



Environment Social Management Plan/Public Environment Report

Bina Solar Hybrid Subproject

May 2021

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ACRONYMS

AP	Affected Person
BMP	Building Materials Permit
BOQ	Bill of Quantities (BOQ)
CITES	Convention on International Trade in Endangered Species
SIEAREEP	Solomon Islands Electricity Access and Renewal Energy Expansion Project
ECD	Environment Conservation Division
EIA	Environment Impact Assessment
EIS	Environment Impact Statement
EMP	Environment Management Plan
EPC	Engineering Procurement Construction Contract
ERW	Explosive Remnants of War
ESIA	Environment Social Impact Assessment
ESMP	Environment Social Management Plan
CESMP	Construction Environment Social Management Plan
ESO	Environment Safety Officer
GEF	Global Environment Facility
GRM	Grievances Redress Mechanism
IDA	International Development Association
MECDM	Ministry of Environment, Climate Change, Disaster Management and Meteorology
MID	Ministry of Infrastructure Development
MMERE	Ministry of Mines Energy Rural Electrification
MPG	Malaita Provincial Government
NAPA	National Adaptation Plan of Action
NEMS	National Environment Management Strategy
PER	Public Environment Report
RSIPF	Royal Solomon Islands Police Force
SDA	Seventh Day Adventist
SICA	Solomon Islands Christian Association
SIDS DOCK	Strategic Climate Fund and Small Islands Development State Initiative Multi-Donor Trust Fund
SIEA	Solomon Islands Electricity Authority
SIG	Solomon Islands Government
SINDS	Solomon Islands National Development Strategy 2011-2020
SINEP	Solomon Islands National Energy Policy 2014-2024
SIWA	Solomon Islands Water Authority
SOP	Standard Operating Procedures
SP	Solomon Power
SSEC	South Sea Evangelical Church
SWIM	Supporting Work in Mission
TCPB	Town Country Planning Board
UAE	United Arab Emirates
UXO	Unexploded Ordnance
WB	World Bank

EXECUTIVE SUMMARY

Subproject Background: Solomon Islands Electricity Authority (SIEA) trading as Solomon Power (SP) established under the Electricity Act 1969 is the sole provider of grid electricity throughout Solomon Islands. Within Honiara itself, it has two power stations (where more than 95% of the energy is from diesel generators) located at Lungga and Honiara producing a combined capacity of 32MW.

Recently, World Bank (WB), Global Environment Facility (GEF), Strategic Climate Fund and Small Islands Development State Initiative Multi-Donor Trust Fund (SIDS DOCK) have agreed to finance capital works under the Solomon Islands Electricity Access and Renewal Energy Expansion Project (SIEAREEP). The SIEAREEP comprise of International Development Association (IDA) Credit 5.55m, IDA Grant 4.75m), and trust funds (Strategic Climate Fund 7.1m, GEF Grant 0.9m and SIDS DOCK grant 1.6m). The project development objective is to increase access to grid-supplied electricity and increase renewable energy generation in Solomon Islands. SP will therefore utilize this funding to increase its footprint throughout Solomon Islands through service connection subsidies and the expansion of solar farms at Henderson and Roof top of SP building together with Solar Hybrid systems and to increase the share of renewable energy from its current and proposed power stations. The project is divided into three (3) components:

- Component 1: Involve installation of new hybrid mini-grids in key locations within Solomon Islands.
- Component 2: involve new electricity service connections and subsidies for household wiring for low-income households accessing electricity services connecting to the mini-grids to be built under Component 1, and others across Solomon Power's grid network.
- Component 3: involve installation of between 0.5MW and 2.5MW of solar (PV) generation to be connected to the existing grid on Guadalcanal and/or Malaita islands.

Subproject Location: The Bina Solar Hybrid is a subproject under component 1. SP proposal is to have the solar site on the Diocese of Auki registered FTE land, Malaita Province. SP is working on a subdivision with the Diocese of Auki, Malaita Province and Ministry of Lands Housing and Survey (MLHS) to lease some part of the land as FTE to SP. The Malaita Planning and Development Board granted permit for subdivision of the land in May 2021. See letter in annex 17.

Subproject scope of work: Construction activities for the solar hybrid will be restricted to creating a driveway onto the site, removal of vegetation from the site, installing foundations for the solar arrays, erection of a secure building to house storage batteries, a diesel generator for generation backup and other ancillary equipment, installing the solar arrays and controllers, and installing of security fencing. Construction of the distribution grid will involve excavating holes for placement of power poles alongside existing roads and tracks, erecting the poles, stringing the power wires, and establishing the electrical connections to existing buildings.

Rational for Environment Social Management Plan or Public Environment Report: The WB Policy has been triggered for this subproject¹. As a result, an Environment Social Management Plan (ESMP) or Public Environment Report (PER) has been developed. The Environment Social Management Framework (ESMF) outlines the environmental and social

¹ SIEAREEP is the project, subproject are referred to as individual sites where specific works are to be delivered.

safeguards instruments for the SIEAREEP. Likewise, the subproject is classified under the “Public Works Sector” in the Solomon Islands Environment Act 1998. It is a prescribed development and requires an environment impact assessment.

Subproject Environment and Social Impacts: The solar site is approximately a kilometer from the coastline and 100m south of the Kwaleunga River with an elevation of less than 11 meters above sea level. The area is flat, comprise of mainly degraded lowland coastal forest, planted with teak trees and is an old cattle grazing area. The coastline and along the main road of the subproject area are occupied by coconut plantations, the catholic station, villages and swamp forests. There will be impacts on the non-land assets mainly crops, fruit trees and commercial tree species such as teak trees. SP has engaged a forestry officer and an agriculture officer to assess the crops, fruit trees and commercial tree species. Affected owners will be compensated for their losses. Unnecessary removal of vegetation will be avoided. The reports are attached in annex 12, 13, 14 and 15. There will be no relocation of people from the subproject activities. The subproject design has avoided physical displacement of people and buildings.

Grievance Redress Mechanism: A Grievances Redress Mechanism (GRM) was developed for the subproject in the ESMF because it is possible that people will have concerns with the overall subproject’s environmental social performance including the implementation of the Construction Environment Social Management Plan (CESMP). Common complaints arising during construction are expected to be minor concerning dust, noise pollution and health and safety issues that should be promptly addressed and resolved. There was grievance at the alternative site at Bina by a landowner group that resulted in covert placed over the land. SP therefore, has resorted to another site at Buma, approximately 3.5km south of Bina, a registered land owned by the Catholic Diocese of Auki. Consent from the Dioceses of Auki is in annex 16.

Conclusion: The study shows that there are no significant environmental and social impacts and the ESMF has described mitigation measures to ensure that all impacts can be mitigated. No significant flora or fauna, nor will any conservation, cultural or heritage sites be affected. The ESMF/PER concludes that the subproject impacts can be avoided and mitigated to acceptable levels.

1.0 INTRODUCTION

1.1. Project Background and Bina Solar Hybrid Subproject

Demand for electricity is heavily influenced by the economic performance of the country. There is a need to plan for sufficient electricity capacity to meet the growing demand as stipulated in the revised SINEP 2014-2024 and the SINDS 2011-2020. The Solomon Power as the agency responsible for generation, transmission and distribution of electricity is a key figure in the realization of this strategic area of development. At present, Solomon Power is 98 percent dependent on diesel generation and most probably the highest retail electricity tariff in the region.

The strategic goal that SIG has set for SP is to make electricity accessible to all Solomon Islanders by year 2050. To achieve this goal, SP is embarking on exploring opportunities in renewable energy sources. Development partners including World Bank, Asian Development Bank (ADB) and the New Zealand Government to name a few have committed funds through grants and loans to SP for installation of on grid and off grid Solar Systems. The objectives of these projects are to introduce power generation that have the potential to significantly reduce reliance on diesel generations.

The Bina Solar Hybrid subproject is a component 1 of the SIEAREEP. SP is preparing an ESMP/PER to meet requirements of the WB Safeguards Policies and Solomon Islands Legislation for Environment. The ESMP/PER will be submitted to both the WB and the Solomon Islands Government (SIG) for approval. See table below for the proposed Bina solar hybrid system components.

Table 1: Bina Solar Hybrid Subproject System Components.

Component	Description
Generator	106 kW Generator
PV	360.kWp
Storage	3 x Tesla Battery & Inverters (50kW, 228kWh each)

Bina is approximately an hour drive from the provincial capital, Auki. This region of Malaita is known as West Kwaio. The Solomon Island Government is planning to develop an onshore processing plant and pineapple processing plant in Bina.

In the Solomon Islands, solar hybrid installation is a prescribed development under public works, 2nd schedule of the Environment Act. SP is required to produce PERs and management plans for the subproject. PER's are undertaken for activities that are likely to have an impact on the environment and are subject to the decision of the national authority, the Environment Conservation Division (ECD) under the Ministry of Environment, Climate Change, Disaster Management and Meteorology (MECDM). The ESMP/PER will be approved by the Director ECD who will then issue a development consent for the subproject.

1.2. Scope and Objectives of the study

The main objective of this assessment is to identify potential environmental and social impacts and risks of the subproject throughout the subproject life cycle, and formulate recommendations

to ensure that the environmental and social impacts and risks of the subproject are avoided, minimized, reduced or mitigated.

The assessment was undertaken in full compliance with the WB 4.01, Environment Social Management Framework (ESMF) for the SIEAREEP and the Solomon Islands environment impact assessment guideline. In addition, appropriate sectorial legal provisions relevant to such subprojects have also been referred to for the necessary considerations during the subproject life cycle.

Specific objectives of the study include the following:

- Establish the environmental and social baseline conditions of the subproject area and review available information and data related to the subproject;
- Identify environmental and social risks and impacts in the subproject's area of influence and outline the process of mitigating and managing adverse environmental and social impacts throughout subproject implementation;
- Examine subproject alternatives and identify ways of improving subproject selection, siting, planning, design and implementation by preventing, minimizing, mitigating or compensating for adverse environmental impacts and enhancing positive impacts;
- Establish a comprehensive environmental and social management plan (ESMP) covering the subproject life cycle; and
- Preparation of an ESMP/PER and submission to WB and ECD for approval.

1.3. Report Structure

The PER consists of ten chapters: (Chapter 1) Introduction; (Chapter 2) Legal and Policy Framework; (Chapter 3) Description of Subproject; (Chapter 4) Description of Environment; (Chapter 5) Potential Impacts and Mitigation Measures; (Chapter 6) Analysis of Alternatives; (Chapter 7) Environment and Social Management Plan; (Chapter 8) Public Consultation and Participation and (Chapter 9) Grievance Redress Mechanism (10) Conclusion and Recommendation.

1.4. ESMP/PER Methodology

The ESMP/PER assesses the potential negative impacts of the subproject on the biophysical, ecological and social environments. It suggests measures for addressing any potential impacts that may have been identified. Site visits to investigate the environmental and social parameters and associated impacts were conducted in June 2020 and November 2020.

The approach taken to develop this ESMP/PER include:

- (i) A review of existing baseline data (climate, geology, soil, physiography and biological resources);
- (ii) consultation with stakeholders including Malaita Provincial Government (MPG), MEMRE, MECDM and Affected Person (AP);

- (iii) Identification of potential impacts based on the design and scope of work;
- (iv) Consideration of potential subproject alternatives;
- (v) Identification of mitigation measures for potential impacts; and
- (vi) Preparation of ESMP matrix as part of the ESMP/PER.



Figure 1: Bina Subproject Site, Google Earth.

2.0 LEGAL AND POLICY FRAMEWORK

2.1. Solomon Islands Legislations and Regulations

Environmental impact assessment in the Solomon Islands is provided for under the Environment Act of 1998 and the accompanying regulatory instrument, the Environment Regulation, 2008 and administered by the MECDM. Refer to annex 2 for relevant Acts.

2.1.1. Environment Act 1998

The Environment Act covers all the environmental issues in Solomon Islands, makes provisions for conservation and protection of the environment, and establishes the ECD. The Act provides for an integrated system of development control, environmental impact assessment (EIA) and pollution control. The Environment Act has considerable power by virtue of Article 4 (1) which states that in the event of a conflict between the Act and other Acts, the provisions of the Environment Act shall prevail.

As required in Part III of the Act, all developers who intend to carry out or are carrying out a 'prescribed development' activity must make an application for development consent together with the relevant EIA report and any other relevant information as may be required by the Director. The Director with responsible staff and government agency then reviews the application with the relevant EIA report and make a decision on whether to grant or not to grant development consent. The developer shall not commence operation or continue to carry out any prescribed development unless it has complied with relevant provisions of the Act, been issued a 'development consent' or the Director has exempted the development from relevant approval requirements.

2.1.2. Environment Regulation 2008

The Environment Regulations 2008 covers detailed requirements for EIA. The Act has a schedule that lists all "prescribed" developments' that need to undergo the EIA process. All prescribed developments require a simple assessment through "screening" or "scoping" process to see what form of additional assessment is required. Most development subprojects require a PER, while many major subprojects will also need a second stage of appraisal which include technical, economic, environmental and social investigations presented in an EIA or environmental impact statement (EIS) report. Forms 1 and 3 are relevant forms in the second schedule of the environmental regulation that provides guidelines to assist in the preparation and drafting of the EIS and PER. This ESMP/PER report is a fulfilment of the environmental regulation and Act.

2.1.3 Electricity Act 1996

Under the Electricity Act 1969, SIEA trading as SP is an autonomous, government-owned entity, endowed with the necessary powers to carry out its functions as the responsible authority for the generation, transmission, distribution and sale of electrical energy throughout the Solomon Islands. The Authority falls under the portfolio of the MMERE, and in accordance with the Electricity Act, SP is answerable to the Minister for MMERE.

2.1.4. Land and Titles Act 1996

The Land and Titles Act is the major legislation that deals with land tenure in the Solomon Islands. Three main categories of land are recognized under the Act, and that includes:

- (1) Customary Land;
- (2) Fixed Term Leases;
- (3) Perpetual Estates

The Lands and Titles Act has a system of registration of different types of leases which allows individuals and groups to acquire titles to land and own land, but one must develop the land that has been acquired or registered or else lose the title to the land. SP obtained rights to use the land at Bina for the solar power plant by way of a consent from the registered FTE holder. This will be acquired by SP in accordance with the Land and Title Act. Discussions with the Catholic Diocese of Auki is in progress and SP expect to secure the land after all the topographic, cadastral and valuation surveys including relevant acquisition processes under the Lands and Title Act are completed. See annex 16 for Diocese of Auki consent to offer land for SP.

2.1.5. Town and Country Planning Board Act 1996

The Town Country Planning Board (TCPB) Act was enacted to administer, control and regulate all land developments other than those under customary land. TCPB was duly established in order to administer and implement the Act. Section 6 provides for the duty of the Board to prepare local planning schemes in consultation with the provincial assembly or the city council in the case of Honiara city. Then, submissions will be made to the Minister for approval and subsequently to the parliament for gazette. Under the local planning scheme, the Board may under section seven; declare an area as “a local planning area”.

The subproject is located in Malaita Province; therefore, a permit or consent is required from the MPG TCPB. In the Act “Development” is strictly defined and means; the carrying out of the building, engineering, mining or other operations in, on, over or under land, or the making of any material change in the use of any buildings or other land’. It, however, does not cover issues relating to agriculture, fishing and forestry developments.

2.1.6. Mines and Minerals Act (Amendment) Act 2008

Provide management for mining and mineral prospecting by regulating controls in all mining and prospecting associate activities, including alluvial mining. Part II of the Act regulates the mandate of the Minister to designate any area as a reserved area and prohibit the carrying out of reconnaissance, prospecting or mining thereon. The same section regulate reconnaissance, prospecting, and mining are prohibited in or any village, place of burial, tambu or other sites of traditional significance, inhabited house or building, any cultivated land or land rendered fit for planting and habitually used for the planting of crops, any land designated as town land, under the Lands and Titles Act, any state forest or controlled forest within the meaning of the Forest Resources and Timber Utilization Act unless some kind of arrangement authorized by the Minister in consultation with landowners and commissioner of forestry are established.

Section 65 outlines the format of the Building Materials Permit (BMP) application that will be made to the Director of Mines with a prescribed fee that is usually paid at the Inland Revenue Division (IRD) and a receipt attached to the application. Section 66 outlines the forms and content of the Building Materials Permit (BMP) application, and Sections 67 and 68 have provisions regarding the rights and obligations of the BMP holder, respectively. Section 69 provides exemptions for the national government or provincial government to mine building materials on any land owned by a government department or a provincial government.

2.1.7. Environmental Health Act [Cap 99]

The Environmental Health Act (Public Health Act), enacted on 1st August 1980, provides for the management and control of community health in the Solomon Islands. Mainly administered by the Minister, the provisions also identify Enforcement Authorities for purposes of preventing the occurrence or for checking the spread of any noticeable diseases, provision and protection of water supplies and management of drainage and sanitation practices.

The Public Health Act serves as the Health Impact Assessment reference in identifying the necessary practicable measures for preventing all conditions liable to injurious or dangerous to health arising from the erection, or occupation of the subproject.

2.1.8. Safety at Work Act

This Act consists of four parts. The key applicable sections of the ACT include:

Part II:

- Article 4 states that it is the duty of every employer to ensure the health and safety at work of his employees.
- Article 6: states that it is the duty of the employer to provide a safe workplace for persons other than his employees.
- Articles 7 and 8: requires manufacturers, suppliers of tools, equipment, suppliers of chemicals, and other hazardous substances to ensure that these are safe and without health risks.
- Article 12: states that any employee who operates unsafe machinery or substances and is injured will be the employers responsible.

Part III:

- Article 15 requires the employer to protect people from dust, fumes, etc.
- Article 16 provides for limits of exposure to dust and fumes.
- Articles 17, 18, 19 and 20 require employers to comply with the operating requirements for: (i) pressure and vacuum systems; (ii) machinery; (iii) dangerous machinery; and (iv) electrical installations.
- Articles 21 and 22 require workplaces to have fire protection and to take precautions against explosions.

2.1.9. Wildlife Protection and Management Act 2010

The Wildlife Protection and Management Act 2010 provides for the conservation, management and protection of wild flora and fauna in the country. It regulates the export and import of wildlife ensuring compliance to obligations set under the Convention on International Trade in Endangered Species (CITES). The Solomon Islands is a refuge for many species of wildlife (that includes rare and endemic). Their need for protection and sound management of these species. The act prohibits the poaching of wild fauna and flora as well as harvesting of protected species.

2.2.10. Custom Recognition Act 2000

The Custom Recognition Act 2000 provides recognition to the existence of any customary law and the nature of such customary law in relation to a matter, and its application in or relevance to any particular circumstances shall be ascertained as though they were matters of fact. However, the existence shall be provided in proof as required under section 5 of the act.

2.2.11. Unexploded Ordnance (UXO)

Technically WWII ordnance found in the Pacific Islands can be defined as either unexploded (UXO) or abandoned (AXO). Unexploded ordnance is defined as explosive ordnance that has been primed, fused, armed or otherwise prepared for use in armed conflict but has failed to explode. Abandoned explosive ordnance is defined as explosive ordnance unused during an armed conflict and subsequently abandoned or left behind. UXO and AXO are defined collectively as Explosive Remnants of War (ERW)².

Solomon Islands was the scene of bitter fighting during World War II. While this was over 60 years ago, unexploded (UXO) may still be found around the Solomon Islands. Should UXO be discovered, the contractor is to immediately cordon off the area, arrange the evacuation of nearby residences and inform the police of the find. Currently all UXO finds are reported to the police who arrange the pickup, transport, storage and ultimate disposal of the finds. While construction sites are expected to be swept for and cleared of UXOs, a chance find procedure for handling the UXOs during the construction is included in the ESMF. This will be the responsibility of the contractor. Ultimately, the SP will be responsible for the supervision and monitoring of the contractor. SP UXO guideline is in annex 5.

2.2.12. Provincial Ordinance

The provincial government is being given power under the Provincial Government Act to pass by-laws that are important to protect and perhaps improve the wellbeing of people.

2.2. World Bank Safeguard Policies

2.2.1 OP4.01 - Environmental Assessment

World Bank financed projects or subprojects requires Environment Social Assessment to ensure that it is environmentally sound and sustainable. OP4.01 (Environmental Assessment) sets out the general policies and principles for environmental protection and the requirements for assessment of impacts and implementation of plans and measures to mitigate or manage impacts. The OP4.01 has been used to classify projects or subprojects. In the case of SP, the Bina Solar Hybrid is a subproject under the SIEAREEP.

The four categories defined in the OP4.01 are:

- **Category A.** The subproject is likely to have significant adverse impact on sensitive and valuable ecosystems (protected areas, wetlands, wild lands, coral reefs, and habitats of endangered species), cultural heritage sites (archaeological, historical sites or existing cultural sites), densely populated areas where resettlement is required or pollution may be significant, heavy development areas and conflict in natural resource allocation, water bodies and land or water containing valuable resources. Since the impacts are adverse, the level of assessment is an Environment Impact Assessment (EIA) or EIS as for the Solomon Islands.
- **Category B.** Potential adverse impacts on human population and environmentally important areas (e.g. wetlands, forest, grasslands and natural habitats) are less adverse,

²Francis S, L and Alama L, 2011. *World War II Unexploded Ordnance*, Retrieved at URL on 29th of October 2013 at URL: <http://www.forumsec.org/resources/uploads/attachments/documents/UXO%20final.pdf>.

temporary, reversible and can be mitigated more readily than those of category A subprojects. The level of assessment required is equivalent to the SIG PER.

- **Category C.** The subprojects are likely to have minimal or no adverse environmental impacts. Category C subprojects do not require an EIA/EIS or PER. The subprojects require ESMPs.
- **Category FI.** Subprojects involve credit line or an equity investment in a financial intermediary. Involves subprojects that will have insignificant environment social impacts and do not require ESMP.

The Environmental and Social Management Framework (ESMF) was prepared to guide SP's social and environment safeguards requirements for the SIEAREEP. Following the screening exercise, the subproject was classified as Category C because it is expected to have less adverse environmental social impacts. These impacts are expected to be temporary and can be readily mitigated.

2.2.2. Other WB policies.

OP4.01 (Environmental Assessment) sets out the general policies and principles for environmental protection and the requirements for assessment of impacts and implementation of plans and measures to mitigate or manage impacts. The OP4.01 has been used to classify projects or subprojects. See screening checklist in Annex 7.

Table 2: Other WB policies.

Policy	Policy Triggered	Reasons
OP4.04 (Natural Habitats)	Yes	The subproject involves clearing of a modified habitat.
OP4.36 (Forests)	No	The area does not have natural forests. The forest can be regarded as degraded lowland coastal forest.
OP4.09 (Pest Management)	No	Subproject does not involve the use of pesticides.
OP4.11 (Physical Cultural Resources)	Yes	Earth movement/excavation/digging can unearth cultural resources. According to the communities, there are no cultural resources inside the proposed solar farm site or along the proposed power lines corridor. But once there is a find during construction, relevant authorities will be informed and the site condoned.
OP4.10 (Indigenous People)	No	SP to will acquire land through a voluntary land protocol procedure.
OP4.12 (Involuntary Resettlement)	Yes	An abbreviated resettlement plan will be prepared to capture land acquisition and non-assets likely to be affected by the subproject activities. There will be no physical displacement of people.
4.37 (Safety of Dams)	No	The subproject does not involve the construction and operation of a dam.
OP 7.50 Projects on International Waterways	No	No subproject activities in international waters.

2.3. Solomon Islands Environmental Assessment Process

The Environment Impact Assessment guideline is designed to administer Schedule 16 of the Environment Act 1998. The guideline comprises of EIA procedural descriptions, stakeholders in the EIA process and fees required for development type. “The guideline was prepared by the ECD with the aim of simplifying the procedures in the Act; provide basic advice and guidance to government officers, planners, developers, resource owners on the environment impact assessment process” (MECM, 2010). Technical Assistance under Asian Development Bank reviewed the EIA guideline in 2015.

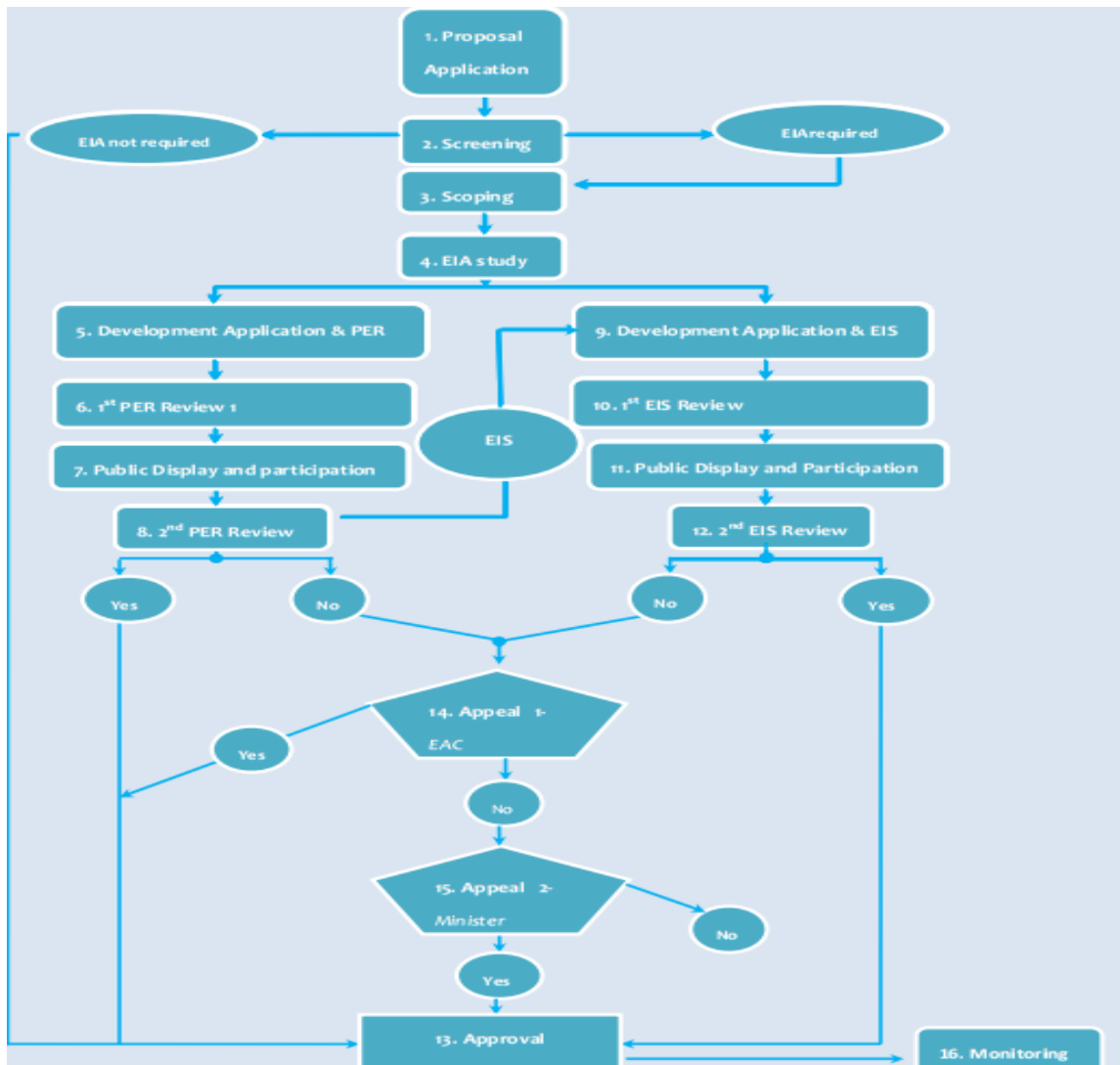


Figure 2: Procedural steps of an EIA³

2.4. Solomon Islands National Policies

2.4.1. National Development Strategy (NDS)

The National Development Strategy is a very comprehensive policy that strategizes ways in order to achieve the development aspirations of the country. Using the 17 United Nations Sustainable Development Goals (SDGs), "Transforming our World: the 2030 Agenda for Sustainable Development" as a reference, the NDS highlights five important long-term development goals and two of them; 1. NDS Objective One: Sustained and inclusive economic growth, and 2. NDS Objective Six: Develop Physical Infrastructure and Utilities to Ensure all Solomon Islanders have Access to Essential Services and Markets, are relevant to this subproject.

In order to achieve all the NDS objectives; it must be realized that access to electricity is crucial to all sectors. The subproject objective is in line with the NDS and promotes economic empowerment and sustainable development.

2.4.2. National Energy Policy 2014-2024

The NEP recognizes the importance of reducing dependency on imported fossil fuel. The Solomon Islands have renewable energy sources such as solar, hydropower, geothermal and biomass and wind energy. NEP was developed to guide the country in its efforts to provide electrification for the growing population by exploring opportunities in renewable energy sources. SP is a key player and is embarking on solar hybrid projects to meet obligations under this policy.

2.4.3. National Energy Policy Framework 2007-2009

The National Energy Policy Framework sets out the Government's policies for planning and management of the energy sector over the next 10 years. The framework defines strategies the government is taking to ensure the objectives of this policy are fully realized. Twelve strategic areas covered in the policy include 1. Energy Sector Planning; Coordination and Management; 2. Petroleum Sector; 3. Transport Sector; 4. Electricity Sector – Urban; 5. Electricity Sector – Rural; 6. Renewable Energy; 7. Environment; 8. Energy Conservation and Efficiency; 9 Capacity Building and Information; and 10. Legislation and Regulations. The subproject is a fulfillment of the fourth strategic area (Electricity urban).

2.4.4. Climate Change Policy

The Solomon Islands Government launched the Climate Change Policy through the MECDM, highlighting steps the government would take in aiding the country and its people to exist and adapt to present imminent climate change and its impact. The Policy aims to integrate climate considerations within the framework of national policies to guide the government and its partners to ensure the people, natural environment and economy of the country are resilient and able to adapt to the predicted impacts of climate change. The SIEAREEP is partially funded by Strategic Climate Fund and SIDS DOCK. Hence, the commitment to greenhouse gas reduction by reducing reliance on diesel generators by SP is aligned to global efforts on climate change.

³ MECM,2010, EIA Guideline

2.4.5. National Environment Management Strategy

The primary document for environmental policy in the country is the 1993 National Environment Management Strategy (NEMS), although outdated; it is an import document now in the absence of an environment policy.

2.4.6. National Waste Management and Pollution Control Strategy

The formulation of the National Waste Management and Pollution Control Strategy (NWMPCS) 2016-2024 is part of the ongoing efforts in the country to address the issue of waste and pollution as the country enters a period of rapid social and economic change. The objectives are:

1. The development of natural resources does not compromise the wellbeing of natural environment, ecosystems and wellbeing.
2. Ensure that existing legislations, strategies and guidelines on waste management and pollution control are effectively implemented and enforced.
3. Support and encourage the 4Rs (Recycle, Reuse, Refuse and reduction) and where relevant regulate waste minimization for solid wastes noting that organic waste form a large component of wastes produced in the country.
4. Develop institutional capacity and train waste and pollution experts for the country.
5. The government through MECDM, provincial government and Ministry of Infrastructure Development (MID) ensure that all provincial centres have in place proper landfills or waste disposal sites and a functioning waste collection system.
6. All Solomon Islanders are aware of the issue of waste and pollution and are taking appropriate actions address it.
7. Waste management and pollution control activities are undertaken based on accurate data and research, updated information, new innovation and technology
8. Encourage public-private partnership and investment in waste management and pollution control.
9. There is a long-term financial mechanism at the national level to manage waste and address pollution issues.
10. International guests and tourists are able to enjoy the natural beauty and aesthetic value of the country.
11. Waste management and pollution control are fully addressed in responding to climate change and natural disasters.

One of the highlights of the strategy is the management of e-wastes such as solar batteries. It is important all waste collection and disposal associated with the subproject during construction, operation and decommissioning are in line with the strategy.

2.5. International Conventions and Agreements

Solomon Islands is a party to some of the international treaties and conventions. The agreements are in Annex 1.

3.0 SUBPROJECT DESCRIPTION

3.1. Subproject Proponent

Name of Company: Solomon Power

Address: Solomon Power, P.O. Box 6, Ranadi, Honiara

Contact Person: Jeremy Maneipuri

Official Designation: General Manager Capital Works (Ag)

Tel: +677 166, + 677 42463

Email: Jeremy.Maneipuri@solomonpower.com.sb

3.2. Subproject Objectives

The subproject development objective is to increase access to solar grid-supplied electricity and increase renewable energy generation in Solomon Islands. This will in turn:

- Promote clean renewable energy;
- Assist in reducing green-house gas emission;
- Promote environmental benefits by reducing fossil fuel and oil usage including disposal;
- Support the realization of the National Energy Policy (NEP) target; and
- Reduce reliance on diesel-generated electricity.

3.3. Subproject Justification/Need

The obligation of SP and development partners is to support SIG commitments to the NEP goals and targets. The NEP major target is to ensure all communities in the Solomon Islands have accessed to electricity by 2050. The SIEAREEP project is aligned to efforts to improve energy access in rural communities using solar energy.

The subproject area comprise of several business undertakings including canteens, agriculture, fishery, timber and farming to name a few. The Solomon Islands Government is planning to develop an onshore fish processing plant and a pineapple processing plant in Bina. It will become one of the Solomon Islands Industrial estates. Solomon Power had initial discussion with the executing agencies of these two important projects, the Ministry of Fisheries and Marine Resource (MFMR) and the Ministry of Commerce, Industry, Labor and Immigration (MCILI) regarding the SP Bina solar hybrid subproject. The SIG ministries commend that SP establishment is vital to the development of Bina Industrial estate.

3.4. Subproject Location

The subproject solar site is located on the Diocese of Auki registered land, Malaita Province. SP is working on a subdivision with the Diocese of Auki, Malaita Province and MLHS to lease some part of the land as fix term estate to Solomon Power. See map below.

