disposal to accredited AFAB/DENR hazardous waste treater and hauler
- Land restoration of all construction facilities and structures

1.7 Project Timeline

The indicative start of construction will be on the 4th quarter of 2022 or once all the permits from AFAB and concerned offices have been secured. The construction phase as shown in **Table 1-4** is expected to be completed in one year from 4th quarter of 2022 to 3rd quarter of 2023. This will be followed by commissioning on the 4th quarter of 2023.

Project Operations: 25 years (2023 to 2048/2049)

Table 1-4 Construction Timeline (indicative)

Project Activities	2022				2023				2048/ 2049
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
Pre-Construction									
Technical Studies, Permitting and Clearances such as ECC application, tree cutting, MOA from NGCP etc.									
Purchase of equipment									
Construction									
Access road clearing and construction									
Tree cutting and land clearing, construction of campsites, perimeter fencing, etc.									
Soil compaction and drainage construction/ installation									
Delivery and installation of mounting rack, PV modules and inverters Installation of AC/DC cables/connectors									
Construction of BESS, Control Unit and substation									
Operation									
Pre-commissioning									

1.8 Manpower Requirements

The indicative manpower requirements (**Table 1-5**) during the project construction is 230 workers while during operation the manpower is 28. The proponent and its contractors will follow the guidelines under Republic Act No. 6685 Section 1. Contractor Requirement. *"All private contractors, including subcontractors, to whom awards are made for the undertaking of national and local public works projects funded by either the National Government or any local government unit including foreign-assisted projects must hire at least fifty percent (50%) of the unskilled and thirty percent (30%) of the skilled labor requirements from the unemployed bona fide and actual residents in the province, city and municipality who are ready, willing and able as determined by the governor, city mayor or municipal mayor concerned where the projects are to be undertaken: Provided, That labor used or to be used for the manufacture of prefabricated construction materials and other materials premade outside the place of project implementation and skilled manpower utilized or to be utilized for the preparation of engineering designs and project plans and layouts shall be exempted from the labor requirements herein imposed: Provided, further, That where the number of available resources is less than the required percentages provided herein, said requirements shall be based on the maximum number of locally available labor resources which fact shall be certified by the municipal, city, provincial or district engineer as sufficient compliance with the labor requirements under this Act."*.

Table 1-5 Manpower Requirements (indicative)

Skill	Expertise/Skills	No. of Personnel)	Schedule
Construction			
Regional Operation Manager	Technical Degree	1	5 to 7 days a week
Project Manager	Technical Degree	1	
Design & Build (Engineering)	Technical Degree	5	
Business Development	Technical Degree	2	
Environment, Health and Safety officer	Technical Degree	1	
Construction Manager/ Engineer	Technical Degree	2	
Operation and Maintenance Engineer and Technician	Technical Degree/ Vocational Course	10	

Driver and Contractor workers (tree cutting, land clearing, installation, etc.)	Unskilled/ Vocational course/ training certificates	200	
Operation			
Regional Operation and Maintenance Engineer	Technical Degree	1	5 to 7 days a week
Plant Manager	Technical Degree	1	
Environment, Health and Safety Officer	Technical Degree	1	
Operation and Maintenance Engineer	Technical Degree	1	
Operation and Maintenance Technician	Technical Degree	1	
Business Development	Technical Degree	2	
Administrative (Office, HR, Finance, Janitor)	Technical Degree	5	
Security Guards (24 hr)	Technical Degree	12	7 days a week (with night shifting)
Grass cutters/ Gardening	Unskilled/ Vocational Course / training certificates	5	5 days a week
Wipers (PV Module Cleaning)		5	5 days a week

2. Public Consultation

2.1 Meeting and Coordination with AFAB

The project IEC and preliminary technical scoping (**Figure 2-1**) with AFAB was participated by AFAB representatives, Hazel De Guzman, Department Manager – Freeport Facilities Department & Officer-In-Charge – Environmental and Utilities Division and John Ryan Reyes, Safety Specialist, and with the EIA preparer from AFA Environmental Engineering Services. The preliminary technical scoping was conducted on 28 April 2022 at the AFAB Administration building. A copy of the attendance sheet can be found in **Appendix A**. Update on the project description for Lucanin-2 project was also coordinated with AFAB on 16 May 2022 which considered the preliminary technical scoping of Lucanin-1 to be the same for Lucanin-2.

The technical scoping discussed the following:

- the policy of the State and Authority of the Freeport Area of Bataan (AFAB) to operate and manage the Freeport Area of Bataan (FAB) as a separate customs territory
- the implementation and enforcement of PD No. 1586, shall be vested on the AFAB including the issuance of ECC
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Note that however, during the AFAB public consultation from another project and proponent on 17 May 2022, there were commentaries about AFAB ECC application process. This resulted AFAB to conduct again a meeting with AFA representatives on June 2022 (tentative) to clarify the ECC application process for this project.

Figure 2-1 IEC and Technical Scoping Meeting with AFAB (28 April 2022)

2.2 IEC and Key-Informant Interviews

The IECs for Lucanin-2 project were conducted at the Barangay LGUs of Townsite, Lucanin and Alion on May 2022. These sessions were participated by the Barangay Captains and some Kagawads of the barangays (**Appendix D**). Random IECs in the general public were also conducted near the perimeter of the project boundary. An IEC brochure (**Figure 2-2**) was distributed and the project description was discussed. Issues and concerns were listed (**Table 2-1**) and the preliminary response of the EIA to these issues are found in **Table 2-3**.

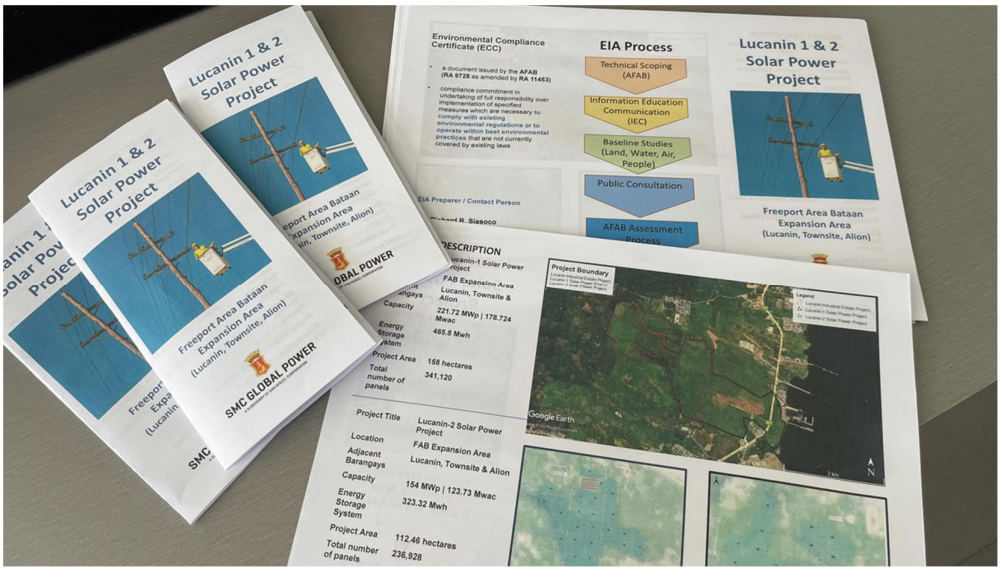

Figure 2-2 IEC Brochure

Table 2-1 IEC and KIIs Issues and Concerns (May 2022)

