

Environmental and Social Impact Assessment Report (ESIA) – Lombok (Annex E-F)

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INO: Eastern Indonesia Renewable Energy Project (Phase 2)

Prepared by ERM for PT Infrastruktur Terbarukan Lestari

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**ANNEX E ENVIRONMENTAL, SOCIAL,
HEALTH, AND SAFETY
MANAGEMENT SYSTEM**



**ENVIRONMENTAL, SOCIAL, HEALTH, AND SAFETY
MANAGEMENT SYSTEM
(ESHS-MS) MANUAL**

PT INFRASTRUKTUR TERBARUKAN ADHIGUNA (PT ITA)

PT INFRASTRUKTUR TERBARUKAN BUANA (PT ITB)

PT INFRASTRUKTUR TERBARUKAN CEMERLANG (PT ITC)

Affiliates of

DECEMBER 2017

This manual outlines Equis Energy, that covers PT ITA, PT ITB, and PT ITC approach in providing guidance and setting expectations to address environmental and social issues primarily in respect to project's compliance with the related Indonesian Laws and Regulations as well as the IFC Performance Standards. This document shall be revised/updated accordingly for any changes or modifications that shall be implemented during construction and operational phases of the project.

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1 Introduction

1.1 Project Overview

Lombok solar farms of 3 x 7 MWp (the “Project”) is being developed by Equis Energy Indonesia (the “Company”) through its Special Purpose Vehicle (SPV) companies:

- PT Infrastruktur Terbarukan Adhiguna (“**PT ITA**”) is developing 5 MW_{AC} **Pringgabaya** solar farm located in Cemporonan sub-village, Pringgabaya Utara village, Pringgabaya district, Lombok Timur regency, Nusa Tenggara Barat province;
- PT Infrastruktur Terbarukan Buana (“**PT ITB**”) is developing 5 MW_{AC} **Selong** solar farm located in Geres Baret sub-village, Geres village, Labuhan Haji district, Lombok Timur regency, Nusa Tenggara Barat province; and
- PT Infrastruktur Terbarukan Cemerlang (“**PT ITC**”) is developing 5 MW_{AC} **Sengkol** solar farm located in Sengkol 1 sub-village, Sengkol village, Pujut district, Lombok Tengah regency, Nusa Tenggara Barat province.

The Project is required to conduct the Environmental Impact Assessment, locally known as UKL-UPL, to comply with Indonesia’s Regulation. The Project is also required to comply with International Finance Corporation (IFC) Performance Standards (PS), associated World Bank (WB) Group’s Environmental, Health and Safety (EHS) Guidelines, and ADB Safeguard Policy Statement. Thus, this Project specific Environmental, Social, Health and Safety Management System (ESHS-MS) document is prepared as a guidance for the management of environmental and social impacts.

1.2 Scope

The Project has developed this Environmental and Social Management System (ESHS-MS) Manual to identify the environmental and social management and mitigation actions required for the Project to comply with the requirements of the International Finance Corporation’s (IFC) Performance Standards and applicable Indonesian national and local laws, standards, and regulations. It provides an overview of the environmental and social baseline conditions of the Project areas, summarizes the potential impacts associated with the solar farms and sets out the management measures required to mitigate any potential impacts presented in the Environmental and Social Management Plan (ESMP). The ESMP shall also be utilized by the EPC contractors commissioned by the PT ITA, PT ITB, and PT ITC as the basis of the site-specific management plans to be prepared before commencing works.

The potential impacts, the associated mitigation measures, and management procedures presented in this ESHS-MS Manual are based on the baseline information and assessments gathered from the Feasibility Study, EIA (UKL-UPL) studies conducted by LPPM Unram (local university), ESHIA study conducted by ERM, and latest project information as per contract with the Engineering, Procurement and Construction (EPC) Contractor.

The Management Plans presented in this ESHS-MS Manual detail the environmental and social management procedures, processes, mitigation and monitoring measures required to complete actions as identified in the UKL-UPL (local EIA) and ESIA documents. In addition to the ESMP, other plans and manuals are also attached in the Appendixes. Stakeholder Engagement Plan (SEP) is one of the examples. SEP outlines the measures to be used in community engagement, dissemination of project information, and grievance management. SEP shall be utilized as a key element in all the

proposed management, monitoring, and mitigation measures outlined in this document. This ESHS-MS Manual and associated attachments are live documents and shall be updated as required during project implementation.

1.3 Objectives

One of the Project's objectives is to avoid, where practical, unacceptable adverse environmental, social and/or economic impacts. In the circumstance that an impact cannot be avoided, PT ITA, PT ITB, PT ITC and its EPC Contractor (who shall be responsible for the management of the construction phase of the Project) are committed to implement the appropriate mitigation measures. For clarity in the management structure, EPC shall consult with PT ITA, PT ITB, and PT ITC on the matters related to environmental, health and safety performances. However, EPC shall have the overall responsibility for planning, implementation, monitoring and enforcement of activities associated with this ESHS-MS Manual and environmental, health, and safety performances during the construction phase.

The primary objective of this ESHS-MS Manual is to describe the measures required to implement the construction, operation, and post-operation related management and mitigation commitments set out in the Project's EIA (UKL-UPL) reports and the issued Environmental Permits, as well as IFC PS as presented in the ESHIA report

All contractors and subcontractors shall be required to comply and apply the ESHS-MS Manual requirements as applicable to the tasks they are employed to undertake.

The measures and procedures outlined in this ESHS-MS Manual are commitments made by the PT ITA, PT ITB, PT ITC. These companies, therefore remain responsible for the implementation. It is recognized that practical implementation of many of the measures may rest with contractors and subcontractors and consequently, the PT ITA, PT ITB, and PT ITC shall require an implementation of a robust review/audit program, as described in this ESHS-MS Manual, to measure and ensure that it is executed.

1.4 ESHS-MS Structure

The ESHS-MS Manual consists of this document and a series of specific supporting plans and manuals provided as appendixes to this document (see Figure 1-1 below).