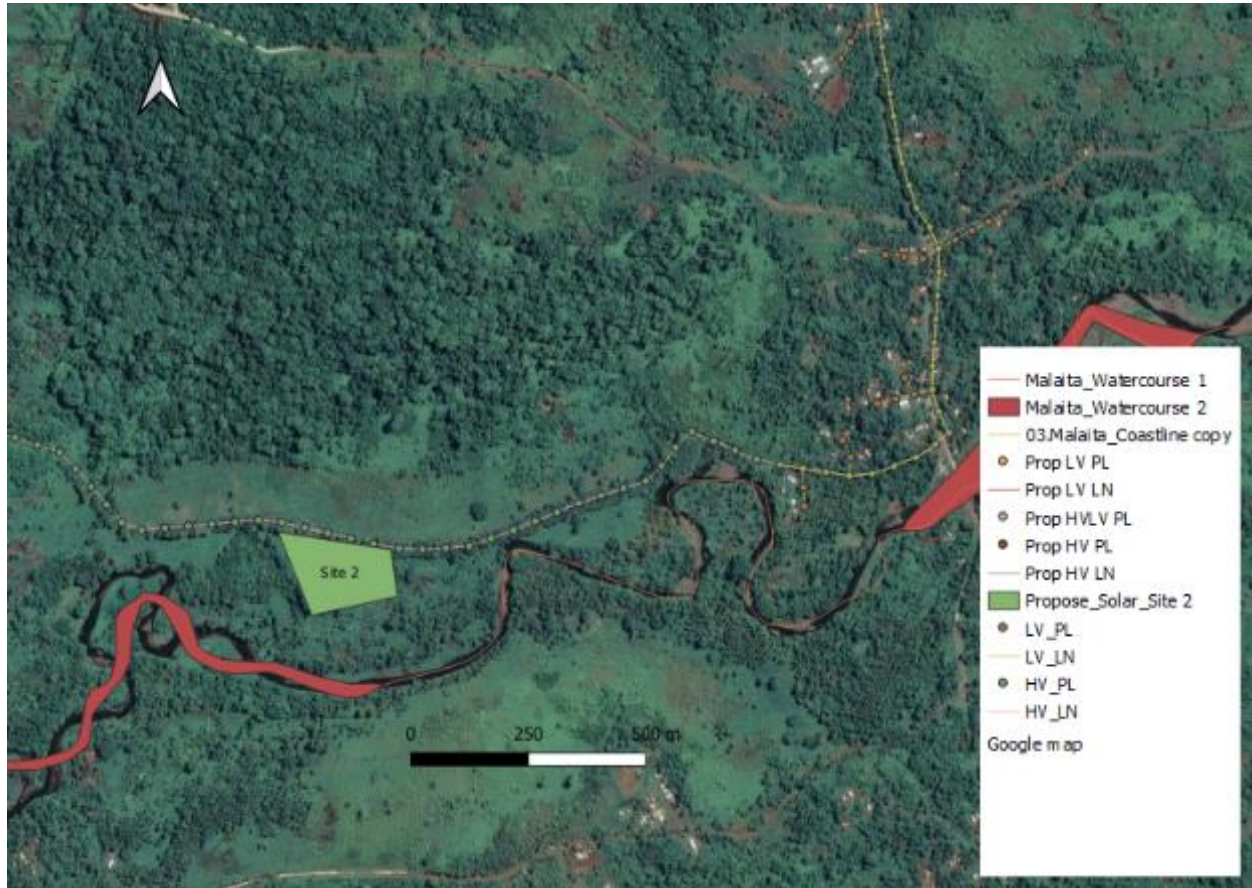


Figure 3: Subproject solar site

3.5. Subproject Scope of Work

3.5.1. Vegetation Removal during Surveying, Demarcation and Clearance

Minor impacts upon terrestrial habitats and flora at the subproject site are expected because of the surveying, demarcation and vegetation clearance/trimming for the solar farm and distribution lines. The proposed solar farm site was cleared for cattle grazing and as a result colonized by weeds, shrub, and ground cover. Agriculture and forestry officers have completed the inventory of crops and trees in the subproject area. Affected non-land asset owners will be compensated. Surveying and demarcation would cause minor degradation of the local ecology through the clearance of small areas of vegetation especially those along LV, HV and service line corridors and inside the solar farm. There are no flora in the area that have conservation significance nor is the area represent the original vegetative cover.

All material, slash and debris resulting from clearing works would be disposed at a provincial designated site on the approval of the Subproject Manager (PM). Section 3.5.9 in this report discusses vegetation clearance for the distribution network.

3.5.2 Fencing and security

The remoteness of the subproject site substantiates the need for fencing and twenty-four hours' security service. A chain link fence is recommended and three layers of barb wire. According to the specification, the contractor will provide secure perimeter fencing to prevent ingress of unauthorized personnel, general populace and small animals such as cats. Positioning shall be nominally at property boundaries. Fencing for the system shall attach to and expand the area boundary of the existing system. The existing design is acceptable to be continued for the expanded perimeter of the site, SP preference is galvanized fence type with sufficient galvanizing layer to resist corrosion in the environment. Fencing should not shade the solar Photovoltaic (PV) panels during prime generation periods. Sufficiently heavy padlocks resistant to corrosion are to be provided by the contractor to secure access gates provided. It is standard practice for Solomon Power to fence areas acquired for all Solar Farm sites. This would not only provide public safety during construction but long term safety measures for residents near the subproject site and public at large. Signage and public notices about safety and description of the subproject will be installed at designated locations for public to read and view. There are no impacts associated with restrictions on local community access since there are roads inside the acquired site. An indicative design would include:

- A heavy mesh fence of 2.5 m overall height with the upper section barbed. Steel posts shall be "hockey stick" design, heavy-duty galvanized, in concrete foundations.
- A continuous concrete strip approximately 200x150mm reinforced with 2x 12mm rebar with an upper surface at ground level is proposed. The lower section of mesh shall be secured to the strip using galvanized rebar or stainless steel loops set in the concrete and secured to the fence by stainless steel fixings at intervals not exceeding 600mm.
- At access gates, the strip shall be further reinforced for heavy traffic to 300mmx300mm and necessary reinforcement.

3.5.3 Installation and mounting of solar

The main component of the system is an array of solar panels mounted above ground level. Based on high-level concept design the system will be comprised of PV capacity of 107kWp Solar Panels String Inverters. The proposed height at this stage is 1-2.5m depending on the topography. The solar panels will be mounted on reinforced concrete platform. There will be walkway between the solar rows or columns to enable maintenance and regular inspection. See below design layout.

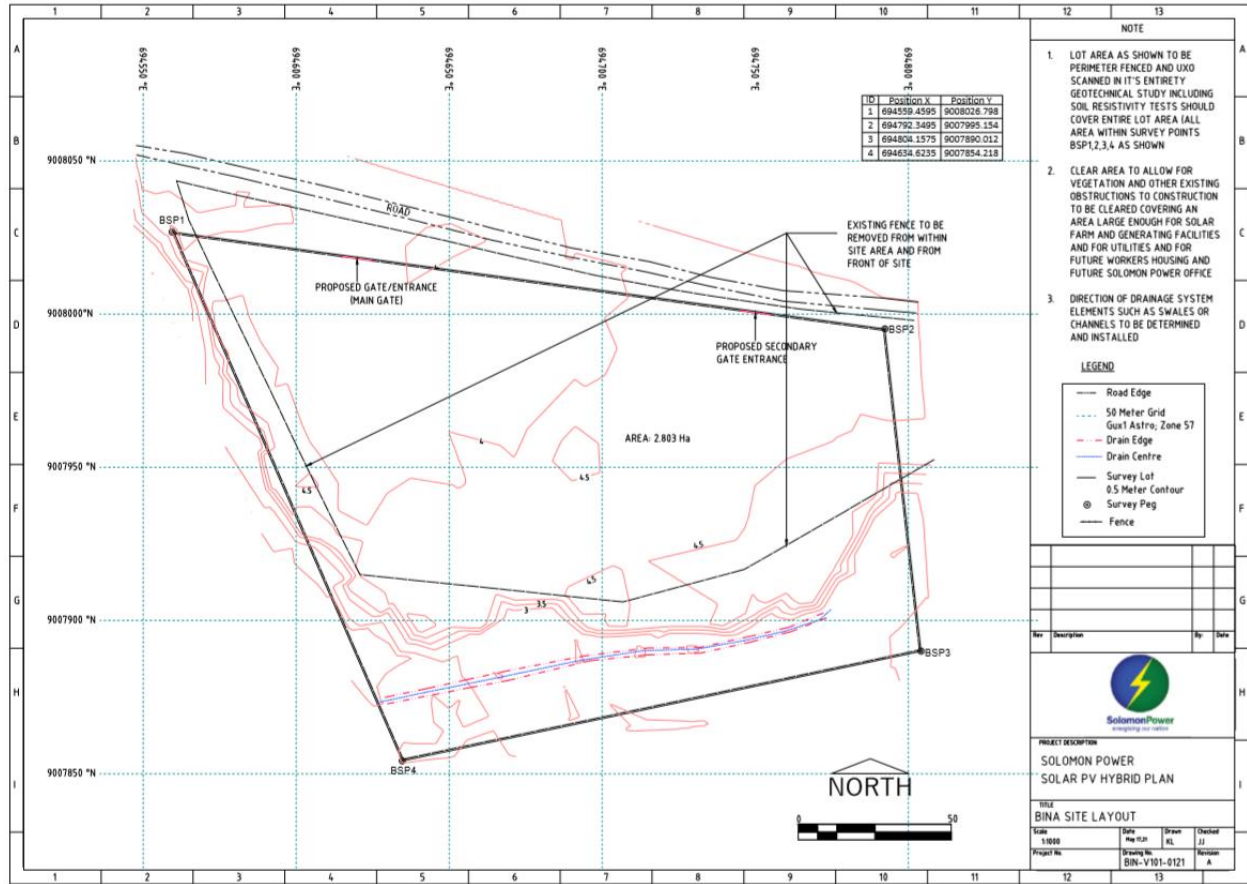


Figure 4: Site Layout Map

The mounting structures (also referred to mounting system), which includes its footings or piles, shall be appropriate for the site. The modules shall be positioned in such a way as to maximize the annual electrical energy output and avoid shading from adjacent structures (including PV arrays) and trees. The PV mounting structure should be from at least a Tier-2 manufacturer with a strong technical, service and warranty capability and with the following minimum requirements:

- Structure requirements apply to all items required to accommodate the modules and associated electrical equipment including rails, module clamps, fasteners, cable trunking / purlins, cable clamps etc.;
- Structures shall be fixed, metallic and having appropriate design and adequate strength which can withstand the load of the modules, snow loads (not likely to be encountered in the applicable climate), seismic loads, cyclonic and high wind velocities as specified in this document;
- The mounting structure including fastenings shall be constructed of non-corrosive, UV-stable materials to meet the durability requirements for tropical marine environments;
- Use of dissimilar metals in contact with each other shall be avoided where practically possible in order to prevent galvanic corrosion. Where dissimilar metals must be used, suitable measures shall be employed in order to prevent galvanic corrosion (e.g. insulating material between dissimilar metallic materials);

- The structures shall be designed for simple mechanical on-site installation with no requirement for welding, cutting, drilling or painting of metal structures onsite;
- The mounting structure shall avoid accumulation of water or moisture within the structure and shall accommodate an adequate flow of water off the structure;
- The design of the array mounting structures should ensure that all parts are pre-cut, pre-drilled and prepared before delivery to the Site and should not require the need to be cut in the field. This is to avoid damage to corrosion resistant coatings. All sharp edges are to be removed at the factory;
- Modules shall be secured in line with the module manufacturer recommendations;
- Each PV module shall be fastened securely at least at four points or completely along two opposite sides, but under all circumstances adhere to the minimum fixing requirements as required by the PV module manufacturer;
- The structure shall be suitable for the module type to be installed with due consideration given to: Module weight (inclusive of any micro inverters);
- Module manufacturer requirements with regards to mounting locations and cable management;
- Ability to expand / add additional modules without modifying the existing structure;
- Air ventilation to the back of the panel to prevent Power de-rating due to thermal buildup;
- The structure shall provide facilities for earthing of all metallic parts (inclusive of the modules);
- The mounting structure design shall be in accordance with the standard requirements and certification by the manufacturer to this extent would be required;
- Provision shall be made for cable management with no sharp edges that could result in damage to cables or persons during installation, maintenance or decommissioning (e.g. through the implementation of rounded edges or end covers/clamps on rails);
- Structures shall have a design life of at least 25 years.
- Solar PV modules mounted on the array frame structures shall be situated above the expected flood level and be at least consistent with the existing system design in terms of installed height.⁴

3.5.4 PV Modules

Only PV modules with the following minimum requirements should be considered:

- Poly or Mono crystalline cells including bifacial, back contact or other silicon cell design arrangement (thin film or amorphous is not preferred);
- Power tolerance shall be a positive power tolerance (+0 to +3Wp or better);
- The PV module shall withstand the wind loadings present at the Site;
- The PV module shall include drain, earth and mounting holes in its frame. No holes shall be drilled on site;

⁴ James, J (2018), *Solomon Power Tingoa, Visale, Baolo, Dala and Buma Solar Hybrid Specifications:*

- The PV module frame shall be made from marine grade anodised aluminium or stainless steel with appropriate seals to prevent water ingress and damage to the active components;
- No specific colour (frame, back foil) requirements are requested;
- The front glass of the PV module shall be tempered glass with a minimum thickness of 3.2mm;
- The PV module shall comply with International Electro-Technical Commission (IEC) 61215, IEC61730, IEC61701 ED2 and IEC 62716;
- Potential-Induced Degradation-free PV cells and modules, unless the PV system is appropriately designed to reverse PIE-effects;
- Bypass diodes are required on each module. No reverse blocking diodes for the system are required;
- Standard locking connectors (e.g. MC-4 or equivalent) certified to EN 50521 are acceptable for panel connections. Corrosion of terminations causes increased voltage drops therefore the number of connections shall be limited. A wiring layout diagram defining the PV panel interconnections will form part of the documentation to be provided by the Detailed Design;
- The terminals must be clearly marked with + and – for the corresponding connections;
- Test certificates must be available;
- The manufacturer cannot be insolvent or going through (partial) bankruptcy at the time of design or installation of the PV System; and
- The modules shall be under the manufacturer's active production and shall not be superseded stock.

Manufacturer documentation with the following information about the PV modules must be available:

- Temperature coefficients for current, voltage, and power;
- I-V curves under different temperature and radiation conditions;
- Physical dimensions and weight;
- Details of the materials used in the module's frame;
- Type and number of cells per module;
- Cell efficiency and/or module efficiency;
- Details of the connectors used and the length of the connecting wires;
- The warranty statement and testing certificate;
- Proof of manufacturer financial stability;
- Solar Modules supplied must have individual flash test data available in soft copy; and
- Pallets and packaging PV modules are supplied within must list modules serial numbers contained within the pallet on the outside of the pallet in a collectable print out.

Note that the Contractor shall illustrate that the design allows for system flexibility to accept more than just one type of PV panel by providing a ranked list of 2 or more other OEM PV panel types suitable for conjoint use. It is expected that the concept design presented shall be able to have PV modules changed to the next highest power class if needed due to manufacturing

improvements. Total installed panels at commissioning should guarantee the required plant sizing and output at 10years.⁵

3.5.5 String and Central Inverters

By definition, a String or Central Inverter (or a grid-tie inverter) is connected directly to the PV panels and contains an embedded Maximum Power Point Tracker (MPPT) which enables the Inverter to optimize energy production from the PV panels. The Contractor is required to specify the appropriate inverters for the site with respect to the capacity and suitability for the designed PV System. The minimum requirements for both types of inverters include:

- String inverters are connected to the PV panels and shall provide a balanced three phase power output to the AC bus;
- The string inverters shall be located near the PV panels unless larger central inverter types are used, have a protection rating of IP 65 (according to IEC 60529) and be protected from sea spray. For Sites where the inverters are located in an indoor dry space, this requirement may change to IP55;
- The string inverters shall have as a minimum one maximum power point tracker (MPPT) and only PV panels mounted on the same horizontal angle and orientations should be grouped together and connected to the same MPPT. It is however encouraged to use the same inverter but a separate MPPT to convert power from two strings mounted at different horizontal angles but with the same orientation because this will increase the conversion efficiency;
- Grid-tied inverters shall be sized appropriately for the maximum module peak power rating under all weather conditions of the Site;
- The Contractor shall ensure and confirm that the DC operating voltage window and current limits of the inverters are not exceeded under all environmental conditions.
- The inverter shall be designed to operate from -20 to +60 degrees centigrade and from 5% to 95% relative humidity;
- It is of paramount importance that the output voltage capability of the inverter is matched with the supply voltage from the utility;
- The Contractor shall ensure that the ventilation and air requirements are appropriately specified so that the cooling requirements of the inverter can be met;
- The Contractor shall specify suitable mounting positions for the inverter (and enclosure, if applicable), in accordance with manufacturer's specification;
- Electronic components will be sealed from contact with salt air and all cooling will be through external heat sinks and not through ambient or forced air flowing across the electronic components;
- The inverters shall not be placed in direct sunlight;
- The location and installation of the inverter shall comply with site restrictions for appropriate and safe access during operation of the inverter;

⁵ IBID 4

- The Total Harmonic Distortion injected onto the grid by the inverter shall be less than 3%, and the output of the inverter shall be a true sine wave;
- The Contractor will endeavour to minimise the number of different types of string inverters by standardising on a typical inverter size to reduce the number of spares. SP prefers the use of 3-phase string inverters with a minimum unit rating of 20 kW. On this basis sizing of any plant can be increased or decreased by this as a multiple and that any section of 20kW (or greater) may be taken out of service for maintenance with minimal overall Plant impact;
- The power conversion efficiency of the DC>AC string inverter shall exceed 97% and that of the bi-directional inverters >94% while operated above 20% of PV array rated power. Cable length and cable diameter shall be carefully considered to optimise system efficiency;
- Terminations between PV panels and string inverters shall be in accordance to manufacturer specifications and no installation practices or terminations shall be used that may void manufacturer warranties;
- Inverters shall comply with AS/NZS 4777.1, 2 & 3 and shall have an option or setting to respond to grid voltage to curtail the power fed from the PV panels to the local grid. This is possible in the case of a high ratio of on grid generation to load;
- Inverters shall have a valid Certificate of Suitability, numbered and dated to testify on its testing, which was conducted within the last five years;
- The inverters shall have passive and active anti-islanding protection as per AS 4777.
- The string inverters shall detect islanding mode when the grid fails and automatically shut down power from the PV system as per the requirements of AS 4777.3;
- The inverters shall detect normal main grid supply and automatically start supplying power from the PV system as per the requirements of AS 4777.3;
- Open protocol standard such as Modbus for seamless integration to third party systems are required. Closed or proprietary protocols are not acceptable unless approved by the Employer. It is anticipated that a separate energy meter for the system with MODBUS communications available as a minimum is installed on the main Solar PV feeder to facilitate future monitoring from the future SCADA system installation;
- A separate, external manual isolation switch shall be installed to provide isolation of the inverters from the LV network;
- Inverters are to be installed in order to not interfere with onsite backup generation or transfer switching arrangements;
- The inverters shall be from a Tier 1 original equipment manufacturer (OEM) of inverters with a strong regional technical and service capability for Central and String inverters; and
- The minimum standard warranty shall be 5 years⁶.

3.5.6 Solar System Integration and Electrical Interconnections

Electrically a string of PV modules are connected in series to form a PV string with a higher output Direct Current (DC) voltage. The strings may be collated in DC combiner boxes (generically

⁶ IBID 4

referred to as combiner boxes) before it is supplied to the string inverters. The Alternating Current (AC) power supplied by the string inverters are collated in an AC distribution board (generically referred to as a DB), from where AC power is supplied to an AC bus which interconnects the system to the site electrical infrastructure and electricity grid. For all interconnection boxes in the PV system, such as junction boxes, combiner boxes and Low Voltage (LV) distribution, the Contractor shall ensure that the design allows for the following:

- Junction boxes (or combiner boxes) shall comply with AS/NZS 60529;
- All cable entries shall maintain the enclosure IP rating;
- Within the junction boxes, switchboards and equipment, conductors are loomed and laced together, with PVC straps or strings. The conductor is appropriately bent to ensure straight entry into the terminal, allowing sufficient spacing and length of the wire for easy disconnection and reconnection;
- DC from the PV arrays inputs shall be suitably fused with dis-connectable fuse holders to provide overcurrent protection and PV array disconnection;
- Should a DC system rated to 1500VDC be used, not just the cable insulating ratings but the plugs, sockets, interconnectors, fuse holders, surge diverters etc... shall be rated to 1500V DC;
- AC power inputs and outputs will be adequately protected by well-coordinated circuit breakers (CBs);
- The box is manufactured from powder coated hot dipped galvanized or Aluzinc coated steel or glass reinforced and UV stabilized plastic material and feature an IP65 rating or higher suitable for corrosive marine environment;
- All cable entries shall maintain the enclosure IP rating;
- Where conductors enter a box without conduit, a tension relief system shall be used to avoid cable disconnections inside the junction box;
- All conductors inside the boxes shall be loomed and lace together, with UV rated straps, rated to be suitable for the life of the subproject; and
- Conductor if bent to enter terminals shall comply with manufacturer bending radius and be done in such a way as to allow sufficient spacing and length of the wire for easy disconnection and reconnection.

The Contractor shall ensure that all cable trays and other cable support systems for all cables, wiring and communication cables, allows for the following:

- The support system shall be positioned adequately to provide access and room for inspection, replacement or additional cabling;
- All components including but not limited to bends, connectors, trays, brackets shall be sized to adequately support the installed cable; and

- Sufficient spacing shall be provided for no less than 20% of additional cabling;

The cables shall be fixed to the support system by appropriate ties, straps or saddles. Stainless steel straps shall be used on cables that supply essential safety services. UV stability of all fixings shall be considered, Nylon 12 cable ties are commonly used for small cable support in areas exposed to direct UV radiation although non plastic materials such as Acetal are the only known materials that will provide a design life greater than 20 years.

- Cable trays shall be designed to ensure that there are no water accumulation points inside the tray;
- Provide segregation for LVAC, DC and communication circuits
- Cables exiting ground level must be mechanically protected by conduit or steel covering arrangement to at least 300mm above ground level so that maintenance use of mowers, trimmers or whipper snippers shall not risk damaging cable insulation near ground level;
- Provide conduit and cable management design such that termites or other insects shall not be able to affect cabling;
- Ensure bending radii are met on cabling; and
- Effectively manage thermal resistivity of soils and thermal loading on bunched cabling and conductors.

For all electrical cables or interconnecting wiring used in the PV System, the Contractor shall ensure that the design allows for the following:

- Installation, protection, termination and jointing of cables in accordance with relevant Australian standards and particularly Australia/New Zealand Standards (AS/NZS) 3000, AS/NZS 3008 and manufacturers' recommendations;
- All PV System wiring is designed in accordance with all relevant standards including AS/NZS 5033 and AS/NZS 3000 and AS/NZS 3008.1;
- The DC cabling from the PV modules to the inverters is sized such that the installed voltage drop for each circuit remains below 2% at all times;
- The AC cabling from the inverters to the connection point meter is sized so that the installed voltage drop of each circuit remains below 1% at all times;
- DC Cables are double insulated and sheathed. Cable sheathing is UV stabilised to ensure that no degradation throughout its working life occurs;
- DC cables are neatly secured behind modules and between sub-arrays. Also that DC cables are sheltered from direct rainfall;
- All cables are protected from the effects of climatic conditions and in particular UV radiation;
- No cabling is exposed to direct sunlight, even if sheathing is labelled as UV stabilised. All cabling that may be exposed must be routed through UV stabilised conduit;
- All cables are protected from mechanical damage in accordance with AS/NZS 3000;
- Cables shall be clamped in order to relieve tension and prevent conductors coming loose. Plastic cable ties must be protected from both direct and reflected UV radiation. Cable ties exposed to UV must be stainless steel;
- DC cabling shall achieve type test in accordance with EN50521 for 1500V.

- DC cables is rated to operate at the open circuit voltage (Voc) generated by the longest string of modules in the facility at the lowest expected temperature at the site;
- Cables are secured and mechanically protected over their entire length. Steel wire armour shall only be used for large sub-array DC voltages and multi-core cabled for AC voltages;
- Energy losses due to cabling shall not exceed 2% of generated power (considered from the main LV circuit breaker at the connection transformer);
- Cables shall occupy less than 66% of the available conduit space;
- All conduit installed within reach of the PV rays shall be UV resistant or protected from UV using an appropriate method;
- Cables are provided with protection against vermin, where required by site conditions;
- DC cables are installed in a manner which minimises induction loops between positive and negative cables. In particular, for string cables, large loops of excess DC cabling shall be avoided;
- All underground cable routes (if applicable) are clearly marked with suitable above ground cable markers to prevent accidental damage to the underground cables;
- Cable joints are limited by planning continuous cable runs along entire cable route lengths;
- Marking of all electrical equipment (including conduits and ducts) are compliant with the Standards and Regulations (or as otherwise agreed upon with the Employer) for marking. All signs and signage are clearly visible, located visibly on the equipment, constructed and installed to remain legible for the design life;
- Markings distinguish between operable control devices, equipment, wiring, indicators, isolation switches, outlets and enclosures to provide instant and ready identification to aid operability and maintainability. Terminology of the marking and labelling matches the documentation provided;
- The numbering system is applied to all DC wiring, AC wiring, PV strings, combiner boxes and inverters. Also that isolating devices such as switches, fuses, isolators and push buttons are numbered and labelled in accordance with the local regulations and good industry practice. Where appropriate, that each label includes the unique number and a description of the device;
- If 1500VDC rated arrays are designed, cabling insulation must be rated to 1500/1500 VDC to achieve 1500V DC conductor to ground rating. The sheath thickness shall be in accordance with AS5000.1 with Nylon 12 extruded jacket or double brass tape to prevent insect attack; and
- Detailed calculations of cable rating covering maximum anticipated load and fault currents shall be provided together with the construction drawings prior to the procurement of the cable. The calculation shall show all derating factors applied to the cable and shall consider all methods of cable installation used (e.g. direct buried, conduits, etc.)⁷.

3.5.7 Secure storage shed for spares

All buildings shall have raised floor and concrete basement. They may have all the necessary appliances for running the solar PV including batteries, transmitters, and transformers. Relevant

⁷ IBID 6

buildings will have the necessary components of standard building codes such as store rooms, toilets facilities, and sewage system to the agreed standard.

The shed shall be at least of large enough size that the amount of spare PV modules required by this document shall fit securely within with enough space left for storage of sundry maintenance tools for vegetation management including trimmers and a ride on mower. The shed shall have secure roller-shutter door, personnel door access and adequate ventilation from whirly-birds or similar arrangements, if windows are included then they are to be of a type that is secure or resistant to forced entry. All entry points are to be lockable. The shed shall be constructed of weatherproof sheeting and design shall consider the climatic conditions outlined in Section 4 of the Specifications.

3.5.8. Diesel generator

Based on the high level concept design, a 106 kW Generator shall be installed as standby to provide support whenever there is a voltage drop in the batteries. The generator shall be fitted with associated auxiliary equipment, switchgear, radiators for cooling of the generator and appropriate fuel storage and supply system. The site will have a concrete basement and will be sheltered from extreme weather events. The site and drainages will incorporate an oil separator to remove oil from surface run-offs and bund walls to protect the oil from spillage. The oil shall be pumped back to drums and stored at a secure storage. The storage areas will be bunded to avoid movement of oil into the environment.

3.5.9 Distribution network

Necessary electrical infrastructure to connect power from the Solar Hybrid Generation System to surrounding communities is also part of the subproject. These include the installation of poles, lines and cables. Installation of these infrastructures will require removal of roadside vegetation. It is standard practice in the Solomon Islands to compensate for crops and trees based on SIG MAL and MOFR rates. See network MOUs for the subproject communities in Annex 10 and 11.

3.5.10 Telecommunication

The sole supplier of telecommunication services in the Solomon Islands is “Our Telekom”. All connections to the main telecommunications system and the various services such as phone and internet will be arranged through “Our Telekom”.

3.5.11 Storage tank for water

The current plan is to connect to the existing water supply network and to support these with harvested rainwater. The harvested water will be stored in 400L water tanks and will be used for domestic purposes and on-site water for fire incidents.

3.5.12 Material requirements

The subproject requires gravel for concrete production. Gravel for concrete production will be sourced from Honiara. Cables, solar panels, poles, cement, solar installation parks, to name a few will be sourced from Honiara and Overseas. All materials including gravel, timber etc. will need to be cleared and certified by the MAL quarantine office prior to them being transported to

site. It is an Engineering Procurement Construction (EPC) contract that means the contractor is responsible for detail design, procurement of relevant materials, construction and commissioning.

3.5.13 Construction Work Force and Equipment

Construction force of approximately 20 personals comprising of solar engineers, civil engineers, operators, securities and managers will be based at the subproject site for the duration of the construction. Workers will be engaged at different stages during construction when the need arises, so the approximate number will be 10 personals per day. Majority of the workers will be based in Bina and travel to the subproject site during the daytime periods. Contractors will rent local houses or construction of an onsite campsite that will have all the necessary facilities including provision for sanitation and occupation. All subproject worker (including construction workforce) will be required to undertake COVID-19, HIV, GBV and SEA prevention training and sign the associated Code of Conduct prior to commencement of works.

4.0 DESCRIPTION OF THE ENVIRONMENT

4.1. Physical Environment

4.1.1 Climate

The Solomon Islands is often subject to the south-easterly trade winds from May to October and the north-westerly trade monsoon winds from December to March. Due to proximity to the equator, air temperature has very little variation. The average annual rainfall ranges from 3,000 to 4,000mm. The daily average rainfall is averaged at 190 and 330mm November to January as being the wettest months.

The climate in Malaita is tropical. Generally, the weather between March and October is dry and humid followed by a wet season from November to April. Being a large and mountainous island attribute the island as being less dry and colder than the smaller islands in the archipelago. The wet season is extremely wet which also coincides with the cyclone season. Maximum average temperature is 25.7 degrees Celsius to 26.7 degrees Celsius each month with a mean of 26.2 degree Celsius while minimum temperatures range from 22.2 degrees Celsius to 23.7 degrees Celsius with a mean of 23 degrees Celsius.

Cyclones occurring within 200km from the subproject site over the last 50 years are ISA, CARLOTTA, IDA, URSULA, MADGE, KERRY, BERNIE, NAMU, JOY, REWA, CYRIL, FREDA, RAQUEL and LINDA. See figure below.

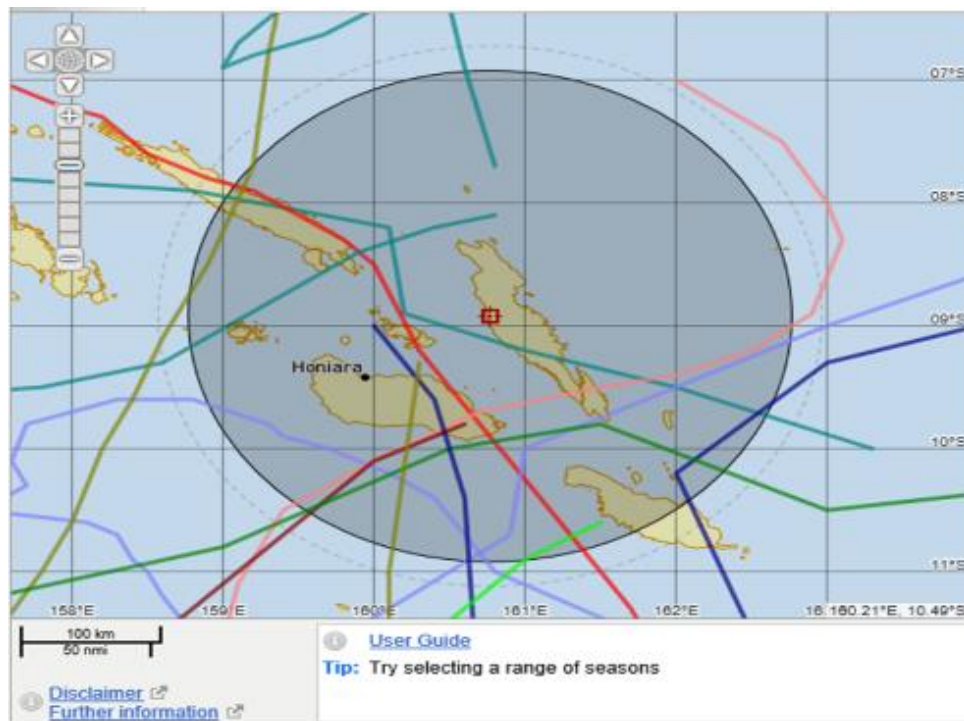


Figure 5: Cyclone track within 200km from Bina.

Source: <http://reg.bom.gov.au/cyclone/history/tracks/index.shtml>, 2015⁸

3.1.2 Topography

Malaita is approximately 4,307 km² in area and is about 185 km long and at its broadest is about 35 km wide. It consists of inland rugged mountain flanked by mountainous plateaux, divided hills and restricted coastal terraces along with scattered swamps and valleys. Malaita is made up of two islands parted by the Maramasike passage about 400m wide⁹. The rugged central range contains several high peaks rising to an elevation of 1000 meters and above including Mt. Kolourat or Mt. Ire (1,438 m) the highest peak in Malaita. Drainage pattern tends to be south-west flowing resulting in narrow coast. Along the coast are oriented ridges overlying conglomerates and inland comprise of random ridges overlying calcareous sediments¹⁰.

The Bina solar site is approximately a kilometer from the coastline and 100m south of the Kwaleunga River with an elevation of less than 11 meters above sea level. The area is relatively flat, comprise of mainly degraded lowland coastal forest, planted with teak trees and is an old cattle grazing area. The coastline and along the main road of the subproject area are occupied by coconut plantations, the catholic station, villages and swamp forests.

⁸ BOM (2016), Cyclone tracks - Southern Hemisphere [beta], Retrieved URL on the 17th February 2020 at URL: <http://reg.bom.gov.au/cyclone/tropical-cyclone-knowledge-centre/history/tracks>

⁹ Moore, C. (2017). *Making Mala: Malaita in Solomon Islands, 1870s–1930s*. ANU Press.

¹⁰ Hansell, J., F and Wall J., R, D 1976, *Land Resources of the Solomon Islands*, Land Resource Division Ministry of Overseas Development, England.



Figure 6: Elevation of the Bina Solar Site, google earth.

4.1.3 Geology

Coleman's geologically categorized Malaita as one of the Pacific Province. The Pacific Province which include whole of Malaita and northern east flanks of Santa Isabel have core of basic lavas, although to date it has nowhere been found to be metamorphosed. The overlying succession is dominantly pelagic sediments with age range from Cretaceous to recent and is folded along northwest trending axes. Faulting also has occurred, but in north central and southern Malaita basic lavas have been folded together with overlying limestones; neither unconformity nor tectonic discordance has been recorded

Malaita consists of rugged mountainous interior flanked by hilly plateaus, lightly dissected hills and narrow coastal terrace with interspersed swamps and valleys. The mountainous interior comprises scattered small and large exposures of the volcanic basement, eroded into deep valleys and narrow ridges rising commonly to 1000m and in some places 1300m. Surrounding the volcanic ridges are widespread limestone rich bands forming distinct karstlands, Coast wards of these and inter fingering with the karstlands are low, lightly dissected hills and ridges mainly lying over calcareous sediments (Hansell and Wall, 1973).

The Malaita coastline is occupied by high karst plateaux abut directly onto the sea: the terraces are mostly low, narrow and broken at intervals by river valleys. Valleys are not well developed but at the coast there are many small swamps occupying former lagoon sites. Offshore and inshore reef development is active. This, added to a general instability of the island, has resulted in an irregular, crenellated coastline of reefs, lagoons, estuaries and promontories.