KII / FGD Participants	Photo Documentation	Issues and Concerns
Marissa Obdin Barangay Secretary of Townsite (12 May 2022)		The Barangay Captain is currently unavailble today due to health condition. Invited AFA on their board meeting on Monday (10AM) to present the solar project. The solar project might lower their electricty cost which is currently 14 Php kwh. The Barangay received invitation from Ruzena re the Public Hearing of Ruzena on 18 May 2022.
Barangay Townsite Boardmeeting Kagawad Ernesto Lucio (16 May 2022)		The land titles of the project is within Lucanin and Townsite, and no Alion.

KII / FGD Participants	Photo Documentation	Issues and Concerns
Ludavino Funlas Barangay Captain of Lucanin (13 May 2022)		The barangay have available chainsaw, backhoe and tracker for rent. Sponsorship on the seminar at Iloilo on 18 June 2022. Issuance of certificate of No objection. Disposal areas of cut trees and spoils.
Random Residents near the perimeter of the project Barangay Alion (13 May 2022)		Maintenance of access road for the community. Glaring effect of the solar panel. There are a lot of tresspassers on the area. Increase in ambient temperature.
Random Residents near the perimeter of the project Barangay Townsite (17 May 2022)		The project site is a private property. They can do whatever they wanted to do in their property. The project is better than poultry and piggery. There is a poultry farm near the Amo River.
Random Residents near the perimeter of the project Barangay Alion (17 May 2022)		Garbage collection is not regular. There are places where there are no garbage collection Water source is Mariveles Water District.
Random Residents near the perimeter of the project Barangay Lucanin (13 May 2022)		The project site is used to be roaming areas of cows and carabaos

KII / FGD Participants	Photo Documentation	Issues and Concerns
Marcialito D. Balan Barangay Captain of Alion (12 May 2022)		Clarification on the road boundary at Alion which is part of the Deeds of Donation of the previous owner which is now included in the property of San Miguel. Will the project name still be Lucanin-2 even it is shared by Alion and Townsite? Noted that it is in the jurisdiction/ territory of FAB. The captain endorses his people as laborer to support in Tree Cutting permit/ activities. The project is good as it is renewable and not poultry and piggery. Confirmation on the attendance in the Public Hearing as the only invited BLGU of Ruzena is Townsite and Lucanin. No current issues on Lucanin river. Alion is the poorest barangay in Mariveles in terms of IRA while Alas-asin is the richest. There is a plan development of tourism areas (lagoon, waterfalls and red land) in the upper portion of Alion. Town Fiesta is every 8 December. The captain also has a plan for flag disposal ceremony which will still be scheduled in the future.
Barangay Clerk Edwin and Police Officer Bartolome Barangay Lucanin (12 May 2022)	Barangay Captain is not around. Barangay clerk will text us if available to meet tomorrow morning. There are multiple reports of trespassing and metal stealing on the barangay which include minors. Suggested to raise the perimeter fence of the planned development and increase number of security guards in the solar project.	
August Capinpin Police Officer-in-Charge (3 May 2022)	What are the sources of water for the project as mentioned by AFAB representative during site visits for the Lucanin Industrial Estate Project.	

2.3 IEC/ Public Consultation (same date with Lucanin Industrial Estate Project's Public Hearing)

As advised by AFAB, our team as environmental consultant of one of the locators to the Ruzena Estates Development Corporation's (REDC) Lucanin Industrial Estate Project were invited to join the public hearing scheduled on 18 May 2022 for the said project. The REDC public hearing program and invitees are shown in **Figure 2-3**. The public consultation (**Figure 2-4**) was held in the Basketball Court of Villa Imperial Subdivision which is near the project site. AFA representative, Jay Richard Siasoco, presented Lucanin-2 Solar power project as one of the locators in the estate project. The issues and concerns related to the solar project are summarized in **Table 2-2** while the preliminary response to these issues and concerns are found in **Table 2-3**.

Proponent:	Ruzena Estates Development Corporation (REDC)	
Overall Presenter:	Brown & Green	
Agenda:	Public Consultation for the ECC of Lucanin Industrial Estate Project (LIEP) of REDC	
Target Date:	May 18, 2022, Wednesday at 10:00AM	
Venue:	Villa Imperial, Brgy. Lucanin & Townsite, Mariveles, Bataan	
Attendees:	REDC, B&G, AFAB, Brgys. Lucanin & Townsite, CENRO, PENRO, MENRO & LGU – Mariveles, Various Groups (Fishermen, Farmer, Senior, TODA etc	
Program:	Invocation	AVP
	National Anthem	AVP
	Welcoming Remarks	Brgy. Lucanin
	Presentation of Stakeholders	B&G
	Purpose of the Public Consultation and Overview of the Philippine Environmental Impact Statement System	AFAB
	Presentation of the Proposed LIEP	B&G
	Light Snacks	B&G
	Open Forum	B&G
	Closing Remarks	Brgy. Townsite

Figure 2-3 REDC Public Hearing Program

Solar Power Project Presentation by Jar Richard Siasoco of AFA Environmental Engineering Services

John Ryan Reyes of the Authority of the Freeport Area of Bataan during Open Forum

The Public Consultation Participants at the Villa Imperial Subdivision Basketball Court

Figure 2-4 Photo Documentation during the Public Consultation (18 May 2022)

Table 2-2 IEC/Public Consultation (18 May 2022)

Participant who raised the Issue	Photo Documentation	Issues and Concerns
Forester Rommel Cuaresma DENR CENRO Bagac, Bataan representative		1. Earth movement may potentially result to surface water run off that will affect the river. 2. Does the project have EGGA. Can we submit to MGB? 3. The outlet of the rivers is Manila Bay which is under the care of the LGU. Fifty estero rangers are assigned by the LGU to clean the river and manila bay. One of the problems encountered is the presence of Fecal Coliform. Development should consider the effect of the project and support the Battle for Manila Bay Rehabilitation. 4. If the project will use groundwater, please consider water permit from NWRB. 5. Is there an Environmental Monitoring and Multite-Partite Monitoring (MMT) team for this project? 6. To consider the protection of river and vegetation as well as livelihood in the Corporate Social Responsibility (CSR).
Atty. Mike		1. DENR has clear regulations regarding the EIA process. The Philippine Movement for Climate Justice raises the similar issue during the Public Consultation conducted from another AFAB project on which they would like to be clarified on or is there an issuance of AFAB guidelines or rules and regulations regarding ECC applications and environmental permits and clearances. 2. Townsite environmental concerns from a nearby project, hopefully, will not occur again. Suggest and properly mitigate impacts on environment (noise, air, trees, ecology (cobra, box turtle) etc.). 3. The project site is AFAB but the effect is within the jurisdiction of LGU. Potential conflict may arise.