The ESHS-MS Manual outlines the environmental and social management processes and procedures applicable to the Project and includes the topics which are common to all environmental and social disciplines.

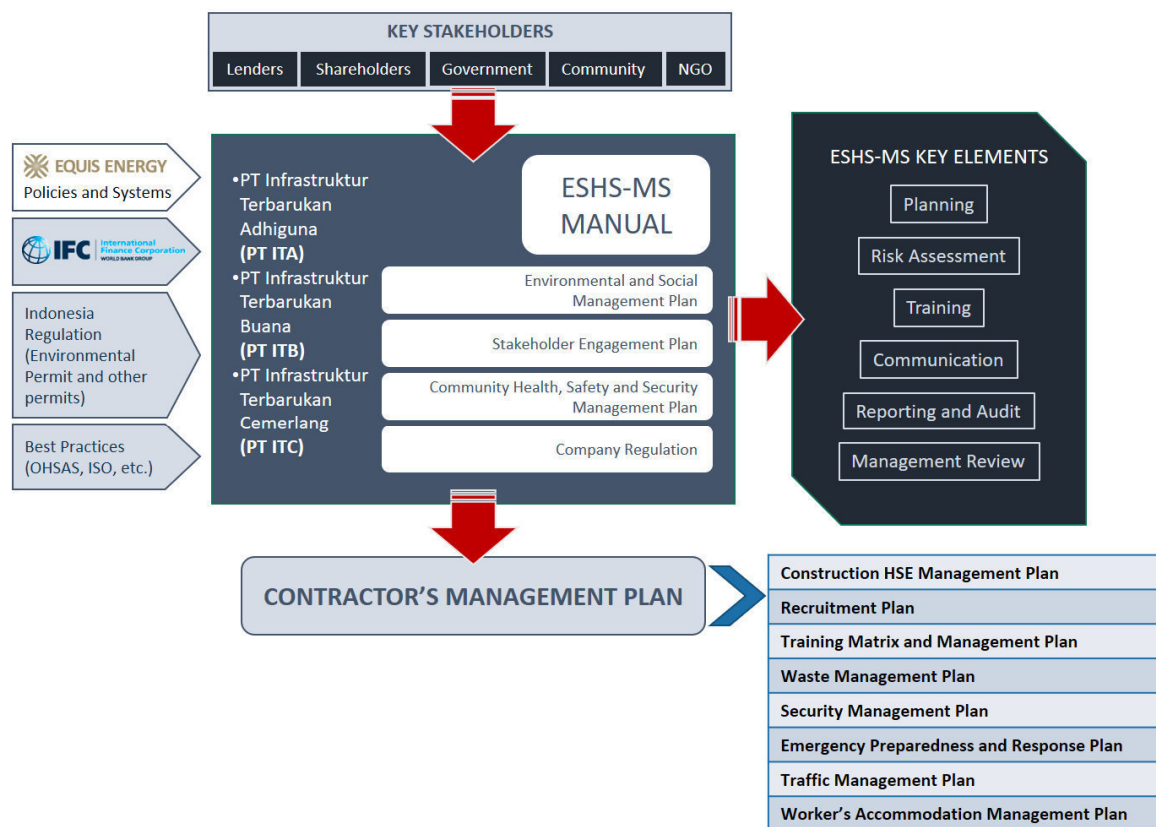


Figure 1-1 PT ITA, PT ITB, PT ITC's ESHS-MS Structure

1.5 Intended Users and Audience

The aim of this document is to communicate to the Project Team (PT ITA, PT ITB, PT ITC, including contractor (EPC) and sub-contractors) of the potential environmental and social issues, management requirements, mitigation measures, and commitments associated with the project construction, operation, and post-operation. The Project Team shall utilize the ESHS-MS Manual and associated Action Plans during project execution to manage the Project's environmental and social aspects.

1.6 Document Control

The ESHS-MS Manual is a controlled document. This document shall be reviewed and updated to reflect changes to the Project. Changes requiring modifications shall be incorporated in accordance to the process defined in PT ITA, PT ITB, and PT ITC's document control plan and procedures.

1.7 Management of Change

PT ITA, PT ITB, PT ITC, EPC contractor, and sub-contractors shall be required to apply appropriate project change management procedures for all changes/deviations to the agreed Project scope and objectives. The overall Project scope and objectives are governed by cost and schedule baselines, design and philosophy documents, including this ESHS-MS Manual. Any recommendations or changes that impact any of these documents or approved design documents are considered a change.

Project change management is the responsibility of PT ITA, PT ITB, PT ITC and is managed accordingly. All changes within the Project will be assigned a classification by PT ITA, PT ITB, and PT ITC which

dictate the approval path and the accountabilities for managing/coordinating the change. The classification process requires a risk assessment.

1.8 Assumptions and Limitations

The Project (as of December 2017) is about to enter the construction phase, thus the detailed designs and specifications are still being prepared by the EPC contractor. As such the project information provided here may be revised during the project implementation.

This ESHS-MS Manual should be regarded as a live document and should be reviewed and updated as impacts become apparent during the Project life.

2 Equis Energy Environmental and Social Policy Statement

As Equis Energy is a UNPRI signatory, PT ITA, PT ITB, and PT ITC has also incorporated the UNPRI Principles into its Environmental and Social Responsibility Policy which outlines actions required pre- and post- investment, including:

- Incorporating ESG considerations into investment analysis and decision-making processes;
- Being active owners and incorporating ESG issues into our ownership policies and practices;
- Seeking appropriate disclosure on the ESG practices of target investments;
- Promoting the acceptance and implementation of the Principles within the investment industry;
- Working to enhance our effectiveness in implementing the Principles;
- Promoting ESG to the investment industry; and
- Monitoring and reporting platform investment ESG activities and progress on a quarterly and annual basis.

This policy will be communicated and understood by the workforce through clear roles and responsibilities, internal communications, and training.