Bina is located in the physiographic region of Malaita Western foothills terraces. It is formed of moderately high foothills, and thin band of terraces, coastal swamps and reefs. The foothills comprise random ridges overlying calcareous sediments inland, and oriented ridges over coarse conglomerates nearer to the coast. The coastal terraces form a band of up to 2km wide and mostly less than 60m high. They are cut in many places by swampy valleys. At the coast are several scattered shallow swamps overlying mainly recent coral at the shoreline. The region is unified by the presence of many southwest flowing rivers that in part have formed a narrow plain at the coast. It is separated from the central hills and mountains by high limestone ridges.¹¹

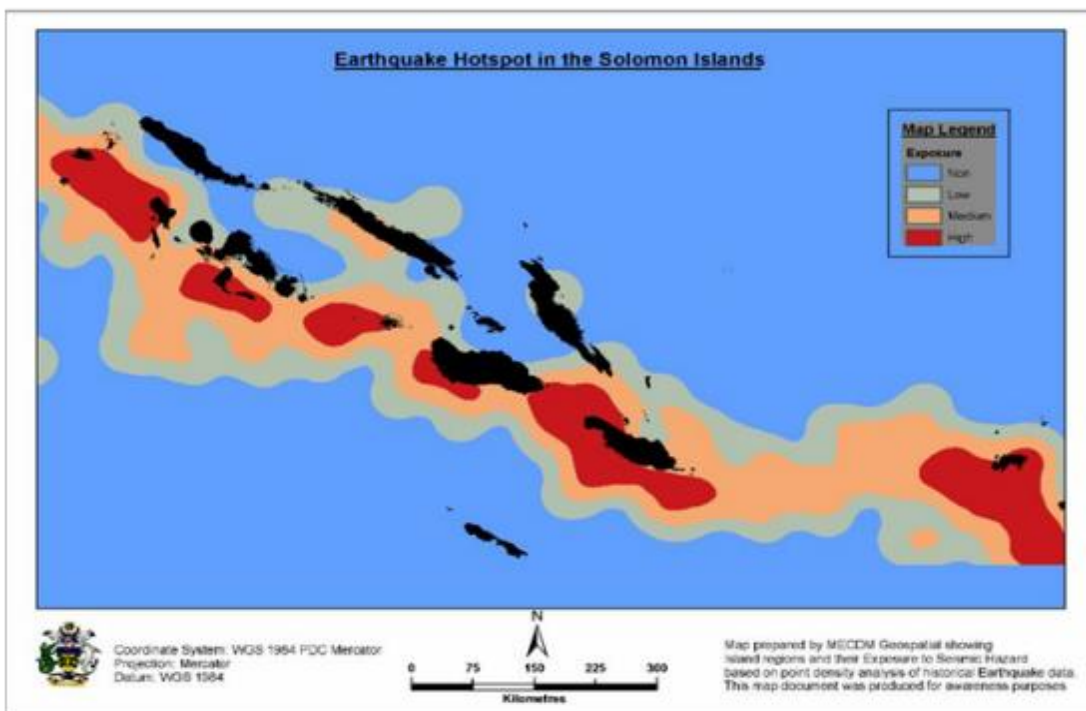


Figure 7: Earthquake Hazard Map (Source MECDM)

4.1.4. Soils

The Malaita lithology is dominated by calcareous, mostly fine-grained sediments which have been gently folded into series of parallel arcuate ridges. On these sediments moderately weathered and leached clayey soils have developed. Areas of Karst and Karst like hills contain shallow, base and humus rich, dark colored clays. Erosion of anticlines has exposed the old volcanic basement in lenticular outcrops within the sediments, resulted in steep-sided ridges and young, leached loams and clays. Around the northern coast are coral based terraces with mature, strongly weathered calcareous soils, and at intervals on the coastal fringe and penetrating inland along valleys and young un-weathered loams, clays and peats (Hansell and Wall, 1973).

According to Hansell and Wall 1973, the soil in Bina are Troporthents, Tropohumults and Tropudalfs, coral detritus, calcareous sediments and limestone origins; some are strongly weathered, leached, acid and low available nutrients. Occurring on flood plains where the solar

¹¹ Hansell and Wall, 1973.

site are deep, very poorly drained, brown peat or muck. They are either organic accumulations or consolidated alluvium. See table below

Table 3: Common soils at the four bridges

Soil Association	Soil Unit	Soil Description	Parent material	Landforms
AB	A	Deep, very poorly drained, reddish brown peat or muck (Tropohemists)	Organic accumulations	Fresh water swamps in lower valleys and former lagoonal areas
	B	Deep, very poorly drained, grey to bluish green clay (Tropaquents)	Consolidated alluvium	Narrow beaches
D	D	Shallow to deep, excessive to poorly drained, pale stony sands (Troporthents)	Coral detritus	Reef platforms
GH	G	Deep freely drained, brown to yellows brown clays and loams (Eutropepts)	Riverrine alluvium	River terraces
	H	Deep, imperfectly drained, greyish mottled loams and clays		Flood plains
LM	L	Deep to shallow, freely drained, dark to dark brown clay (Tropudalfs)	Coral and associated alluvial impurities	Terrace surfaces
	M	Shallow, freely drained, stony dark brown clay (rendolls)		Terrace margins

4.1.5. Water Resources

The two main rivers at the subproject site are Singgalo and Kwaleunga Rivers. The catchment areas are shown in the table below. The solar site is situated approximately 200m south of the Kwaleunga River. The water way is relatively stable in the area however; there is a need for a proper flood modelling to confirm the likely risk level.

Table 4: River Catchment Areas

River	Catchment Area (Km ²)
Singgalo	41
Kwaleunga	60

4.2. Biological Environment

4.2.1. Forest

Despite the geographical spread of islands and relative varied flora in the Solomon Islands, the climax vegetation in the Solomon Islands archipelago shows similarity of appearance between islands. The five major vegetation types that have been identified in the Solomon Islands include:

1. Grassland
2. Swamps
3. Lowland Rainforest

4. Montane Forests
5. Secondary Vegetation

The vegetation type for Bina area (subproject location) is mainly degraded lowland coastal and swamp forests.

4.2.2. Terrestrial Flora

The subproject area is now heavily the subject of village development, subsistence activities, as well as commercial activities such as coconut and cocoa plantations, cattle grazing and pineapple farm. The vegetation is now largely degraded coastal lowland forest vegetated with coconut and cocoa plantations, and interspersed with subsistence gardens and regenerating scrubland. The subsistence gardens within the Bina comprise of pineapples (*Ananas comosus*), cassava (*Manihot esculenta*), sweet potato (*Ipomoea batatas*) and banana (*Musa*) to name a few. Where there are no gardens or plantations, the hill and lowland forests usually comprise mostly *Macaranga sp*, bamboo, fern, *Kleinhovia hospita*, and *Terminalia catapa*. Giant Needle grass (*Mimosa invisa*) occurs at Old areas of cultivation and soil disturbance. The immediate road sites are mostly dominated by smaller plants or herbs including *Wolstonia biflora*, *Macaranga tanarius*, *Alpinia purpurata*, *Nephrolepis cordifolia*, and non-tree ferns.

The small swamps associated with the coast and rivers are usually characterized by the presence of *inocarpus fargifer*, sago palms (*Metroxylon sp*), *pandanus tectorius*, *pandanus poronaliva* and are sometimes planted with swamp taro (*Cyrtosperma johnstonii*) and *Colocasia esculenta*. The streams and wetland systems also include nypa palms (*nypa fruticans*), and mangrove strands

Field observation established that the mangroves in the area are considered important to the communities in the area. The mangroves however are about a kilometer South West of the solar site and will not be impacted by the subproject activities.



Figure 8: Typical vegetation, Bina subproject site.

4.2.3. Terrestrial Fauna

With the tropical and subtropical environment in the Solomon Islands, it is a home to faunas that can be found nowhere else in the world. The forests of Malaita are known to support considerable number of bird and vertebrate endemism. Terrestrial fauna includes bird species such as the Solomons Cockatoo (*Cacatua ducorpsi*), Yellow-bibbed Lory (*Lorius chlorocercus*), Malaita white-eye (*Zosterops stresemanni*), as well as the Malaita dwarf kingfishers (*Ceyx malaitae*). Reptiles are common especially snakes and geckos and include the brown tree snake (*Boiga irregularis*) which can be found in tropical environments.

In the vicinity of the subproject site, human settlements and their activities have disturbed the area and thus rendered the area devoid of any significant wildlife to be of much concern. Most of the original vegetation that are critical in accommodating much of the original wildlife have all gone.

4.2.4. Marine habitats and Fauna

Malaita has the largest population of any island in the country, which when coupled with its high population density, means that there will be a substantial impact on the surrounding marine ecosystems. In the past, dynamite fishing and artificial island construction has occurred within

LangaLanga lagoon, Lau Lagoon and in the Fanalei/Walende region in South Malaita (Sulu *et al.* 2000). The population pressure in Malaita has inevitably had a big impact on the surrounding coral reefs, which shows up in the generally low coral cover at the sites. Low coral cover in the Falaubulu area in LangaLanga Lagoon is a result of the removal of corals for artificial island Solomon Islands Marine Assessment Technical Report construction and of dynamite fishing practices. Toi island situated outside of Lau Lagoon with its' high coral cover is further away from human settlements, and probably has less anthropogenic interference unlike Suafa, which is in Lau Lagoon. The similar levels, and sometimes higher levels, of macro algal cover to coral cover indicate an imbalance on the coral reefs around Malaita. This is quite possibly due to overfishing, destruction of coral habitats, sedimentation and nutrient eutrophication allowing for higher algae growth (Green *et al.*, 2004).

The coastline comprise of fringing reefs strip of white and black sand texture. Patches of sea grass and algae can be found along the coastline and bays. *Enhalusacoroides/Cymodocearotundata* are common close to shore (0-10m from beach). Generally, marine environment at the entrance of the rivers in the sub-project areas is largely impacted from high water turbidity. Sediment deposition is common at the river entrance forming sand bars causing flooding to adjacent land. Coral reefs at and adjacent to the river entrance are unlikely to survive in a less photosynthetic environment resulting in coral bleaching and eutrophication.

4.2.5. Rare and Endangered Species

Solomon Islands is home to rare and endangered species. The island of Malaita has some of the rarest and endangered species in the world. The Malaita Honeyeater (*Myzomela malaitae*) is certainly a rare species. It is endemic to Malaita and endangered as its population is facing the risk of extinction due to habitat loss. However, the IUCN have listed it as a near threatened species. The other rare bird species in Malaita is the Malaita fantail (*Rhipidura malaitae*) and Malaita Boobook (*Ninox malaitae*). There are rare and endangered mammals on the island but are continuously threatened. The subproject site and the surrounding area however, have no rare and endangered species that are of any conservation values.

4.2.6. Protected Areas

Protected areas are defined as geographical spaces, recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values. There are about 42 protected around the country. They are managed by NGOs and the local communities, with most are managed through 'community-based resource management' approach, as the resources are owned by traditional communities. The government also supported the management of a few of those protected areas. The nearby area which is known for its marine importance is the Abalolo, Gwaedalo, Ailau (AGA) Community Managed Marine Protected Area (CMMPA) however, it is further away along the Buma Harbor Coastline. The subproject site has no areas declared as protected area under the Protected Areas Act 2010.

4.2.7. Invasive Species

Biological impacts from introduced species and invasive species can cause a great deal of damage to naturally adapted systems. Invasive or introduced species are species that are non-indigenous and can colonize and suppress local species. Most of these species are a major threat

to ecosystems in the Solomon Islands. Table 3.2 of the State of the Environment Report, 2008 lists 11 invasive plants; 1 micro-organism and 2 aquatic vertebrates/invertebrates. Invasive plants include the usual invasive species such as: *Acacia fanersiana* (Ellinton's curse) *Lantana camara*, *Makania macrantha* (mile a minute vine), *Mimosa invasa* and *Mimosa pudica* (Sensitive mimosa), *Eichhornia crassipes* (Water Hyacinth), etc. These plants have arrived either as agriculture, forestry or as garden ornamentals. The microorganism is *Phytophthora colocasiae* (Taro leaf blight), while fish include Tilapia and the mosquito fish. Gastropods include African snail (*Lissachatina fulica*). The Cane Toad (*Bufo marinus*) is also included in the list. Fire ants (*Wasmania auropunctata*) are now established within the Solomon Islands but have not been noted as an invasive species. Nor is the Paper Mulberry *Broussonetia papyrifera* that has established itself along roadsides in Malaita. Alongside these are the tilapia and African snails.

4.3. Socio-Economic Environment

4.3.1. Wider subproject area

Bina subproject site is located on the West coast of Malaita in Weagu Silana Sina ward 28 in Malaita province that has a population of 5,121¹² people. The subproject area comprise of more than eight communities both inland and along the coast. The subproject network will cover Buma, Sinafolo, Sinamauri, Sinasu, Bina, Bina Hill, To'ae and Kwailatutu communities. Majority of the locals here are customary landowners and do have access to social services such as; schools, health, transport, road, communication, and housing, etc., some of the residents still lack basic services including clean water, sanitation and reliable power.

4.3.2 Household and standard of living

Dwellings: The Bina communities comprise of permanent buildings, semi-permanent buildings and leaf houses. Initial survey in 2018 by the planning and design team identified 407 proposed customers for the subproject (table 5). From the 407 buildings, 53% were permanent houses, 7% semi-permanent houses and 28% leaf houses.

¹² Solomon Islands Government. (2020). *Solomon Islands National Statistics Office*. Retrieved from Census Website: <https://www.statistics.gov.sb/statistics/demographic-statistics/census>.

Table 5: Proposed Customers

Building Type	Total
Permanent house	216
Semi – Permanent house	28
Leaf house	115
School buildings	14
Clinic	1
Shops or Canteen buildings	18
Church buildings	11
Community Hall	1
Warehouse	3
TOTAL PROPOSED CUSTOMERS	407

Source: Solomon Power, 2018.



Figure 9: Typical dwellings, Bina

Demographic: In the 2020 SP survey, 38% of the population in Bina are children below 15 years and those that are over 60 years old. The estimated dependency ratio is (0.63) of which children exceed in number rather than those over 60 years.

Figure 10: Age Distribution, shows that the population is heavily weighted towards young people – especially those of school age. Males outnumber females in all but is nearly the same for the child-rearing age group (20-40 years).

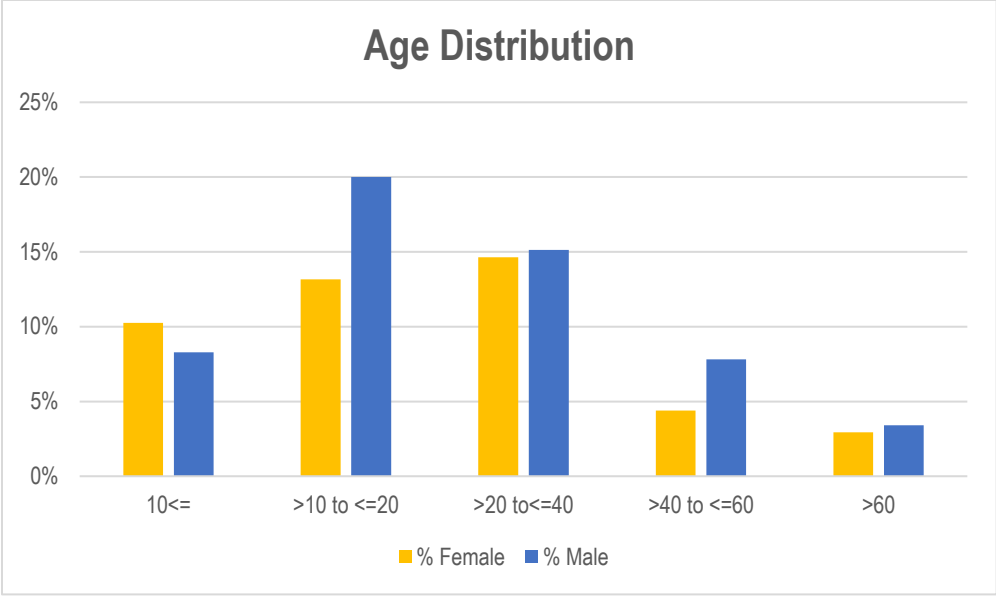


Figure 10: Age Distribution

Water: Majority of the water used by the Bina communities comes from the community water supply. Rainwater is use mainly for drinking while well, river and spring for washing and cooking. SP will install a water tank for domestic use and on site safety requirements.

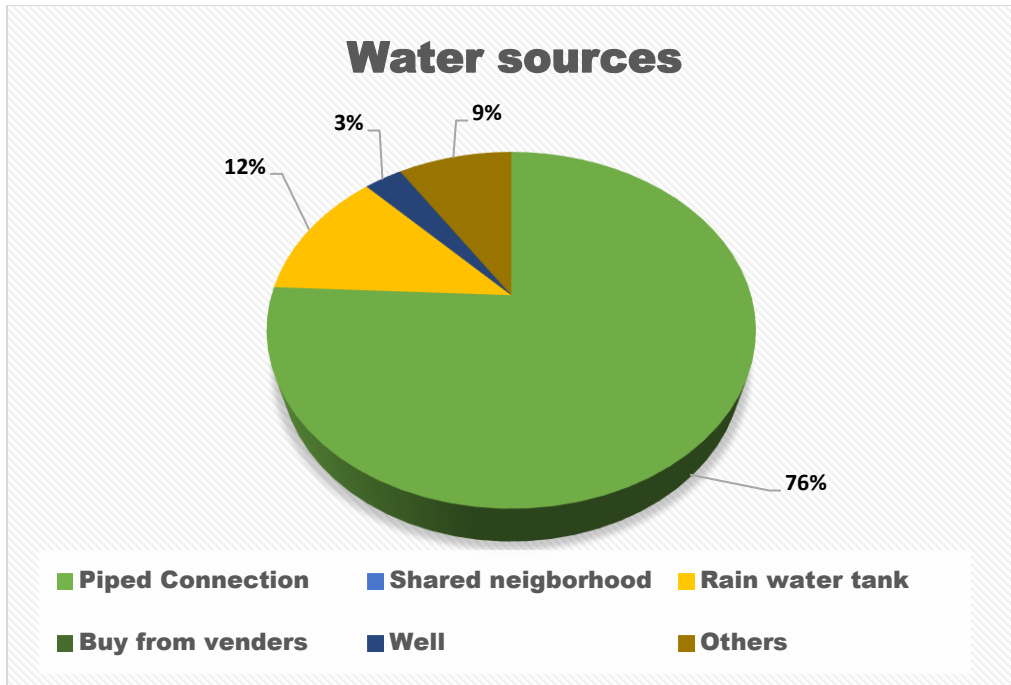


Figure 11: Water sources-Bina

In 2020 SP survey, out of 33 surveyed, more than half of the houses (52%) have toilets outside the house, only 6% have toilets inside house and another 6% use communal toilets while the rest of the households (36%) had no proper toilet at all (i.e., they use bush or on the beach).

Energy use and supply: All households in the area use solar lights and batteries. A few use petrol and diesel generators during occasions such as church gatherings, school graduation, meetings and other special events.

According to the social survey, all of the households rely on solid fuel fires (wood and coconut shell) for cooking and baking, besides, (21%) use both firewood and bottled gas as bottled gas was used mainly for quick cooking such as cooking of cabbage or boiling of water.

4.3.3. Community Consultation

Community consultations for the subproject were held in Bina Village in June 2020 and Buma Village in November 2020. The agenda of the meetings is to inform the community about the subproject, SP proposal for land, network MOU and safeguards instruments. See annex 8 and 9 for minutes of meeting and consultation report.

4.3.4. Social Services

Health and Education: Majority of the people in the area have access to basic health care and education. The nearest school is Gwaidingale Secondary School, which is located on the boarder of West Kwara'ae and West Kwaio. It service both the regions and most students walk 1-2 km every day to school. Due to the large number of students, the villagers mention that those who

live far were assign for morning session while those that live near the school attend afternoon session.

People travel several meters for medical attention, some walk while others use passenger trucks to reach the nearest clinic. Others who have access to more cash see private doctors in Auki town, travel to Auki health center or Kilufi Hospital.

Communication: The subproject area is well service with both Telecom and B-Mobile Services. Internet connection is very fast within the area compared to other places in Malaita.

Transport: Road access is through the Malaita South Road. Land transport is vital to people in the area along with sea transport as an alternative. The common land transport are public 3-Ton trucks and private vehicles only. Majority of the people within the area normally use public transportation to travel to Auki, as it is more affordable otherwise, they walk to other villages or use sea transport by boat and canoe.



Figure 12: Transportation access-Bina Bridge (left) and Buma Harbor (right).

4.3.5. Income generations

Majority of the people in Bina involve much on the informal sector than the formal sector. The main income generating activity is the farming and selling of pineapples. Other economic activities include selling of vegetables and root crops, piggery, cocoa, timber to name few that help the families and individuals with their needs and wants. Farming plays an important role in Bina as it provides self-employment for the community especially the women and youths.

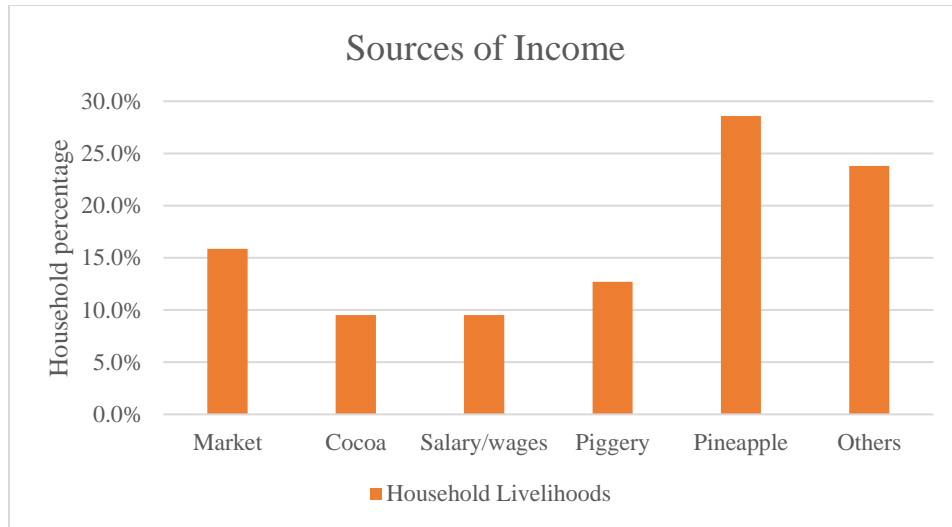


Figure 13: Household Livelihoods



Figure 14: Selling of timber as source of income.

The main source of cash income for local households is the sale of pineapples (28.6%), sale of vegetables and crops (15.9%), cocoa (9.5%), salary/wages (9.5%), piggery (12.7%), and others include the sale of cooked food, fish, timber, shell money truck & top-up services and remittance (23.8%). See Figure 13.

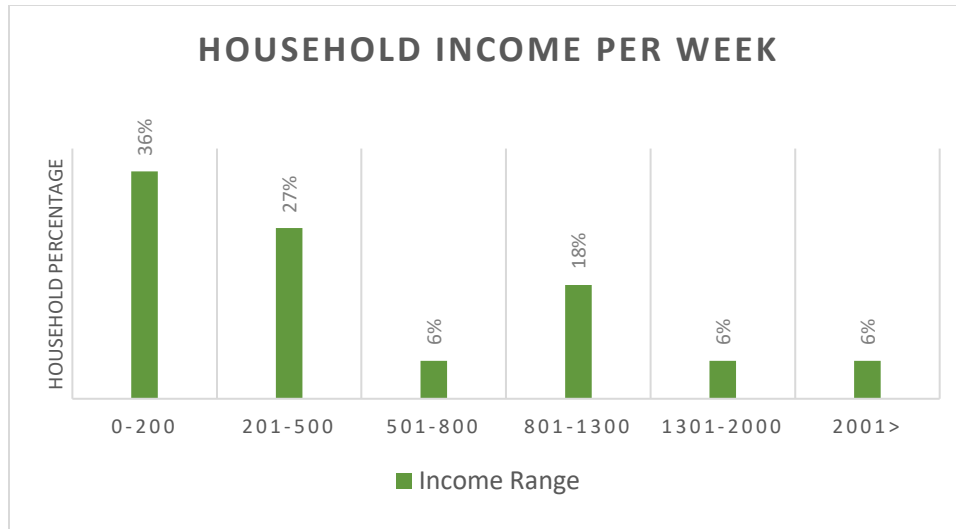


Figure 15: Income range

Analysis of household income indicated that (36.36%) earned between SBD0-200 dollars per week, 27.27% HH earned between SBD201-500 per week, 6.06% HH earned between SBD501-800 per week, 18.18% HH earned between SBD801-1300 per week, 6.06% HH earned between SBD1301-2000 per week and 6.06% HH earned more than SBD2001 per week.

Employment: Majority in the area involve in informal activities. There are public servants and professionals who are working in government ministries especially teachers and nurses. Laborers are mainly carpenters and plumbers whom were engage to build buildings.

Selling of cooked food: At the subproject neighborhood, selling of cooked food is common. Women confirmed that they earn an average of SBD300 per week from selling of cooked food and popcorn.

Selling of pineapple: The major source of income for most households in the area is from the sale of pineapples. On average, a family can earn up to SBD15, 000 annually from the sale of pineapples. Villagers revealed that during the pineapple season they would travel to Auki or even to Honiara to sell their pineapples.

4.3.6. Social Organization

Tribal Affiliation: The people speak the 'Kwaio language group' one of eleven major languages in Malaita. The communities in the area belong to a tribal group and sub clans. Malaita practice a patrilineal system, where land inheritance is past on through the men. Membership comes from one's father's side, though people recognise cognatic relationships (i.e., from both sides).

Leadership: Tribes and subtribes are directed by customary chiefs and recognize elders who have expert knowledge of the group and its history and customs. A group of elected trustees led by a chairperson nowadays represents landowning clan groups. Each village also has an elected chief or headman. Historically the subproject area would have "big men" who were charismatic leaders able to use their personal abilities and enterprise to organize community activities. The

subproject is located in Weagu Silana Sina Ward 28 and under the West Kwaio Malaita Constituency.

Religion: According to the sample population, the subproject neighborhood comprises of representatives from the Church of Melanesia-Anglican, Catholics and South Seas Evangelical Church (SSEC). In the 2018 survey report, there are 11 church buildings in the area. People in the area normally travel to nearby churches to commune with other church members.

Assessment of the households shows that majority of the area represents the Catholics, SSEC and a few from the COM.



Figure 16: Old SSEC church at Bina village with new structure under construction.

Women and Youth: In the subproject neighborhood, women and youth are either part of a church based group or women's association. Most of the youth groups are associated with the churches.

5.0 ANTICIPATED ENVIRONMENTAL SOCIAL IMPACTS AND MITIGATION MEASURES

5.1. Significance of Impacts

The potential environment and social impacts for the subproject have been identified, and their significance assessed. The duration of the impacts is assessed with reference to the scope of work and the biophysical and social environment in the subproject site. Mitigation measures are designed in order to avoid and/or minimize each of the potential environmental and social impacts. Impacts may be minor, moderate, major or negligible based on the scale of impact itself and whether it be mitigated or not.

5.2. Potential preconstruction impacts and mitigations

5.2.1 UXO

During WWII, the subproject site was subjected to intense battles and while this occurred over 60 years ago, it is possible that a chance discovery of a UXO will occur. Provision in the contract BOQ will ensure the contractor carry out a UXO survey prior to any construction and during construction. Should UXO be discovered, the contractor is to immediately cordon off the area, arrange the evacuation of nearby residences and inform the RSIPF of the find.

5.2.2 Preliminary designs and design specification

Preliminary designs and design specification will need to be approved by SP and the MPG TCPB. The board will issue a building permit or consent for the development to proceed. This process is a legal requirement under the Town Country Planning Act, which means consent has to be acquired prior to any civil works onsite. The designs avoids resettlement and unnecessary clearance to vegetation.

5.2.3 Land restrictions

The initial consent from the landowners and community representative is in annex 12. MOU for the network had been signed with the landowners and communities. See annex 8.

5.3. Potential construction impacts and mitigations

5.3.1 Impact on Flora and Fauna

During the construction phase, flora and fauna can be affected but any potential impacts are considered minimal, as the construction will be performed at previously developed site. Measures to be included in the subproject to ensure protection of flora and fauna within the site include:

- At the induction meeting, the contractor and SP will provide guidance on felling and clearing of vegetation;
- Contractor will be responsible for providing adequate knowledge to construction workers in respect of fauna. The poaching of fauna will be prohibited. Anyone behaving in such manner will be reported to the management and disciplined and

- Construction workers will be informed about general environmental protection and the need to avoid un-necessary felling of trees whenever possible.

5.3.2 Impacts on Air Quality

The quality of air within the subproject site is typical of a rural setting in the Solomon Island. The construction works will have a minor and temporary impact on local air quality through emission of exhaust from construction machineries, as well as through dust generation from vehicles transporting materials and from exposed stockpiles. There are no air quality or emission standards in Solomon Islands, and as the subproject is not a green-field development nor is it highly polluting, preparing a baseline for subsequent monitoring is not considered warranted. Total Suspended Solids (TSS), SO₂ and NO₂ gases are expected because of the diesel and petrol fueled equipment as well as dust from exposed ground or stockpiles. There are a number of good engineering practices that can be employed to ensure that any air quality impacts generated during construction are mitigated. These include:

- Construction equipment being maintained to a good standard. The equipment will be checked at regular intervals to ensure they are maintained in working order and the checks will be recorded by SP as part of environmental monitoring;
- Prohibition of the use of equipment and machinery that causes excessive pollution (i.e. visible smoke) at the subproject sites;
- Provide workers with protective safety equipment including masks;
- Ensuring that all vehicles transporting potentially dust-producing material are not overloaded, are provided with adequate tail-boards and side-boards, and are adequately covered with a tarpaulin (covering the entire load and secured at the sides and tail of the vehicle) during transportation;
- Wetting material (for example prior to transport or when stockpiled) when conditions are such that there is a high risk of dust generation. This is particularly important when climatic conditions expose sensitive receptors to potentially damaging levels of suspended particulates;
- Material stockpiles being located in sheltered areas and covered with tarpaulins or other such suitable covering to prevent material becoming airborne;
- Contractor to develop a trigger action response plan (TARP) that details what the construction workers should do for different dust levels and wind directions; and
- Periodic qualitative air quality monitoring (by observation rather than testing).

5.3.3 Impacts on Water Quality

Water quality can be affected during construction when soils, wastewater, oils and lubricants, sewage and other materials are discharged to the environment. Construction activities that may exacerbate the movement of these materials into the water environments will be examined and mitigation measures developed. Mitigation measures include:

- The implementation of erosion and sediment control measures such as silt fences and sedimentation ponds during clearing and construction. The direction in which water will flow across the subproject area should be determined prior to the commencement of works and mitigation controls put in place to prevent turbid water from being discharged offsite.
- Minimizing interference with natural water flow within or adjacent to subproject site;

- Solid wastes, debris, spent oil or fuel from construction machinery or plant, construction material, or waste vegetation removed from subproject site will be disposed at a designated site approved by communities and the provincial authority;
- Hydro-carbons, fuel, and other chemicals as required for the works, will be stored in secure containers or tanks that are bunded and located away from the surface waters, or streams and shoreline. Any spills will be contained and immediately cleaned up as per the requirements of the emergency response plan prepared by the contractor; and
- All water, waste-water and other liquids used or generated by subproject works and activities will be collected and disposed of in an approved manner and in an approved location. Such disposal will not be permitted to cause either pollution or nuisance. All sanitary and kitchen wastewater will be piped into soak hole and soak way.

5.3.4 Impacts on Soils and Erosion

There will be minor excavation work during construction. Measures will be taken to avoid the movement of eroded soil from the site onto adjoining areas including the worksite. At the completion of work, all disturbed areas will be stabilized by national re-vegetation. Existing patterns of erosion, soil characteristics and topographic conditions were taken into consideration in the concept design of the subproject. Certain types of earth works, e.g. vegetation clearing and excavation can result in sedimentation.

The potential impacts on soil, or from erosion, during construction are from (i) turbidity impact on the receiving water bodies; (ii) soil erosion and loss of protective vegetation; and (iii) soil contamination from fuel, chemicals and/or construction material spillage. Material stockpiles will be susceptible to erosion, creating sediment-laden run-off, particularly during rains and re-suspension of dust during the dry season. Stockpiles will not be permitted near water bodies and should have an associated erosion and control plan to prevent sediment from leaving the site through rainwater run-off. Potential soil impacts and erosion will be mitigated by:

- In the event that the contractor causes damage to agricultural land, productive land or gardens, contractor is solely responsible for repairing the damage (It is expected all works carried out on SP registered land);
- Designs used that protect soils in order to reduce erosion; and
- Random and uncontrolled tipping of spoil, or any material, will not be permitted;
- Remediation of hydrocarbon contaminated soil;
- Ensuring bunding of areas at construction lay down areas for storage of fuels and other potential hazardous substances; and
- Developing a spill response plan (emergency response plan) and provide training to contract workers on how to implement the spill response plan.

5.3.5 Impacts on Noise Levels

There are no noise standards in Solomon Islands, and as any noise generated by the subproject will be temporary (i.e. during construction) and intermittent, preparing a baseline of ambient noise levels for subsequent monitoring is not considered warranted.

Construction noise is generally intermittent, attenuates quickly with distance, and depends on the type of operation, location and function of equipment. During construction, there will be a

temporary impact due to the noise of the construction equipment, especially heavy machinery when construction activities are carried out close to residents.

The most sensitive receptors are mainly residential buildings. It is the responsibility of the contractor to arrange meetings between affected residents on feasible work schedules (hours of equipment operation etc.). WB standard noise levels can be used as a guide¹³.

Table 1.7.1- Noise Level Guidelines ⁵⁴		
Receptor	One Hour L _{Aeq} (dBA)	
	Daytime 07:00 - 22:00	Nighttime 22:00 - 07:00
Residential; institutional; educational ⁵⁵	55	45
Industrial; commercial	70	70

Table 6: WB Noise guideline

Measures to be included in the subproject to mitigate the effects of noise include:

- Requirements in the ESMP and contract documents that all vehicle exhaust systems and noise generating equipment be maintained in good working order and that regular equipment maintenance will be undertaken;
- Prohibition of any construction activities between 9pm and 6am in, or close to, residential sites;
- The contractor will prepare a schedule of operations that will be approved by affected stakeholders. The schedule will establish the days, including identifying days on which there should be no work, and hours of work for each construction activity and identify the types of equipment to be used;
- Workers will be provided with noise abatement equipment; and
- The Contractor will deal with any complaints regarding noise and other potential or perceived impacts in the first instance through the redress grievances mechanism.

5.3.6 Impacts on Access

The subproject will cause temporary impacts, including inconvenience, minor disruptions to traffic using the local access during the construction period. Where applicable, the contractor will develop a traffic management plan as part of CESMP. Mitigation of impacts on access will include:

- Care must be taken during the construction period to ensure disruptions to access and traffic are minimized;
- Signage and other appropriate safety features will be used to indicate construction works are being undertaken; and
- The contractor will ensure that access roads to privately owned land are not disturbed.

¹³ <https://www.ifc.org/wps/wcm/connect/4a4db1c5-ee97-43ba-99dd-8b120b22ea32/1-7%2BNoise.pdf?MOD=AJPERES&CVID=Is4XYBw>

5.3.7 Impacts on Health and Safety

The subproject's activities can cause a range of health and safety impacts. The main impacts on health and safety are associated with (i) risk of accidents, (ii) traffic safety issues and (iii) chemical spills. The risk of the spread of communicable disease is considered negligible.

Observing general health and safety requirements, including the provision of safety and protective gear and equipment to workers, will reduce the risk of accidents at the subproject site. Air pollution and noise, which have a health and safety aspect, have already been discussed.

The contractor will need to observe general health and safety requirements and, as a minimum, must be compliant with the Labor Act of 1978, the Safety at Work Act of 1996 and where application the WB/IFC EHS Guidelines. SP Subproject Engineers will undertake inspection and spot checks weekly to ensure the contractor is complied with the health and safety requirements. The SIG declared a state of public emergency in 2020 to protect the country against the risk of COVID-19 pandemic. All government agencies, including provinces, SOEs, the private sector and communities were required to comply with the SIG COVID-19 protection measures persuaded by the Ministry of Health and Medical Services (MHMS) and SIG COVID-19 task force committee. In order to comply with the country's management system, SP contractors have been advised to provide a COVID-19 management plan. This will also be required in all SP future contracts.