Participant who raised the Issue	Photo Documentation	Issues and Concerns
Engr. Gladies Representative from the MPDO of Mariveles		1. The 2017 to 2026 CLUP states that the Ruzena Industrial Estate Project are classified into Planned Unit Development (PUD) and agricultural area. Barangay Lucanin has 212.25 ha PUD while Townsite has 65.02 ha. The Ruzena property is 432.324 ha, the difference belongs to forest and agricultural area and not industrial? 2. Radius of consideration/ influence for environmental assessment?
Ernesto Lucio Barangay Council of Townhall		1. Water estimation in cleaning per panel? 2. Potential flooding when clearing Lot 387 and 386 in sitio Maligaya. The farm and Ruzena property is separated by Amo river only. 3. Other concerns from Townsite such as the dust exposure and blocked drainage canal from another AFAB project. Where to file complain and who is the authority to report to DENR or AFAB? 4. Benefits of FAB enterprise project to Barangay LGU if the project is under jurisdiction of AFAB?

Table 2-3 Summary of EIA Related Issues and Concerns from the Public Consultations (IEC, KII & Public Scoping)

Issues and Concerns	Preliminary EIS Response
Project Description	
The project site is AFAB but the effect is within the jurisdiction of LGU. Potential conflict may arise. Radius of consideration/ influence for environmental assessment?	The solar project has no effluent and emission, hence, the Direct Impact Area is limited to the FAB expansion area or the project location itself. In terms of social benefits, Corporate Social Responsibility (CSR) and Real Property Tax (RPT), the indirect barangays Lucanin and Townsite are the priority and considered as Indirect Impact Areas (IIA). In terms of study areas for the water quality, the two rivers namely, Lucanin and Amo, are considered in the baseline studies due to its proximate location from the project. For geohazards, approximately 1-km from the project boundary will be assessed.
The land titles of the project is within Lucanin and Townsite, and no Alion.	The land titles and lease agreement showing the parcels of lands under the jurisdiction of Lucanin and Townsite will be attached in the EIS.
Will the project name still be Lucanin-2 even it is shared by Alion and Townsite? Noted that it is in the jurisdiction/ territory of FAB.	
Clarification on the road boundary at Alion which is part of the Deeds of Donation of the previous owner which is now included in the property of San Miguel.	This will be considered in the final site development map.
What are the sources of water for the project as mentioned by AFAB representative during site visits for the Lucanin Industrial Estate Project.	Option 1 – Storm harvesting and storage with recirculating wastewater treatment facility. Option 2 – Surface Water (application to NWRB/AFAB)
Water estimation in cleaning per panel?	The water requirement is 2 to 5 L per panel per month.
Land	
Does the project have EGGA?	Yes
Can we submit to MGB?	Submission is through AFAB. AFAB representative agreed to submit a copy to MGB.
The 2017 to 2026 CLUP states that the Ruzena Industrial Estate Project are classified into Planned Unit Development (PUD) and agricultural area. Barangay Lucanin has 212.25 ha PUD while Townsite has 65.02 ha. The Rusena property is 432.324 ha, the difference belongs to forest and agricultural area and not industrial?	SB reclassification stating that the project area is industrial will be attached in the EIS.
Potential flooding when clearing Lot 387 and 386 in sitio Maligaya. The farm and Ruzena property is separated by Amo river only.	To check Lucanin-2 project if Lot 387 and 386 are included.
Disposal of cut trees and spoils.	Tree cutting permit will be applied to AFAB. Disposal areas or LGU donataion for cut trees will be coordinated with AFAB.

Issues and Concerns	Preliminary EIS Response
	Spoils will be collected and handed over to a designated spoils disposal area.
Air	
Increase in ambient temperature	The solar panel design is tilted at 7 degrees which is very low and will be faced away from any sensitive receptor. Therefore, heat effects and glare (if any) will be out of sight. In addition, modern solar panels has anti-reflective coatings which reduces light effect. The solar project also has perimeter fence and outside the fence are trees that would also served as buffer.
Water	
Earth movement will result to surface water run off that will affect the river.	Sufficient buffer to Amo and Lucanin rivers will be observed during construction. A slope and grading plan will be at placed.
The outlet of the rivers is Manila Bay which is under the care of the LGU. Fifty estero rangers are assigned by the LGU to clean the river and manila bay. One of the problems encountered is the presence of Fecal Coliform. Development should consider the effect of the project and support the Battle for Manila Bay Rehabilitation.	Portable toilet will be used during the construction period. Septic tank will be installed in the office building during the operations. The solar project have no effluent which is directly to river. The perimeter of the project site will have a drainage and WTP that will have a water recirculation process using storm water through rain harvesting.
If the project will use groundwater, please consider water permit application from NWRB.	The project will not use groundwater. Water use is rain. Drainage and STP will be installed on which water collected from the rain will be recirculated/recycle.
There is a poultry farm near the Amo River. A nearby resident complain about the odor and its wastewater disposal.	The Lucanin Industrial Estate Project will have its own drainage layout and Wastewater Treatment Plant (recirculating) for its locators. The project will also have its own solid waste management facilities. The locators will be fenced and will follow the Water Code of the Philippines recommended distance to a waterway.
People	
Livelihood programs that would help the community. To consider the protection of river and vegetation in the Corporate Social Responsibility (CSR).	Part of the CSR under Social Development Plan (**See Section 5**) • Livelihood • Tree Planting • Coasal Clean-up
Benefits of FAB enterprise project to Barangay LGU if the project is under jurisdiction of AFAB?	Locators are subject to a five percent final tax on gross income earned, of which 1 percent goes to the national government, 1 percent to the province of Bataan, one percent to the host LGU, and 2 percent to the Authority of the Freeport Area of Bataan (AFAB). The benefits are Real Property Tax (RPT) and shares from the 1% (final tax on gross income earned) to the host LGU (Mariveles).
Maintenance of access road for the community.	The project site will have its own perimeter fence and will develop its own access road from the Ramon Super Highway to Lucanin Estate locators.
Glaring effect of the solar panel	The solar panel design is tilted at 7 degrees which is very low and will be faced away from any sensitive receptor. Therefore, heat effects and glare (if any) will be out of