Project EHS Policies

Our Commitment

PT Infrastruktur Terbarukan Adhiguna (PT ITA), PT Infrastruktur Terbarukan Buana (PT ITB), and PT Infrastruktur Terbarukan Cemerlang (PT ITC) are committed to the effective implementation of our ESHS Policy and to the continual improvement of our ESHS performance.

Environment

We care for the environment. It is in the nature of our business as a renewable energy IPP that we are contributing to the reduction of Greenhouse Gas (GHG) emissions. The largest anthropogenic source of GHG emissions has been from fossil fuel burning to generate electricity. We have strong commitment to sustainable development by providing electricity generated from renewable resources.

We are committed to comply with the following principles:

- Compliance with applicable environmental laws and regulations;
- Efficient use of resources, cleaner production principles in product design and production processes; and
- Prevention of pollution and minimizing the environmental impacts of our operations including the materials that we use.

Community and Stakeholder Engagement

We strive to be a valued corporate citizen to the communities in the vicinity of our operations.

We are committed to the following principles:

- We respect the values and cultural heritage of local communities;

- We aim to improve the livelihood of local community where possible and to minimize any impact on their living conditions;
- We are committed to developing strong, constructive, and responsive relationships with the affected communities and stakeholders including but not limited to government entities, non-governmental organizations (NGOs), shareholders, and other interested parties in carrying out our activities including planning, design, construction, and operation.

We will achieve this objective through stakeholder engagement, operating a robust grievance mechanism, and ongoing reporting to the affected communities.

Labor and Working Conditions

We and our contractors recognize our responsibility to respect and protect the rights of our workers.

We adopt the following principles:

- We obey and comply with local labor practices relating to term of employment, work hours, payment of wages, and maintaining good working relationships with our workers; and, **we demand the same from our contractors;**
- We will not employ or support the use of any form of child labor or forced/coerced labor, either **directly or through suppliers or contractors;**
- We respect our workers' right to associate and engage in the collective bargaining process pursuant to local labor practices;
- We guarantee our workers that they will be free from all forms of harassment and discrimination based on race, color, religion, national origin, gender (including pregnancy), age, disability, sexual orientation, gender identity, HIV status, marital status, or any other status protected by the laws and regulations in the locations where we operate; and
- We protect workers' rights by allowing each worker to deal directly with management on issues of importance to that worker. Thus, we provide a grievance mechanism to receive, analyze, and address workers' concerns.

Health and Safety

We do not compromise the health and safety of our workers and our contractors' workers. We will provide a safe and comfortable working environment to our workers and will ensure our contractors to do the same. We aspire to achieve a Zero Harm track record for all of our workers as well as the surrounding communities. It is our fundamental belief that all accidents can be prevented.

Our Actions

To meet our ESHS commitments, we will:

- Ensure that all activities undertaken by us, our contractors and consultants are complying with the applicable regulations of the Republic of Indonesia as well as international standard that we subscribe to;
- Continuously review, measure, and evaluate our environmental, social, health, and safety objectives;

- Perform Environmental, Social, Health, and Safety Management System (ESHS-MS) performance reviews, which will be reported to Senior Management to ensure the effectiveness of ESHS-MS implementation;
- Take any necessary and appropriate follow-up action to ensure the intent of the ESHS policy is met, that procedures and plans are being implemented, and are seen to be effective;
- Ensure that all workers, shareholders, and other stakeholders understand our ESHS Policy commitments; and
- Manage external interactions through an active stakeholder engagement program and a mechanism to receive, analyze, and address stakeholder grievances.

This policy will be communicated to all staff, contractors and stakeholders of PT ITA, PT ITB, and PT ITC.

PT ITA, PT ITB, PT ITC's ESHS Policy Statement is provided in bilingual (English and Bahasa Indonesia) and is presented in Appendix 1.

3 Applicable International Finance Corporation Performance Standards

The IFC Performance Standards is a set of international benchmarks for identifying and managing environmental and social risks. These standards offer a framework for understanding and managing environmental and social risks for high profile, complex, international, or potentially high impact project. The financial institution is required to verify, as part of its environmental and social due diligence process, that the commercial client/investee complies with the IFC Performance Standards. To do so, the financial institution needs to be knowledgeable of the environmental and social laws of the country in which it operates and to be able to compare the regulatory requirements against those of the IFC Performance Standards to identify gaps. A good understanding of both set of requirements as well as potential gaps ensures that the financial institution can effectively identify and assess the key environmental and social risks and impacts that might be associated with a financial transaction.

If non-compliances with the IFC Performance Standards are identified, and depending on the severity of the issue, the financial institution can require the commercial client/investee to develop a corrective action plan to address the issue within a reasonable timeframe and stipulate this as a condition of the financial transaction with the commercial client/investee.

The IFC Performance Standards help IFC, and its clients manage and improve their environmental and social performance through an outcome-based approach and also provide a solid base from which clients may increase the sustainability performance of their business operations. The desired outcomes are described in the objectives of each Performance Standard, followed by specific requirements to help clients achieve these outcomes through means that are appropriate to the nature and scale of the project and commensurate with the level of environmental and social risks (likelihood of harm) and impacts.

The IFC Performance Standards (PS) comprised eight topics:

- Performance Standard 1: Assessment and Management of Environmental and Social Risks and Impacts
- Performance Standard 2: Labor and Working Conditions
- Performance Standard 3: Resource Efficiency and Pollution Prevention
- Performance Standard 4: Community Health, Safety, and Security
- Performance Standard 5: Land Acquisition and Involuntary Resettlement
- Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources
- Performance Standard 7: Indigenous Peoples
- Performance Standard 8: Cultural Heritage

PS 1: Assessment and Management of Environmental and Social Risks and Impacts

Commercial clients/investees are required to manage the environmental and social performance of their business activity, which should also involve communication between the client/investee, its workers and the local communities directly affected by the business activity. This requires development of a good management system, appropriate to the size and nature of the business activity, to promote sound and sustainable environmental and social performance and to lead to improved financial outcomes.