Mitigation measures for reducing and avoiding impacts on health and safety include:

- SP and the contractor to provide workers health and safety induction, and on the specific hazards of their work;
- Provide workers with personal protection equipment, such as safety boots, safety glasses, reflector vests, helmets, gloves, and protective clothing and ensure workers adhere to OH&S policy at all times;
- Garbage receptacles will be setup at subproject sites, which will be regularly cleared. The garbage will be dumped only at designated site approved by the communities and the provincial government;
- Provision of adequate protection to the general public in the vicinity of the work site, including advance notice of commencement of works, installing safety barriers if required and signage or marking of the work areas; and
- SP/Contractor will issue general and hot work permits at every stage of the work outlining the scope and precautionary and protection measures for example working at height, confined spaces, isolation of electrical equipment/ power-lines.

5.3.8 Fire

Smoking near fuel storage areas causing fire and loss to construction resources are expected to be minor. At this stage, it is uncertain the amount of fuel likely to be onsite but it expected to be less than 100 gallons per month for the construction. Mitigations measures include:

- Prohibit smoking close to fuel storage areas;
- Erect signage of no go smoking zones; and
- Provide extinguishers and fire hydrants including training workers on their use.

5.3.9 Accidental discovery of archaeological resources

Any site clearance, digging and excavation activities undertaken during construction can un-earth archaeological sites or resources. In the event this occurs, work shall cease immediately and the authorities (National Museum Tambu Register, Ministry of Culture and MECDM) shall be informed.

- Activities shall not re-commence until the authorities have signed-off that the site/resources have been dealt with appropriately and that work may continue. The contractor will be responsible for complying with the requirements of authorities, and the SP shall monitor the same.

5.3.10 Emergency Response Plan

The contractor will be responsible for preparation of an emergency response plan in consultation with the relevant organization that will cover containment of hazardous materials, oil spills, and work-site accidents. The plan will detail the process for handling, and subsequently reporting, emergencies, and specify the organizational structure (including responsibilities of nominated personnel). The plan will also consider elements such as access to emergency services and medical treatment and the availability of emergency response resources on site such as medical equipment, fire extinguishers and spill kits etc. including ensuring that the contractor is able to effectively use them.

5.3.11 Climate Change and Adaptation

As for the subproject, the main climate change risk would be related to occurrences of extreme rainfall events and tropical cyclones. Extreme weather events have had the potential to cause damage the solar hybrid. Fumes from construction machineries used for the work will contribute to emission of greenhouse gases; however, can be considered minimal and negligible. Therefore, the subproject will not have any significant impact on climate change. Risks of impacts on the solar hybrid and associated structures from climate change will be addressed through routine inspections. In addition to repairing solar hybrid components, one of the responsibilities of the contractor will be to report on cases where onsite drainages are failing and to recommend upgrades or additions as required.

5.3.12 Generation of waste during construction

Construction waste comes in solid and liquid form from different construction components. The ECD regulates the discharge of any substances on the environment. All construction materials whether liquid or solid will be disposed at designated site approved by the Subproject Engineer with prior approval from Malaita Province, Landowning Units or ECD.

Segregation of Solid Wastes: Solid is generally understood as solid or semisolid, non-soluble material (including gases and liquids in containers). All other forms of waste except for anything non-solid can be categorized as solid waste. Solid waste represents a majority of the waste produced during the construction. Construction waste will include drums, cables, timber and metal off cuts and kitchen waste to name a few. The contractor will sort or segregate all solid waste before disposal. Willy Bins will be labeled with different waste categories for example “cans,

plastic and organic” waste and be installed at designated sites especially at the entrance, campsite and construction area. The contractor’s obligation is to remind construction workers to adhere and comply with the segregation methods and penalize workers who defied the rules established.

Liquid waste management: Liquid waste can be fluids of any form, dirty or clean, toxic or not, can be oil, grease, fats, sewage to name a few. All these are expected during the construction period and will be managed at acceptable standards. Obviously waste oil is common during construction as a result will be stored in a safe location. There is provision for spate toilet at all construction sites.

Where fuel is being transferred from a vehicle, the tank truck must be certified to standard and that all trucks used to transport fuel tanks meet commercial vehicle inspection requirements. There should be signs, indicating that the ignition must be turned off and smoking is not permitted while the vehicle is being refueled and must be visible to every driver. Travelling along highway should be not more than 60km/hr. to avoid accidents. Maintain at least one 20-B:C portable fire extinguisher with the tank vehicle. Refueling equipment from a tank vehicle is permitted if the following conditions are met:

- the fuelling is conducted outdoors on commercial or industrial establishments;
- the fuelling is conducted using approved hose-reel and automatic closing nozzles; and
- appropriate training and equipment are supplied to deal with any incidental spillage.

All storage tanks for combustible and flammable liquids will be built and maintained regularly. There will be thorough inspection for possible leakages and faults. Whenever a problem occurs, a spill response kit capable of containing and absorbing fuel spills will be made available and maintained. Company will ensure spills are recovered and that contaminated soil is removed or treated. Post spill response procedures and maintain an emergency response plan with the fuel facility.

Asbestos Removal and Disposal: No demolition works required for this subproject. However, when contact with asbestos, herewith are the management measures. If asbestos fibres are present in the air and are inhaled, there is a risk that they may cause a variety of serious health problems. Asbestos cement products, will be handled with care and through the use of standard operating procedures (SOP) or Material Safety Data Sheets (MSDS). Release of asbestos fibres into the air comes from drilled or cut during construction, especially if broken in the process may release asbestos fibres. A number of good engineering practices will be carried to avoid such risk:

- Workers familiarise themselves with the type and condition of asbestos cement product that will require removal and disposal of at the site;
- Will obtain approval for an appropriate disposal site prior to demolition;
- Will remove asbestos cement demolition materials immediately from the site to the disposal site without storing it;
- All workers handling the materials are supplied with the appropriate protection clothing and equipment, which are:
 - White disposable overalls to wear during the operation;
 - Disposable dust mask suitable for work with asbestos; and
 - Disposable gloves.
- Ensure that the following are available at the site:

- A hose and a supply of water for wetting down materials;
- A plastic groundsheet that can fully wrap the quantity of asbestos cement sheeting and which will be disposed of with it; and
- Packaging tap to seal the wrapped sheeting.
- Prevent children, or anyone else who may be affected by the work, from entering the immediate work area;
- Wear a suitable disposable dust mask to prevent inhalation of asbestos fibres; and
- Wear disposable overalls. These should be taken off at the site and disposed of with the AC sheets, These overalls will prevent asbestos fibres clinging to your clothes where they could cause contamination

Hazardous Waste Management: Hazardous and chemical wastes can be generally referred to as materials either in their solid, liquid or gas states that exhibit a 'hazardous characteristic', usually ignitability, corrosivity, reactivity and toxicity when made in reference to chemicals. It is possible that hazardous chemicals will be used during construction. Hazardous waste materials, such as catalysts, will be handed back to the suppliers for specialist disposal. All Hazardous waste shipped from the site will be subjected to waste manifest to track generation, transportation through licensed and approved contractors. The contractor will:

- Store kerosene, diesel, petrol and lubricants in a bunded area with an impervious surface and with stormwater drainage provisions as approved by the Engineer;
- Store paint, and chemicals in a hazardous materials storage shed with walls, roof, ventilation and a bunded floor with an impervious surface;
- Ensure that the storage capacity of each bunded area is at least 105% of the total volume of hazardous material stored;
- Secure the areas and sheds used to store hazardous materials by erecting a security fence of minimum height 1.80m around each facility with the fence located outside the bund;
- Locate the hazardous materials storage areas at least 10.0m away from any watercourse;
- Contain and mop up spills of hazardous materials in accordance with manufacturer's specifications.

Waste management training and awareness: SP and the contractor will pursue training on waste management protocols with the construction team before civil works commences. In addition to that, all new staff or visitors will be briefed on the waste management practice and requirements before he/she takes up a job or visit site. Workers will be reminded regularly through weekly meetings or daily pre-starts on waste management obligations. The contractor has the right to penalize workers when waste management protocols are not followed or complied to.

5.3.11. Impacts on Protected Areas and other Sensitive Ecosystem

The subproject activities will not have any impact on protected areas. The subproject site consists mostly of a disturbed deciduous and cassava/potatoes plots and with a small-scale operation, the impacts are expected to be minor. All in all no impact is envisaged for protected areas and sensitive ecosystem.

5.3.12 Risk of Invasive species

The risk of spreading invasive species is low to medium. It is mandatory for movements of materials and machineries between urban centers to acquire a clearance certificate from the Quarantine Division. Responsible authorities will be immediately notified of incidents of invasive species associated with the subproject.

5.3.13 Risk of Spread of Communicable Disease

The spread of STIs, HIV and COVID-19 could be a possibility during construction due to influx of workers in the subproject area. Implementation of the STIs, HIV, AIDS, GBV, SEA and COVID-19 awareness and prevention campaign will be undertaken during the pre-construction phase as well as construction by the contractor.

5.3.14 Social concerns

Community concerns regarding the subproject will be dealt with through the grievance redress mechanism (GRM) in chapter nine. Impact on adjacent residential buildings will be from the noise and dust from equipment. Other risks including spread of diseases between the construction team and the residential population is deemed minor or negligible. The contractor will need to provide first aid kits, safety equipment for workers and provision for taking victim to hospital. The contractor will be responsible for providing adequate training to construction workers and public in relation to safety issues, code of conduct and GBV. Alcohol consumption and inappropriate behavior by the workers or public will be monitored and dealt with by police. Mitigation measures include:

- Contractor to ensure worker's actions are controlled and code of conduct observed; and
- Educate workers to respect public properties or other important services.

5.3.15 Employment

Direct employment possibilities may arise as a result. A few skilled workers may need temporary housing or camp and the provision of water, food and basic sanitation during the construction phase. Increase in income generation will take place for local market vendors as the workers will have to buy local food produces from the market and shops.

5.4. Potential Operation impacts and mitigations

5.4.1 Community Health Concerns

For concerns that the communities may have regarding safety and accidents. For example, electrocution and skin disease. Mitigation measures will include:

- Potential risks will be identified, evaluated and addressed in a manner that follows the safeguard policies;
- Potential risks will be communicated through forms of community consultations or as deemed appropriate, in particular, risks associated with transmission lines to nearby communities;
- Provision for training will be made available to local communities to ensure that an understanding of OHS and social risk awareness is in place during accidents.

5.4.2 Natural Disaster Impacts

Malaita Island is vulnerable to cyclones. Therefore, it is important infrastructures, and utilities are design proof to such conditions. Extreme weather events may cause damage to the distribution line and solar farm. SP will develop an emergency response plan to manage and respond to such events.

5.4.3 Climate Change

The risks to the subproject as a result of climate change revolve around the ongoing operation and maintenance of the assets. The main climate change risk would be related to occurrences of extreme tropical cyclones. These events have the potential to damage the solar hybrid, including the poles and distribution lines. Over time, it could lead to tear and wear of distribution lines and associated apparatus. Risk of impacts on the subproject can only be addressed through inspection and routine maintenance works.

Fumes from construction machinery will contribute to the emission of greenhouse gases; however, considered to be negligible on a global scale. Therefore, the subproject will not have any significant impact on climate change.

5.4.4 Health and Safety

Observing general health and safety requirements, including the provision of protective gear and equipment to workers, will reduce the risk of accidents at the work sites. Measures include ongoing training of workers and reviewing Standard Operating Procedures (SOP) to suit condition at the subproject.

Mitigation measures include:

- Provide workers with training in occupational health and safety (OHS) issues, and on the specific hazards of their work;
- Ongoing training in SOPs; and
- Provide workers with personal protection equipment, such as safety boots, safety glasses, reflector vests, helmets, gloves, and protective clothing.

5.4.5 Management of waste

It is possible that the remains of the construction and demolished materials accumulate at the subproject site. The demolished materials and construction materials will be disposed at the designated site approved by SP. These wastes should be removed at the first instance during the construction phase.

Operation of the subproject will generate wastes including drums, cables, timber and metal off-cuts and kitchen. The contractor will develop a waste management plan as part of its CESMP. Waste management measures will include the following measures:

- Regular collection and disposal of waste at the approved site;
- Regular inspection on oil sumps;
- Waste oil inventory and oil stored in safe containers, careful attention given during overhauls and maintenance;
- Discussion currently being pursued with the ECD on possible export of waste oil.

5.4.6 Sewage and Hydrocarbons

The offices, workshop and related facilities will have piped sewerage connections to a specified septic tank. Sludge shall be stored in holding tanks. The holding tanks will be periodically pumped out and the sludge buried at a suitable location which minimizes the risk of any leaching to water bodies.

Activities likely to cause spillage of hydrocarbons either into land or water shall be undertaken so far as possible in bund areas. In particular, vehicle wash downs, maintenance and refueling, except in emergencies, should take place in workshops and other hardstand areas with appropriate drainage systems, dump, including the capacity to intercept spilt hydrocarbons or oily water; Earth-bund locations within the subproject site where spilt hydrocarbons or oily water can be contained within the bund.

5.4.7 Water Tank

SP ensures the water pumps, tanks and reticulation network are always operational through regular maintenances'. Continuous supply of water is important to subproject site for use in emergency responses as well as domestic purposes.

5.4.8 Impacts on Air Quality

The impacts on air quality during operation of the subproject are negligible unless there is a need for maintenance and the use of heavy machinery. Engineering practices that can be employed to ensure that any air quality impacts generated during operation are minimized includes the following:

- Equipment will be checked at regular intervals to ensure they are maintained in working order and SP will record the checks as part of environmental monitoring; and
- Periodic qualitative air quality monitoring (by observation rather than testing).

5.4.9 Noise

Noise from the operation of the subproject is negligible unless there is maintenance from the use of machinery.

5.5. Decommissioning Impacts

5.5.1 Waste Impacts

Decommissioning of the solar hybrid will result in recycled materials including glass, semiconductor, steel, aluminium and copper. At the end of its operational life, the component parts can be dismantled using minimal impact approach and recycled or disposed of safely. SP will manage all waste according to the Solomon Islands Waste Management Pollution Control Strategy (SIWMPCS). At this stage, SP is yet to identify oversea companies who would be interested in recycling such waste. Normally ECD will facilitate waste transactions under the Waigani Convention. Following SP and ECD discussions on waste, SP will explore the viability of exporting solar waste overseas or selling to local companies. SP is planning to develop a waste management plan to address the issue of waste and pollution in the energy sector.

5.5.2 Storage sites

Minimal space is available for storage of waste materials unless it is recycled immediately after decommissioning. In Solomon Islands, recycling is a major concern, as there are limited to no technology available. Therefore, SP and ECD will have to discuss a prior arrangement for recycling with companies overseas. Alternatively, while discussing disposal methods, a first priority will have to be determined for the appropriate sites for storage.

5.5.3 Access and Mobility

During decommissioning, access and mobility at the subproject site will have minor impacts. The contractor will agree on the work schedule with nearby communities or residential areas before decommissioning activities commence.

5.5.4 Vegetation restoration.

The emphasis will be on the use of local provenance species of native plants and that the emerging vegetation type and composition be similar, or at least close, to that was present before the subproject, at the same time considering vegetation types and densities that will produce a quick coverage to minimize further damage to the environment and restore functional ecosystems, as well as vegetation types of cultural and economic significance preferred by end-users.

5.6. Cumulative impacts

The proposed subproject solar site is located on Catholic Diocese of Auki registered land currently used by the diocese for cattle grazing. The settlement patterns have degraded the natural habitats overtime exacerbated by farming practices and logging. The construction of the solar hybrid and network will induce insignificant impact on existing processes and the environment. Minor impacts are anticipated since best engineering practices will be adopted. Noise, fumes and dust at the subproject site during construction and from the operation of the solar hybrid in addition to the daily operation of the road and domestic activities are negligible and deemed minor. It is therefore concluded that the subproject activities will not induce or enhance existing negative impacts but rather will increase opportunity for economic development.

6.0 ANALYSIS OF ALTERNATIVES

This section looks at undertaking the various alternatives of the project. There are three basic options: (1) Alternative Design and Technology (2) Alternative Site Options (3) leave the subproject as it is now. If the project were to continue, it would be necessary to take technical, environmental and social aspects of the subproject into consideration and ensure that these concerns are adequately considered in the decision making. It is therefore important to consider all practicable options and ensure that the best available option(s) is/are chosen. The following section details the development options.

6.1. Alternative to Design and Technology

The contract arrangement is an EPC contract. Therefore, the contractor is responsible for design, procurement, construction and commissioning of the subproject. The installation will be carried out in compliance to SP specification and SOPs for Solar hybrid installation. The contractor will design and furnish all materials and equipment to be fully compatible with electrical, environmental and space conditions of the site. It will include all equipment to safely support the full demands of the solar farm and be designed for unattended operation.

Installation of the solar and substation requires technical machineries and equipment operated by technically approved people. Localized machineries and equipment may be used as support.

SP had completed concept designs of all poles, conductors and associated apparatus. Pole types are based on the span length, location and geotechnical features of the site. Unlike other initial solar hybrid sites in the Solomon Islands, the WB subproject sites will have 11kV HV line in its network purposely to allow expansion in the future. The subproject is currently in the concept design stage so it is highly likely that additional information on design alternatives and technologies will be available at detail design stage.

6.2. Alternative Site Options

Two potential solar sites were identified by the planning team. The two sites were described in detail in the Bina Planning report 2018 and 2020.

Table 7: Potential Sites

Site 1	Bina
Site 2	Buma



Figure 17: Potential Solar Sites identified by the planning team

Both sites are located on registered land in Malaita Province. Site 1 is located on Bonale Tribal land and Site 2 on Diocese of Auki, Buma. The sites are relatively flat and meet all technical requirements for the solar hybrid system. However, some landowners have placed covert over the Bonale land so Solomon Power cannot proceed acquisition of site 1. SP has commenced the acquisition of site 2 since it is located on registered land and consent has been granted by the Diocese of Auki. Consultation conducted by Solomon Power with the Diocese of Auki and the subproject communities reveal that people value the importance of the development.

As a result, it is not feasible to consider alternatives to location which will increase expense, social and environmental issues. There is no other realistic alternative to the site 2 that will provide the same economic, environmental, and social advantage.

Why work has to be done at site 2:

- Meet SP technical requirements and standards;
- Further away from residential buildings;
- No land disputes;
- Access to coastline; and
- Access to road.

6.3. No Development Option

The “No Development Option” implies not proceeding with the project rather choosing to leave the site as it is at the current state, which is certainly provided no alternative for the subproject. This option would likely lead to socio- economic impacts including but not necessarily limited to the following:

- Limited energy to meet growing demands;
- Without such expansion, SP will unable to meet SINEP targets set by the SIG;
- Failure to realize that by improving energy efficiency will boost the potential for increased income generation through various business undertakings,

In view of the above, it is important to consider that the positive benefits of the subproject will compensate the potential negative environmental and social effects. Therefore, the “No Development Option” is not recommended.

7.0 ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

Table 8: Environment Social Management and Monitoring Plan

IMPACT MANAGEMENT					IMPACT MONITORING		
Subproject activities	Potential Environment Impacts	Mitigation approaches	Responsibility	Mitigation cost	Parameter to monitored	Means of verification and frequency	Responsibility
PRE-CONSTRUCTION PHASE							
UXO Survey.	<ul style="list-style-type: none"> Contact with UXO. 	<ul style="list-style-type: none"> Completion of the UXO survey by qualified personnel. 	<ul style="list-style-type: none"> Contractor. 	<ul style="list-style-type: none"> To be include in the BOQ 	<ul style="list-style-type: none"> Survey been carried out by approved personals 	<ul style="list-style-type: none"> Certificate showing the Subproject area is UXO free 	<ul style="list-style-type: none"> RSIPF and SP
Development of preliminary designs /site plans / maps.	<ul style="list-style-type: none"> Resettlement and damage to vegetation. 	<ul style="list-style-type: none"> The concept drawings and route are designed to avoid resettlement impacts and disturbance to vegetation. 	<ul style="list-style-type: none"> Contractor and SP 	<ul style="list-style-type: none"> To be part of the Subproject cost. 	<ul style="list-style-type: none"> Plans approved by SP 	<ul style="list-style-type: none"> Building permit 	<ul style="list-style-type: none"> SP
CONSTRUCTION PHASE							
Vegetation clearance for distribution lines and Solar Hybrid.	<ul style="list-style-type: none"> Removal of grass. 	<ul style="list-style-type: none"> Minimize clearance to construction perimeter only. Unnecessary clearance avoided. Contractor to communicate clearance area to workers and monitor clearance activities 	<ul style="list-style-type: none"> Contractor 	<ul style="list-style-type: none"> Include in construction cost 	<ul style="list-style-type: none"> Area of vegetation; area of felled trees/vegetation removal 	<ul style="list-style-type: none"> During survey and activities - visual inspection before, during and after 	<ul style="list-style-type: none"> SP

IMPACT MANAGEMENT					IMPACT MONITORING		
Subproject activities	Potential Environment Impacts	Mitigation approaches	Responsibility	Mitigation cost	Parameter to monitored	Means of verification and frequency	Responsibility
Operation of construction machinery generating emissions.	<ul style="list-style-type: none"> Emission of exhaust from vehicles and machinery. Emissions of CO² and POPs. 	<ul style="list-style-type: none"> Maintain construction equipment. Prohibit use of equipment that generates smoke. 	<ul style="list-style-type: none"> Contractor 	<ul style="list-style-type: none"> Inc. in construction cost. 	<ul style="list-style-type: none"> Air quality, emissions. 	<ul style="list-style-type: none"> Weekly or after complaint - periodic visual inspection; Any particulate matter and smoke. 	<ul style="list-style-type: none"> SP.
	<ul style="list-style-type: none"> Dust caused by construction vehicles running at high velocity, Degrade air quality/ Increase TSS in the atmosphere. 	<ul style="list-style-type: none"> Thorough watering to avoid dust. Restrict operations if particulates are causing nuisance to sensitive receptors. 	<ul style="list-style-type: none"> Contractor 	<ul style="list-style-type: none"> Inc. in construction cost 	<ul style="list-style-type: none"> dust, particulate matter; Use of tarpaulins and loading of vehicles; Stockpiles. 	<ul style="list-style-type: none"> Weekly or after complaint - periodic visual inspection. 	<ul style="list-style-type: none"> SP
Operation of construction machinery creating noise	<ul style="list-style-type: none"> Noise to communities and schools. 	<ul style="list-style-type: none"> Construction machine exhaust systems and noisy equipment will be maintained to minimise noise. Limit noisy construction activities to day time hours, e.g. Construction activities prohibited between 9pm and 6am. 	<ul style="list-style-type: none"> Contractor 	<ul style="list-style-type: none"> Inc. in construction cost. 	<ul style="list-style-type: none"> Adherence to agreed schedule; Complaints (no. logged with resolution). 	<ul style="list-style-type: none"> Weekly or after complaint - review schedule. Consultation (ensure schedule being 	<ul style="list-style-type: none"> SP ECD

IMPACT MANAGEMENT					IMPACT MONITORING		
Subproject activities	Potential Environment Impacts	Mitigation approaches	Responsibility	Mitigation cost	Parameter to monitored	Means of verification and frequency	Responsibility
		<ul style="list-style-type: none"> Agree works schedule with stakeholders. 				adhered to).	
	<ul style="list-style-type: none"> Impacts on construction workers. 	<ul style="list-style-type: none"> Workers limit of exposure to noise will be strictly below 70 decibels per 8 hour shift. (See WB guidelines in Table 6) Provide workers with noise abatement equipment (ear-muffs etc.). Complaints will be addressed by contractor through the GRM. 	<ul style="list-style-type: none"> Contractor 	<ul style="list-style-type: none"> Inc. in construction cost. 	<ul style="list-style-type: none"> Workers safety equipment. 	<ul style="list-style-type: none"> Weekly Workers are provided with safety equipment. 	<ul style="list-style-type: none"> SP ECD
Stockpile of Construction Materials.	<ul style="list-style-type: none"> Construction materials washed out into marine environment Increase siltation and turbidity or receiving environment 	<ul style="list-style-type: none"> Construction materials will be stockpiled away from the drain and covered. Placement of diversion ditches around stockpiles. 	<ul style="list-style-type: none"> Contractor 	<ul style="list-style-type: none"> Inc. in construction cost. 	<ul style="list-style-type: none"> No stockpiling close to water bodies. 	<ul style="list-style-type: none"> Weekly-Visual Inspection. 	<ul style="list-style-type: none"> SP ECD
	<ul style="list-style-type: none"> Dust from exposed stockpiles. 	<ul style="list-style-type: none"> Material stockpiles located in sheltered areas and to be covered. Water stockpiles as necessary. 	<ul style="list-style-type: none"> Contractor 	<ul style="list-style-type: none"> Inc. in construction cost 	<ul style="list-style-type: none"> dust, particulate matter; Stockpile covered. 	<ul style="list-style-type: none"> Weekly or after complaint - periodic visual inspection 	<ul style="list-style-type: none"> SP

IMPACT MANAGEMENT					IMPACT MONITORING		
Subproject activities	Potential Environment Impacts	Mitigation approaches	Responsibility	Mitigation cost	Parameter to monitored	Means of verification and frequency	Responsibility
Excavation works, installation of Solar Hybrid Generation System and distribution lines.	<ul style="list-style-type: none"> Risks of accidents. 	<ul style="list-style-type: none"> Standard Operating procedures (SOP) for instalment correctly executed. Workers wear personal protective equipment including clothing, helmets, safety boots, earmuff etc. Completion of a detail OHS risk assessment prior to the commencement of activities. Instalment of signage boards, markings, barricades where applicable; Speed limits should be set and a safety audit may be carried out prior to completion of construction to ensure road safety signs are properly implemented. Contractor to develop a traffic plan as part of the CESMP. 	<ul style="list-style-type: none"> SP Contractor 	<ul style="list-style-type: none"> Inc. in construction cost. 	<ul style="list-style-type: none"> Workers wore safety equipment. 	<ul style="list-style-type: none"> Workers are provided with safety equipment. Daily inspection. Risk assessment completed and identified controls complied with. 	<ul style="list-style-type: none"> ECD and SP.
	<ul style="list-style-type: none"> Accidental Discovery of UXO. 	<ul style="list-style-type: none"> Should UXO be discovered, the contractor is to immediately cordon off the area arrange the evacuation of nearby residences and inform the UXO contractor and RSIPF of the find. 	<ul style="list-style-type: none"> Contractor, SP 	<ul style="list-style-type: none"> Include in construction cost 	<ul style="list-style-type: none"> Occurrence of UXO at the construction site 	<ul style="list-style-type: none"> Upon discovery of UXO 	<ul style="list-style-type: none"> SP and RSIPF

IMPACT MANAGEMENT					IMPACT MONITORING		
Subproject activities	Potential Environment Impacts	Mitigation approaches	Responsibility	Mitigation cost	Parameter to monitored	Means of verification and frequency	Responsibility
	<ul style="list-style-type: none"> Silt generation. 	<ul style="list-style-type: none"> Keep road side vegetation Use of silt control devices and sediment traps/fences when required. Construction of sediment settling ponds and bunds. Diverting turbid water to sediment settling ponds. Implementation of an erosion and sediment control plan. 	<ul style="list-style-type: none"> Contractor 	<ul style="list-style-type: none"> Include in construction cost 	<ul style="list-style-type: none"> Reduced soil erosion and sedimentation Vegetation clearance minimized No dump sites near waterways 	<ul style="list-style-type: none"> Weekly - visual inspection Visual inspections during and after rain events to monitor the effectiveness of erosion and sediment control measures. 	<ul style="list-style-type: none"> SP and ECD
	<ul style="list-style-type: none"> Accidental release of hydrocarbon from construction machines. 	<ul style="list-style-type: none"> Ensure all construction machines are well maintained. A prestart on construction machine carried out every morning. Oil/fuel remediation agents, oil pads, oil booms and geofabric clothes are procured for usage as part of the emergency response plan. 	<ul style="list-style-type: none"> Contractor 	<ul style="list-style-type: none"> Include in construction cost. 	<ul style="list-style-type: none"> Construction machineries maintain in good working order. Spot check for visible oil Water quality. 	<ul style="list-style-type: none"> Weekly - visual inspection. 	<ul style="list-style-type: none"> SP and ECD.

IMPACT MANAGEMENT					IMPACT MONITORING		
Subproject activities	Potential Environment Impacts	Mitigation approaches	Responsibility	Mitigation cost	Parameter to monitored	Means of verification and frequency	Responsibility
	<ul style="list-style-type: none"> Direct discharge to adjacent creeks or streams. 	<ul style="list-style-type: none"> Development footprint will be provided with effective drainage systems which will avoid direct discharge to creeks or streams/ when the need arises. 	<ul style="list-style-type: none"> Contractor 	<ul style="list-style-type: none"> Included in construction cost 	<ul style="list-style-type: none"> No direct discharge to water bodies 	<ul style="list-style-type: none"> Weekly visual inspection SP ECD 	<ul style="list-style-type: none"> SP and ECD
	<ul style="list-style-type: none"> Access and Mobility at several road sections will be prohibited temporarily during the construction. 	<ul style="list-style-type: none"> Contractor to allow sections of the road area to be continuously accessed by affected party. Signs and other appropriate safety features will be used to indicate construction works are being undertaken. 	<ul style="list-style-type: none"> Contractor 	<ul style="list-style-type: none"> Included in Contract 	<ul style="list-style-type: none"> Maintenance of access; Signage; Road free of materials and debris; Haulage routes rehabilitated 	<ul style="list-style-type: none"> During activities - Visual inspection; Consultations; Review of traffic management plan 	<ul style="list-style-type: none"> SP and ECD
	<ul style="list-style-type: none"> Risk of invasive species (e.g. giant African snail spread through materials and machineries) 	<ul style="list-style-type: none"> SP to acquire clearance certificate from MAL quarantine for transportation of machineries and materials between islands. 	<ul style="list-style-type: none"> SP and MAL 	<ul style="list-style-type: none"> Included in Contract 	<ul style="list-style-type: none"> Ensure there are no invasive species associated with the Subproject 	<ul style="list-style-type: none"> Visual inspection and consultation with affected community. 	<ul style="list-style-type: none"> SP and MAL and ECD
Fuelling construction machines and	<ul style="list-style-type: none"> Hydrocarbon leakage / spills from construction sites / workshops. 	<ul style="list-style-type: none"> Detailed Emergency Response Plan (as part of CESMP) prepared by contractor to cover hazardous materials/oil 	<ul style="list-style-type: none"> Contractor. 	<ul style="list-style-type: none"> Included in construction cost. 	<ul style="list-style-type: none"> Ensure storage sites are using existing. 	<ul style="list-style-type: none"> Weekly inspection. 	<ul style="list-style-type: none"> SP and ECD.

IMPACT MANAGEMENT					IMPACT MONITORING		
Subproject activities	Potential Environment Impacts	Mitigation approaches	Responsibility	Mitigation cost	Parameter to monitored	Means of verification and frequency	Responsibility
storage of Hydrocarbons		<p>storage, spills and accidents to land and water.</p> <ul style="list-style-type: none"> Chemicals will be stored in secure containers away from the water bodies. Chemicals stored in bund area or compound with concrete floor and weatherproof roof and fire extinguishers. Protective Equipment (PPE) to workers directly involved in handling hazardous substances. Ensure all construction machines are well maintained. Accidents reported to police within 24 hours. 			Concrete base.		
	<ul style="list-style-type: none"> Spill associated with Hazardous substances. 	<ul style="list-style-type: none"> Store kerosene, diesel, petrol and lubricants in a bunded area with an impervious surface and with stormwater drainage provisions as approved by the Engineer. Store paint, and chemicals in a hazardous materials storage shed with walls, roof, ventilation and a bunded floor with an impervious surface; 	<ul style="list-style-type: none"> Contractor 	<ul style="list-style-type: none"> Included in construction cost 	<ul style="list-style-type: none"> Handling of hazardous materials. 	<ul style="list-style-type: none"> Weekly inspection 	<ul style="list-style-type: none"> SP

IMPACT MANAGEMENT					IMPACT MONITORING		
Subproject activities	Potential Environment Impacts	Mitigation approaches	Responsibility	Mitigation cost	Parameter to monitored	Means of verification and frequency	Responsibility
		<ul style="list-style-type: none"> Ensure that the storage capacity of each bunded area is at least 105% of the total volume of hazardous material stored; Secure the areas and sheds used to store hazardous materials by erecting a security fence of minimum height 1.80m around each facility with the fence located outside the bund; Locate the hazardous materials storage areas at least 10.0m away from any watercourse; Contain and mop up spills of hazardous materials in accordance with manufacturer's specifications. 					
	<ul style="list-style-type: none"> Smoking near storage and workshop areas causing fire 	<ul style="list-style-type: none"> Prohibit smoking close to fuel storage areas. Put up signs of no go smoking zones. Provide extinguishers and train workers on their use. 	<ul style="list-style-type: none"> Contractor. 	<ul style="list-style-type: none"> Include in construction cost. 	<ul style="list-style-type: none"> Signs and fire extinguishers. 	<ul style="list-style-type: none"> Code of conduct and housekeeping rules being adhered to. Verify records of accidents 	<ul style="list-style-type: none"> SP and ECD

IMPACT MANAGEMENT					IMPACT MONITORING		
Subproject activities	Potential Environment Impacts	Mitigation approaches	Responsibility	Mitigation cost	Parameter to monitored	Means of verification and frequency	Responsibility
Presence of construction workers	<ul style="list-style-type: none"> Waste generated at construction and installation sites causing nuisance and potential contamination to soil and adjacent water bodies. 	<ul style="list-style-type: none"> Garbage receptacles will be set up at construction sites, and will be collected and disposed every day. Prepare waste management plan (as part of CESMP). All wastes from work sites to be disposed of in approved landfill / areas by contractor. Provide sufficient training in appropriate collection and waste disposal methods. Collection and treatment of septic waste/temporary toilets during construction phase in accordance with ECD. 	Contractor.	Include in construction cost.	<ul style="list-style-type: none"> Waste management - visual inspection that solid waste is disposed of as per CESMP. 	<ul style="list-style-type: none"> Monthly, as required and spot checks - visual inspection. Review of waste management plan. 	SP and ECD.
		<ul style="list-style-type: none"> No wastes to be dumped in waterways. Ensures wastes not discharged to rivers or coastal waters and that all wastes disposed of in proper areas. Provide adequate and safe drinking water. 	Contractor	Include in construction cost	<ul style="list-style-type: none"> No direct discharges to local streams, coast or rivers; Regularity of waste removal 	<ul style="list-style-type: none"> Visual inspection Weekly 	SP and ECD
	<ul style="list-style-type: none"> Possibility of conflicts or antagonism between the public and the workers 	<ul style="list-style-type: none"> Facilitate reconciliation between parties- affected person, Contractor to involve in resolving the issue. 	Contractor	Include in constr	<ul style="list-style-type: none"> No. concerns raised and resolution; 	<ul style="list-style-type: none"> Ongoing - consult with public to monitor 	SP and ECD

IMPACT MANAGEMENT					IMPACT MONITORING		
Subproject activities	Potential Environment Impacts	Mitigation approaches	Responsibility	Mitigation cost	Parameter to monitored	Means of verification and frequency	Responsibility
		<ul style="list-style-type: none"> Call the Police once it goes beyond control. 		<ul style="list-style-type: none"> uction cost 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> environmental concerns. 	
	<ul style="list-style-type: none"> Risk of contractor engaged in GBV 	<ul style="list-style-type: none"> All workers will be required to undertake GBV trainings and sign the associated code of conduct prior to commencement of civil works. 	<ul style="list-style-type: none"> Contractor 	<ul style="list-style-type: none"> Include in construction cost 	<ul style="list-style-type: none"> Zero GBV tolerance. 	<ul style="list-style-type: none"> Incident reports and consultations. 	<ul style="list-style-type: none"> SP
	<ul style="list-style-type: none"> Climate Change and Natural disasters. 	<ul style="list-style-type: none"> Inspection and maintenance. 	<ul style="list-style-type: none"> Contractor 	<ul style="list-style-type: none"> Include in construction cost 	<ul style="list-style-type: none"> Equipment failure 	<ul style="list-style-type: none"> Weekly inspection and after every storm. 	<ul style="list-style-type: none"> Contractor
OPERATIONAL PHASE							
Operation of Solar Hybrid System	<ul style="list-style-type: none"> Impacts from maintenance machineries 	<ul style="list-style-type: none"> Maintain machineries at standard working condition Safety PPE for workers. Workers carrying out maintenance are trained to avoid electric shocks. Completion of a risk assessment and implementation of SOPs. 	<ul style="list-style-type: none"> SP 	<ul style="list-style-type: none"> Include in operational cost. 	<ul style="list-style-type: none"> Air quality, emissions. 	<ul style="list-style-type: none"> Monthly or after complaint - periodic visual inspection. Any particulate matter and smoke. 	<ul style="list-style-type: none"> SP
	<ul style="list-style-type: none"> Accidents (involving electric shocks and burning). 	<ul style="list-style-type: none"> All SP workers and contractors are trained and certified. 	<ul style="list-style-type: none"> SP. 	<ul style="list-style-type: none"> Operational cost. 	<ul style="list-style-type: none"> Zero incidents. 	<ul style="list-style-type: none"> Incident reports. 	<ul style="list-style-type: none"> SP.