Issues and Concerns	Preliminary EIS Response
	sight. In addition, modern solar panels has anti-reflective coatings which reduces light effect. The solar project also has perimeter fence and outside the fence are trees that would also served as buffer.
There are a lot of tresspassers on the area	The project site will have its own perimeter fence. There will be assigned security guards and CCTVs will be installed.
There are multiple reports of trespassing and metal stealing on the barangay which include minors. Suggested to raise the perimeter fence of the planned development and increase number of security guards in the solar project.	
Garbage collection is not regular in the community. There are places where there are no garbage collection.	The solar project will have its own Wastewater Treatment Facility (recirculating) and Solid Waste Management plan/ facilities.
EMoP	
Is there an Environmental Monitoring and Multite-Partite Monitoring (MMT) team for this project?	The solar project is non-ECP, formulation of MMT is for Environmentally Critical Projects (ECP) only. Environmental monitoring will be conducted for the project. The Environmental Monitoring Plan (EMoP) for this project will form part of the Section 6 of the EIS. The project will submit Self Monitoring Report (SMR), quarterly and Compliance Monitoring Report (CMR), semi-annual to AFAB.
Others	
Townsite environmental concerns from a nearby project, hopefully, will not occur again. Suggest and properly mitigate impacts on environment (noise, air, trees, ecology (cobra, box turtle) etc.).	Impacts and mitigations will form part of the EIS Section - Environmental Management Plan.
DENR has clear regulations regarding the EIA process. The Philippine Movement for Climate Justice raises the similar issue during the Public Consultation conducted from another AFAB project on which they would like to be clarified on or is there an issuance of AFAB guidelines or rules and regulations regarding ECC applications and environmental permits and clearances.	The policy of the State and Authority of the Freeport Area of Bataan (AFAB) to operate and manage the Freeport Area of Bataan (FAB) as a separate customs territory The implementation and enforcement of PD No. 1586, shall be vested on the AFAB including the issuance of ECC The revised procedural manual DENR Administrative Order No. 30 Series of 2003 (DAO 03-30) will be used as guidelines or reference in the Environmental Impact Assessment (EIA)
Other concerns of Townsite such as the dust exposure and blocked drainage canal from another FAB project. Where to file complain and who is the authority to report to DENR or AFAB?	Environmental concerns from FAB projects should be raised to AFAB.

3. Proposed List of Stakeholder for Consultations

DENR Administrative Order 2017-15 were used as guidelines on public participation under the Philippine Environmental Impact Statement System – list of stakeholder for public consultations. The proposed list (**Table 3-1**) will be coordinated with AFAB who have the jurisdiction over the FAB Expansion Area.

Table 3-1 Proposed List of Stakeholder for Public Consultations

Groups	Participants	Addressee
a) Local Government Units (LGU) in areas where all project facilities are proposed to be constructed/ situated and where all operations are proposed to be undertaken		
• Authority of the Freeport of Bataan	- Environment and Utilities Division - AFAB Police Personnel	**Engr. Emmanuel D. Pineda** Chairman and Administrator **Authority of the Freeport Area of Bataan** CC: Hazel De Guzman, Department Manager – Freeport Facilities Department & Officer-In-Charge – Environmental and Utilities Division John Ryan Reyes, Safety Specialist
• Municipality of Mariveles	**City/ Municipal LGU** - Mayor's Office - Vice Mayor' Office	**Hon. Kuya AJ Concepcion** Municipal Mayor **Mariveles Municipal Hall** Roman Super Hwy, Mariveles, 2105 Bataan, Philippines +63 47 9351757 **CC:** Office of the Mayor and Vice Mayor, Sangguniang Bayan (SB), Municipal/ Community Environment and Natural Resources Officer (MENRO) & Community Environment and Natural Resources Officer (CENRO)
• Barangay Lucanin	**Barangay LGU** - Barangay Captain - Barangay Council - Barangay Secretary - Barangay Peacekeeping Action Team (BPAT) - Barangay Security Force/Tanod - Barangay Health Workers (BHW) - Barangay Nutrition Scholars (BNS) - Barangay Youth Council (SK)	**Hon. Ludavino Funlas** Barangay Chairman **Barangay Lucanin** CC: Representatives from Barangay Council, Secretary, BPAT, Tanod, BHW, BNS, SK, Sector/ organization leaders (seniors, women, 4Ps, Youth, farmers, TODA, fisher folks, PWD, school, church, etc.), and general public
• Barangay Townsite		**Hon. Carmelita C Adame** Barangay Chairman **Barangay Townsite** CC: Representatives from Barangay Council, Secretary, BPAT, Tanod, BHW, BNS, SK, Sector/ organization leaders (seniors, women, 4Ps, Youth, farmers, TODA, fisher folks, PWD, school, church, etc.), and general public

Groups	Participants	Addressee
• Barangay Alion		**Hon. Marcialito D. Balan** Barangay Chairman **Barangay Alion** CC: Representatives from Barangay Council, Secretary, BPAT, Tanod, BHW, BNS, SK, Sector/ organization leaders (seniors, women, 4Ps, Youth, farmers, TODA, fisher folks, PWD, school, church, etc.), and general public
b) Government agencies with related mandate on the type of project and its impacts	Department of Energy (DOE)	**Director Renante M. Sevilla** Director **Department of Energy (DOE) – Luzon Field Office**
c) Interest groups (NGO/POs) preferably those with mission/s specifically related to the type and impacts or the proposed project	TBA if any	TBA if any
d) Households, business activities, industries that may be potentially displaced	None	None
e) People whose socio-economic welfare and cultural heritage are projected to be affected by the project especially Vulnerable Sectors and Indigenous populations	• Representatives of the General Public of IIA • Vulnerable groups (Women, PWD, Seniors, Solo Parents, Youth) • Pantawid Pamilyang Pilipino Program (4PS) • TODA • Fishermen • Farmer	Through Barangay Captain (as above)
f) Local Institutions (schools, churches, hospital)	Representatives from school, churches, and hospital (Townsite Elementary School and Lucanin Elementary School)	Through Barangay Captain (as above)
Others • Ruzena Industrial Development Corporation		**Ms. Princess Dianne V. Bello** Special Projects Unit Ruzena Estate Development Corporation

Annex A – AFAB Attendance Sheet

Privacy Notice:
The Authority of the Freeport Area of Bataan (AFAB) ensures that the data gathered in this form are held under strict confidentiality in accordance with the R.A.10173 otherwise known as the Data Privacy Act of 2012."