PS 2: Labor and Working Conditions

For any business, its workforce is an asset and a sound worker-management relationship is a key component of the overall success of the enterprise. By protecting the basic rights of workers, treating workers fairly, and providing them with safe and healthy working conditions, commercial clients/investees can enhance the efficiency and productivity of their operations and strengthen worker commitment and retention.

PS 3: Resource Efficiency and Pollution Prevention

Business activity often generates increased levels of pollution to air, water, and land that may threaten people and the environment at the local, regional, and global level. Commercial clients/investees are required to integrate pollution prevention and control technologies and practices (as technically and financially feasible as well as cost-effective) into their business activities.

PS 4: Community Health, Safety, and Security

Business activities can increase the potential for community exposure to risks and impacts arising from equipment accidents, structural failures, and releases of hazardous materials as well as impacts on a community's natural resources, exposure to diseases, and the use of security personnel. Commercial clients/investees are responsible for avoiding or minimizing the risks and impacts to community health, safety, and security that may arise from their business activities.

PS 5: Land Acquisition and Involuntary Resettlement

Land acquisition due to the business activities of a commercial client/investees may result in the physical displacement (relocation or loss of shelter) and economic displacement (loss of access to resources necessary for income generation or as means of livelihood) of individuals or communities. Involuntary resettlement occurs when affected individuals or communities do not have the right to refuse land acquisition and are displaced, which may result in long-term hardship and impoverishment as well as environmental damage and social stress. Commercial clients/investees are required to avoid physical or economic displacement or minimize impacts on displaced individuals or communities through appropriate measures such as fair compensation, improving livelihoods and living conditions.

PS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources

Protecting and conserving biodiversity (including genetic, species, and ecosystem diversity) and its ability to change and evolve is fundamental to sustainable development. Commercial clients/investees are required to avoid or mitigate threats to biodiversity arising from their business activities and to promote the use of renewable natural resources in their operations.

PS 7: Indigenous Peoples

Indigenous Peoples are recognized as social groups with identities that are distinct from other groups in national societies and are often among the marginalized and vulnerable. Their economic, social, and legal status may limit their capacity to defend their interests and rights to lands, natural and cultural resources. Commercial clients/investees are required to ensure that their business activities respect the identity, culture, and natural resource-based livelihoods of Indigenous Peoples and reduce exposure to impoverishment and disease.

PS 8: Cultural Heritage

Cultural heritage encompasses properties and sites of archaeological, historical, cultural, artistic, and religious significance as well as unique environmental features and cultural knowledge, innovations, and practices of communities embodying traditional lifestyles, which are protected for current and future generations. Commercial clients/investees are required to avoid significant damage to cultural heritage due to their business activities.

4 Legal and Regulatory Compliance

PT ITA, PT ITB, PT ITC and all contractors and sub-contractors shall confirm and ensure compliance with all relevant national and local environmental and social legal requirements.

4.1 Environmental and Social Laws and Regulation

Indonesia legal framework relating to environmental regulations is originated from the regulations formulated in the late 1980s. The passage of Act No. 4 of 1982 formed the key requirements of Environmental Protection which created the National Pollution Control Commission and was tasked to oversee and implement regulations to protect the environment. This regulation and the other regulations which followed enhances the awareness of the public and the private sector on the need to prevent pollution, protect the resources and in the end, minimize and prevent pollution. In 2009, to accommodate gaps concerned the law enforcement in environmental protection, the 1982 act was superseded by Act No. 32 of 2009 regarding Environmental Protection.

Furthermore, the underlying law that regulated the Environmental Permit is Government Regulation (GR) No. 27 of 2012 regarding Environmental Permit, which should be applied for before construction phase. Environmental Permit is issued to business and/or activities after the environmental impact assessment (AMDAL/UKL-UPL) of the Project is accepted by the AMDAL/UKL-UPL committee. A Project is required to complete either AMDAL (Analisis Mengenai Dampak Lingkungan) or UKL-UPL (Usaha Pengelolaan Lingkungan – Usaha Pemantauan Lingkungan) study based on the size of the Project and the magnitude of impact potentially created by the Project.

Regulation of Minister of Environment No. 05 of 2012 stipulates the type and size of projects/activities requiring AMDAL and those requiring UKL-UPL. In the case of solar power plant, any solar power plant with capacity ≥ 10 MW in one location is required to complete AMDAL, while solar power plant with capacity < 10 MW is required to complete UKL-UPL which in principle is a simplified version of AMDAL. There are more requirements needed to complete an AMDAL study compared to UKL-UPL study.

PT ITA, PT ITB, and PT ITC are required to each complete UKL-UPL procedure for the 5 MW_{AC} (7 MWp) solar power plant. The UKL-UPL document and Environmental Permit are legal documents for the project to implement its environmental management and monitoring commitment as established in the documents, and act as basis in obtaining other permits required for the construction of the Project.

Furthermore, the Act No. 13 of 2003 regarding labor is the governing law between employers and employees in the private sector. It seeks to afford protection to labor, promote employment and human resources development and ensure industrial peace based on social justice. This law also set forth the requirements related to working hours, health, and safety requirements, employment dispute and freedom to join and form the labor union.

The Ministry of Manpower is the primary government agency mandated to promote gainful employment opportunities, develop human resources, protect workers and promote their welfare, and maintain industrial peace. This ministerial agency consists of several directorate generals that perform primarily policy and program development and advisory functions for the minister in the administration and enforcement of laws relating to working conditions. The labor supervision and health and safety directorate general envisions well-guided employers and workers committed to a

safe, healthful and productive work environment. In Indonesia, there is a dedicated court that is specifically handling the industrial dispute which called PHI (*Pengadilan Hubungan Industrial*).

4.2 Environmental Document and Environmental Permit

Environmental Permit is a legal approval and commitments of PT ITA, PT ITB, and PT ITC that embodied in the Impacts Assessment and Mitigation that were included in the UKL-UPL documents. The summary of these mitigation measures is presented in this document as ESMP (Environmental and Social Management Plan). Environmental Permit issuance enforces PT ITA, PT ITB, and PT ITC legal responsibility to address the identified issues and provide the necessary mechanisms in dealing with every concern recognized in the impact assessment process.