IMPACT MANAGEMENT					IMPACT MONITORING		
Subproject activities	Potential Environment Impacts	Mitigation approaches	Responsibility	Mitigation cost	Parameter to monitored	Means of verification and frequency	Responsibility
		<ul style="list-style-type: none"> All households are wired by grade A licence contractors. Advise communities during awareness to report to SP and Fire services of any burning incidents. 					
	<ul style="list-style-type: none"> Public safety on the use of electricity. 	<ul style="list-style-type: none"> Community Education and awareness at the preconstruction, construction and prior to commissioning of facility. Awareness conducted at schools, church and institutions. Awareness through media. 	<ul style="list-style-type: none"> SP. 	<ul style="list-style-type: none"> Operational cost. 	<ul style="list-style-type: none"> Zero Incidents. 	<ul style="list-style-type: none"> Incident reports. 	<ul style="list-style-type: none"> SP.
	<ul style="list-style-type: none"> Establishment of the network infrastructure throughout the district will introduce more roadside obstacles and the potential for collisions. 	<ul style="list-style-type: none"> Road safety assessment (majority of the poles will be within the road corridor and supposed to be 4m from road pavement-SP will avoid encroaching into people lands). Traffic in the area is lower and does not seem to pose any risk to the poles. Unless people are drunk which is law and order issue. 	<ul style="list-style-type: none"> SP. 	<ul style="list-style-type: none"> Operational cost. 	<ul style="list-style-type: none"> Zero Incidents. 	<ul style="list-style-type: none"> Incident reports. 	<ul style="list-style-type: none"> SP.
	<ul style="list-style-type: none"> Road Accidents and safety of women associated with no street lamps. 	<ul style="list-style-type: none"> There are provisions to install streetlamps on its distribution network for the sake of community safety, 	<ul style="list-style-type: none"> SP. 	<ul style="list-style-type: none"> Operational cost. 	<ul style="list-style-type: none"> Budget for installation of street lamps. 	<ul style="list-style-type: none"> Installation of street lamps. 	<ul style="list-style-type: none"> SP.

IMPACT MANAGEMENT					IMPACT MONITORING		
Subproject activities	Potential Environment Impacts	Mitigation approaches	Responsibility	Mitigation cost	Parameter to monitored	Means of verification and frequency	Responsibility
		however not at this stage. Assessment on suitable location for street lights will commence soon after the project.					
	<ul style="list-style-type: none"> Waste generated at solar (Solid waste) old batteries 	<ul style="list-style-type: none"> Garbage receptacles will be set up at construction sites, which will be regularly cleared by the SP. SP to prepare waste management plan. All wastes from work sites to be disposed of in approved landfill / areas by SP. Workers will provide sufficient training in appropriate waste disposal methods. 	<ul style="list-style-type: none"> SP 	<ul style="list-style-type: none"> Included in operational cost. 	<ul style="list-style-type: none"> Waste management - visual inspection that solid waste is disposed of as per CESMP; Visibility of oil and fuel. 	<ul style="list-style-type: none"> Monthly, as required and spot checks - visual inspection; Review of waste management plan. 	<ul style="list-style-type: none"> SP and ECD
DECOMMISSIONING							
Dismantling the solar hybrid	<ul style="list-style-type: none"> Solar waste 	<ul style="list-style-type: none"> SP will manage all waste according to the Solomon Islands Waste Management and Pollution Control Strategy. At this stage, SP is yet to identify buyers of solar waste. Normally ECD will facilitate waste transactions under the Waigani Convention. Following SP and ECD discussions on the 	<ul style="list-style-type: none"> SP 	<ul style="list-style-type: none"> To be part operational cost. 	<ul style="list-style-type: none"> Solar Panels and associated E-wastes. 	<ul style="list-style-type: none"> During decommissioning. 	<ul style="list-style-type: none"> SP/ECD

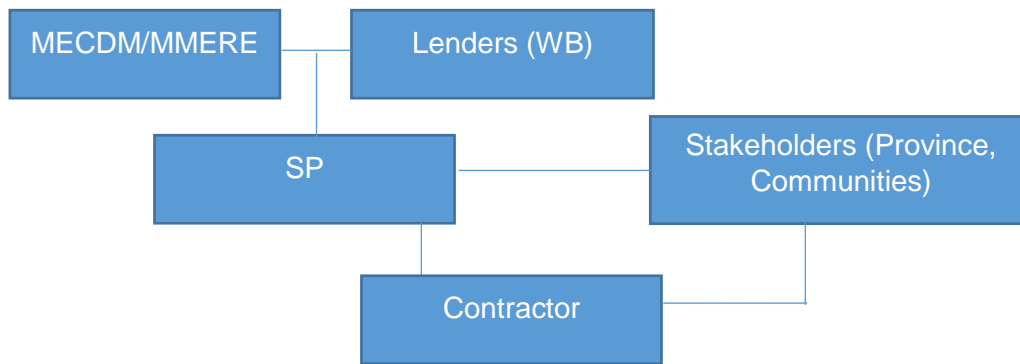
IMPACT MANAGEMENT					IMPACT MONITORING		
Subproject activities	Potential Environment Impacts	Mitigation approaches	Responsibility	Mitigation cost	Parameter to monitored	Means of verification and frequency	Responsibility
		matter, SP will explore feasibility of exporting solar waste overseas. ECD recommend that SP discuss with a Fijian company on batteries disposal.					
	<ul style="list-style-type: none"> Storage of waste materials to certain extent can occupy space, unless they are recycled or removed immediately after decommissioning. 	<ul style="list-style-type: none"> Storage facilities spaces and secure. 	<ul style="list-style-type: none"> SP 	<ul style="list-style-type: none"> To be part operational cost 	<ul style="list-style-type: none"> Storage facility 	<ul style="list-style-type: none"> After decommissioning 	<ul style="list-style-type: none"> SP/ECD
	<ul style="list-style-type: none"> During decommissioning, access and mobility at the subproject site will have minor impacts. 	<ul style="list-style-type: none"> SP will agree work schedule with the community before decommissioning activities commences. 	<ul style="list-style-type: none"> SP 	<ul style="list-style-type: none"> Operational cost 	<ul style="list-style-type: none"> Road access, signage 	<ul style="list-style-type: none"> During decommissioning. 	<ul style="list-style-type: none"> SP/ECD.
Dismantle of standby generator and fuel tank.	<ul style="list-style-type: none"> Spillage of oil and fuel. 	<ul style="list-style-type: none"> Ensure standard operating procedures for dismantle of generator and tank are in place. All fuel and oil from generator pumped into drums before lifting to vehicle. 	<ul style="list-style-type: none"> SP 	<ul style="list-style-type: none"> Operational cost 	<ul style="list-style-type: none"> spillage 	<ul style="list-style-type: none"> During decommissioning. 	<ul style="list-style-type: none"> SP/ECD.

7.1. Institutional Arrangement

This section identifies implementation arrangement for managing environment and social impacts, mitigations and reporting.

The overall organizational structure for environmental and social management for the subproject is shown in **Error! Reference source not found.**figure 17 below.

Figure 18: Organizational Structure for Environmental Social Management



7.1.1 Solomon Power

The overall management of all monitoring and inspection tasks comes under the SP. This covers all aspects of the required activities including coordination with other agencies that have national responsibilities over some of the tasks. The company is responsible for general Subproject execution and with day-to-day subproject management activities, as well as monitoring.

SP will include key performance indicators in the Contract that regarding the Contractor's environmental, social and health and safety performance that will inform their compliance monitoring schedule.

SP will be responsible for compliance monitoring during construction and operation of the Subproject. The ECD will also be responsible for verifying the monitoring undertaken by the SP through audits and spot-checks. The outcomes of the monitoring will be included in the monthly progress report.

SP, through the Capital Works Department will be the key contact for the subproject. The department is responsible for the delivery of a capital program aimed at expanding and developing SP's position to meet future demands and challenges. It is supported by operational and engineering departments to ensure reliable, efficient and safe delivery of energy.

SP responsibilities includes:

- Preparation of screening reports, proposal applications, Environment Social Management Plans and Public Environmental Reports for subprojects as required to meet requirements of the Environment Act 1998 and WB Policies;
- Arrange public consultation to advise affected communities of the scope and scheduling of the subprojects;
- Arrange for ESMP/PER to be attach to Bid Document;
- Arrange for reports to be sent to the MECDM and WB for evaluation. Following approval by the MECDM and the issuing of permits/approvals advise the SP and WB of the approval;
- Evaluate and approve the CESMPs prepared by the contractors as a condition of the contracts;
- Management of GRM; and
- Undertake regular site visits to independently monitor the contractor's compliance with the CESMP.

7.1.2 Contractor

The contractor will be responsible for preparing a CESMP at construction stage and during implementation that is aligned with this plan and also informed through a risk assessment, whenever additional engineering information is available. These includes an emergency response plan, health and safety plan and waste management plan as part of their CESMP. The contractor will also be responsible for implementing all environmental, health and safety actions included in the CESMP. As a condition to contract, contractor will recruit an environmental safety officer (ESO) whose responsibilities will include:

- Coordinating with SP for preparing the CESMP;
- Provide training and awareness on environment, health and safety.
- Undertake STIs, HIV/AIDS, Malaria, Dengue, GBV, SEA and COVID-19 briefings and awareness raising amongst the contractor's employees;
- Contractor complies with the clauses in the contract and bidding documents in respect of environment, health and safety;
- Ensuring the contractor does not commence construction activities until requisite approvals have been received from ECD, provincial authorities and SP;
- Participating in monitoring with SP to ensure environmental, social management and health and safety activities are reported as required;
- Produce monthly environment, social and health and safety monitoring reports to SP; and

- Facilitating consultation with the affected stakeholders and ensuring smooth implementation of the subproject.

7.1.3 Ministry of Environment Conservation, Climate Change, Disaster Management and Meteorology (MECDM).

As the national agency responsible for environment and conservation, the ECD under MECDM will need to be involved in the various aspects of the subproject. Under the requirements of the Environment Act 1998, the ECD will need to review the ESMP/PER and monitor the progress of construction. The ECD has been fully informed of the status of the subproject and also awaits the submission of the ESMP/PER. The ECD will review and issue development consent for the subproject.

7.1.4 Ministry of Mines, Energy and Rural Electrification (MMERE)

The Mines and energy division (MED) under MMERE is responsible for ensuring the smooth implementation of the subproject. The MED from time to time will carry out inspections ensuring subproject indicators are implemented on time, specification and national requirements are effectively executed. SP will need to seek BMP approval from the ministry for sourcing gravel at any location, however not at this stage. The MED will also be responsible for coordinating this requirement with other departments in the ministry for quick review and approval of the BMP.

7.1.5 Malaita Provincial Government

The provincial assembly is the governing arm of the province. The MPG TCPB shares an important role in approving development plans to certain extent. SP is responsible for liaising with Provincial planning division for consent. A building permit is tendered when a plan is being approved by the board or assembly. It is important the provincial government grant the consent so that, SP and MLHS can also proceed with the acquisition.

7.1.6 Royal Solomon Islands Police Force

Solomon Islands is a major battle ground during the World War II. Provision in the contract BOQ will allow the contractor to carry out UXO survey prior to construction and during construction. Should UXO be discovered during the construction, the contractor and SP are to immediately cordon off the area, arrange the evacuation of nearby residences and inform the RSIPF of the find.

7.1.7 Communities

The subproject communities comprise of tribal chiefs, village chiefs, church leaders, youths and women. Tribal chiefs and community elders are required to facilitate discussion with their tribes on easement for transmission and distribution lines. Provide support to SP on GRM issues, identifying landowners, signing the MOU and ensuring smooth implementation of the subproject.

7.1.8 Catholic Diocese of Auki, Malaita Province

The contact for the FTE land is the Bishop of the Catholic Diocese of Auki. The Diocese of Auki will be responsible for:

- Ensuring land lease is within the subproject timeframe;
- Ensuring necessary documents for transfer of land is available;
- Providing continuous support to the subproject during construction and when it is operational.

7.2. Environment Monitoring and Reporting

Monitoring is a component of an impact assessment that combats uncertainties pertaining to unanticipated impacts, to ensure mitigation measures are working and to reassure public on the progress of the development. Progressive monitoring must accompany various stages of the subproject activities (construction and operational phase). The Environmental social monitoring plan is based on the potential impacts, significance of the impacts and mitigation approaches identified during the screening. It comprises of parameters to be monitored, frequencies and responsible authorities as per impact. The Contractor is required to prepare a detailed environment social and health and safety monitoring plan based on Table 8 in consultation with SP. ECD is responsible for monitoring compliance, reviewing the company’s monthly monitoring report and suggesting ways to improve or strengthen mitigation approaches. A monitoring checklist is in Annex 3.

Table 9: Responsibilities for Environmental Social Management & Monitoring

Subproject Stage	Responsible Organization	Responsibilities
Feasibility studies and appointment	Solomon Power	<ul style="list-style-type: none"> • Prepare ESMP/PER including overall ESMP (Table 8) • Preliminary design
Feasibility studies and subproject review and approval	ECD	<ul style="list-style-type: none"> • Review and approval of ESMP/PER including overall ESMP (Table 8)
Detailed Design	Contractor	<ul style="list-style-type: none"> • Prepare detailed design and specification • Submit design to SP for approval • Prepare CESMP based on specifics of detailed design • Submit CESMP to SP for review and approval
	SP	<ul style="list-style-type: none"> • Approve the Contractor’s detailed design and specification and CESMP
Construction	Contractor	<ul style="list-style-type: none"> • Implementation of CESMP • Submission of monthly reports to SP • Provision of awareness/training to workers • Regular Safety awareness as part of tool box meetings (covering OH&S, PPE and safety signs displaying work progress) • Consultation and awareness to workers on code of conducts and management of communicable diseases
	SP	<ul style="list-style-type: none"> • Supervise implementation of CESMP • Audit construction phase through environmental and OHS inspections and review monitoring data
	ECD	<ul style="list-style-type: none"> • Audits and spot checks

Subproject Stage	Responsible Organization	Responsibilities
Operation	SP	<ul style="list-style-type: none"> • Provide budget to undertake environmental monitoring • Undertake environmental monitoring and prepare bi-annual reports • Prepare maintenance reports to adaptively manage environmental risks related to operations (as per ESMP/PER) • Complete preventative maintenance to prevent environmental, social and OHS incidents and nuisance.
Decommissioning	SP	<ul style="list-style-type: none"> • Ensure all waste associated with decommissioning is disposed in a manner accepted by ECD. Provide budget for waste export. • Consult with ECD who will provide options on disposals and processes.
	ECD	<ul style="list-style-type: none"> • Provide support to SP on Waigani Process and other conventions on export of waste.

7.3. Training.

SP and contractor will conduct the environment, social, health and safety training for all workers before construction commences. The training will prepare workers to manage and protect the environment, to manage any potential social impacts and to ensure the safety of the public and the construction team.

7.3.1 Environmental and Safety Induction Training.

Mandatory, all workers attend the Environmental Safety Induction Training. The training covers legislation and regulations, policy, organization structure, duties and responsibilities, mitigation measures, targets in the ESMP and housekeeping rules/guidelines. The major topics will include air pollution control; waste management; vegetation clearance controls, health and safety; handling of hazardous substances, emergency preparedness; and, first aid training.

7.3.2 Environmental and Safety Toolbox Talk.

In addition to that, all workers will attend the weekly environmental and safety toolbox talk. The purpose of the talk is to rectify lesson learnt and re-emphasizing the importance of environment and safety procedures. The Environment Safety Officer will update all workers when Standard Operating Procedures (SOP) is being developed or reviewed.

7.3.3 Refresher training.

There is provision for refresher training on specific topics. These can be done annually depending on the nature of the work and approval from the SP management.

8.0 PUBLIC CONSULTATION AND PARTICIPATION

8.1. Consultation Activities

The major stakeholders in this subproject include the Malaita Provincial Government, MLHS, ECD, MID, MAL, MECDM, and MMERE. All these agencies are important because they produce approvals and permits important for the subproject. In addition to that, they provide support to communities through grants and technical resources. MICLI and MFMR are also important because of the proposed Bina Industrial Estate. Sharing information with these agencies promotes collective planning and budgetary initiations for development. Align development activities and maximizing benefits to rural communities.

Initial consultation with communities were completed by SP including subproject evaluation and economic viability through cost benefit analysis. These include household surveys. Therefore, the subproject plans are known to the SIG, the provincial government and the surrounding communities and businesses. Further public consultations and media awareness will be carried out prior to commencing construction to alert the stakeholders about the construction schedule.

8.2. Consultation with land owners and communities

There were two consultations conducted by SP with the landowners and communities. Bina consultation took place in June 2020 and Buma consultation in November 2020. The summary of the consultations are provided in the tables below and in annex 8 and 9.

Table 10: Community consultation at Bina and Buma

Questions/Comments	Responses
<ul style="list-style-type: none"> Vegetation clearing for distribution line in particular will require felling of important crops or trees along power line corridor. Communities feel that SP and its contractor must compensate affected owners. (Will there be compensation for crops, trees and assets?) 	<ul style="list-style-type: none"> SP will compensate crops and trees affected by the subproject based on SIG MAL rates and MOFR assessments.
<ul style="list-style-type: none"> Cost of tariff and affordability to village people. (Will there be reduction on the electricity tariff from the use of the solar system?) 	<ul style="list-style-type: none"> This subproject will help reduce cost of fuel and reduce tariff. There is provision to review and reduce tariff but not at this stage.
<ul style="list-style-type: none"> Reiterate the importance of electricity usage and its safety. (Will be there be awareness on the use and safety of electricity?) 	<ul style="list-style-type: none"> Awareness on the use and safety of electricity will be conducted prior to commissioning of the subproject.
<ul style="list-style-type: none"> There are disputes among the tribal groups over the Bonale Land. Will SP continue to pursue acquisition of the proposed solar site when there are disputes over the land? 	<ul style="list-style-type: none"> SP will not acquire land that is under some form of dispute.

<ul style="list-style-type: none"> Majority of the questions are related to cost of connection to households. 	<ul style="list-style-type: none"> There are two SP connections types (1. Normal and 2. OBA). Cost of wiring and connection will be covered under the Output based Aid (OBA) arrangements. SP will meet all connection and wiring cost to every household. Each household will pay a minimal cost to SP when they submit their applications. The current scope of OBA is in Guadalcanal and Malaita Provinces. The program might expand to WB solar hybrid sites. Leaf houses can be connected as long they meet SP regulatory standards. SP regulatory team will inspect all buildings to ensure they are safe prior to connection to the SP network.
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Table 11: Community Consultation at Buma

Questions/Comments	SP Responses
<ul style="list-style-type: none"> The Diocese of Auki Bishop expressed appreciation to SP's positive response following the consent that was given and acknowledge SP's presence in Buma on behalf of the church. The Bishop highlighted that the subproject is important because it promotes sustainable development and provide economic opportunities unlike logging which degrade the environment and cause social issues. 	<ul style="list-style-type: none"> SP acknowledge the Bishop and thank the Catholic Church for accepting SP request for availing church land for the solar farm. SP also, thank the landowners and surrounding communities who have provided support to the church in ensuring land is available for the subproject.
<ul style="list-style-type: none"> Community representative express support for the subproject. It is important the communities and landowners provide the support needed by the church and SP during land acquisition. 	<ul style="list-style-type: none"> Restriction on land use is a major obstacle to development in the Solomon Islands. Solomon Power will work with the church, communities and surrounding landowners to ensure the subproject is implemented successfully.
<ul style="list-style-type: none"> What is the required land size necessary for this subproject? 	<ul style="list-style-type: none"> Solomon Power requires a minimum size of 1 hectare of land.
<ul style="list-style-type: none"> Reiterate the importance of electricity usage and its safety. (Will there be awareness on the use and safety of electricity?) 	<ul style="list-style-type: none"> Awareness on the use and safety of electricity will be conducted prior to commissioning of the subproject.



Figure 19: Bina Consultation

8.3. Consultation and Disclosure

The ESMP/PER documenting the mitigation measures and consultation process will be submitted to MECDM and will be available for public review. Further consultation and disclosure will be carried out during the implementation through:

- The media before construction and operation commences; and
- Information regarding the approved subproject and the proposed environmental management measures will be posted at suitable locations at the subproject site.

The ESMP/PER report will be available to the public from SP website or upon request through phone and email.

9.0 GRIEVANCES REDRESS MECHANISM

Any concerns, issues or grievance during the course of the subproject will be addressed in a transparent and timely manner, and without retribution to the affected person (AP)¹⁴. These concerns may pertain to the subproject's environmental performance or social risks.

An initial process has been set up to address any issues and/or problems raised directly at the subproject level in the first attempt. However, if this cannot be resolved, then the grievances will be addressed through a mechanism of referral to ECD within the MECDM. The GRM process and forms will be made available to all households within the subproject area.

9.1. During construction

It is anticipated, that during the construction phase, most complaints that may arise are expected to be minor complaints regarding dust, health & safety and noise, and can be resolved easily. All complaints received at the site office are to be entered into a registry kept on the site, this includes information such as date, name, contact address and reason for the complaint. A duplicate entry copy is given to the AP for their record when the complaint is registered. The register will indicate the party responsible for resolving the complaint and the date when this was made together with the date the AP was informed of the decision and how the decision was given to the AP. The register is then signed off by the person responsible for a decision to be made and dated. The register must be kept at the front desk of the contractor's office, and it is a public document. The contractor's GRM person is responsible for ensuring the forms or entries are filled out properly. The copy given to the AP will show the procedures for assessing the complaint with a statement affirming the AP rights to make a complaint. There are no costs involved when applying to AP for raising a complaint.

Complaints received by the AP are discussed directly with the SP Subproject Manager. For straightforward complaints, the PM can make an on-the-spot determination to resolve the issue. For complicated complaints, the PM will forward the complaint to the SP Management. The Management has five days to resolve the complaint and make a decision to the AP. If the AP complaint is dismissed, the AP will be informed of their rights to take it to the next level. A copy of the decision is to be sent to the ECD and MED.

If the AP is not satisfied, the complaint can be taken to the ECD Director, who will appoint the ECD Officers to review the complaint. The Director will then have 15 days to make a determination.

9.2. During Operation and Decommissioning

During operation, the same conditions apply; i.e., there are no fees attached to the AP for making a complaint, the complainant is free to make the complaint which will be treated in a transparent manner.

¹⁴Affected Person (AP) refers to anyone affected by the development, can be an organization or government agency.

10.0 CONCLUSION

The study shows that there are no significant environmental impacts and the ESMP has described mitigation measures to ensure that all impacts can be mitigated to environmentally friendly levels. No significant flora or fauna, nor will any conservation, cultural or heritage sites be affected.

The design has avoided resettlement impacts and unnecessary removal of crops and trees. There will be however removal of teak trees along the network corridor. Affected crop and tree owners will be compensated on what has been lost due to the subproject activities.

Prior to commencing construction, the contractor will prepare a CESMP when further engineering details are available. During construction, SP will be responsible for monitoring and supervising compliance with the CESMP.

The subproject has minimal impacts, none of which are catastrophic, all of which can be satisfactorily mitigated. Based on the above, it is concluded that environmental social impacts arising from the subproject can be minimized to minor levels. There is no need for further assessment or EIS.

11.0 REFERENCES

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ANNEX

Annex 1: Multilateral Agreements

Multi-lateral Agreements that the Solomon Islands is a party to Convention or Treaty	Status	Purpose/Aim	Agency Responsible
Regional MEAs			
i. Pollution Protocol for Dumping	Ratified 10/9/98	Prevention of pollution of the South Pacific region by dumping	Marine Div/ECD
ii. Pollution Protocol for Emergencies	Ratified 10/9/98	Cooperation in combating pollution emergencies in the South Pacific region.	Marine Div/ECD Project: National Pollution Prevention Plan
iii. Natural Resources & Environment of South Pacific Region (SPREP Convention)	Ratified 10/9/98	Protection of natural resources and environment of the South Pacific Region in terms of management and development of the marine and coastal environment in the South Pacific Region.	ECD
iv. Waigani Convention on Hazardous & Radioactive Wastes 1995	Ratified 7/10/1998	Bans the importation of hazardous and radioactive wastes into Forum Island countries and to control the trans-boundary movement and management of hazardous wastes within the South Pacific region.	ECD
Chemicals, Wastes and Pollution			
i. Liability for Oil Pollution Damage	Ratified	Strict liability of ship owner for pollution damage to a coastal state within a certain amount.	Marine Div
ii. Marine Pollution Convention (London)	Ratified	Prevention of marine pollution by dumping of wastes and other matter.	ECD/Foreign Affairs
iii. Desertification (UNCCD)	Acceded 16/4/1999	Agreement to combat desertification and mitigate the effects of drought in countries experiencing drought or desertification.	Agriculture Div/ECD Project: National Action Plan on Land Degradation and Drought; National Capacity Self-Assessment (NCSA)

iv. POPs Convention (Stockholm)	Acceded 28.7/2004	Protection of human health and environment from persistent organic pollutants.	ECD/Environmental Health Div. Project: National Implementation Plan
Biodiversity			
i. CITES	Instrument of ratification being prepared	Regulations and restriction of trade in wild animals and plants through a certification system of imports and exports.	ECD
ii. World Heritage Convention	Acceded 10/6/1992	Protection of sites of Outstanding Universal Values. Solomon Islands currently has East Rennell Island as a World Heritage site.	Museum/ECD
iii. Convention on Biological Diversity (UNCBD)	Ratified 3/10/1995	Conserve biological diversity through the sustainable use of its components and the fair and equitable sharing of the benefits arising out of utilizing genetic resources.	ECD Project: NCSA; National Biodiversity Strategy and Action Plan; International Waters Program; 3rd National Report
iv. Cartagena Protocol	Acceded	Protection of human health and the	ECD

Annex 2: Other important Legislation

Act	Date	Main objectives
River Waters	1973	Control of river waters for equitable and beneficial use; establishes activities for which permits are required.
National Parks	1978	Establishes national parks; establishes restrictions on use and provides for appointment of park rangers.
Wild Birds	1978	List scheduled birds for protection. Establishes bird sanctuaries and strict hunting season for several birds.
Agriculture and Livestock	1982	Applies to agricultural and livestock industries. Defines noxious weeds and their control.
Forest Resource and Timber Utilization	1991	Governs licensing of felling of trees and sawmills; timber agreements on customary land. Establishes State Forest and Forest Reserves and management systems. The Forestry Bill 2004 seeks to replace the Act and provide more control in conservation of forests and improved forest management.

Fisheries	1998	Framework for fisheries management and development, including licensing of fishing vessels and processing plants. Lists prohibited fishing methods, provides for establishment of Marine Protected Areas (MPAs) and coastal management plans.
Provincial Government Act,	1997	<p>The Provincial Government Act of 1997 gives power to the provinces to make their own legislation including environment and conservation. Schedule 3 of the Act provides a list of activities for which the provinces have responsibility to pass ordinances.</p> <p>The State of the Environment Report (2008) shows that eight provincial ordinances have been passed which include:</p> <ul style="list-style-type: none"> ○ one environmental protection ordinance, ○ six wildlife and wildlife management and conservation area ordinances, and ○ one marine and freshwater ordinance.
Labour Act	1978	<p>This Act deal with employment of workers. Part IX Care of Workers, requires the employer under:</p> <ul style="list-style-type: none"> ○ Article 65: to provide workers with rations. ○ Article 66: to protect workers and dependents from malaria. ○ Article 67: to provide workers with an accessible supply of clean, non-polluted water for drinking, washing and for other domestic purposes. Water supplies may be inspected by a Health Officer. ○ Article 68: requires the employer to make sufficient and proper sanitary arrangements for workers. ○ Article 69: requires the employer to provide accommodation for the worker and his family if they are not conveniently located to the work place. ○ Article 70: requires the employer to provide medical care at the workplace. ○ Article 71: states that depending on the circumstances the employer may be required to provide medical facilities,
The Safety at Work (Pesticide Regulations)	1983	<p>This regulation is included as a component within the Safety at Work Act and deals with the following:</p> <ul style="list-style-type: none"> ○ Article 3: requires the formation of a Pesticides Registration Advisory Committee. ○ Article 4: Requires a Register of Pesticides to be maintained. ○ Article 13: shows that all pesticide containers are to be labelled with the following: <ul style="list-style-type: none"> a. The trade name of the pesticide. b. The net weight and ISO approved name of the active ingredient, together with its formulation. c. Directions for use and what the pesticide is to be used for. d. Hazard label regarding storage, and handling and safety equipment required for application. e. Minimum withholding periods prior to harvest. f. First aid treatment.