FAB

ATTENDANCE SHEET

EVENT/ ACTIVITY TITLE: TECHNICAL SCOPING " LUCANIN-1 SOLAR POWER PROJECT "

VENUE: FPD MEETING ROOM

DATE & TIME: APRIL 28, 2022

	NAME			SEX	COMPANY/ DEPT.	CONTACT NUMBER / EMAIL	SIGNATURE
	LAST	FIRST	MIDDLE				
1	Siasoco	Jay Richard	Roxas	M	AFA Environmental Engr.	09155400799 jaricai0217@yahoo.com	
2	CADDARAO	PATRICK	SUBIDO	M	AFA Envi. Engr.	09398181636 patrickcaddarao@yahoo.com	
3	Rosello	Raymond	ORIAS	M	AFA Env.	09510781156	
4	REYES	JOHN RYAN	STO. DOM	M	AFAB - FPD - GOV	09175817788	
5	DE GUZMAN	HAZEL	NALUS	F	AFAB - FPD	09170031050	
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Annex B – IEC Presentation

Information and Education Campaign (IEC)

Lucanin-2 Solar Power Project

SMC GLOBAL POWER

Project Description

Project Proponent

SMC GLOBAL POWER

A SUBSIDIARY OF SAN MIGUEL CORPORATION

SMC Global Power Holdings Corp. (SMC Global Power)
SMC GLOBAL LIGHT AND POWER CORPORATION

- one of the largest power companies in the Philippines serving as the energy arm of San Miguel Corporation
- according to the Department of Energy EPIRA Report 2020, the power the Company produces is approximately 20% of the National Grid, 27% of the Luzon Grid, and 8% of the Mindanao Grid (as of December 31, 2020)

Project Boundary

Lucanin Industrial Estate Project
Lucanin-2 Solar Power Project

The Project is within the jurisdiction of the Freeport Area of Bataan (FAB).