5 Project Description

Lombok solar farms with capacity totaling 21 MWp is being developed by Equis Energy Indonesia through its Special Purpose Vehicle (SPV) companies:

- PT Infrastruktur Terbarukan Adhiguna (**PT ITA**) – 7 MWp **Pringgabaya** solar farm
- PT Infrastruktur Terbarukan Buana (**PT ITB**) – 7 MWp **Selong** solar farm
- PT Infrastruktur Terbarukan Cemerlang (**PT ITC**) – 7 MWp **Sengkol** solar farm

The three solar farms will be developed in different villages and regencies across Lombok island as presented in the Figure 5-1.

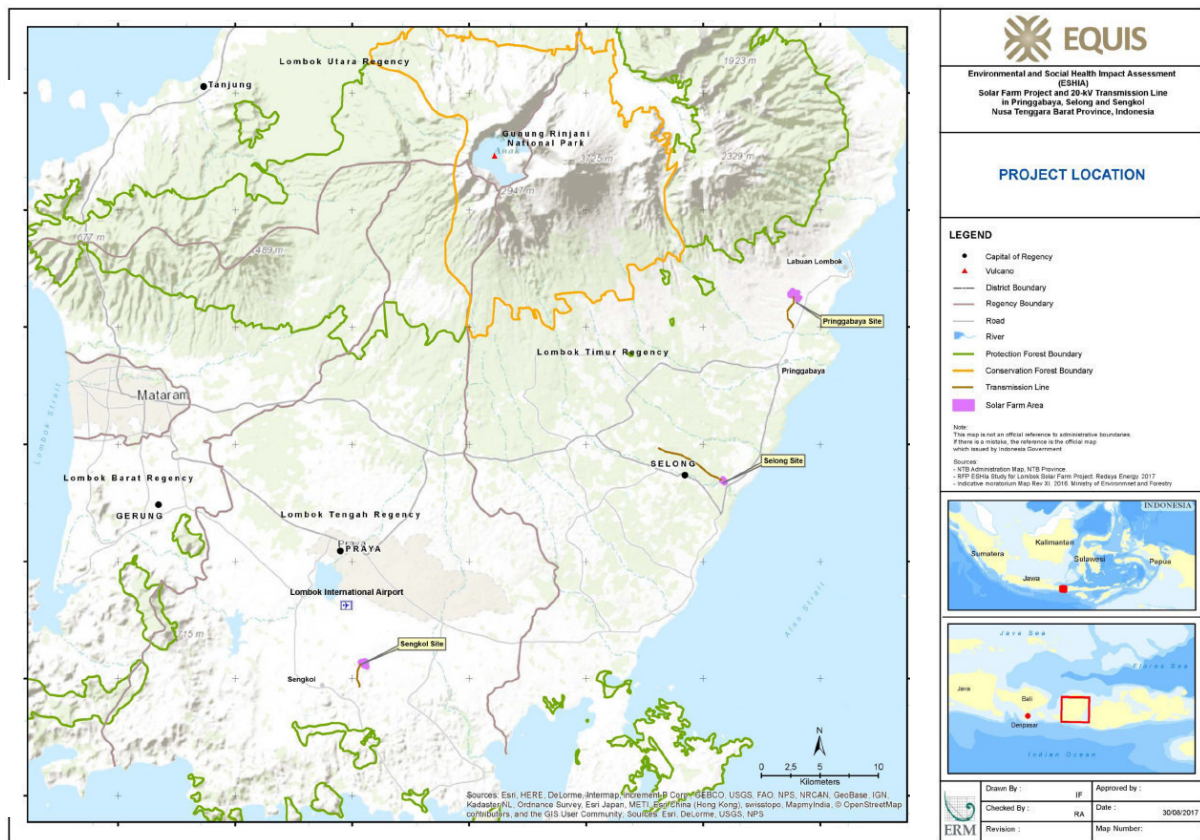


Figure 5-1 Project Location

The key details for each solar farm are described in the Table 5-1 below.

Table 5-1 Project Details

Project component	Pringgabaya Site	Selong Site	Sengkol Site
Capacity	7 MWp (5 MW _{AC})	7 MWp (5 MW _{AC})	7 MWp (5 MW _{AC})
Location:			
- Sub-village	Cemperonan	Geres Baret	Sengkol 1
- Village	Pringgabaya Utara	Geres	Sengkol
- District	Pringgabaya	Labuhan Haji	Pujut
- Regency	Lombok Timur	Lombok Timur	Lombok Tengah

Project component	Pringgabaya Site	Selong Site	Sengkol Site
Land secured			
- Solar farm	11.35 ha	11.11 ha	8.73 ha
- Access road	0.13 ha	0.26 ha	0.27 ha
- Total	11.47 ha	11.37 ha	9.00 ha
Grid connection	3.5 km 20 kV overhead transmission line to PLN Pringgabaya substation	9.2 km 20kV overhead transmission line to PLN Selong substation	2.6 km 20 kV overhead transmission line to PLN Sengkol substation

a. Pringgabaya Site

Pringgabaya site and surrounding areas have been modified to accommodate for rain fed dryland agricultural practices. The site itself has been historically used for corn, sugar-apple (*srikaya*), and beans plantations. Since no irrigation was used, plantation can only be done once in a year during the rainy season. Besides agricultural activities, stone crushers can also be found surrounding the site.

The site is located approximately 3 km to PLN Pringgabaya 150/20 kV substation and 100 m to the nearest village road. The nearest residential area is approximately 200 m southwest from the site. The closest sensitive receptors to Pringgabaya site, SMKN 1 Pringgabaya School is located 500 metres from the project in the south direction and Musholla Islahulummah is located 350 from the south-eastern project boundary.