		<p>g. Name of manufacturer and registration number of the pesticide.</p> <ul style="list-style-type: none">○ Article 15: shows that no unlabelled pesticides can be imported, while Article 16 states that pesticides cannot be sold, supplied or used other than in the original container.○ The First Schedule classifies pesticides into 4 hazard levels depending on their oral or dermal toxicity as follows: 1a - extremely hazardous; 1b - highly hazardous; II - moderately hazardous; and III - slightly hazardous.
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Annex 3: Monitoring Checklist (pre-construction and construction)

	Subproject activities	Applies	Mitigation approaches	Monitoring Responsibility	Parameter to monitored	Means of verification and frequency	Achieved (yes, no)	Remarks/Action
PRE-CONSTRUCTION PHASE	UXO Survey	<ul style="list-style-type: none"> Contact or 	<ul style="list-style-type: none"> Provision in the BOQ to allow RSIPF to carry out UXO survey. 	<ul style="list-style-type: none"> SP 	<ul style="list-style-type: none"> Survey been carried out by approved personals 	<ul style="list-style-type: none"> Certificate showing the subproject area is UXO free 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none">
	Development of preliminary designs /site plans / maps	<ul style="list-style-type: none"> Contractor 	<ul style="list-style-type: none"> Design standards meet national and internal standards (designs and specification). 	<ul style="list-style-type: none"> SP 	<ul style="list-style-type: none"> Plans approved by HCC and the town country planning board 	<ul style="list-style-type: none"> Building permit 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none">
CONSTRUCTION PHASE	Vegetation clearance	<ul style="list-style-type: none"> Contractor 	<ul style="list-style-type: none"> Minimize clearance to the construction perimeter; Unnecessary clearance avoided. 	<ul style="list-style-type: none"> SP, Contractor 	<ul style="list-style-type: none"> Area of vegetation; area of felled trees/vegetation removal 	<ul style="list-style-type: none"> During survey and activities - visual inspection before, during and after 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none">
	Operation of construction machinery generating emissions	Contractor	<ul style="list-style-type: none"> Maintain construction equipment; Prohibit use of equipment that causes excessive pollution (e.g. generates smoke). 	SP, Contractor	<ul style="list-style-type: none"> Air quality, emissions, 	<ul style="list-style-type: none"> Weekly or after complaint - periodic visual inspection; Any particulate matter and smoke 		
		Contractor	<ul style="list-style-type: none"> Thorough watering to avoid dust 	SP, Contractor	<ul style="list-style-type: none"> dust, particulate matter; Use of tarpaulins and loading of vehicles; Stockpiles. 	<ul style="list-style-type: none"> Weekly or after complaint - periodic visual inspection 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none">
	Operation of construction	Contractor	<ul style="list-style-type: none"> Construction machine exhaust systems and noisy equipment will be maintained to minimise noise 	SP, Contractor	<ul style="list-style-type: none"> Adherence to agreed schedule; 	<ul style="list-style-type: none"> Weekly or after complaint - review schedule 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none">

	Subproject activities	Applies	Mitigation approaches	Monitoring Responsibility	Parameter to monitored	Means of verification and frequency	Achieved (yes, no)	Remarks/A ction
	machinery creating noise		<ul style="list-style-type: none"> Limit noisy construction activities to day time hours, i.e. construction activities prohibited between 9pm and 6am Agree works schedule with stakeholders 		<ul style="list-style-type: none"> Complaints (no. logged with resolution). 	<ul style="list-style-type: none"> Consultation (ensure schedule being adhered to) 		
		Contractor	<ul style="list-style-type: none"> Workers limit of exposure to noise will be strictly below 85 decibels per 8-hour shift Provide workers with noise abatement equipment (ear-muffs etc.) Complaints will be addressed by contractor 	SP, Contractor	<ul style="list-style-type: none"> Workers safety equipment. 	<ul style="list-style-type: none"> Weekly Workers are provided with safety equipment 	•	•
	Stockpile of Construction Materials	Contractor	<ul style="list-style-type: none"> Construction materials will be stockpiled away from the drain and covered when necessary. Placement of diversion ditches around stockpiles 	SP, Contractor	<ul style="list-style-type: none"> No stockpiling close to water bodies. 	<ul style="list-style-type: none"> Weekly-Visual Inspection 	•	•
		Contractor	<ul style="list-style-type: none"> Material stockpiles located in sheltered areas and to be covered 	SP, Contractor	<ul style="list-style-type: none"> dust, particulate matter; Stockpile covered. 	<ul style="list-style-type: none"> Weekly or after complaint - periodic visual inspection 	•	•
	Clearing, excavations and installation of solar	Contractor	<ul style="list-style-type: none"> Standard Operating procedures (SOP) for instalment correctly executed. Workers wear protective equipment including clothing, helmets, safety boots, earmuff acts 	SP, Contractor	<ul style="list-style-type: none"> Workers wore safety equipment. 	<ul style="list-style-type: none"> Workers are provided with safety equipment Daily inspection 	•	•

	Subproject activities	Applies	Mitigation approaches	Monitoring Responsibility	Parameter to monitored	Means of verification and frequency	Achieved (yes, no)	Remarks/A ction
		Contractor	<ul style="list-style-type: none"> The area surrounding the instalment site bund and secure. Spills clean as per emergency response plan 	SP, Contractor	<ul style="list-style-type: none"> emergency response plan; Spills cleaned and area rehabilitated; Workers are provided with safety equipment. 	<ul style="list-style-type: none"> Weekly inspection 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none">
		Contractor	<ul style="list-style-type: none"> Should UXO be discovered, the contractor is to immediately cordon off the area arrange the evacuation of nearby residences and inform the RSIPF of the find. 	SP, Contractor,	<ul style="list-style-type: none"> Occurrence of UXO at the construction site 	<ul style="list-style-type: none"> Upon discovery of UXO 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none">
		Contractor	<ul style="list-style-type: none"> Keep road side vegetation Use of silt control devices and sediment traps/fences when required Construction of sediment settling ponds and bunds. Diverting turbid water to sediment settling ponds. 	SP, Contractor	<ul style="list-style-type: none"> Reduced soil erosion and sedimentation Vegetation clearance minimized No dump sites near waterways 	<ul style="list-style-type: none"> Weekly - visual inspection 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none">
		Contractor	<ul style="list-style-type: none"> Ensure all construction machines are well maintained. A prestart on construction machine carried out every morning Oil/fuel remediation agents, oil pads, oil booms and geo-fabric clothes are procured for usage as part of the emergency response plan 	SP, Contractor	<ul style="list-style-type: none"> Construction machineries maintain in in good working order Spot check for visible oil Water quality 	<ul style="list-style-type: none"> Weekly - visual inspection 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none">

	Subproject activities	Applies	Mitigation approaches	Monitoring Responsibility	Parameter to monitored	Means of verification and frequency	Achieved (yes, no)	Remarks/A ction
		Contractor	<ul style="list-style-type: none"> Development footprint will be provided with effective drainage systems which will avoid direct discharge to creeks or streams (when the need arises) 	SP, Contractor	<ul style="list-style-type: none"> No direct discharge to water bodies 	<ul style="list-style-type: none"> Weekly - visual inspection SP, ECD 		•
		Contractor	<ul style="list-style-type: none"> Contractor to allow sections of the road area to be continuously accessed by affected party and guided through to avoid any safety problems Signs and other appropriate safety features will be used to indicate construction works are being undertaken 	SP ,Contractor	<ul style="list-style-type: none"> Maintenance of access; Signage; Road free of materials and debris; Haulage routes rehabilitated 	<ul style="list-style-type: none"> During activities - Visual inspection; Consultations; Review of traffic management plan 	•	•
	Fuelling construction machines and storage of Hydrocarbons	Contractor	<ul style="list-style-type: none"> Detailed Emergency Response Plan (as part of CESMP) prepared by contractor to cover hazardous materials/oil storage, spills and accidents Chemicals will be stored in secure containers away from the water bodies Chemicals stored in area or compound with concrete floor and weatherproof roof and fire extinguishers Ensure all construction machines are well maintained Accidents reported to police within 24 hours 	SP, Contractor	<ul style="list-style-type: none"> Ensure storage sites are using existing concrete base; 	<ul style="list-style-type: none"> Weekly inspection 	•	•

	Subproject activities	Applies	Mitigation approaches	Monitoring Responsibility	Parameter to monitored	Means of verification and frequency	Achieved (yes, no)	Remarks/A ction
		Contractor	<ul style="list-style-type: none"> Prohibit smoking close to fuel storage areas Put up signs of no go smoking zones Provide extinguishers and train workers on their use 	SP, Contractor	<ul style="list-style-type: none"> Signs and fire extinguishes 	<ul style="list-style-type: none"> Code of conduct and housekeeping rules being adhered to. Verify records of accidents 	•	•
	Presence of construction workers	Contractor	<ul style="list-style-type: none"> Garbage receptacles will be set up at construction sites, which will be regularly cleared by the contractor. Contractor to prepare waste management plan (as part of CESMP) All wastes from work sites to be disposed of in approved landfill / areas by HCC and SP Contractor will provide sufficient training in appropriate waste disposal methods 	SP, Contractor	<ul style="list-style-type: none"> Waste management - visual inspection that solid waste is disposed of as per CESMP; 	<ul style="list-style-type: none"> Monthly, as required and spot checks - visual inspection; Review of waste management plan 	•	•
			<ul style="list-style-type: none"> No wastes to be dumped in waterways Contractor ensures wastes not discharged to rivers or coastal waters and that all wastes disposed of in proper areas Contractor to provide adequate and safe drinking water 	SP Contractor	<ul style="list-style-type: none"> No direct discharges to local streams, coast or rivers; Regularity of waste removal 	<ul style="list-style-type: none"> Visual inspection Weekly 	•	•

	Subproject activities	Applies	Mitigation approaches	Monitoring Responsibility	Parameter to monitored	Means of verification and frequency	Achieved (yes, no)	Remarks/A ction
		Contractor	<ul style="list-style-type: none"> • Facilitate reconciliation between parties- affected person, contractor to involve in resolving the issue. • Call the Police once it goes beyond control 	Contractor	<ul style="list-style-type: none"> • No. concerns raised and resolution; 	<ul style="list-style-type: none"> • Ongoing - consult with public to monitor environmental concerns 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •

Annex 4: General Work Permit



CONTRACTOR SITE SAFETY GUIDE FOR SIEA PROJECT SUPERVISORS

APPENDIX 1: GENERAL WORK PERMIT

CONTRACTOR GENERAL WORK PERMIT						
PROJECT NO.		PERMIT NO.				
(A) WORK TO BE UNDERTAKEN						
(B) PERMIT DETAILS			(F) NAMES OF PERSONS INVOLVED			
Location		EMPLOYEE NAME	SIEA INDUCTED	SITE INDUCTED	COMMENT	
Permit Duration		1.				
Start Date/Time		2.				
End Date/Time		3.				
THIS PERMIT IS ONLY VALID FOR THE TIME SPECIFIED		4.				
		5.				
(C) NAMES OF PERSONS SUPERVISING WORK			6.			
Responsible Person		7.				
Standby Person		8.				
Note: It is the responsibility of the Responsible person to ensure that the personnel involved in carrying out the work fully understand the detail and requirements of work under this permit.			9.			
			Note: Complete extra names on another sheet of paper where required using above format and attach to this permit.			
(D) STATEMENT BY RESPONSIBLE PERSON			(G) PRECAUTION AND PROTECTION			
I hereby acknowledge receipt of this permit and state that I fully understand my duties. I am aware of the nature and position of the work area and plant covered by this permit. I am satisfied that I and the persons under my control to work under this permit should have no difficulty in keeping clear of unsafe plant in the course of the work.			REQUIREMENTS		REQUIRED	N/A
			Full time supervision			
			Standby Person			
			Safety Harness			
			Head Protection			
			Eye Protection			
			Ear Protection			
			Hand Protection			
			Feet Protection			
			Body Protection			
Reflector Vests						
SIGNATURE	DATE	TIME	(E) SIEA ISSUING AUTHORITY			
			<i>Persons entering the worksite have been instructed to take all of the above precautions.</i>			
TITLE	SIGNATURE	DATE	TIME	COMMENTS:		
Property Manager						
Chief Engineer						
(I) CANCELLATION OF PERMIT BY RESPONSIBLE PERSON			(H) REFERENCES:			
The work under this permit is now complete and the work area has been vacated.			1. Work Methodology			
			2. Check Sheets			
SIGNATURE			3. Drawings			
			4. JSA			
DATE			5.			
			6.			
TIME						
Document No: OHSC34 Version 1		Custodian: OHS Officer				
Created: February 2016		Last Review: November 2018		Next Review: December 2019		

Annex 5: SIEA UXO Clearance Framework and Guide



SIEA UXO Clearance Framework and Guide

November 2014
Revised June 2019

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Acronyms

AOD	Abandoned Ordnance
CWPM	Capital Works Programme Manager
EOD	Explosive Ordnance Disposal
MID	Ministry of Infrastructure and Development
OH&S	Occupational Health and Safety
RSIPF	Royal Solomon Islands Police Force
RSIPF-EOU	Royal Solomon Islands Police Force – Explosive Ordnance Unit
SIEA	Solomon Islands Electricity Authority (Authority)
SIG	Solomon Islands Government
UXO	Unexploded Ordnance
WWII	World War 2

1.0 INTRODUCTION

Solomon Islands was the site of severe battle between the Japanese Army and the American Allied Forces during WWII. The war resulted in hundreds of thousands of firearms and UXO items left behind.

WWII ordnance found in Solomon Islands can be defined as either unexploded (UXO) or abandoned (AXO). Unexploded ordnance are explosive ordnances that has been primed, fused, armed or prepared for use in armed conflict but has failed to explode. Abandoned explosive ordnances are explosive ordnance unused during the war and subsequently left behind.

For the purpose of this guide, UXO is used as the general term to describe unexploded or abandoned ordnance, munitions and explosive devices left behind during WWII which represents a hazard to people and to any future development of the land on which they are abandoned.

Although UXO is not captured in the Environmental Act 1998 and Environmental Regulation 2008, UXO clearance activities have become an integral part in any development activity in the Solomon Islands. As the ministry responsible for infrastructure development in SI, MID has a draft UXO procedure developed as a means to render safe and take responsibility for UXO related hazards on any development activity occurring on SIG crown land.

Note that this guide only provides guidance for the management of UXO threats. It does not give detailed guidance on EOD contracting practise. The safety of SIEA employees, its clients and customers, developers and partners, consultants and contractors are not guaranteed.

More guidance on international standards on unexploded ordnance for the construction industry can be obtained from **CIRIA C681: Unexploded Ordnance (UXO)**

2.0 OBJECTIVE OF THE GUIDE

The overall purpose of this guide is to provide a policy and framework governing responsibility and procedures to assess, mitigate and eliminate any UXO related hazard from any SIEA project site before any construction work commences. It provides guidance on the management of any UXO hazards associated with any development activity carried out by the Authority.

This guide also helps the Authority conduct appropriate UXO risk management procedures at the design phase, provide budget for and seek appropriate advice and guidance on UXO contamination and disposal.

It provides the steps to follow to allow EOD contractors to sweep and clear contaminated project sites before any building, engineering, geotechnical investigations, and maintenance work of a construction nature starts.

3.0 TARGET AUDIENCE

This guide is targeted for SIEA staff, its clients and customers, developers and partners, consultants and contractors. It should be applicable to health authorities, the environmental division, land owners and other relevant local agencies and stakeholders involved in the development project.

SIEA Contractors and Engineers are equally responsible for the wellbeing of their personnel on site and would be advised at the initial contract meetings of their responsibility, the process to manage UXO risks and who to contact at SIEA regarding UXO sightings and threats during project construction.

4.0 RESPONSIBILITY AND RISK MITIGATION MEASURES

Risk mitigation measures are put in place to ensure so far as is reasonably practical the health and safety of SIEA employees and of any other persons affected by the development activity.

4.1 Authority

SIEA and all its employees have a responsibility under the SIEA OH&S policy¹ to ensure the safety of its staff and every other person involved or affected by its normal day to day operation or any development activity.

The responsibility to report a sighting of a UXO or any suspicious article found at project sites or any SIEA location in the country resides with the SIEA and all its employees.

In the event of a suspicious UXO find, the following risk mitigation measures should immediately be followed.

- the area must be cordoned off appropriately
- physical measures put in place to avoid unauthorised tampering of the UXO find
- highly visible markings are provided at the HIGH RISK area.
- the UXO risk is communicated to surrounding communities

The find is reported to the SIEA Capital Works Programme Manager (CWPM) and the RSIPF-EOU. The CWPM will be responsible for the assessment, mitigation or elimination of any UXO related hazard with responsible authorities and EOD clearance contractors. SIEA will keep statistics and records of UXO information from studies done on its sites and the report made available to public upon request.

A reporting system is required to be established, communicated to all parties and managed for UXO clearance activities.

¹ The SIEA policy on Occupational Health and Safety 2010 is being reviewed.

SIEA is responsible for public awareness and consultation and building employee and stakeholder capacity to respond to the UXO threats at SIEA locations

UXO clearance will be considered and integrated into capital development activities and budget.

4.2 General Public

The general public must be consulted and encouraged to provide feedback and comments on their general short and long term safety during planning and design stage through the operational life of the project. These public consultations are carried out as part of required activities at the initial project initiation, planning and design stage.

Public comments and concerns must be properly documented and timely feedback provided. The mechanism to address public concerns will follow the existing SIEA mechanism for handling of customer complaints, through the Customer Service Department and the Public Relations Officer.

4.3 EOD Contractors

EOD contractors are required to be competent and registered to carry out this type of service. They are required to have the necessary expertise and equipment to identify, isolate, remove and safely dispose all UXO threats with assistance from the RSIPF-EOU.

The EOD contractor is responsible for site safety procedures and are required to have in place appropriate strategies to manage risks and environmental impacts and have appropriate insurance coverage.

The contractor will provide to SIEA before any clearance work begins,

- Supporting documentation on competency (experience and references), insurance coverage and legal registration where necessary
- Proposed suitably qualified and experienced staffing to carry out the service
- Proposed procedures complying with international standard UXO clearance practices
- Proposed UXO identification and clearance methodology and timing
- Contract amount for the service

The typical activities to be carried out by EOD contractors is summarised below.²

- Carry out and complete UXO survey of the project site including affected areas outside of the project site but related to the project.
- Cordon off areas and prevent unauthorised tampering where suspected UXO threats are determined.

² The procedures are summarised from the MID's '9.0 Unexploded Ordnance Procedure'

- Arrange for and carry out safe removal of all UXO ordnance from project site.
- Responsibly dispose UXO ordnance in accordance with relevant local law
- Ensure strategies and resources are in place to manage unintended accidents and explosions.
- Provide a report confirming completion of UXO survey, detection, removal and disposal.
- Provide necessary documentation to RSIPF – EOD and other relevant SIG agencies for the issuing of a Certificate of Clearance.
- Continuously monitor, document and report to SIEA and RSIPF any residual UXO threats arising during project implementation

The contractor will confirm and certify in accordance with **CIRIA C681: Unexploded Ordnance (UXO)** or an alternate internationally accepted standard.

4.4 RSIPF – EOU

The RSIPF– EOU is the body responsible for clearance and disposal of UXO finds. The RSIPF EOU also responds to public reports of UXO and undertake clearance activities. Where there are no nearby police stations in the outer islands, reports should be directed to relevant government district agencies which then notify police at the provincial headquarters.

The RSIPF EOU will provide a Certificate of Clearance after suspected UXO ordnances have been removed by them or by EOD clearance contractors before any construction work can begin.

5.0 RISK ASSESSMENT AND MANAGEMENT

5.1 Preliminary Risk Assessment

Preliminary risk assessment is required to be carried out to enable SIEA to identify any potential UXO risk or threat and decide whether a detailed risk assessment is required.

Preliminary risk assessment includes:

- examination of existing historical data
- talking with local surrounding communities about any past occurrences with UXO's
- provide probability on threat potential and
- recommend further steps to take

This is to be documented and filed and communicated to the CWPM or Project Engineer. A Preliminary risk assessment form is attached in Annex 1.

If potential risks are identified, a detailed risk assessment leading to detection and identification, recovery and disposal will be initiated.

5.2 Detailed Risk Assessment

In the Detailed Risk Assessment stage, project planning will take into consideration UXO activities in the design and budget for the project.

Risk mitigation measures are put in place and the public made aware of the UXO risk.

6.0 CONTACT DETAILS

All SIEA staff, clients and customers, developers and partners, consultants and contractors are to contact the following SIEA and RSIPF personnel regarding UXO issues on SIEA land.

Organisation	Contact Detail
Royal Solomon Islands Police Force (RSIPF)	Director Explosive Ordnance Unit P.O. Box G1723 Honiara Tel: 23820
Ministry of Environment, Climate Change, Disaster Management and Meteorology (MECDM).	Director –Tel:24070 Environmental Conservation Division P.O. Box 21 Honiara Tel: 23031/28054 Undersecretary technical
Ministry of Infrastructure (MID)	Under Secretary (Technical) P.O. Box G8 Honiara Tel: 24247-Undersecretary Admin Tel: 20331-Undersecretary Technical

Annex 6: Contractor General Work Permit



CONTRACTOR SITE SAFETY GUIDE FOR SIEA PROJECT SUPERVISORS

APPENDIX 1: GENERAL WORK PERMIT

CONTRACTOR GENERAL WORK PERMIT						
PROJECT NO.				PERMIT NO.		
(A) WORK TO BE UNDERTAKEN						
(B) PERMIT DETAILS			(F) NAMES OF PERSONS INVOLVED			
Location			EMPLOYEE NAME	SIEA INDUCTED	SITE INDUCTED	
Permit Duration			1.			
Start Date/Time			2.			
End Date/Time			3.			
THIS PERMIT IS ONLY VALID FOR THE TIME SPECIFIED			4.			
			5.			
(C) NAMES OF PERSONS SUPERVISING WORK			6.			
Responsible Person			7.			
Standby Person			8.			
Note: It is the responsibility of the Responsible person to ensure that the personnel involved in carrying out the work fully understand the detail and requirements of work under this permit.			9.			
			Note: Complete extra names on another sheet of paper where required using above format and attach to this permit.			
(D) STATEMENT BY RESPONSIBLE PERSON			(G) PRECAUTION AND PROTECTION			
I hereby acknowledge receipt of this permit and state that I fully understand my duties. I am aware of the nature and position of the work area and plant covered by this permit. I am satisfied that I and the persons under my control to work under this permit should have no difficulty in keeping clear of unsafe plant in the course of the work.			REQUIREMENTS		REQUIRED	N/A
			Full time supervision			
			Standby Person			
			Safety Harness			
			Head Protection			
			Eye Protection			
			Ear Protection			
Hand Protection						
Feet Protection						
Body Protection						
Reflector Vests						
(E) SIEA ISSUING AUTHORITY			<i>Persons entering the worksite have been instructed to take all of the above precautions.</i>			
TITLE	SIGNATURE	DATE	TIME	COMMENTS:		
Property Manager						
Chief Engineer						
(H) REFERENCES:						
(I) CANCELLATION OF PERMIT BY RESPONSIBLE PERSON			1. Work Methodology			
			2. Check Sheets			
			3. Drawings			
			4. JSA			
			5.			
			6.			
The work under this permit is now complete and the work area has been vacated.						
SIGNATURE	DATE	TIME				
Document No: OHS34 Version 1		Custodian: OHS Officer				
Created: February 2016		Last Review: November 2018		Next Review: December 2019		

Annex 7: Screening Checklist

SCREENING QUESTIONS	Yes	No	REMARKS
A. Subproject Siting			
Is the Subproject area adjacent to or within any of the following environmentally sensitive areas?			
• Cultural heritage site		No	There are no cultural areas in or near the proposed solar sites.
• Protected area		No	There are no protected areas in or near the proposed solar sites.
• Wetland		No	Kwaleunga River is located approximately 200m north of the solar site 2.
• Mangrove		No	Mangroves occupy the coastal areas, river mouths and bays.
• Estuarine		No	No estuarine in or near the proposed solar sites.
• Buffer zone of protected area		No	There are no protected areas in or near the proposed subproject site.
• Special area for protecting biodiversity		No	There are no special areas for protecting biodiversity in or near the proposed subproject site.
B. Potential Environmental and Social Impacts			
Will the Subproject cause.			
• encroachment on historical/cultural areas, disfiguration of landscape and increased waste generation?		No	There are no historical and cultural areas in or near the proposed subproject site.
• encroachment on precious ecosystems (e.g. sensitive or protected areas)?		No	There are no sensitive or protected areas near or within proposed subproject site.
• alteration of surface water hydrology of waterways crossed by roads and resulting in increased sediment in streams affected by increased soil erosion at the construction site?	Yes		Minor silt generation due to clearing and exposure of soil surface.
• damage to sensitive coastal/marine habitats by construction of submarine cables?		No	No sub marine cables for this subproject.

SCREENING QUESTIONS	Yes	No	REMARKS
<ul style="list-style-type: none"> deterioration of surface water quality due to silt runoff, sanitary wastes from worker-based camps, and chemicals used in construction? 	Yes		Impact arises when silt are allowed to move in to the environment. All campsites will have proper sanitary facilities and chemicals (fuels and oils) stored in shed with concrete floor.
<ul style="list-style-type: none"> increased local air pollution due to rock crushing, cutting, and filling? 		No	No crushing, cutting or filling for this subproject. There will be dust due to vehicle running at high velocity.
<ul style="list-style-type: none"> risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during subproject construction and operation? 	Yes		No radioactive hazards involved. Chemical handling resulted in spillages of (fuel and oil during construction and operation of solar farm) will be managed through an emergency response plan which will be developed as part of the CESMP.
<ul style="list-style-type: none"> chemical pollution resulting from chemical clearing of vegetation for construction site? 		No	No chemicals will be used
<ul style="list-style-type: none"> noise and vibration due to blasting and other civil works? 	Yes		Noise from construction machineries only
<ul style="list-style-type: none"> dislocation or involuntary resettlement of people? 		No	No households inside the proposed area.
<ul style="list-style-type: none"> disproportionate impacts on the poor, women and children, Indigenous Peoples, or other vulnerable groups? 		No	The subproject promotes socio-economic opportunities including employment for local people.
<ul style="list-style-type: none"> social conflicts relating to inconveniences in living conditions where construction interferes with pre-existing roads? 		No	Both site 1 and site 2 are accessible by road. It is part of the contractor's and SP obligation to ensure construction work does not compromise community access.
<ul style="list-style-type: none"> hazardous driving conditions where construction interferes with pre-existing roads? 		No	The traffic especially in site 2 is very low. The contractor and SP will ensure a traffic management system is in place to ensure public safety and safety of workers.

SCREENING QUESTIONS	Yes	No	REMARKS
<ul style="list-style-type: none"> creation of temporary breeding habitats for vectors of disease such as mosquitoes and rodents? 		NO	The subproject activities will ensure no ponding.
<ul style="list-style-type: none"> dislocation and compulsory resettlement of people living in right-of-way of the power transmission lines? 		No	There will be no relocation for this subproject. The design team avoid relocation.
<ul style="list-style-type: none"> environmental disturbances associated with the maintenance of lines (e.g. routine control of vegetative height under the lines)? 	Yes		Vegetation clearance within the proposed solar farm area and corridor for transmission and distribution lines.
<ul style="list-style-type: none"> facilitation of access to protected areas in case corridors traverse protected areas? 		No	There are no protected areas near or within the proposed sites.
<ul style="list-style-type: none"> disturbances (e.g. noise and dust) 	Yes		Minor noise and dust disturbance due to construction machineries.
<ul style="list-style-type: none"> population influx during subproject construction and operation that cause increased burden on social infrastructure and services (such as water supply and sanitation systems)? 		No	Majority of water for use at the solar farm will be harvested rain water stored in tanks. Campsite will have all the necessary building standards including proper sanitation.
<ul style="list-style-type: none"> social conflicts if workers from other regions or countries are hired? 		No	EPC contract, Code of conduct will be enforced.
<ul style="list-style-type: none"> poor sanitation and solid waste disposal in construction camps and work sites, and possible transmission of communicable diseases from workers to local populations? 	Yes		Contractor to produce a waste management plan as part of the CESMP
<ul style="list-style-type: none"> risks to community safety associated with maintenance of lines and related facilities? 	Yes		Radio announcement and notices will be placed at designated locations to inform communities.
<ul style="list-style-type: none"> community health hazards due to electromagnetic fields, land subsidence, lowered groundwater table, and salinization? 		No	The subproject will not create electromagnetic fields, land subsidence, lowed ground water and salinization.
<ul style="list-style-type: none"> risks to community health and safety due to the transport, storage, and use and/or disposal of materials such as explosives, fuel, and other chemicals during construction and operation? 	Yes		Vehicles running at high velocity. No explosives will be used during construction and operation.

SCREENING QUESTIONS	Yes	No	REMARKS
<ul style="list-style-type: none"> community safety risks due to both accidental and natural hazards, especially where the structural elements or components of the subproject (e.g., high voltage wires, and transmission towers and lines) are accessible to members of the affected community or where their failure could result in injury to the community throughout subproject construction, operation, and decommissioning? 	Yes		Natural hazards including cyclones could have the potential of damaging power lines. Safety awareness to communities will be conducted at all stages of the subproject.
C. Land Acquisition and Access Issues Questions regarding land acquisition and access for the Subproject include:			
<ul style="list-style-type: none"> will there be land acquisition? 	Yes		The subproject is subject to a voluntary land protocol procedure (The Bishop of Diocese of Auki, Malaita Province had granted their consent to SP to start the land acquisition process) Transmission lines will be covered under a Memorandum of Understanding (MOU). Bina community landowners and residents have already signed the MOU.
<ul style="list-style-type: none"> is the site for land acquisition known? 	Yes		There are two alternative sites. Site 1 is under some form of dispute so the Solomon proceed into acquiring site 2. Site 2 is located on Diocese of Auki registered area.
<ul style="list-style-type: none"> is the ownership status and current usage of land to be acquired known? 	Yes		The land is registered to Diocese of Auk. It is currently an old cattle grazing area.
<ul style="list-style-type: none"> will existing rights-of-way (ROW) be used for transmission line or distribution line easements? 	Yes		An MOU will cover easements for power lines.
<ul style="list-style-type: none"> will there be loss of shelter and residential land due to land acquisition? 		No	There are no households inside the two potential sites.

SCREENING QUESTIONS	Yes	No	REMARKS
<ul style="list-style-type: none"> will there be loss of agricultural and other productive assets due to land acquisition? 	Yes		The proposed site (2) is an old cattle grazing area. There are also teak trees in the area. Land acquisition and inventory of assets and valuation reports will be covered in the ARAP.
<ul style="list-style-type: none"> will there be losses of crops, trees, and fixed assets due to land acquisition? 	Yes		There are no fixed assets. But crops mainly teak trees. An inventory of the crop will commence after the land transfer is made. Compensation will be based on the Ministry of Agriculture Livestock (MAL) and Ministry of Forestry Research (MFR) rates.
<ul style="list-style-type: none"> will there be loss of businesses or enterprises due to land acquisition? 		No	No loss to business or enterprises due to land acquisition expected.
<ul style="list-style-type: none"> will there be loss of income sources and means of livelihoods due to land acquisition? 	Yes		There will loss of teak trees. SP will compensate crop owners based on market value.
<ul style="list-style-type: none"> will people lose access to natural resources, communal facilities and services? 		No	There are no facilities within the two proposed sites. People will continue to access local resources near the proposed sites.
<ul style="list-style-type: none"> if land use is changed, will it have an adverse impact on social and economic activities? 		No	No changes expected.
<ul style="list-style-type: none"> will access to land and resources owned communally or by the state be restricted? 		No	Communities will continue to access resources for example gardens or plantation near the proposed sites.
D. Indigenous Peoples Issues			
<ul style="list-style-type: none"> are there socio-cultural groups present in or use the subproject area who may be considered as "tribes" (hill tribes, schedules tribes, tribal peoples), "minorities" (ethnic or national minorities), or "indigenous communities" in the subproject area? 		No	There are no socio cultural groups present or use the proposed sites.

SCREENING QUESTIONS	Yes	No	REMARKS
<ul style="list-style-type: none"> are there national or local laws or policies as well as anthropological researches/studies that consider these groups present in or using the subproject area as belonging to "ethnic minorities", scheduled tribes, tribal peoples, national minorities, or cultural communities? 		No	NA
<ul style="list-style-type: none"> do such groups self-identify as being part of a distinct social and cultural group? 		No	NA
<ul style="list-style-type: none"> do such groups maintain collective attachments to distinct habitats or ancestral territories and/or to the natural resources in these habitats and territories? 		No	NA
<ul style="list-style-type: none"> do such groups maintain cultural, economic, social, and political institutions distinct from the dominant society and culture? 		No	NA
<ul style="list-style-type: none"> do such groups speak a distinct language or dialect? 		No	NA
<ul style="list-style-type: none"> have such groups been historically, socially and economically marginalized, disempowered, excluded, and/or discriminated against? 		No	NA
<ul style="list-style-type: none"> are such groups represented as "Indigenous Peoples" or as "ethnic minorities" or "scheduled tribes" or "tribal populations" in any formal decision-making bodies at the national or local levels? 		No	NA
<ul style="list-style-type: none"> will the subproject directly or indirectly benefit or target Indigenous Peoples? 		No	Bina community are direct beneficiaries of the subproject. The subproject is expected to promote socio-economic activities and employment.
<ul style="list-style-type: none"> will the subproject directly or indirectly affect Indigenous Peoples' traditional socio-cultural and belief practices? (e.g. child-rearing, health, education, arts, and governance)? 		No	There will be no impacts on cultural beliefs and practices.
<ul style="list-style-type: none"> will the subproject affect the livelihood systems of Indigenous Peoples? (e.g., food production system, natural resource management, crafts and trade, employment status)? 		No	No impacts expected.
<ul style="list-style-type: none"> will the subproject be in an area (land or territory) occupied, owned, or used by Indigenous Peoples, and/or claimed as ancestral domain? 		No	No physical displacement involved. The land is registered to Diocese of Auk.

SCREENING QUESTIONS	Yes	No	REMARKS
<ul style="list-style-type: none"> will the subproject activities include physical displacement from traditional or customary lands? 		No	No physical displacement involved. The land is registered to Diocese of Auk.
<ul style="list-style-type: none"> will the subproject activities include establishing legal recognition of rights to lands and territories that are traditionally owned or customarily used, occupied or claimed by Indigenous Peoples? 		No	The land is registered to Diocese of Auk. SP will acquire the land in accordance with the Solomon Islands Lands and Title Act.
<ul style="list-style-type: none"> will the subproject activities include acquisition of lands that are traditionally owned or customarily used, occupied or claimed by Indigenous Peoples? 		No	The land is registered to Diocese of Auk.

SUBPROJECT CATEGORISATION FOR ENVIRONMENTAL IMPACTS

Based on the definition of impacts in World Banks Safeguards Policies, what is the category?

- Category A, significant environmental social impact, a full ESIA/EIS is required []
- Category B, marginal environmental social impacts, an ESIA/PER is required []
- Category C. minor or no adverse environmental impacts. Category C subprojects do not require an EIA/EIS or PER. The subprojects may require some form of Environment Social Management Plan (EMSP) developed. [✓]
- Category FI. Projects involve credit line or an equity investment in a financial intermediary. Involves subprojects that will have insignificant environment social impacts and do not require ESMP. []

The foregoing has been reviewed and agreed with by:

Name & Signature

Date.....

Annex 8: Minutes of meeting Buma

Buma Visit 2020

Minutes of Meeting

Subject: SP Meeting with Diocesan Bishop (Peter Houhou), Buma parish priests, Surrounding community leaders

Date: 24th November 2020

Location: Buma Station

Attendees: (Please refer to attendees list attached)

No	Meeting Updates
1	<p>Meeting starts at 1:30pm</p> <p>Words of Welcome Chair, (Father Desmond Firibo) welcome everyone to the meeting</p>
2	<p>Notes</p> <ul style="list-style-type: none"> <p>Auki Catholic diocesan bishop - has expressed appreciation to SP's positive response following the consent that was given & acknowledge SP's presence in Buma on behalf of the church. He informed everyone that SP's visit to Buma is the result of the consultation that was done with different respectful leaders of the Diocese, Buma Priests, Parish Pastoral Council including Sister of the church and surrounding Communities Bishop also highlighted the importance of this solar development. He said that this is a genuine one, since it is for the common good of our people, unlike other development such as logging etc.</p> <p>Simon Notoro (SP) – SP's introduction</p> <p>Simon (SP) thanked the Bishop for initially accepted SP's request for any available land & also for allowing SP to carryout assessment on Buma land for the solar project</p> <p>Simon has highlighted SP's national goal to be 100% renewable by 2050 therefore, called on to everyone to support such development. He stressed during the meeting that, it is easier to work/deal with lands that are owned by church compared to customary lands. He then further explained the land acquisition process & stated the difference between Lease and outright purchase agreement</p> <p>He made clear to attendees SP's interest when it comes to Land Agreement. He said that SP only interested in Lease Agreement rather than Outright Purchase Agreement. In addition, Simon called on to everyone that once this solar system has set up, it is your responsibility to look after knowing that SP is responsible for the daily operation and maintenance of the asset</p> <p>Josiah Rade (SP) – (In response to a question raised during the meeting) Explained the basic components of the solar plant system & he further explains the distance a High voltage and low voltage line will cover</p> <p>Buma church rep – Add on the benefits of such program. He called on to everyone from their side that this upcoming development is vital and must not be objected. He commented that this will bring new mind sets in the rural communities by way of improving lifestyle and encourage villages based businesses such as fisheries, wood works, agriculture etc. which will in turn contribute to the cash economy and even will surely bring back a lot of their young unemployed youths in Honiara town Therefore, he appealed to everyone to support this undertaking</p> <p>Community rep 1 – Strongly stressed to the meeting that this land at Buma belongs to the church therefore, Bishop has the overall right & since the decision has been made for SP to identify suitable land to set up a solar farm, we should be all happy and together support this because the church is willingly offers its land for this undertaking.</p>

He further made comments and gave example for tribal owned lands. He said, dealing with several land owners is quiet challenging the likes of Bina proposed solar project le. The dispute of few will affect the good of our communities. Therefore, this upcoming project should not be disputed

- **Community rep 2** – Raise concern on land and he asked the bishop to comment or confirm on how to deal with land matter should there be any in the future
 - Bishop has assured to the people during this meeting that, whatever happens that might disturb this development will be dealt with and sorted out among ourselves land owners without affecting the progress of this development. He humbly called on to every leaders including chief, elders, surrounding communities and members to support this upcoming development
- **Buma response** was positive and SP was advised to carry on with the site assessment
- **Closing Prayer**

Questions & Answers:

1: Bishop: What is the required land size necessary for this project

Respond: Josiah (SP) – A minimum size of 1 hectare should qualifies a land

2: Attendee: How far will the high voltage line runs? How far the Low voltage will go?

Respond: Josiah (SP) – HV can covers up to10 kilometres, radii
- LV can run 2km, radii

3: Attendee; Will it possible for the proposed HV line to reach as far as Bina?

Respond: Josiah (SP) – The distance from Buma to Bina is approximately 8km thus, it is possible

4; What components this solar farm will has?

Respond: Josiah (SP) – The proposed farm will consist of the following solar Panels, Batteries, invertors, including generator and station transformers

5: Who will responsible for this solar farm once operational?