Legend

- Lucanin Industrial Estate Project
- Lucanin-2 Solar Power Project

301

301

N

2 km

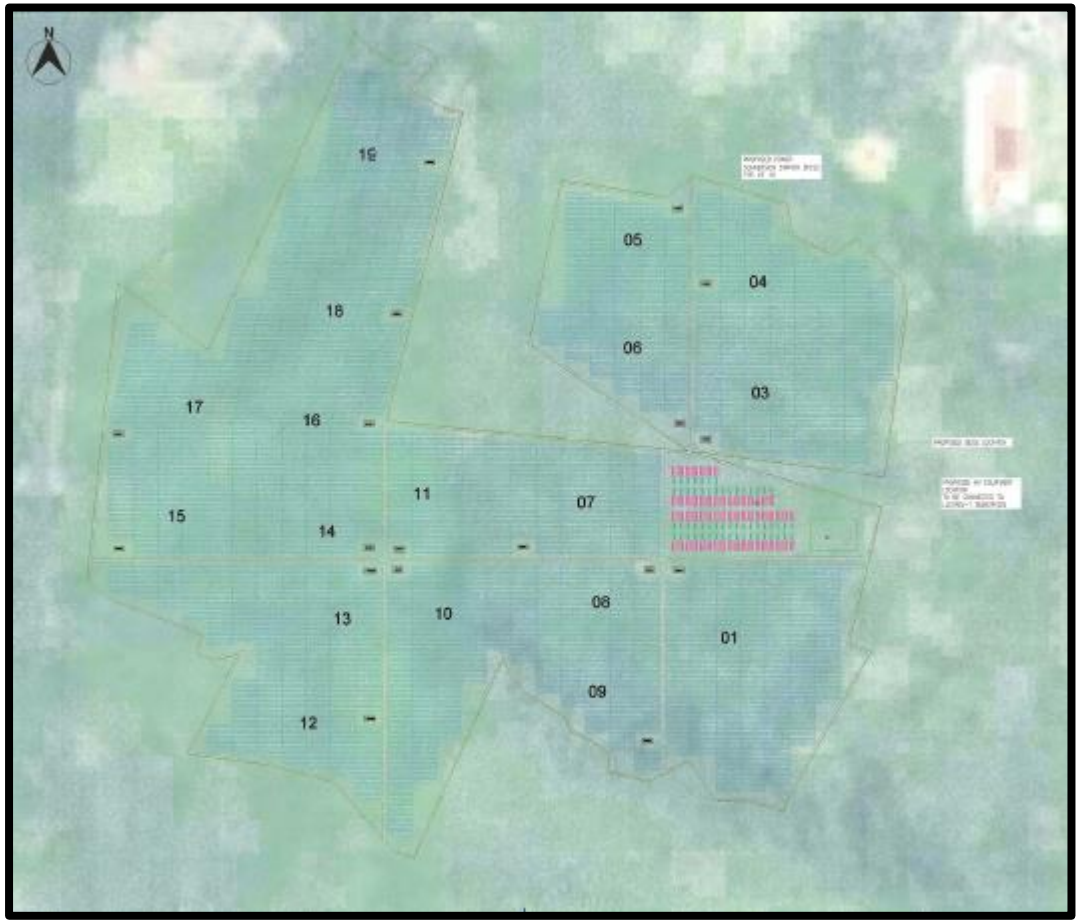
Google Earth

Image © 2022 Maxar Technologies
Image © 2022 TerraMetrics

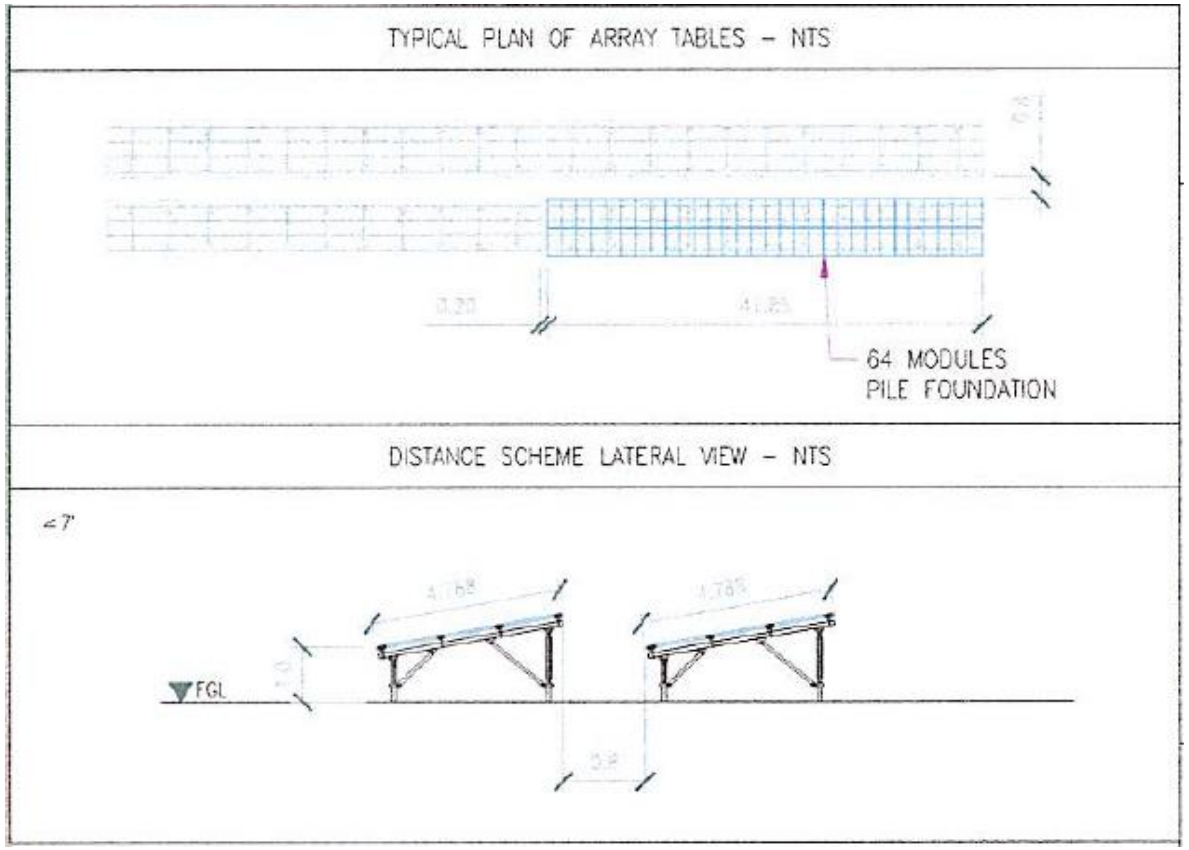
Project Description

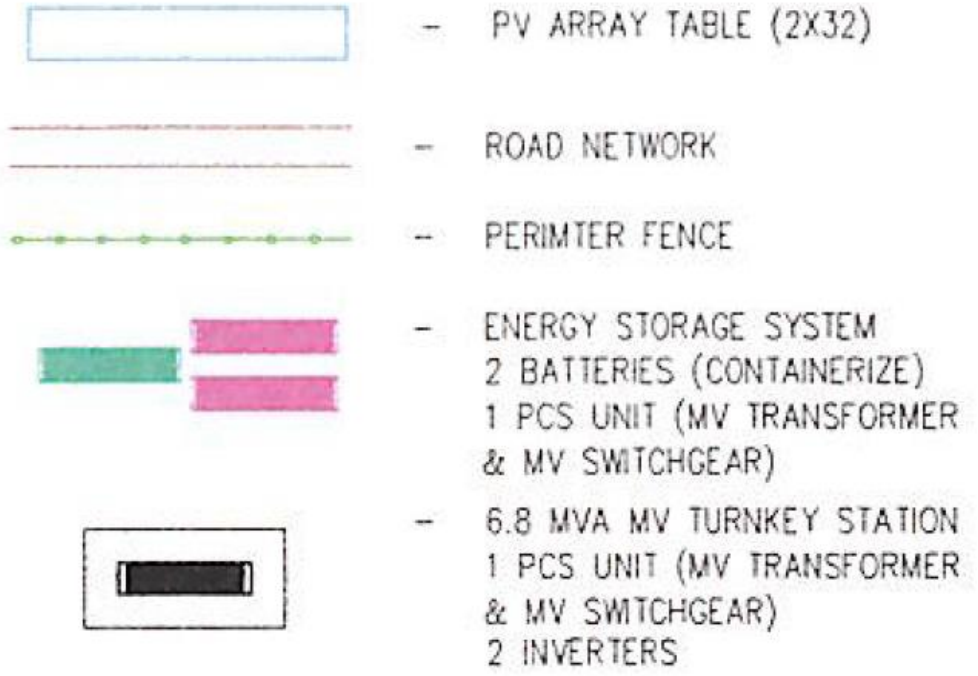
Project Fact Sheet

Project Name	**Lucanin-2 Solar Power Project**
Capacity	154 MWp | 123.73 MWac
Energy Storage System (ESS) Energy	323.32 MWh
Project Area	112.46 ha
Project Location	Freeport Area Bataan Expansion Area (adjacent to Barangay Alion, Lucanin and Townsite)
Total Number of PV Array Tables	3,702
String/Table	2
Module/String	32
Total number of strings	7,404
Total number of panels	236,928
Panel Wp (MONO)	650
Inverter rating	3,437 MWac
Total Number of PV Inverters (PCS)	52 ~ 26 MV Turnkey Station



Project Components





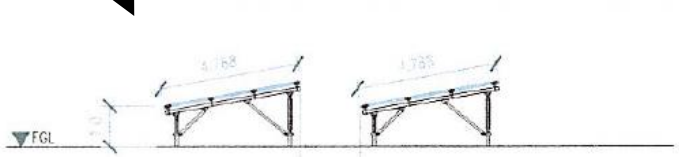
Battery Energy Storage System (BESS)

Sample Solar Photovoltaic System

Image source: Unsplash

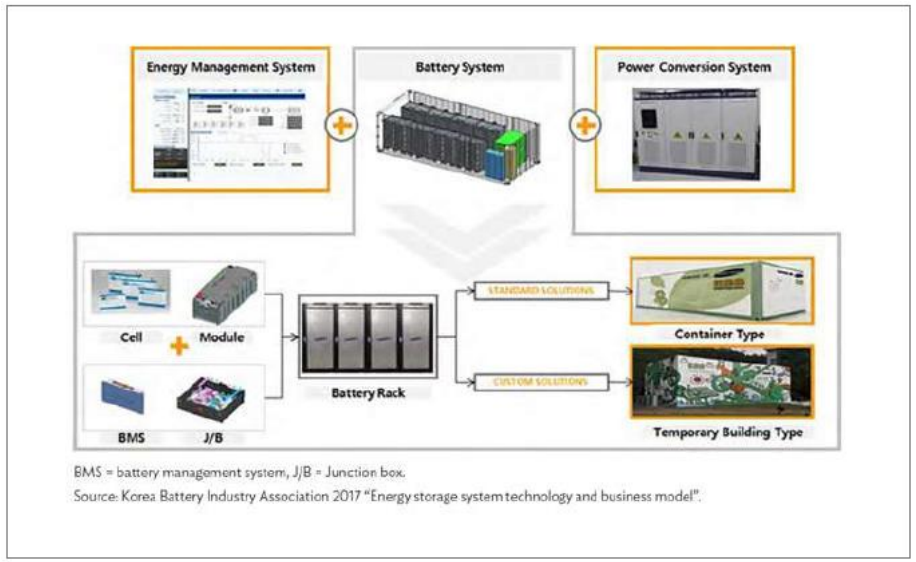
Project Technology

Sun



Photovoltaic System (Solar Panels)

Main Control Building
(Power Plant Control system)



Battery Energy Storage System

Consumers (industrial, residential, etc.)