UKL-UPL of Pringgabaya solar farm has been conducted and accepted by Environmental Office of Lombok Timur regency through the issuance of Environmental Permit No. 188.47/14/DLHK/2017 on 20 March 2017. The Project has completed land acquisition process and has obtained the necessary permit to progress to construction.

b. Selong Site

Selong site and surrounding area have historically been used for rain fed dry land agriculture, containing cassava, with coconut trees also commonly found in this area. Selong site is located approximately 6 km to PLN Selong 150/20 kV substation and 400 m to the nearest village road. The nearest residential areas are located approximately 250 m south, 700 m southwest, and 400 m east of the site.

UKL-UPL of Selong solar farm has been conducted and accepted by Environmental Office of Lombok Timur regency through the issuance of Environmental Permit No. 188.47/121/DLHK/2017 on 31 July 2017. The Project has completed land acquisition process and has obtained the necessary permit to progress to construction.

c. Sengkol Site

Sengkol site and surrounding areas have historically been used for rain fed dry land agriculture, containing corn, soybean, and other bean crops. Areas of the site are also used for rain fed rice field cultivation. Sengkol site is located approximately 4 km to PLN Sengkol 150/20 kV

substation. Houses are located alongside regency road, which is approximately 120 m of the site.

UKL-UPL of Sengkol solar farm has been conducted and accepted by Environmental Office of Lombok Tengah regency through the issuance of Environmental Permit No. 11/KEP.IL/BTL/DLH/2017 on 16 August 2017. The Project has completed land acquisition process and has obtained the necessary permit to progress to construction.

Each solar farm will require the construction and operation of the following key elements:

- Installation of a solar panel field;
- Installation of main station;
- Installation of inverter station;
- Construction of drainage and water distribution system;
- Construction of internal roads; and
- Installation of 20 kV overhead transmission line to the nearest PLN 150/20kV substation.

It is envisaged that the following additional activities will be required to support the Project's construction and operation:

- Fencing surrounding the site boundary;
- An emergency diesel generator.

The Project will initially have a power generation capacity of 15 MWac and is expected to be operational for a period of 20 years, and potentially longer. Construction is expected to take approximately 8 months starting in December 2017. The scheme of the Project is BOO (build own operate), so at the end of the Project's lifetime, the solar farms will not be transferred to PLN.

The activities that have been carried out and planned to be conducted throughout the lifetime of the Project are described in the following sections.

5.1 Pre-Construction Phase

Pre-construction primarily covers the Project's permitting and land acquisition process. UKL-UPL of each site has also been approved and the Environmental Permit for all the sites have been obtained. This construction stage also covers the EPC contracting and it has been signed in November 2017.

Socialization and public consultation activities have been undertaken at each site by the Project Proponent and UKL-UPL consultant. This activity was intended to provide information on the Project plan, its potential impacts, and mitigation measures to the villagers and also provide a forum for questions.

- *Pringgabaya* – Public consultation for Pringgabaya site was held back in June 2016. The public consultation was part of AMDAL process. However, as the Project progressed, the capacity of Pringgabaya solar farm changed to a smaller capacity so AMDAL was no longer required.
- *Selong* – Public consultation for Selong site was conducted on 6 July 2017 as part of UKL-UPL process.

- *Sengkol* – Public consultation for Sengkol site was conducted on 27 July 2017 as part of UKL-UPL process.

As part of ESHIA development process, stakeholder consultation was also conducted on 25-28 July 2017 which involved head of permitting office, head of villages, midwives, landowners, and representatives of environmental office.

5.2 Construction Phase

a. Mobilization of Equipment and Material

Equipment, machinery, and Project infrastructure will be delivered to the site via road. It is expected that most of the equipment will be delivered to Pringgabaya and Selong site via Kayangan Port and transported via truck and heavy vehicles along the main road. The distance of Kayangan Port to Pringgabaya and Selong are approximately 6 km and 27 km respectively. For the Sengkol site, most of the equipment will be delivered via Lembar Port and transported via truck and heavy vehicles along the main road. The distance of Lembar Port to the Sengkol Site is 36 km. Construction will result in increased vehicle movements around the site and along the main transport route to site from Kayangan Port and Lembar Port. However, impacts are generally expected to be confined to the 8-month construction period.

b. Land Preparation and Civil Works

Land preparation such as earth works, site compaction, site levelling, and excavations will be required to prepare the site for construction. This will be completed by heavy machinery such as excavators and graders and will include clearing and removal of existing vegetation. Some areas of the site are at a low elevation and may be subject to increased flooding risk, as such site drainage installation and land re-profiling works will be required. Land preparation is likely to result in additional noise and dust generation as a result of earth works moving and transportation, piling and heavy vehicle movements.

c. Photovoltaic Field Installation and Construction of Facilities and Infrastructures

Following site preparation, the PV module foundations are established, prior to delivery and installation of each module. A small hole is drilled into the soil surface and concrete foundations and supporting structures are established. Site access road, perimeter road, and road inside the plant will be built. Additional facilities such as fencing and drainage system will also be constructed.

Temporary facilities, such as site office, fabrication/machine area, warehouse, etc. will also be built to support construction phase.

d. Mechanical and Electrical Works

Infrastructure such as cabling and conduits will be established within the PV field to connect the individual modules to the convertor box and central inverter. Connecting conduits will be established below ground, with small trenches dug to install the equipment.

e. Substation and Transmission Line

An overhead 20 kV transmission line will be constructed approximately 3.5 km from Pringgabaya solar farm to PLN Pringgabaya substation; 9.2 km from Selong solar farm to PLN Selong substation; and 2.6 km from Sengkol solar farm to PLN Sengkol substation.

f. Commissioning

There will be several tests and verification conducted during the commissioning, those include Pre-Synchronization/Mechanical Completion Tests, Post-Synchronization Tests, Pre-Commercial Operation date (COD) Performance Test. Upon passing all these tests, commercial operations can commence.

5.3 Operation and Post-Operation Phase

Solar farm projects will have limited activities for the operations and maintenance phases which involve:

- Regular monitoring of the solar power plant operation;
- Normal greasing and cleaning activities;
- Solar PV module cleaning for twelve times a year, about one time a month; and
- Internal road repairs as and when required.

After 20 to 25 years of operation, solar farms will be decommissioned and dismantled.