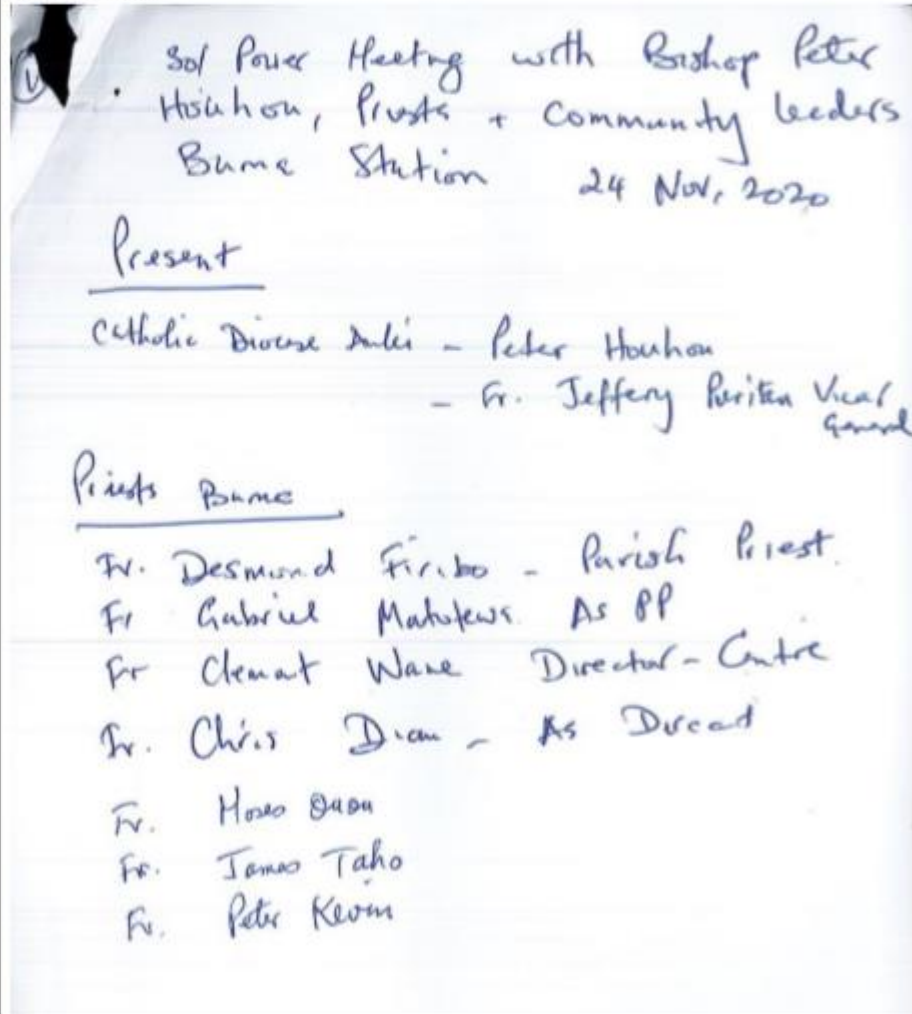
Update on SP Site assessment at Buma

The following task were carried out

- Solar site assessment on two proposed sites
- Landing site assessment
- Route assessment
- Buma household survey

ATTACHMENT

List of all attendees



Names:

Sig-

1. Cynthia Agofi
2. William Kwarani
3. Justine Agofi
4. Chrisanto Kobe
5. Aubin Siru
6. Sisto Faaramoa
7. Jefferey Faaramoa
8. Jonah Maetoben
9. Andrew Sudri
10. Bernard Siru
11. Sekudo Siteageni
12. Raymond Agwa
13. Joachim
14. Anthony iusi
15. Agnes Soifi
16. Augustine wagi
17. Altine Damutabau
18. Patricia wate
19. Bruno Taelamo
20. Bernard siru
21. Thomas Damutabau
22. Steven Dimeu
23. Clagnent Iro
24. Moses Niuf'o'a
25. Patric Eneke
26. Joella Agofi
27. Francis Anekia
28. Trasisio Taelamo
29. Yarmyn Agofi
30. Anthony Kisuri
31. Sabnam
32. Francis

Solomon PWD

- ① Josiah Rade - Planning Engineer
- ② Abraham Wak - GIS officer.
- ③ Winston Lapa - Environment officer.
- ④ Simon Nantoro - Land's officer

Sign
Date
Signature
Stamp

Annex 9: Bina Consultation Report



Bina Solar Hybrid Subproject

Bina Solar Hybrid Subproject Consultation Report June 2020



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1.0 Background

1.1 Introduction

The Solomon Power as the agency responsible for generation, transmission and distribution of electricity is a key figure in the realization of this strategic area of development. Currently, Solomon Power (SP) is 98 percent dependent on diesel generation and most probably the highest retail electricity tariff in the region. By 2050, SP want to achieve the goal set aside by SIG to energize the nation through access of electricity in the nine (9) provinces. To achieve the goal SP is embarking on exploring opportunity in renewable energy source (Solar hybrid). World bank, Asia Development Bank and New Zealand to name few have committed funds through grants and loans to SP for installation of on-grid and off-grid Solar Systems.

The objective of this project is to introduce power generation that have the potential to reduce reliance on diesel generations. Diesel generation is an expensive expenditure resulted in high tariffs.

Bina solar hybrid subproject is funded by World Bank to support the people that live in and around Bina area, especially the Kwaio region. The funding includes the installation of solar hybrid system in Bina area.

SP is required to produce an Environment Social Management Plan for this subproject. Solar farm hybrid projects are prescribed development under the Solomon Islands Environment Act 1998. Therefore developers are required to prepare a ESMP or PER's for the subproject. ESMP/PER are undertaken for activities that are likely to have impact on the environment and are subjected to decision of the national authority, the Environment Conservation Division (ECD) under the Ministry of Environment, Climate Change, Disaster Management and Meteorology (MECDM). The ESMP/ PER will be approved by the Director ECD who will then issue a development consent for the project.

1.2 Objectives

The purpose of Bina consultation was to carry out:

- Environmental and social survey (this include the villages along the grid network). Social survey include the household composition, economic information, household expenditure and attitude toward the solar project.
- Meeting session with communities regarding Safety, Lands, Environment, and Planning. A representative of each area did presentations.

2.0 Consultation

One consultation with community was done in Bina village with all the nearby villages gathered in Bina and the landowners signed Memorandum of Understanding (MOU).



2.1 Schedule

Table 1: Schedule Outline

Date	Time	Community	Activity
Thursday 18 th June 2020	Afternoon 2pm-5:00pm	Bina Community	Community consultation, social survey and site visit.

2.2 Solomon Power Personnel

Table 2: List of SP personnel

Date	Personnel Participants	Communities
18 th June 2020	Winston L, Simon N, Gaby G, Fredrick W, Angellyn K and Javelyn G	Bina Community

2.3 Questions and Answers

Questions/Comments	Responses
<ul style="list-style-type: none"> Vegetation clearing for distribution line in particular will require felling of important crops or trees along power line corridor. Communities feel that SP and its contractor must compensate affected owners. (Will there be compensation for crops, trees and assets?) 	<ul style="list-style-type: none"> SP will compensate crops and trees affected by the project based on SIG MAL rates and MOFR assessments.
<ul style="list-style-type: none"> Cost of tariff and affordability to village people. (Will there be reduction on the electricity tariff from the use of the solar system?) 	<ul style="list-style-type: none"> This project will help reduce cost of fuel. There is a plan to review and reduce tariff in the future.
<ul style="list-style-type: none"> Reiterate the importance of electricity usage and its safety. (Will there be awareness on the use and safety of electricity?) 	<ul style="list-style-type: none"> Awareness on the use and safety of electricity will be conducted prior to commissioning of the subproject.
<ul style="list-style-type: none"> There are disputes among the tribal groups over the Bonale Land. Will SP continue to pursue acquisition of the proposed solar site when there are disputes over the land? 	<ul style="list-style-type: none"> SP will not acquire land that is under some form of dispute. <p>(SP later found there was a covert over the Bonale Land)</p>
<ul style="list-style-type: none"> Majority of the questions are related to cost of connection to households. 	<ul style="list-style-type: none"> There are two SP connections types (1. Normal and 2. OBA). Cost of wiring and connection will be covered under the Output based Aid (OBA) arrangements. SP will meet all connection and wiring cost to every household. Each household will pay a minimal cost to SP when they submit their applications.



Bina Solar Hybrid Subproject

	<ul style="list-style-type: none">• Leaf houses can be connected as long they meet SP regulatory standards. SP regulatory team will inspect all buildings to ensure they are safe prior to connection to the SP network.
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Bina Solar Hybrid Subproject

Appendix

Appendix 1: Consultation Photo

Bina Community



Figure 1: Consultation in Bina Community



Appendix 2: Participation List

Bina Attendance List

Poina consultation
18/06/20

Name	Contact	Sign
Rustus Stanley	7162150	[Signature]
Jack Maesugza	7290140	[Signature]
Damon Mac		[Signature]
JAMES ERIBO	7390051	[Signature]
APOLLOS AGE		[Signature]
DAVID GISA	8596869	[Signature]
Kristos Sirinane		[Signature]
Chris Kiki		[Signature]
Charles Miki		[Signature]
Albert Fijane	[Signature]	
Godfrey Firibo		
Aditaba	7811738	[Signature]
Bambas nisi		
Jarr Hilly	8555961	[Signature]
Stanley		
JOHN WANE		[Signature]
HENSLY WAI		
P. SARA		[Signature]
Jesmiel Ono		[Signature]
Smason Sotalea		[Signature]
Michael. Macfiasin		[Signature]



Bina Solar Hybrid Subproject

<u>Names:-</u>	<u>CONTACT</u>	<u>Sign:</u>
J. Oben	7331501	
Billy Peter	7935468	
Oliver Sae	7206161	
Moses F.	77172530	
Baura E.	7241755	
Heneth B.	—	
Eddie Goni	—	
MORGAN	—	
John Kate	8546604	
JANET Mackiki	7608817	
FRANCES Utu		x
David lekaigani		
Alexandra Olona	x	
Rosemary Sukur		
Tom - Wai		
Jubinal Subusubma	7832694	
Bruno Faebus		
STEVEN SUGF	7306908	

Annex 10: Bina Network MOU



MEMORANDUM OF UNDERSTANDING

SP-MOU-17: Easement for Power Line Construction

THIS MEMORANDUM OF UNDERSTANDING is made on the 22nd Day of the month of June, Year Two Thousand and Twenty (2020)

BETWEEN the Solomon Islands Electricity Authority (SIEA) trading as Solomon Power (hereinafter referred to as “SP”) as one part;

AND: The Land Owning Groups of Bina community, and Zone representatives of, Bonale, Dau, Talifu, Bina, Bina Hill, Toae and Kwailatutu, West Kwaio region, Malaita Province, (hereinafter referred to and “the Landowners”) on the other part

The landowners are here representing the approval of clauses of this MOU in relation to the entire distribution line coverage and route as shown in the attached map.

WHEREAS:

- A. Solomon Power is desirous of constructing its network which includes:
 - Building of High Voltage (HV) power lines and poles
 - Building of Low Voltage (LV) power lines and poles
 - Installing of Distribution Transformer and/or Ring Main Units
- B. Solomon Power has the right to construct power poles, transformer, and other related infrastructure along the public and feeder roads within the concerned area. As part of its community consultation process, it had been engaging in a series of meetings with respective community leaders to obtain the approval and support for the project.
- C. The Chiefs, Community leaders/Elders and Landowners along the access road, which the line will run, have an overwhelming support for the project to proceed.
- D. The Chiefs, Community Leaders/Elders and Landowners are desirous of having power to their communities and pledged to support the project.
- E. The parties to this MOU are desirous of making their commitments to the construction of the power lines in Bina community under this MOU.



1.0 Solomon Power AGREED AS FOLLOWS:

- 1.1 To commence construction of the lines in and around Bina community as soon as this MOU is signed by relevant parties.
- 1.2 To provide all the materials and technical staff for the purpose of constructing the power lines.
- 1.3 To ensure that safety of the community and the general public is maintained by placing appropriate sign boards and demarcations where constructions will be carried out throughout the duration of the project.
- 1.4 To ensure the built infrastructure is maintained such that vegetation is properly controlled and faulty lines, poles and transformer is repaired and addressed to Solomon Power Standards.
- 1.5 To carry out assessments and costing of either HV or LV extensions from the main line to connect individual homes/village/commercial undertakings on request. The cost of such extension will be subject for discussions between the interested parties and Solomon Power.
- 1.6 To compensate for any *cultural vegetation*¹ along the route of the easement required for construction purposes. The rate(s) will be according to standard agriculture rates as stipulated in “The Forest Resources and Timer Regulations”.

¹ Cultural vegetation is planted and/or maintained by humans



2.0 LANDOWNERS AGREED AS FOLLOWS:

- 2.1 To pledge their support for the project to proceed by allowing Solomon Power to construct equipment as stated in Part A) along existing and new easements.
- 2.2 To inform members of their respective communities to support the project in order for its implementation to progress smoothly without interference.
- 2.3 To meet the cost (or to seek other assistances) of the service lines to individual homes/villages/community buildings/commercial buildings etc. where necessary.

IN WITNESS WHEREOF the PARTIES hereto have agreed on the afore-stated terms

and SIGN this MEMORANDUM OF UNDERSTANDING with their SEALS

affixed on this22nd..... day of the month ofJune..... Year

Two thousand and twenty (2020).

Signatory forming the agreement as per this MOU on behalf of Solomon Power:

Name: ~~SEAN AG TAAI~~ MARTIN SAU

Position: CEO (AG)

Signature: 

Date: 22/06/20



Signatories forming the agreement as per this MOU on behalf of the Land Owners:

Name of Person(s)	Position Relevant to the project	Signature	Date
SEPHERS FRANK ARIMATA	Chief		18/6/20
BRUNO TAELAMO	ELDER VICE chairman of Bonele		18/6/20
DICKSON Mae	Trustee		18/6/20
JULIAN Suluusime	Chief		18/6/2020
David Mosia	Elder		18/6/2020
JACK Maesuge	cthr.		18/6/2020
JOHN WANE			18/6/2020
TOM. wai			18/6/2020
HENSLY wai			18/6/2020



Justus Stanley	Trustees		18/06/20

Annex 11: Buma Network MOU



MEMORANDUM OF UNDERSTANDING

SP-MOU-17: Easement for Power Line Construction

THIS MEMORANDUM OF UNDERSTANDING is made on the 26th Day of the month of August, Year Two Thousand and Twenty-One (2021)

BETWEEN the Solomon Islands Electricity Authority (SIEA) trading as Solomon Power (hereinafter referred to as "SP") as one part;

AND: The Land Owning Groups of Dau, Talifu, Bonale, Sina Suu, Sina Mauri, Sina Folo lands and Buma Catholic Station in West Kwaio, Malaita Province (hereinafter referred to and "the Landowners") on the other part

The landowners are here representing the approval of clauses of this MOU in relation to the entire distribution line coverage and route as shown in the attached map.

WHEREAS:

- A. Solomon Power is desirous of constructing its network which includes:
- Building of High Voltage (HV) power lines and poles
 - Building of Low Voltage (LV) power lines and poles
 - Installing of Distribution Transformer and/or Ring Main Units
- B. Solomon Power has the right to construct power poles, transformer, and other related infrastructure along the public and feeder roads within the concerned area. As part of its community consultation process, it had been engaging in a series of meetings with respective community leaders to obtain the approval and support for the project.
- C. The Chiefs, Community leaders/Elders and Landowners along the access road, which the line will run, have an overwhelming support for the project to proceed.
- D. The Chiefs, Community Leaders/Elders and Landowners are desirous of having power to their communities and pledged to support the project.
- E. The parties to this MOU are desirous of making their commitments to the construction of the power lines in as per the map attached under this MOU.



1.0 Solomon Power AGREED AS FOLLOWS:

- 1.1** To commence construction of the lines as soon as this MOU is signed by relevant parties.
- 1.2** To provide all the materials and technical staff for the purpose of constructing the power lines.
- 1.3** To ensure that safety of the community and the general public is maintained by placing appropriate sign boards and demarcations where constructions will be carried out throughout the duration of the project.
- 1.4** To ensure the built infrastructure is maintained such that vegetation is properly controlled and faulty lines, poles and transformer is repaired and addressed to Solomon Power Standards.
- 1.5** To carry out assessments and costing of either HV or LV extensions from the main line to connect individual homes/village/commercial undertakings on request. The cost of such extension will be subject for discussions between the interested parties and Solomon Power.
- 1.6** To compensate for any *cultural vegetation*¹ along the route of the easement required for construction purposes. The rate(s) will be according to standard agriculture rates as stipulated in “The Forest Resources and Timer Regulations”.

¹ Cultural vegetation is planted and or maintained by humans



2.0 LANDOWNERS AGREED AS FOLLOWS:

- 2.1** To pledge their support for the project to proceed by allowing Solomon Power to construct equipment as stated in Part A) along existing and new easements.
- 2.2** To inform members of their respective communities to support the project in order for its implementation to progress smoothly without interference.
- 2.3** To meet the cost (or to seek other assistances) of the service lines to individual homes/villages/community buildings/commercial buildings etc. where necessary.

IN WITNESS WHEREOF the PARTIES hereto have agreed on the afore-stated terms

and SIGN this **MEMORANDUM OF UNDERSTANDING** with their **SEALS**

affixed on this day of the month of Year

Two thousand and Twenty-One (2021).

Signatory forming the agreement as per this MOU on behalf of Solomon Power:

Name: MARTIN SAM

Position: CHIEF ENGINEER

Signature: 

Date: 10/01/2022



Signatories forming the agreement as per this MOU on behalf of the Land Owners:

Name of Person(s)	Position Relevant to the project	Signature	Date
Sixtus Fairava	Vice Chairman		26/08/21
Wills Agofi	Women Leader		26/08/21
Ronald Suda	youth leader		11
Scholastica Faneau	Women Leader	x	11
Jimmy Daku	Chief		11
John Mausafi	Chief	x	11
Melina Alageni	youth leader		26/08/21
Jacklyn Fnuce	youth leader		26/08/21
Indith Anisi	Women COR		26/08/21
Simon Fro	farmer		26/08/21



Frank Bassoni	Chief		26/08/21
Andrew Marna	Chief	X	11
Fiona Oloka	Vice youth leader		11
MICHAEL STANLEY	YOUTH LEADER		11
Adrian Rumba	CATCHEMENT		11
Kedeah Taka	women Group		11
Joana-P. Prketa	Women Group		11
Ben Oloise	Teacher		11
Alfred Funuka	Farmer		11
JEFFERY MANATA	Farmer		11
JULIANI K.	Farmer		11



Map of the Distribution Network



Annex 12: MOFR assessment report for Buma local growers

OUTGROWERS	TREE SPECIES	DBH(cm)	LENGTH (m)	NDBH(cm)	STD VOLUME(m ³)
Siberio	Tectonagrandis(Tecg)	39	10	29	0.661
Siberio	Tecg	42	14	28	0.862
Siberio	Tecg	35	12	23	0.499
Siberio	Tecg	41	15	26	0.796
Siberio	Tecg	39	10	29	0.661
Siberio	Tecg	38	9	29	0.594
Siberio	Tecg	30	9	23	0.312
Siberio	Tecg	35	11	24	0.498
Siberio	Tecg	32	10	22	0.38
Siberio	Tecg	33	11	22	0.418
Siberio	Tecg	40	14	26	0.743
Siberio	Tecg	35	12	23	0.499
Siberio	Tecg	38	13	25	0.638
Siberio	Tecg	32	9	23	0.374
Siberio	Tecg	39	8	31	0.604
Siberio	Tecg	35	10	25	0.491
Siberio	Tecg	39	12	27	0.688
Siberio	Tecg	40	15	25	0.736
Siberio	Tecg	38	10	28	0.616
Siberio	Tecg	40	12	28	0.739
Siberio	Tecg	30	8	22	0.304
Siberio	Tecg	35	11	24	0.498
Siberio	Tecg	34	12	22	0.456
Siberio	Tecg	32	9	23	0.374
Siberio	Tecg	39	12	27	0.687
Siberio	Tecg	34	10	24	0.452
Siberio	Tecg	38	11	27	0.63
Siberio	Tecg	40	14	26	0.743
Siberio	Tecg	41	12	29	0.793
Peter Lako	Tecg	30	8	22	0.304
Peter Lako	Tecg	25	9	16	0.181
Peter Lako	Tecg	28	9	19	0.255
Peter Lako	Tecg	30	10	20	0.314
Peter Lako	Tecg	32	8	24	0.362
Peter Lako	Tecg	35	13	22	0.494
Peter Lako	Tecg	29	10	19	0.284
Peter Lako	Tecg	32	12	20	0.377
Peter Lako	Tecg	36	11	25	0.54
Peter Lako	Tecg	34	13	21	0.45
Peter Lako	Tecg	32	10	22	0.38
Peter Lako	Tecg	35	14	21	0.485
Peter Lako	Tecg	34	10	24	0.452
Peter Lako	Tecg	30	12	18	0.305
Peter Lako	Tecg	35	14	21	0.485
Peter Lako	Tecg	32	13	19	0.369
Peter Lako	Tecg	34	10	24	0.452
Peter Lako	Tecg	36	9	27	0.515
Peter Lako	Tecg	38	9	29	0.594
Peter Lako	Tecg	39	10	29	0.661
Foslina Wawari	Kepok tree	44	13	31	0.981
Foslina Wawari	Kepok tree	45	12	33	1.026
Hano	Kepok tree	43	12	31	0.906
Hano	Kepok tree	40	10	30	0.707
Maris Ausia	Tecg	39	11	28	0.677
Adrian B'Inalo	Tecg	35	9	26	0.478
Adrian B'Inalo	Tecg	38	11	27	0.63
Adrian B'Inalo	Tecg	40	12	28	0.739
Adrian B'Inalo	Tecg	39	10	29	0.661
Adrian B'Inalo	Tecg	36	10	26	0.531
Adrian B'Inalo	Tecg	34	11	23	0.457
Adrian B'Inalo	Tecg	39	9	30	0.636
Adrian B'Inalo	Tecg	40	10	30	0.707
Adrian B'Inalo	Tecg	37	10	27	0.573
Lawrence Tonilemae	Tecg	30	12	18	0.305
Lawrence Tonilemae	Tecg	34	10	24	0.452
Lawrence Tonilemae	Tecg	38	11	27	0.63
Lawrence Tonilemae	Tecg	36	9	27	0.515
Lawrence Tonilemae	Tecg	35	10	25	0.491
Lawrence Tonilemae	Tecg	40	12	28	0.739
Lawrence Tonilemae	Tecg	41	10	31	0.755
Lawrence Tonilemae	Tecg	38	14	24	0.633
Lawrence Tonilemae	Tecg	39	10	29	0.661
Lawrence Tonilemae	Tecg	35	12	23	0.5
Lawrence Tonilemae	Tecg	34	11	23	0.457
Lawrence Tonilemae	Tecg	39	12	27	0.687
Lawrence Tonilemae	Tecg	40	14	26	0.743
Lawrence Tonilemae	Tecg	39	12	27	0.687
Lawrence Tonilemae	Tecg	36	10	26	0.531
Lawrence Tonilemae	Tecg	35	11	24	0.498

Lawrence Tonelemas	Tecg	42	33	29	0.879
Lawrence Tonelemas	CL	45	33	32	1.046
Lawrence Tonelemas	CL	35	30	25	0.491
Lawrence Tonelemas	CL	30	30	20	0.334
Lawrence Tonelemas	CL	32	31	21	0.381
Lawrence Tonelemas	CL	33	9	24	0.407
Lawrence Tonelemas	CL	30	30	20	0.334
Lawrence Tonelemas	CL	40	30	30	0.707
Lawrence Tonelemas	CL	41	32	29	0.793
Lawrence Tonelemas	CL	44	34	30	0.99
Lawrence Tonelemas	CL	33	31	22	0.418
Lawrence Tonelemas	CL	38	30	28	0.616
Lawrence Tonelemas	CL	36	32	24	0.543
Lawrence Tonelemas	CL	35	30	25	0.491
Lawrence Tonelemas	CL	35	32	23	0.499
Lawrence Tonelemas	CL	31	30	21	0.346
Lawrence Tonelemas	CL	35	30	25	0.491
Lawrence Tonelemas	CL	39	32	27	0.687
Lawrence Tonelemas	CL	38	31	27	0.63
John Lako	Tecg	30	30	20	0.334
John Lako	Tecg	35	32	23	0.5
John Lako	Tecg	36	33	23	0.54
John Lako	Tecg	33	30	23	0.435
John Lako	Tecg	31	31	20	0.346
John Lako	Tecg	30	9	21	0.332
John Lako	Tecg	35	32	23	0.499
John Lako	Tecg	38	33	25	0.638
John Lako	Tecg	35	31	24	0.498
John Lako	Gmea	38	34	24	0.633
John Lako	Gmea	36	32	24	0.543
John Lako	Gmea	40	35	25	0.736
John Lako	Gmea	39	30	29	0.661
John Lako	Gmea	35	31	24	0.498
John Lako	Gmea	40	32	28	0.739
Gregory Kikisa	Tecg	34	32	22	0.456
Gregory Kikisa	Tecg	35	31	24	0.498
Gregory Kikisa	Tecg	30	9	21	0.332
Gregory Kikisa	Tecg	33	31	22	0.418
Gregory Kikisa	Tecg	30	30	20	0.334
Gregory Kikisa	Tecg	31	31	20	0.346
Gregory Kikisa	Tecg	32	32	20	0.377
Gregory Kikisa	Tecg	33	31	22	0.418
Gregory Kikisa	Tecg	32	9	23	0.374
Charles Foolamo	Gmea	42	32	30	0.848
Charles Foolamo	Gmea	40	31	29	0.727
Charles Foolamo	Gmea	39	30	29	0.661
Charles Foolamo	Gmea	40	32	28	0.739
Charles Foolamo	Gmea	35	33	22	0.494
Charles Foolamo	Gmea	38	30	28	0.635
Charles Foolamo	Gmea	36	9	27	0.535
Charles Foolamo	Gmea	34	30	24	0.452
Charles Foolamo	Gmea	39	32	27	0.687
Charles Foolamo	Gmea	36	33	23	0.54
Solo Moesugao	Tecg	30	30	20	0.334
Solo Moesugao	Tecg	39	31	28	0.677
Solo Moesugao	Tecg	40	34	26	0.743
Solo Moesugao	Tecg	35	32	23	0.5
Solo Moesugao	Tecg	31	30	21	0.346
Solo Moesugao	Tecg	32	9	23	0.374
Solo Moesugao	Tecg	39	8	31	0.604
Solo Moesugao	Tecg	41	30	31	0.755
Solo Moesugao	Tecg	35	32	23	0.5
Solo Moesugao	Tecg	34	7	27	0.401
Solo Moesugao	Pometia pinnata	37	31	26	0.584
Solo Moesugao	Pometia pinnata	39	33	26	0.69
Solo Moesugao	Pometia pinnata	36	7	29	0.462
Solo Moesugao	Pometia pinnata	39	30	29	0.661
Solo Moesugao	Pometia pinnata	32	8	24	0.362
Solo Moesugao	Pometia pinnata	35	9	26	0.478
Solo Moesugao	Pometia pinnata	38	7	31	0.528
Charles Maenata	Vitex cofasua(yasa)	40	32	28	0.739
Charles Maenata	vasa	38	30	28	0.616
John Daubo	Tecg	36	31	25	0.54
John Daubo	Tecg	38	30	28	0.616
John Daubo	Tecg	35	9	26	0.478
John Daubo	Tecg	32	8	24	0.362
John Daubo	Tecg	34	7	27	0.4
Francis maekoto	Gmea	39	30	29	0.661
Francis maekoto	Gmea	40	33	27	0.744
Francis maekoto	Gmea	36	32	24	0.543

Francis maekoto	Gmea	33	10	23	0.415
Francis maekoto	Gmea	32	9	23	0.374
Save Foosi	Tectonagrundi(Tecg)	38	11	27	0.63
Save Foosi	Tecg	35	12	23	0.499
Save Foosi	Tecg	36	10	26	0.531
Save Foosi	Tecg	39	9	30	0.636
Save Foosi	Tecg	42	14	28	0.862
Save Foosi	Tecg	41	10	31	0.755
Save Foosi	Tecg	38	8	30	0.566
Save Foosi	Tecg	40	10	30	0.707
Save Foosi	Tecg	39	12	27	0.687
Save Foosi	Tecg	35	14	21	0.485
Save Foosi	Tecg	38	7	31	0.528
Save Foosi	Tecg	36	9	27	0.515
Save Foosi	Tecg	32	11	21	0.381
Save Foosi	Tecg	35	14	24	0.633
Save Foosi	Tecg	34	13	21	0.45
Save Foosi	Pometia pinnata	38	10	28	0.616
Save Foosi	Pometia pinnata	39	8	31	0.604
Save Foosi	Gmea	46	13	33	0.684
Save Foosi	Gmea	40	10	30	0.707
Save Foosi	Gmea	43	11	32	0.885
Save Foosi	Gmea	40	12	28	0.739
Save Foosi	Gmea	39	9	30	0.636
Save Foosi	Gmea	42	7	35	0.673
Makida Belauri	Pometia pinnata	38	10	28	0.616
Makida Belauri	Pometia pinnata	38	11	27	0.63
Makida Belauri	Pometia pinnata	40	13	27	0.744
Makida Belauri	Pometia pinnata	42	10	32	0.804
Makida Belauri	Pometia pinnata	41	12	29	0.793
Makida Belauri	Pometia pinnata	39	9	30	0.636
Makida Belauri	Pometia pinnata	39	12	27	0.687
Makida Belauri	Pometia pinnata	34	10	24	0.452
Makida Belauri	Gmea	40	13	27	0.744
Makida Belauri	Gmea	41	12	29	0.793
Makida Belauri	Gmea	45	14	33	1.197
Makida Belauri	Gmea	39	10	29	0.66
Makida Belauri	Gmea	38	12	26	0.637
Makida Belauri	Gmea	30	11	19	0.312
Makida Belauri	Gmea	40	13	27	0.744
Makida Belauri	Gmea	45	15	30	1.06
Makida Belauri	Gmea	44	10	34	0.908
Makida Belauri	Gmea	48	12	36	1.231
Makida Belauri	Tectonagrundi(Tecg)	39	10	29	0.66
Makida Belauri	Tecg	40	9	31	0.679
Makida Belauri	Tecg	35	12	23	0.499
Makida Belauri	Tecg	34	11	23	0.457
Makida Belauri	Tecg	38	10	28	0.616
Makida Belauri	Tecg	37	9	28	0.554
Makida Belauri	Tecg	40	12	28	0.739
Makida Belauri	Tecg	43	14	29	0.925
Makida Belauri	Tecg	48	10	38	1.134
Makida Belauri	Tecg	45	15	30	1.06
Makida Belauri	Tecg	39	14	29	0.66
Makida Belauri	Tecg	38	8	30	0.556
Makida Belauri	Tecg	36	10	26	0.531
Makida Belauri	Tecg	40	12	28	0.739
Makida Belauri	Tecg	45	15	30	1.06
Makida Belauri	Tecg	41	13	28	0.8
Makida Belauri	Tecg	39	11	28	0.677
Makida Belauri	Tecg	36	10	26	0.531
Makida Belauri	Tecg	38	14	24	0.633
Makida Belauri	Tecg	40	13	37	1.398
Makida Belauri	Tecg	43	9	34	0.817
Makida Belauri	Tecg	42	10	32	0.804
Makida Belauri	Tecg	39	12	27	0.687
Makida Belauri	Tecg	38	8	30	0.566
Makida Belauri	Tecg	35	9	26	0.478
Makida Belauri	Tecg	31	11	20	0.346
Makida Belauri	Tecg	36	12	24	0.543
Makida Belauri	Tecg	37	12	25	0.589
Makida Belauri	Tecg	33	9	24	0.407
Makida Belauri	Tecg	38	10	28	0.616
Makida Belauri	CL	40	13	27	0.744
Makida Belauri	CL	35	12	23	0.499
Makida Belauri	CL	32	10	22	0.38
Makida Belauri	CL	30	10	20	0.314
Atanasio Orneo	CL	31	13	18	0.331
Atanasio Orneo	CL	32	10	22	0.38
Atanasio Orneo	CL	30	9	21	0.332

Atanasio Ormea	CL	32	12	20	0.377
Atanasio Ormea	CL	34	11	23	0.457
Atanasio Ormea	CL	32	8	24	0.362
Atanasio Ormea	CL	30	9	21	0.312
Atanasio Ormea	CL	39	12	27	0.687
Atanasio Ormea	CL	34	10	24	0.452
Atanasio Ormea	CL	35	9	26	0.478
Atanasio Ormea	CL	31	12	19	0.34
Atanasio Ormea	CL	35	10	25	0.491
Atanasio Ormea	CL	30	13	17	0.295
Atanasio Ormea	CL	32	8	24	0.362
Atanasio Ormea	CL	36	10	26	0.531
Atanasio Ormea	CL	38	11	27	0.63
Atanasio Ormea	CL	40	14	26	0.743
Atanasio Ormea	CL	39	10	29	0.66
Atanasio Ormea	CL	38	7	31	0.528
Atanasio Ormea	CL	37	9	28	0.554
Atanasio Ormea	CL	38	10	28	0.616
Atanasio Ormea	Gmelina Arborea[Ormea]	45	13	32	1.046
Atanasio Ormea	Ormea	42	12	30	0.848
Atanasio Ormea	Ormea	46	14	32	1.126
Atanasio Ormea	Ormea	42	12	30	0.848
Atanasio Ormea	Ormea	40	10	30	0.707
Atanasio Ormea	Ormea	38	8	30	0.566
Atanasio Ormea	Ormea	39	7	32	0.563
Atanasio Ormea	Ormea	41	12	29	0.755
Atanasio Ormea	Ormea	41	13	28	0.8
Atanasio Ormea	Ormea	43	10	33	0.855
Atanasio Ormea	Ormea	39	9	30	0.636
Atanasio Ormea	Ormea	37	6	31	0.453
Atanasio Ormea	Ormea	35	11	24	0.498
Atanasio Ormea	Ormea	34	10	24	0.452

Farmers Names	Tree Species	Total std Volume/ Species/farmer	Ave unit Price /M ³ [USD]	Total value(USD)/sp	Total value[BD]/sp
Silverio	Teag	16.746	\$40.00	\$669.84	\$5,480.40
Peter Lako	Teag	8.259	\$40.00	\$330.36	\$2,707.86
Fotina Wawari	Kepok tree	2.007	\$40.00	\$80.28	\$658.03
Rario	Kepok tree	1.613	\$40.00	\$64.52	\$528.85
Moris Ausio	Teag	0.677	\$40.00	\$27.08	\$221.96
Adrian Rinaldi	Teag	5.412	\$40.00	\$216.48	\$1,774.42
Lawrence Tonelemae	Teag	10.163	\$40.00	\$406.52	\$3,332.13
Lawrence Tonelemae	CL	10.164	\$40.00	\$406.56	\$3,332.45
John Lako	Teag	4.062	\$40.00	\$162.48	\$1,331.80
John Lako	Gmea	3.81	\$40.00	\$152.40	\$1,249.18
Gregory Kikisa	Teag	3.513	\$40.00	\$140.52	\$1,151.80
Charles Fodlamo	Gmea	6.278	\$40.00	\$251.12	\$2,058.36
Solo Maesuga	Teag	5.214	\$40.00	\$208.56	\$1,709.50
Solo Maesuga	PM	3.765	\$40.00	\$150.60	\$1,234.42
Charles Maenala	Vasa	1.355	\$40.00	\$54.20	\$444.26
John Daubo	Teag	2.396	\$40.00	\$95.84	\$785.57
Francis maekoto	Gmea	2.737	\$40.00	\$109.48	\$897.37
Savo Fodi	Teag	8.865	\$40.00	\$354.60	\$2,906.55
Savo Fodi	PM	1.22	\$40.00	\$48.80	\$400.00
Savo Fodi	Gmea	4.324	\$40.00	\$172.96	\$1,417.70
Maldito Belauri	PM	5.362	\$40.00	\$214.56	\$1,745.57
Maldito Belauri	Gmea	8.276	\$40.00	\$331.04	\$2,713.44
Maldito Belauri	Teag	20.771	\$40.00	\$830.84	\$6,830.16
Maldito Belauri	CL	1.937	\$40.00	\$77.48	\$635.06
Atanasio Gmea	CL	9.898	\$40.00	\$395.92	\$3,245.24
Atanasio Gmea	Gmea	10.191	\$40.00	\$407.64	\$3,341.31
total value				\$2,702.04	\$52,223.50
summary of total std volume of each species[M ³]					
1 Teag				86.079	
2 Gmea				35.616	
3 CL				21.989	
4 PM				10.347	
5 Vasa				1.355	
6 Kepok tree				3.62	
Total Std volume				159.015	