Inverter Station

Image source: Unsplash

Transmission Lines

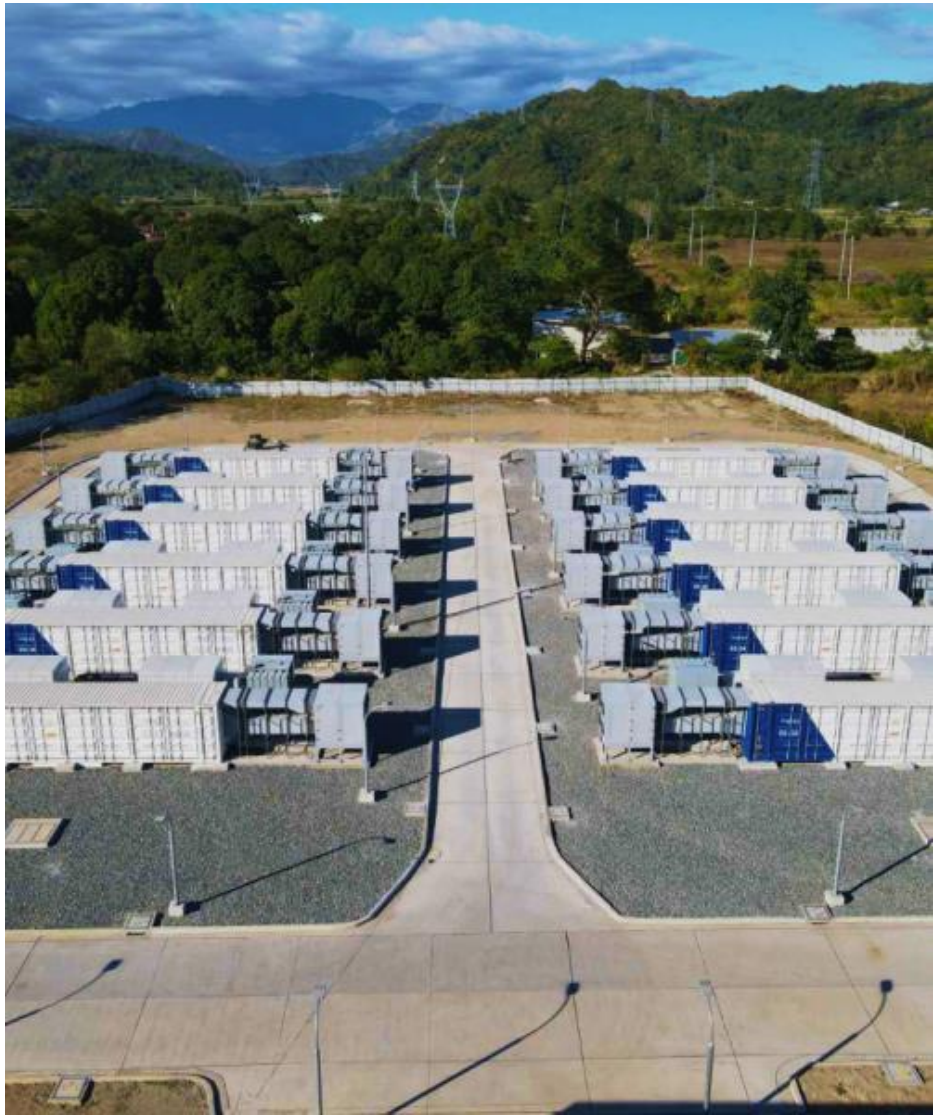
Take-off Substation

Image source: Unsplash


N
NGCP
LAMAO SUBSTATION
LUCANIN 2 SOLAR
POWER PROJECT
PROPOSED 5.6KM
TRANSMISSION ROUTE
Limay
Google

Project Rationale

- Contribute to the Clean Energy Scenario target of 35.0 percent and 50.0 percent RE share in the power generation mix by 2030 and 2040
- Regulate fluctuations in the national grid with zero emissions
- to help the country achieve a carbon-neutral economy
- to deliver competitive and reliable power
- Local employment during construction and operation



Project Alternatives

Project Type	Remarks
No project scenario	No new energy / power source to cater the demand of new and existing developments Other manufacturing or energy projects may be established which may potentially produce more harm to the environment as compared to solar project The project site will stay as a scrubland with fragments of orchards The project site will remain under FAB expansion area
With Project – Solar Power Plant and Battery Energy Storage System	Less environmental and social impacts as compared to other powerplant or manufacturing projects The project site is open to sunlight and far from any elevated structures/ obstruction (no shading effect) Additional source of renewable energy

Project Timeframe

2022	2023	2024 to 2048
Second Quarter to Third Quarter • Environmental Impact Assessment • Permitting **Fourth Quarter** • Land clearing and road access	**Construction Phase** • Siteworks and foundations • Mounting of structures • Solar PV, control room and BESS installation and or construction • Commissioning	• **Project Operation (Energy Generation)**

Preliminary identified environmental impacts and mitigations

Possible issues and concerns	Response / Mitigations/ Enhancement Measures
The Land • Vegetation Removal (construction phase) • Generation of Solid Waste (construction and operation) • Geohazards (Heavy rains and severe wind condition, ashfall (construction and operation)	• Conduct tree inventory and secure tree cutting permit from AFAB • Proper housekeeping and implementation of solid waste management plan & designation of Spoils Disposal Area • Early warning systems, strong foundation and proper mounting of PV arrays
The Water • Potential change in water quality (construction phase) • Water competition	• Maintain sufficient buffer to Lucanin and Amo River or any waterways • Rain harvesting and storage pond • Observance of ROW
The Air • Dust generation from land clearing activities (construction phase) • Mobilisation (construction and operation)	• Road spraying and speed limits • Vehicles/equipment will be properly checked (LTO registered and passed the carbon emission tests)
The People • Generation of employment (construction and operation) and economic benefits • Road safety and access	• Priority hiring of qualified locals • Careful planning in the scheduling of delivery materials/ construction equipment • Appropriate road and safety signages

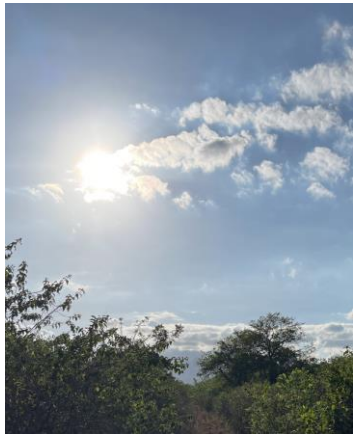
***Preliminary assessment only. Subject to change upon the completion of the Environmental Impact Assessment

EIA Baseline Studies

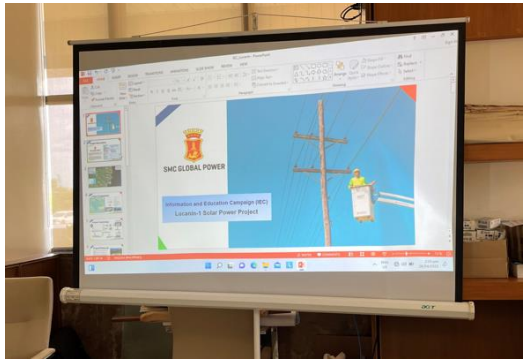
Terrestrial Ecology (Flora and Fauna surveys)

Water Quality (Groundwater and Surface Water sampling)