5.4 Workforce Requirement

The total number and qualifications of workers to be recruited will depend on the type of activities involved in the construction activity and the availability of appropriate skills and expertise within the local area, or nationally.

Worker recruitment will be handled directly by the EPC hence workforce numbers are yet to be confirmed, but are expected to be approximately 215 people during peak construction for each site. The vast majority of roles are unskilled which may present short term employment opportunities for local workers. Local labor from surrounding communities will be prioritized, however the Project may need to source labor from elsewhere for specific roles and depending on the skill levels of the local workforce. The breakdown of labor needed during construction is presented in Table 5-2 below.

Table 5-2 Estimated Number and Type of Employment during Construction

Skill Type	Skill Labor (number)	Unskilled labor (number)
Steel bar work	4	20
Brick layer		15
Welder	4	10
Crane/machine operator	4	
Electrician	5	15
Measurement/survey	3	10
Ordinary works		120

Security and safety	3	
First aiders	2	
Total	25	190
Total skill and unskilled labor	215	

During operations, skilled operators will be required onsite at all times. The total operational workforce requirements are small and are expected to be limited to 15 individuals that include plant operator, security, and housekeeper. The majority of these are expected to be unskilled positions.

Accommodation arrangements during construction are to be confirmed by the EPC. The base case is that the non-local workforce would stay in available accommodation within the local community. Onsite worker's accommodation may be established if the available accommodation is not adequate to accommodate all the non-local workforce. The operational workforce is expected to be relatively small and will also be housed within the local community.

5.5 Water Use Supply and Storage

Water will be required during construction but will generally be limited to workers' daily needs, dust suppression and to support equipment installation, noting that a small sized concrete batching which will be located onsite will not require a significant amount of water. The required volume of water is uncertain at this stage. Domestic water, such as drinking water, is expected to be delivered to site, while construction water supply will also be sourced from the existing water distribution line or bore well depending on the site condition. Should construction of bore well is deemed necessary, the Project will conduct ground water assessment to assess and minimize impact of the new constructed bore well to community's water supply.

Unlike conventional power plants, PV solar farms do not use water in electricity generation. The main water requirement is for washing of the PV modules and this is expected to occur twelve times per year. Operations, including water for panel cleaning, are expected to require approximately 1,000 m³ per month for total three sites.

5.6 Energy Supply

Electricity supply during construction will be from PLN's existing 20kV line which is close to each site location. An emergency diesel generator will be provided for backup to support construction only if there is an interruption to the PLN supply. During operations, power will be sourced from the Project (during the daytime) and/or existing PLN 20kV line. Maximum necessity of electricity is predicted to be approximately 15 kW.

The onsite fuel requirement during construction phase will be about approximately 600 l for each site, which will be procured from outlets located close to the project site. For operation, it is predicted that 150 l fuel will be used per month for each site.

5.7 Traffic and Transport

Marine Transportation

Kayangan Port in Labuhan Lombok town has been used for ferries which carry passengers from and to Pototano, Sumbawa island. While Lembar Port is an international port that has adopted ISO 9001:2008 for quality management system.

The port will be the main delivery point of project equipment such as PV Panels and electrical infrastructure which is not readily available locally. Vessel deliveries to the port would generally be limited to the construction period and are unlikely to result in significant additional vessel loads at the port. From the port, equipment would be loaded directly to trucks and heavy vehicles for delivery to site.

Land Transportation

Traffic associated with the construction of the Project will be generated during the transportation of the following:

- Heavy machinery e.g. bulldozers, graders, trucks, trenchers, excavators and loaders;
- Delivery of Project equipment and support materials; and
- Movement of the workforce to and from the site.

During these activities traffic will utilize existing roads and will travel through a number of local towns and villages to reach the Project site from Kayangan Port and Lembar Port.

5.8 Waste and Discharge

Sanitary and Runoff Wastewater Management

A septic sewage treatment system will be installed to dispose of domestic wastewater generated during construction and operation. During operation, this is expected to be housed at the Main Station area. Domestic wastewater will include runoff from the mess, kitchen and bathroom facilities.

Sources of contamination, such as fuel, oil drums and chemicals will be stored in appropriately bunded areas such that runoff can be captured and stored. This contaminated runoff will then be managed and disposed of by a licensed waste contractor.

Solid Waste Management

During construction and operation, solid waste, domestic solid waste, and hazardous waste will be generated. Domestic solid wastes such as broken glass, iron and steel, wood, cartons and paper, etc. will be sorted daily on-site, and reused and recycled where possible. Any solid waste that cannot be reused or recycled will be collected and transported by a licensed waste operator to a designated licensed landfill site.

Containers (bins) will be provided on-site to store the domestic solid waste. The number of bins provided will be adjusted during the construction phase, as needed. The final disposal location is still to be confirmed as part of the detailed construction planning.

Broken PV modules will require storage and disposal during operations (and potentially construction). A PV module typical life is over 20 years. Silicon is the major component of the modules hence they are unlikely to be classified as a hazardous material.

Hazardous Waste

Only small volumes of hazardous wastes are expected to be generated by the Project during construction and operation. These would generally be limited to transformer oil and wastes from the battery control system.

Government Regulation No. 101/2014 regarding hazardous waste management sets provisions for managing hazardous and toxic wastes, starting from waste generation to final disposal. According to this regulation, the company that generates the hazardous waste (e.g. used oil, oily rags and used grease) is required to temporarily store the waste at the company premises and obtain a permit from the relevant authority. Moreover, the hazardous waste must be transported and disposed of by a permitted waste contractor

5.9 Air and Greenhouse Gas Emissions

Air emissions during construction are predominantly generated by the mobilization of equipment and materials during construction and construction activities. The air emissions generated during construction activities will come from heavy and light equipment, earthworks activities, and vehicles movement for mobilization of material and power generator. Meanwhile, air emissions during operation activities are generated by the mobilization of the workforce, supplies and power generation.

Solar power project delivers significant GHG emission savings when compared to conventional fossil fuel power generation.