Annex 13: MOFR assessment report for Diocese of Auki-Buma

OUTGROWERS	TREE SPECIES	DBH(cm)	LENGTH (m)	NDBH(cm)	STD VOLUME(m ³)
Catholic Mission	Toak (Tocg)	41	10	31	0.755
Catholic Mission	Tocg	40	11	29	0.727
Catholic Mission	Tocg	45	15	30	1.06
Catholic Mission	Tocg	44	10	34	0.908
Catholic Mission	Tocg	50	16	34	1.453
Catholic Mission	Tocg	39	10	29	0.66
Catholic Mission	Tocg	40	12	28	0.739
Catholic Mission	Tocg	51	13	38	1.474
Catholic Mission	Tocg	43	11	32	0.885
Catholic Mission	Tocg	44	10	34	0.908
Catholic Mission	Tocg	40	10	30	0.707
Catholic Mission	Tocg	42	11	31	0.83
Catholic Mission	Tocg	45	15	30	1.06
Catholic Mission	Tocg	46	15	31	1.132
Catholic Mission	Tocg	41	12	29	0.793
Catholic Mission	Tocg	43	13	30	0.919
Catholic Mission	Tocg	45	10	35	0.962
Catholic Mission	Tocg	41	15	26	0.796
Catholic Mission	Tocg	46	16	30	1.131
Catholic Mission	Tocg	48	15	33	1.283
Catholic Mission	Tocg	47	15	32	1.206
Catholic Mission	Terminalia lrasii(TB)	70	15	50	2.945
Catholic Mission	Gmelina arborea(Gmea)	53	15	38	1.701
Catholic Mission	Gmea	50	12	38	1.361
Catholic Mission	Gmea	49	10	39	1.195
Catholic Mission	Gmea	45	11	34	0.999
Catholic Mission	Gmea	50	16	34	1.453
Catholic Mission	Gmea	51	14	37	1.505
Catholic Mission	Gmea	53	16	37	1.72
Catholic Mission	Gmea	45	10	35	0.962
Catholic Mission	Gmea	44	11	33	0.941
Catholic Mission	Gmea	41	10	31	0.794
Catholic Mission	Gmea	41	13	28	0.8
Catholic Mission	Gmea	50	16	34	1.453
Catholic Mission	Gmea	49	12	37	1.29
Catholic Mission	Gmea	46	13	33	1.111
Catholic Mission	Gmea	48	14	34	1.271
Catholic Mission	Gmea	41	10	31	0.755
Catholic Mission	Gmea	43	14	29	0.925
Catholic Mission	Gmea	44	12	32	0.965
Catholic Mission	Gmea	43	12	31	0.906
Catholic Mission	Gmea	42	10	32	0.804
Catholic Mission	Gmea	50	16	34	1.453
Catholic Mission	Gmea	51	15	36	1.527
Catholic Mission	Gmea	45	14	31	1.057
Catholic Mission	Gmea	41	12	29	0.793
Catholic Mission	Gmea	52	16	36	1.629
Catholic Mission	Gmea	51	14	37	1.505
Catholic Mission	Gmea	45	14	31	1.057
Catholic Mission	Gmea	43	12	31	0.906
Catholic Mission	Gmea	41	11	30	0.777
Catholic Mission	Calophyllum(CL)	32	9	23	0.374
Catholic Mission	Gmelina moluccana(Gm)	40	12	28	0.739
Catholic Mission	Gm	45	14	31	1.102
Catholic Mission	Gm	43	10	33	0.855
Catholic Mission	Gm	50	14	36	1.425
Catholic Mission	Gm	42	12	30	0.848
Catholic Mission	Gm	40	10	30	0.707
Catholic Mission	Gm	41	10	31	0.755
Catholic Mission	Gm	48	14	34	1.271
Catholic Mission	Gm	46	13	33	1.112
Catholic Mission	Gm	49	12	37	1.29
Catholic Mission	Gm	49	10	39	1.195
Catholic Mission	Cedrella odorata(Cedo)	32	10	22	0.38
Catholic Mission	Cedo	30	9	21	0.312
Catholic Mission	Cedo	34	11	23	0.415
Catholic Mission	Cedo	35	11	24	0.498
Catholic Mission	Cedo	33	10	23	0.415
Catholic Mission	Cedo	34	10	24	0.452
Catholic Mission	Gmea	40	12	28	0.739
Catholic Mission	Gmea	45	15	30	1.06
Catholic Mission	Gmea	43	10	33	0.855
Catholic Mission	Gmea	50	10	40	1.257
Catholic Mission	Gmea	52	12	40	1.508
Catholic Mission	Gmea	48	10	38	1.134
Catholic Mission	Gmea	47	14	33	1.197
Catholic Mission	Gmea	40	11	29	0.727
Catholic Mission	Gmea	50	15	35	1.443
Catholic Mission	Gmea	51	14	37	1.505

Catholic Mission	Gmea	54	13	41	1.736
Catholic Mission	Gmea	50	12	38	1.361
Catholic Mission	Gmea	55	14	41	1.848
Catholic Mission	Gmea	56	16	40	2.031
Catholic Mission	Gmea	49	10	39	1.195
Catholic Mission	Gmea	58	15	43	2.178
Catholic Mission	Gmea	60	15	45	2.386
Catholic Mission	Gmea	59	16	43	2.324
Catholic Mission	Gmea	42	10	32	0.804
Catholic Mission	Gmea	53	12	41	1.584
Catholic Mission	Gmea	49	11	38	1.248
Catholic Mission	Gmea	50	15	35	1.443
Catholic Mission	Gmea	54	14	40	1.759
Catholic Mission	Gmea	55	13	42	1.801
Catholic Mission	Gmea	50	11	39	1.334
Catholic Mission	Gmea	51	14	37	1.505
Catholic Mission	Gmea	60	16	44	2.433
Catholic Mission	Gmea	54	14	40	1.759
Catholic Mission	Gmea	59	15	44	2.281
Catholic Mission	Gmea	48	12	36	1.221
Catholic Mission	Gmea	45	12	33	1.026
Catholic Mission	Gmea	50	13	37	1.398
Catholic Mission	Gmea	45	12	33	1.026
Catholic Mission	Gmea	45	11	34	0.999
Catholic Mission	Gmea	49	10	39	1.195
Catholic Mission	Gmea	50	12	38	1.361
Catholic Mission	Gmea	52	11	41	1.452
Catholic Mission	Gmea	53	14	39	1.672
Catholic Mission	Gmea	56	14	42	1.94
Catholic Mission	Gmea	60	13	47	2.255
Catholic Mission	Gmea	59	10	49	1.886
Catholic Mission	Gmea	45	11	34	0.999
Catholic Mission	Gmea	41	10	31	0.755
Catholic Mission	Gmea	40	11	29	0.727
Catholic Mission	Gmea	50	12	38	1.361
Catholic Mission	Gmea	49	13	36	1.323
Catholic Mission	Gmea	52	13	39	1.553
Catholic Mission	Gmea	54	14	40	1.759
Catholic Mission	Gmea	50	10	40	1.257
Catholic Mission	Gmea	61	16	45	2.545
Catholic Mission	Gmea	59	14	45	2.227
Catholic Mission	Gmea	58	13	45	2.068
Catholic Mission	Gmea	52	11	41	1.452
Catholic Mission	Gmea	49	10	39	1.195
Catholic Mission	Gmea	50	10	40	1.257
Catholic Mission	Gmea	52	12	40	1.508
Catholic Mission	Gmea	53	10	43	1.452
Catholic Mission	Tectoria grandis(Teag)	35	9	26	0.478
Catholic Mission	Teag	39	7	32	0.563
Catholic Mission	Teag	41	10	31	0.755
Catholic Mission	Teag	32	6	26	0.339
Catholic Mission	Teag	45	12	33	1.026
Catholic Mission	Teag	42	10	32	0.804
Catholic Mission	Teag	39	7	32	0.563
Catholic Mission	Teag	40	9	31	0.679
Catholic Mission	Teag	42	9	33	0.77
Catholic Mission	Teag	39	7	32	0.563
Catholic Mission	Teag	40	11	29	0.727
Catholic Mission	Teag	43	10	33	0.855
Catholic Mission	Teag	45	11	34	0.999
Catholic Mission	Teag	41	9	32	0.724
Catholic Mission	Teag	43	8	35	0.77
Catholic Mission	Teag	40	9	31	0.679
Catholic Mission	Teag	42	8.5	33.4	0.740
Catholic Mission	Teag	45	10	35	0.962
Catholic Mission	Teag	51	11	40	1.382
Catholic Mission	Teag	50	10.3	39.7	1.275
Catholic Mission	Teag	46	11	35	1.058
Catholic Mission	Teag	44	9.2	34.8	0.875
Catholic Mission	Teag	41	10	31	0.755
Catholic Mission	Teag	40	12	28	0.740
Catholic Mission	Teag	41	9.4	31.6	0.737
Catholic Mission	Teag	51	12	39	1.433
Catholic Mission	Teag	52	13	39	1.553
Catholic Mission	Teag	40	10	30	0.707
Catholic Mission	Teag	41	9	32	0.724
Catholic Mission	Teag	41	11	30	0.777
Catholic Mission	Teag	45	12	33	1.026
Catholic Mission	Teag	45	13	32	1.046
Catholic Mission	Teag	42	10	32	0.804

Catholic Mission	Teg	41	9	32	0.724
Catholic Mission	Teg	42	12	30	0.848
Catholic Mission	Teg	39	9	30	0.636
Catholic Mission	Teg	43	12.2	30.8	0.909
Catholic Mission	Teg	48	11	37	1.183
Catholic Mission	Teg	55	10.5	44.5	1.633
Catholic Mission	Teg	52	11	41	1.452
Catholic Mission	Teg	49	9.2	39.8	1.145
Catholic Mission	Teg	60	13	47	2.255
Catholic Mission	Teg	59	11	48	1.99
Catholic Mission	Teg	50	10.9	39.1	1.308
Catholic Mission	Teg	51	12	39	1.434
Catholic Mission	Teg	49	10	39	1.195
Catholic Mission	Teg	54	9	45	1.431
Catholic Mission	Teg	56	8.9	47.1	1.551
Catholic Mission	Teg	50	11	39	1.334
Catholic Mission	Teg	51	10	41	1.32
Catholic Mission	Teg	50	12	38	1.361
Catholic Mission	Teg	53	13	40	1.634
Catholic Mission	Teg	51	13	38	1.474
Catholic Mission	Teg	52	12	40	1.508
Catholic Mission	Teg	54	10	44	1.521
Catholic Mission	Teg	54	12	42	1.663
Catholic Mission	Teg	52	10	42	1.385
Catholic Mission	Teg	41	11	30	0.778
Catholic Mission	Teg	42	14	28	0.862
Catholic Mission	Teg	49	10	39	1.195
Catholic Mission	Teg	50	14	36	1.425
Catholic Mission	Teg	45	10	35	0.962
Catholic Mission	Teg	49	8	41	1.056
Catholic Mission	Teg	50	11.5	38.5	1.339
Catholic Mission	Teg	55	10.5	44.5	1.633
Catholic Mission	Cedrella odorata(Cedo)	43	10	33	0.855
Catholic Mission	Cedo	40	9	31	0.679
Catholic Mission	Cedo	45	11	34	0.999
Catholic Mission	Cedo	39	10.2	28.8	0.664
Catholic Mission	Cedo	41	8.9	32.1	0.72
Catholic Mission	Cedo	44	10	34	0.908
Catholic Mission	Cedo	42	11	31	0.83
Catholic Mission	Bruguiera gymnorhiza(mangrove)	34	9	25	0.442
Catholic Mission	Mangrove	35	10	25	0.491
Catholic Mission	Mangrove	38	9	29	0.594
Catholic Mission	Mangrove	32	8	24	0.362
Catholic Mission	Mangrove	40	10	30	0.707
Catholic Mission	Mangrove	41	11	30	0.778
Catholic Mission	Mangrove	35	11	24	0.498
Catholic Mission	Mangrove	30	10	20	0.334
Catholic Mission	Mangrove	32	7	25	0.344
Catholic Mission	Mangrove	40	8	32	0.643
Catholic Mission	Mangrove	43	6	37	0.645
Catholic Mission	Mangrove	35	11	24	0.498
Catholic Mission	Mangrove	32	9	23	0.374
Catholic Mission	Mangrove	40	10	30	0.707
Catholic Mission	Mangrove	37	10.2	26.8	0.575
Catholic Mission	Mangrove	32	6	26	0.329
Catholic Mission	Mangrove	36	8	28	0.493
Catholic Mission	Mangrove	40	9	31	0.679
Catholic Mission	Mangrove	43	9	34	0.817
Catholic Mission	Mangrove	45	10	35	0.962
Catholic Mission	Mangrove	39	7	32	0.563
Catholic Mission	Mangrove	38	9	29	0.594
Catholic Mission	Mangrove	40	10	30	0.707
Catholic Mission	Acacia Mangium(Acacia)	32	9	23	0.374
Catholic Mission	Acacia	29	8	21	0.277
Catholic Mission	Acacia	31	9	22	0.342
Catholic Mission	Acacia	32	10	22	0.38
Catholic Mission	Acacia	31	11	20	0.342
Catholic Mission	Acacia	29	8	21	0.277
Catholic Mission	Acacia	30	10	20	0.334
Catholic Mission	Acacia	31	11	20	0.346
Catholic Mission	Acacia	30	10	20	0.334
Catholic Mission	Terminalia brasi(TB)	35	12	23	0.499
Catholic Mission	TB	33	10	23	0.425
Catholic Mission	TB	34	13	21	0.45
Catholic Mission	TB	30	11	19	0.312
Catholic Mission	TB	36	8	28	0.493
Catholic Mission	TB	38	10	28	0.636
Catholic Mission	TB	37	12	25	0.589
Catholic Mission	TB	30	10	20	0.334
Catholic Mission	TB	35	11	24	0.498

Catholic Mission	TB	32	7	25	0.344
Catholic Mission	TB	30	8	22	0.304
Catholic Mission	TB	34	11	23	0.457
Catholic Mission	TB	33	10	23	0.415
Catholic Mission	TB	35	11	24	0.498
Catholic Mission	TB	36	14	22	0.532
Catholic Mission	TB	32	10	22	0.38
Catholic Mission	TB	30	10	20	0.334
Catholic Mission	TB	35	13	22	0.494
Catholic Mission	TB	36	10	26	0.531
Catholic Mission	TB	38	12	27	0.688

Farmers Names	Tree Species	Total std Volume/ Species	Ave/Unit Price /M³(USD)	Total value(USD)/SP	Total value(SBD)/SP
Catholic Mission	Tectona grandis	90.398	\$40.00	\$3,615.92	\$29,638.68
Catholic Mission	Terminalia	12.088	\$40.00	\$483.52	\$3,963.27
Catholic Mission	Gmelina arborea	118.459	\$40.00	\$4,738.36	\$38,509.01
Catholic Mission	Colophyllum	0.374	\$40.00	\$14.96	\$122.62
Catholic Mission	Cedrela odorata	8.127	\$40.00	\$325.08	\$2,664.59
Catholic Mission	Bruguiera gymnorhiza	13.106	\$40.00	\$524.24	\$4,297.04
Catholic Mission	Acacia mangium	2.97	\$40.00	\$118.80	\$973.77
Catholic Mission	Gmelina moluccana	10.299	\$40.00	\$411.96	\$3,276.72
	total std volume	255.821	total value	\$19,292.84	\$153,775.79

Annex 14: MAL assessment report



**Ministry of Agriculture & livestock
Department of Extension
Auki
Malaita province**

Date: 30th August 2020.

To: Solomon Power Manager
Solomon Power
Auki
Malaita province

A crops assessment was carried out on the date of 25th to 27th August 2021 revealed that the following food gardens, some coconut trees and fruit trees will damage by your company Solomon power during your operation in the Solar farm site and extension line from solar farm site to Buna station and the extension line from solar farm site to Kwabu, Sinamauri clinic, Sinafolo community and Sinasu community. So I recommend you to facilitating the payments for the crops and fruit trees in the solar farm site and alone the extension line area to the concern farmers.

This are the detail of the crops assessment report.

Solar farm site

No	Farmers' name	Villages	Crop types	Stages	Qty	Unit cost	Total cost
1	Buna Parish (parish Priest)	Buna Station	Coconut	Bearing	15	\$150.00	\$2,250.00
				Non – bearing	18	\$75.00	\$1,350.00
			Taro	Mature	40	\$10.00	\$400.00
				Pre-mature	65	\$5.00	\$325.00
			Sego Palm	Mature	14	\$50.00	\$700.00
				Pre mature	16	\$25.00	\$400.00
			Ngali nuts	Bearing	14	\$100.00	\$1,400.00
				Non - Bearing	28	\$50.00	\$1,400.00
			Breadfruit	Bearing	16	\$50.00	\$800.00
				Non – bearing	31	\$25.00	\$775.00
			Yellow bamboo	Mature	45	\$10.00	\$450.00
				Pre mature	65	\$5.00	\$325.00
			Sand paper	Mature	15	\$15.00	\$225.00
				Pre – mature	25	\$7.50	\$187.50
Total							\$9,637.50
Extension line							
2	Buna Parish (parish Priest)	Buna station to Bethany settlement	Coconut	Bearing	36	\$150.00	\$5,400.00
				Non – bearing	10	\$75.00	\$750.00
			Betel nuts	Bearing	6	\$30.00	\$180.00
				Non bearing	8	\$15.00	\$120.00
			Alite	Bearing	6	\$50.00	\$300.00
				Non – bearing	3	\$25.00	\$75.00
			Guava	Bearing	4	\$30.00	\$120.00
				Non – bearing	8	\$15.00	\$120.00

			Mango	Bearing	1	\$50-00	\$50-00
				Non – bearing	4	\$25-00	\$100-00
			Sego palm	Mature	3	\$50-00	\$150-00
				Pre – mature	11	\$25-00	\$275-00
Total							\$7,640-00
3	Jr Thomas Damutalau	Bethany resident	Coconut	Bearing	15	\$150-00	\$2,250-00
				Non – bearing	16	\$75-00	\$1,200-00
Total							\$3450-00
4	Parish priest (Buma)	Anthony Resident	Coconut	Bearing	13	\$150-00	\$1,950-00
				Non – bearing	5	\$75-00	\$375-00
			Pawpaw	Bearing	5	\$20-00	\$100-00
				Non – bearing	6	\$10-00	\$60-00
			Sego palm	Mature	1	\$50-00	\$50-00
Total							\$2535-00
5	Bruno Taelamo	Baolo	Cut nuts	Bearing	6	\$50-00	\$300-00
				Non – bearing	5	\$25-00	\$125-00
			Palm	Mature	4	\$10-00	\$40-00
				Pre – mature	8	\$5-00	\$40-00
			Guava	Bearing	5	\$30-00	\$150-00
				Non – bearing	2	\$15-00	\$30-00
			Banana	Bearing	4	\$10-00	\$40-00
				Non – bearing	8	\$5-00	\$40-00
			Mango	Bearing	4	\$50-00	\$200-00
				Non – bearing	6	\$25-00	\$150-00
			Ngali nut	Bearing	5	\$100-00	\$500-00
				Non – bearing	8	\$50-00	\$400-00
			Five corner	Bearing	4	\$30-00	\$120-00
				Non – bearing	3	\$15-00	\$75-00
			Malayan apple	Bearing	6	\$50-00	\$300-00
				Non – bearing	4	\$25-00	\$100-00
			Orange	Bearing	3	\$50-00	\$150-00
				Non – bearing	4	\$25-00	\$100-00
Total							\$2,860-00
6	Alick Ius old place	Baolo	Coconut	Bearing	8	\$150-00	\$1,200-00
				Non – bearing	6	\$75-00	\$450-00
			Betel nuts	Bearing	13	\$30-00	\$390-00
				Non – bearing	12	\$15-00	\$180-00
			Rambu tan	Bearing	4	\$50-00	\$200-00
Total							\$2,420-00
7	Parish priest - Buma	Baolo to hoteni	Sego palm	Mature	12	\$50-00	\$600-00
				Pre – mature	13	\$25-00	\$250-00
			Coconut	Bearing	8	\$150-00	\$1,200-00
				Non – bearing	2	\$75-00	\$150-00
			Kakake	Mature	65	\$12-00	\$780-00
				Pre – mature	86	\$6-00	\$516-00
Total							\$3,496-00
	Parish priest - Buma	Solar farm site to Afeala'a village	Sego palm	Mature	26	\$50-00	\$1,300-00
				Pre – mature	31	\$25-00	\$775-00
			Cocoa	Bearing	158	\$50-00	\$7,900-00
				Non – bearing	48	\$25-00	\$1,200-00
			Breadfruit	Bearing	16	\$50-00	\$800-00
				Non – bearing	31	\$25-00	\$775-00
			Betel nut	Bearing	16	\$30-00	\$480-00

				Non – bearing	13	\$15-00	\$195-00
			Yellow bamboo	mature	54	\$10-00	\$540-00
				Pre – mature	68	\$5-00	\$340-00
			Ngali nuts	Bearing	8	\$100-00	\$800-00
				Non – bearing	26	\$50-00	\$1,300-00
			Total				\$16,405-00
8	Justin Tasi	Afeala'a	Bonio	Mature	36	\$3-00	\$108-00
				Pre – mature	48	\$1-50	\$72-00
			Ramtan	Bearing	6	\$50-00	\$300-00
				Non – bearing	8	\$25-00	\$200-00
			Betel nuts	Bearing	16	\$30-00	\$480-00
				Non – bearing	11	\$15-00	\$165-00
			Cut nut	Bearing	12	\$50-00	\$600-00
				Non – bearing	8	\$25-00	\$100-00
			Coconut	Bearing	6	\$150-00	\$900-00
				Non – bearing	5	\$75-00	\$375-00
			Breadfruit	Bearing	4	\$50-00	\$200-00
				Non – bearing	9	\$25-00	\$225-00
			Guava	Bearing	3	\$30-00	\$900-00
				Non – bearing	5	\$15-00	\$75-00
			Total				\$4700-00
9	Parish priest – Buna	Front vida road	Banana	Bearing	8	\$10-00	\$80-00
				Non bearing	12	\$5-00	\$60-00
			Coconut	Bearing	8	\$150-00	\$1,200-00
				Non bearing	6	\$75-00	\$450-00
			Cut nuts	Bearing	8	\$50-00	\$400-00
				Non – bearing	4	\$25-00	\$100-00
			Cocoa	Bearing	126	\$50-00	\$6,300-00
			Sego palm	Mature	8	\$50-00	\$400-00
				Pre – mature	13	\$25-00	\$325-00
			Betel nuts	Bearing	10	\$30-00	\$300-00
				Non bearing	6	\$15-00	\$90-00
			Pawpaw	Bearing	7	\$20-00	\$140-00
			Total				\$9,845-00
10	Fostina Wawali	Kwabu	Coconut	Bearing	4	\$150-00	\$600-00
			Total				\$600-00
11	Eddie Aulalo	Kwabu	Banana	Bearing	10	\$10-00	\$100-00
				Non – bearing	15	\$5-00	\$75-00
			Cut nuts	Bearing	4	\$50-00	\$200-00
			Betel nuts	Bearing	13	\$30-00	\$390-00
			Total				\$765-00
12	Eremina Kioe	Kwabu	Coconut	Bearing	3	\$150-00	\$450-00
13	Moses Buato'o	Kwabu	Coconut	Bearing	3	\$150-00	\$450-00
14	Mathew O'okunu	Kwabu	Coconut	Bearing	5	\$150-00	\$750-00
			Breadfruit	Bearing	2	\$50-00	\$100-00
			Alite	Bearing	1	\$50-00	\$50-00
			Kepok	Bearing	1	\$50-00	\$50-00
			Total				\$950-00
15	Eddie Waioa	Kwabu	Coconut	Bearing	3	\$150-00	\$450-00
			Betel nuts	Bearing	1	\$30-00	\$30-00
			Ngali nuts	Bearing	1	\$100-00	\$100-00
			Total				\$580-00
16	Max Luma'a	Sinamauri	Coconut	Bearing	6	\$150-00	\$900-00

17	David Dalomae	Sinafolo	Coconut	Bearing	3	\$150-00	\$450-00
18	Morris Ausia	Sinafolo	Coconut	Bearing	29	\$150-00	\$4350-00
			Apple	Bearing	1	\$50-00	\$50-00
	Total						\$4400-00
19	Frank Baegeni	Sinafolo	Mango	Bearing	1	\$50-00	\$50-00
20	Haward Mafane	Sinafolo	Kapok	Bearing	2	\$50-00	\$50-00
21	Anther	Sinafolo	Orange	Bearing	2	\$50-00	\$100-00
			Pomelo	Bearing	2	\$30-00	\$60-00
	Total						\$160-00
22	Solomon Solo	Sinafolo	Coconut	Bearing	13	\$150-00	\$1,950-00
23	John Kwai	Sinafolo	Betel nuts	Bearing	7	\$30-00	\$210-00
24	Lino Sikilete	Sinafolo	Coconut	Bearing	8	\$150-00	\$1,200-00
25	Serado Sikilete	Sinafolo	Coconut	Bearing	7	\$150-00	\$1050-00
26	Lawrence Sikilete	Sinafolo	Coconut	Bearing	7	\$150-00	\$1050-00
27	Lawrence Kisa	Sinasu	Sego Palm	Mature	7	\$50-00	\$350-00
			Coconut	Bearing	2	\$150-00	\$300-00
			Ngali nut	Bearing	1	\$100-00	\$100-00
			Banana	Bearing	9	\$10-00	\$900-00
				Non – bearing	16	\$5-00	\$80-00
			Cut nuts	Bearing	6	\$50-00	\$300-00
				Non – bearing	11	\$25-00	\$275-00
			Yellow bamboo	Mature	28	\$10-00	\$280-00
	Total						2,585-00
28	Athanasio Omea	Sinasu	Coconut	Bearing	14	\$150-00	\$2,100-00
			Mango		1	\$50-00	\$50-00
			Bread fruit	Bearing	1	\$50-00	\$50-00
	Total						\$2200-00
29	Peter Felemino	Sinasu	Coconut	Bearing	2	\$150-00	\$300-00
30	James Kwai	Sinasu	Apple	Bearing	1	\$50-00	\$50-00
31	Sale Msaenaia	Sinasu	Cut nut	Bearing	1	\$50-00	\$50-00
32	Peter Daubo	Sinasu	Coconut	Bearing	3	\$150-00	\$450-00
33	Mathew Suana	Sinasu	Mango	Bearing	1	\$50-00	\$50-00
34	Safe Foosi	Sinasu	Coconut	Bearing	6	\$150-00	\$900-00
				Non bearing	5	\$75-00	\$375-00
			Yellow bamboo	Mature	26	\$10-00	\$260-00
				Pre – mature	38	\$5-00	\$190-00
			Banana	Bearing	6	\$10-00	\$60-00
				Non bearing	12	\$5-00	\$60-00
	TOTAL						\$1845-00

Detail Summary

No	Farmers	Communities or area covered	Total Cost
1	Buma Parish (parish Priest)	Buna Station (solar farm site)	\$9,637- 50
2	Buma Parish (parish Priest)	Buma station to Bethany settlement	\$7,640-00
3	Jr Thomas Damutalau	Bethany resident	\$3450-00
4	Parish priest (Buma)	Anthony Resident	\$2835-00
5	Bruno Taelamo	Baolo	\$2,860-00
6	Alick lus old place	Baolo	\$2,420-00
7	Parish priest - Buma	Baolo to hoteni	\$16,405-00
8	Justin Tasi	Afeala'a	\$4700-00
9	Parish priest – Buma	Front vida road	\$9,845-00
10	Fostina Wawali	Kwabu	\$600-00
11	Eddie Aulalo	Kwabu	\$765-00
12	Eremina Kioe	Kwabu	\$450-00
13	Moses Buato'o	Kwabu	\$450-00
14	Mathew O'okunu	Kwabu	\$950-00
15	Eddie Waioa	Kwabu	\$580-00
16	Max Luma'a	Sinamauri	\$900-00
17	David Dalomae	Sinafolo	\$450-00
18	Morris Ausia	Sinafolo	\$4400-00
19	Frank Baegemi	Sinafolo	\$50-00
20	Haward Mafane	Sinafolo	\$50-00
21	Anther	Sinafolo	\$160-00
22	Solomon Solo	Sinafolo	\$1,950-00
23	John Kwai	Sinafolo	\$210-00
24	Lino Sikilete	Sinafolo	\$1,200-00
25	Serado Sikilete	Sinafolo	\$1050-00
26	Lawrence Sikilete	Sinafolo	\$1050-00
27	Lawrence Kisa	Sinasu	\$2,585-00
28	Athanasio Omea	Sinasu	\$2200-00
29	Peter Felemino	Sinasu	\$300-00
30	James Kwai	Sinasu	\$50-00
31	Sale Maenaia	Sinasu	\$50-00
32	Peter Daubo	Sinasu	\$450-00
33	Mathew Suana	Sinasu	\$50-00
34	Safe Foosi	Sinasu	\$1845-00
	TOTAL		\$80,442-50

The rate used in this report was delivered from the government crop compensation rate currently in use.

For any queries, please do not hesitate to contact us on phone 40241 / 7372360 Auki Agriculture.

Thank you for understanding.

Patrick Maesuba
 Senior Field Officer (SFO)
 Ministry of Agriculture, Auki Malaita Province

Cc: Provincial Police Commander (PPC) - Auki

Annex 15: Clarification on MOFR report and valuation



**Solomon Islands
Government**

Ministry of Forestry &
Research



P.O Box G24,
Honiara,
Solomon Islands.



Fax:
(677) 24660
Phone:
(677) 24215 / 22263 / 22250



mofr.gov.sb

Solomon Is.

TO: Winston Lapo
Solomon Power
Honiara

Date: 5/10/2021

Dear Sir,

SUBJECT: BUMA FORESTRY INVENTORY REPORT 2021.

Please find attached is the forestry inventory report based on the raw data's collected during the field work.

Note that the plantations and the family woodlots are not of quality forest stand, therefore, our office will not use the determined value schedule that logging companies have used. Hence, we only calculate the value based on the average determined value schedule for such poor forest stands.

The forestry tree species that are identified are as such: *Tectona grandis* (Tecg), *Gmelina arborea* (Gmea), *Terminalia brassii* (Tb), *Calophyllum* (Cl), *Cederella odorata* (Cedo), *Bruguiera gymnorrhiza* (mangrove tree), *Acacia manguim* (Acacia), *Gmelina mollucana* (Gm), *Pometia pinnata* (Pm/Akwa), *Vitex cofassu* (vasa), and the Kepok tree.

The total value for the forestry standing volume is **\$135,899.20**, where the Catholic Mission subtotal is **\$83,775.70**, while the farmers their subtotal is **\$52,123.50**.

Hope this report serves the purpose of your organisations intention.

Should you need any more information, Please don't hesitate to call or email me.

Thank you very much for working together.

Yours Faithfully

A handwritten signature in blue ink, appearing to read 'Angella Gwao'.

Angella Gwao
Ranger Officer
Auki FD
Malaita Province

Annex 16: Consent from the Diocese of Auki (Holder of the FTE title)



OFFICE OF THE BISHOP
CATHOLIC DIOCESE OF AUKI
PO BOX A-13, AUKI, MALAITA PROVINCE
SOLOMON ISLANDS
PHONE: (677)40130 – EMAIL: houhoupeter4@gmail.com

29th October 2020

Solomon Islands Electricity Authority
Trading as SOLOMON POWER
PO Box 6, HONIARA, SOLOMON ISLANDS

Attention: Chief Executive Officer

RE: REPLY TO YOUR LETTER OF INTEREST TO ACQUIRE A LAND FROM BUMA, FOR SOLAR HYBRID GENERATION SYSTEM DEVELOPMENT

Thank you very much indeed for your email dated 28th/10/2020, a follow up on phone conversation on the 19th/10/2020 regarding the interest of SOLOMON POWER to acquire from Buma Land, a Sub-division for Solar Hybrid Generation System Development Project.

I would say that this project is a genuine one, since it is for the common good of our people. As the Chief Shepherd of the Diocese, focusing on the Spiritual Well-being of people, on the other hand, SOLOMON POWER is focusing on the physical well-being of the same people. When we put these two together, this is a great Holistic Development for our People.

During the consultation with different respectful Leaders of the Diocese, Buma Parish Priests, Parish Pastoral Council, Sisters, and the surrounding Communities, they all agreed and are for the Idea of having the Project.

Therefore, as the Bishop of the Diocese, I made a "Formal Consent" with Solomon Power, to proceed with necessary steps as to start the process in laying a profile for this very important Project.

Upon receiving this Letter of Invitation, your Office can decide to when, and at what time, you are coming across to Auki, so that we can talk and then go to Buma to see the place and to identify the ACTUAL place where the Solar Hybrid Generation System Development Project was to be STATIONED.

To keep it short and sweet, if you have any questions or clarifications, do not hesitate to contact these Mobile Numbers:

7716256: Vicar General: Fr. Jeffrey Puritau
7802516: Diocese Lands Commission: Fr. John Adai
7890256: Parish Priest: Fr. Desmond Firi
7874299: Bishop Peter Houhou

Thank you for your understanding and co-operation. Looking forward for more future correspondence.

Yours in Christ,

Bishop Peter Houhou



Cc. Fr. Jeffry Puritau: Vicar General.
Cc. Fr. John Adai. Diocese Lands Commission
Cc. Fr. Desmond Firibo. Parish Priest Buma

"I came not to be served but to serve"

Annex 17: Permit for subdivision of parcel 171-003-7



MALAITA PROVINCE



MALAITA PROVINCIAL GOVERNMENT
P.O. BOX 63
AUKI
MALAITA PROVINCE
SOLOMON ISLANDS
TEL: (677) 40071/72

Your Ref:

Our Ref: BRD/2/92

Date: 15/06/2021

Branch Manager
SIEA
Auki
Malaita Province

Dear Sir,

Subject: DEVELOPMENT PERMIT TO SUBDIVIDE PARCEL 171-003-7 (PROPOSED BUMA SOLR POWER)

Thank you for your payment of \$500.00 being fee paid for the above.

The Board met on 21/05/2021 and approved the permit for the subdivision of Parcel 171-003-3.

We regret for this later reply.

Yours faithfully,


Mr. Joshua Keniore
Board Chairman (Vice)

Malaita Planning and Development Board
MALAITA PROVINCIAL GOVERNMENT

"Tu mi tugetabildim Malaita"