Site Topography and Geohazards



Climate



Information Campaign

Information Campaign

Meeting and Technical Coordination with AFAB (April 2022)

IEC Brochure

Information Campaign

Information Campaign

Information Campaign

Nearby communities around the project site

Information Campaign

Issues and concerns raised during stakeholder consultations

- Access roads / Right of way (competition)
- Glaring effect of the solar pv panel
- Increase in ambient temperature
- Potential decrease in the cost of electricity
- Project security / Presence of metal steel robbers (especially <18 years old and below)
- Disposal of cut trees and spoils

Contact Person

EIA Preparer / Contact Person

- **Jay Richard R. Siasoco of AFA Environmental Engineering Services | T: 09155400790**

For Environmental Impact Assessment (EIA) - related issues and concerns: lucaninsolar@gmail.com

END

Annex C – IEC Brochure

Environmental Compliance Certificate (ECC)

- a document issued by the **AFAB (RA 9728** as amended by **RA 11453)**
- compliance commitment in undertaking of full responsibility over implementation of specified measures which are necessary **to comply with existing environmental regulations** or **to operate within best environmental practices** that are not currently covered by existing laws

EIA Preparer / Contact Person

Jay Richard R. Siasoco
Project Manager
AFA Environmental Engineering Services | T: 09155400790

For Environmental Impact Assessment (EIA) - related issues and concerns:
lucaninsolar@gmail.com

EIA Process

Technical Scoping (AFAB)

Information Education Communication (IEC)

Baseline Studies (Land, Water, Air, People)

Public Consultation

AFAB Assessment Process

Lucanin 1 & 2 Solar Power Project

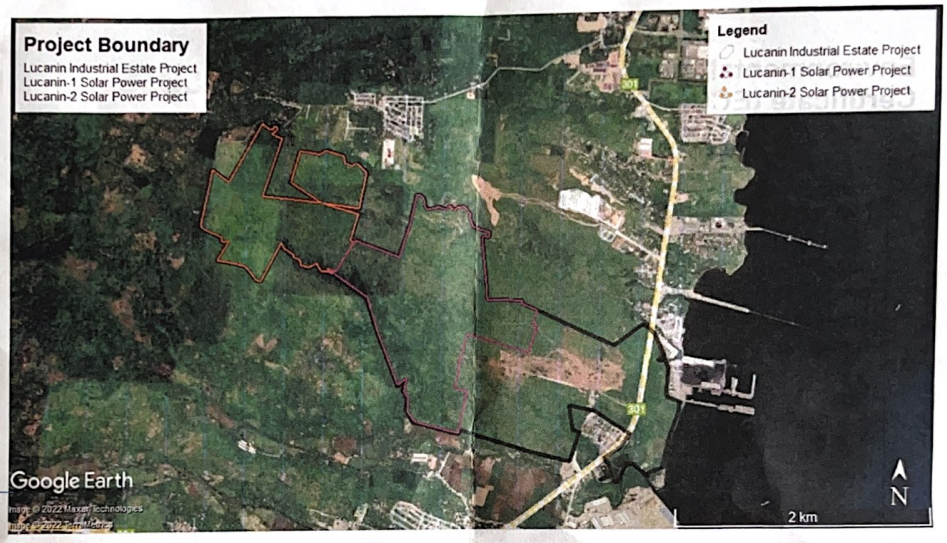
Freeport Area Bataan Expansion Area
(Lucanin, Townsite, Alion)

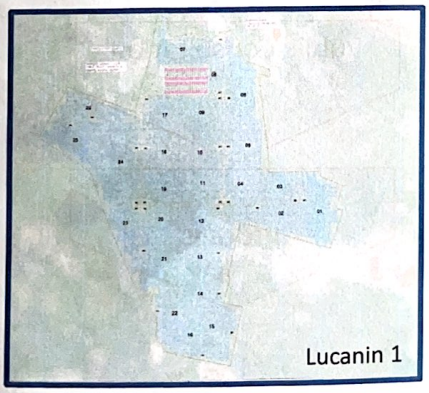
SMC GLOBAL POWER
A SUBSIDIARY OF SAN MIGUEL CORPORATION

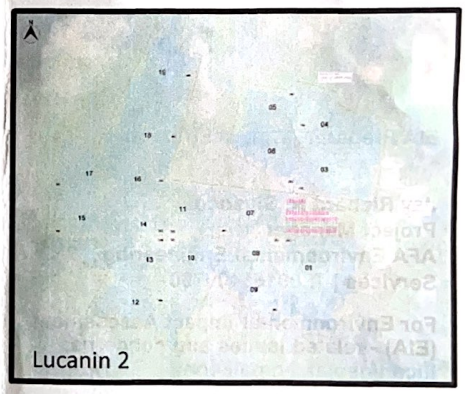
PROJECT DESCRIPTION

Project Title	**Lucanin-1 Solar Power Project**
Location	**FAB Expansion Area**
Adjacent Barangays	**Lucanin, Townsite & Alion**
Capacity	**221.72 MWp | 178.724 Mwac**
Energy Storage System	**465.8 Mwh**
Project Area	**158 hectares**
Total number of panels	**341,120**

Project Title	**Lucanin-2 Solar Power Project**
Location	**FAB Expansion Area**
Adjacent Barangays	**Lucanin, Townsite & Alion**
Capacity	**154 MWp | 123.73 Mwac**
Energy Storage System	**323.32 Mwh**
Project Area	**112.46 hectares**
Total number of panels	**236,928**







Annex D – IEC Attendance Sheet

Project: LUCANIN Solar Power Project
What: INFORMATION CAMPAIGN

Name	Gender	Office	Designation	Contact Details/ Email	Date	Signature
	M	Barangay Alion	Punong Barangay	alion.marivelesa@gmail.com	12/9/22	
MARCIALITO D. PALMA				09175366692		
MARISSA S. OBDIN		TOWNSITE	Secretary	09399288832	5/12/22	
EDISON TAHEO		TOWNSITE	COUNCILOR	09098645738	5/12/22	
Lady A. FUNILAS		~~CABCABEAN~~ LUCANIN	P.B.	09610975218	5/13/22	

Project: LUCANIN-1 & Lucanin-2 Solar Power Project
What: Information Campaign

Name	Gender	Office	Designation	Contact Details/ Email	Date	Signature
CORNELITA C. BOAME	F	Barangay Townsite	Brgy Captain	09089595183	16 May	
JOARD C DIMAYUG	M					
APRIL JOY MARQUEZ	F					
JOVITO G. AGBUG	M					
FLORENCIO M. PAGSIBIGAN	M		KAGAWAD	09186951622		
EDISON D TAHEO	M			09098645728		
LEONARDO P. FRANCISCO	M		KAGAWAD	09512924438		
VAN B. DONDA	M			09324221419		
				0914-7845500		
EDWARD D. LUCIN	M		KAGAWAD			