5.10 Lighting and Visual Amenity

Visually, the Project is within a low-lying area and elevated structures would be limited to single story buildings and low-lying electricity infrastructure, such as the PV modules. The Project is unlikely to be visible to the villages located around the Project area.

Glaring has been associated with some solar farms in other countries however modern PV modules are now coated with anti-reflective substance which significantly reduces this issue.

5.11 Noise and Vibration

During construction, the main sources of noise and vibration will be generated from earthmoving works and construction of foundations. However, solar farms in general are not associated with noise generation during operations and this will be the case with this Project.

5.12 Unplanned Events

Solar farms are not typically associated with significant emergency risks however there is the potential for unplanned events to occur during the construction and operation of the Project; this includes:

- Environmental incidents such as hydrocarbon or chemical spills;
- Vehicle accidents;
- Natural disasters such as flooding and fire/explosion; and
- Medical emergencies such as injury, illness, or fatalities.

An Emergency Response Plan (ERP) will be developed as part of ESHS Management System in order to manage unplanned events.

6 Environmental and Social Baseline

6.1 Study Area

The study area considered for ESHIA includes an area within 5 km radius from farthest of solar farm. The study area of 5 km has been selected based on the location of Project site and its footprint, nature and spatial distribution of potential social and environmental impacts (based on similar type of projects). The Project Footprint for Project includes land used for solar farm, substation, storage of materials, site office, access roads, and internal and external transmission lines.

The effects of the Project and Project activities on a particular resource or receptor will have spatial (distance) and temporal (time) dimensions, the scale of which is dependent on a number of factors. These factors are incorporated in the definition of the Project's Area of Influence (Aol).

This Aol is in turn, divided into a core and buffer zone. This division of the Aol into two zones is based on the understanding that the majority of the impacts from the project (during the mobilisation, construction, operations, and decommission phase) would be contained within a 1 km radius from the Project Footprint in terms of spread and intensity, with the buffer zone appearing to have limited interaction with the Project. Map of Area of Influence (Aol) of each site is presented in Figure 6-1, Figure 6-2, and Figure 6-3 below.

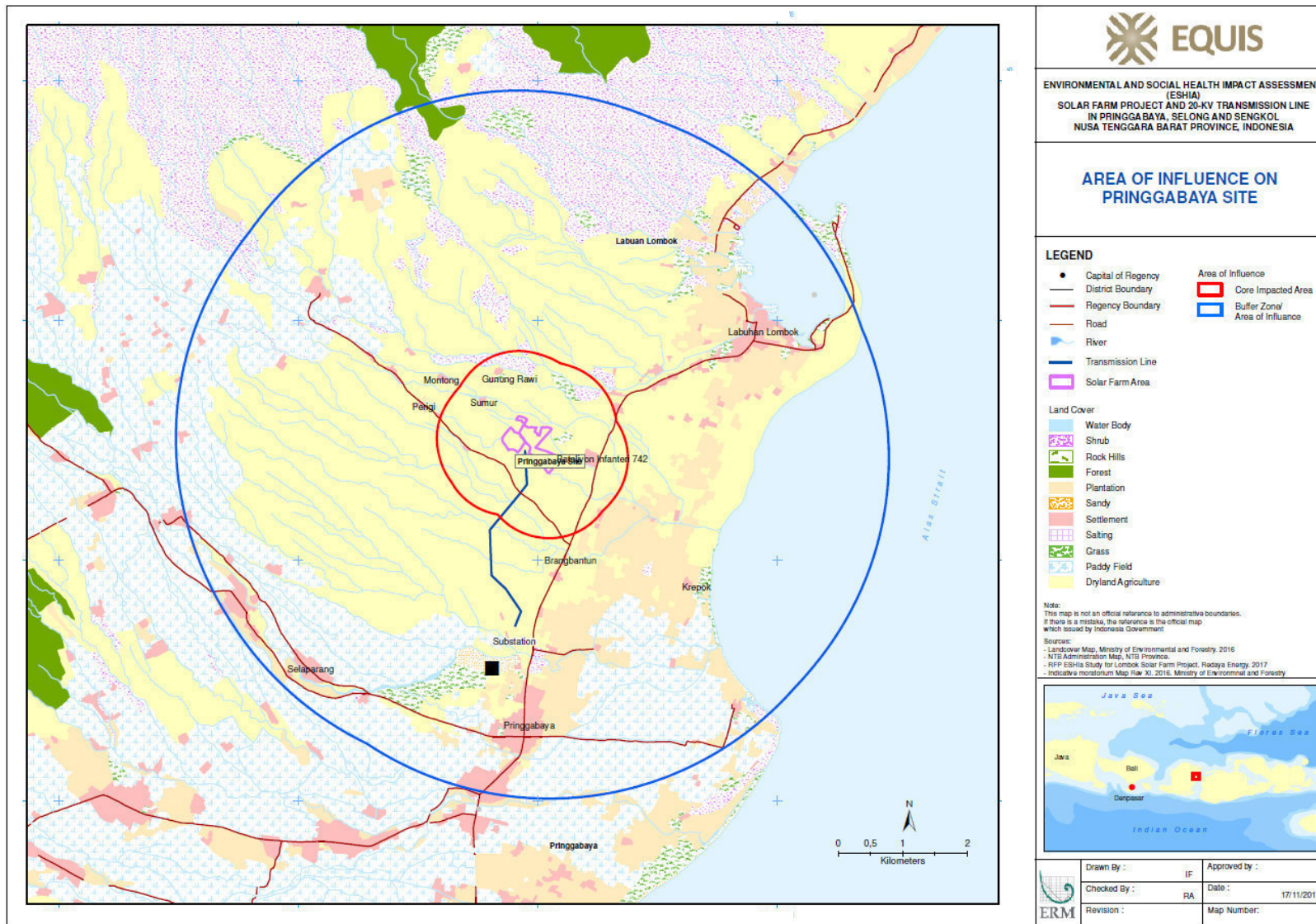


Figure 6-1 AoI Map of Pringgabaya Solar Farm

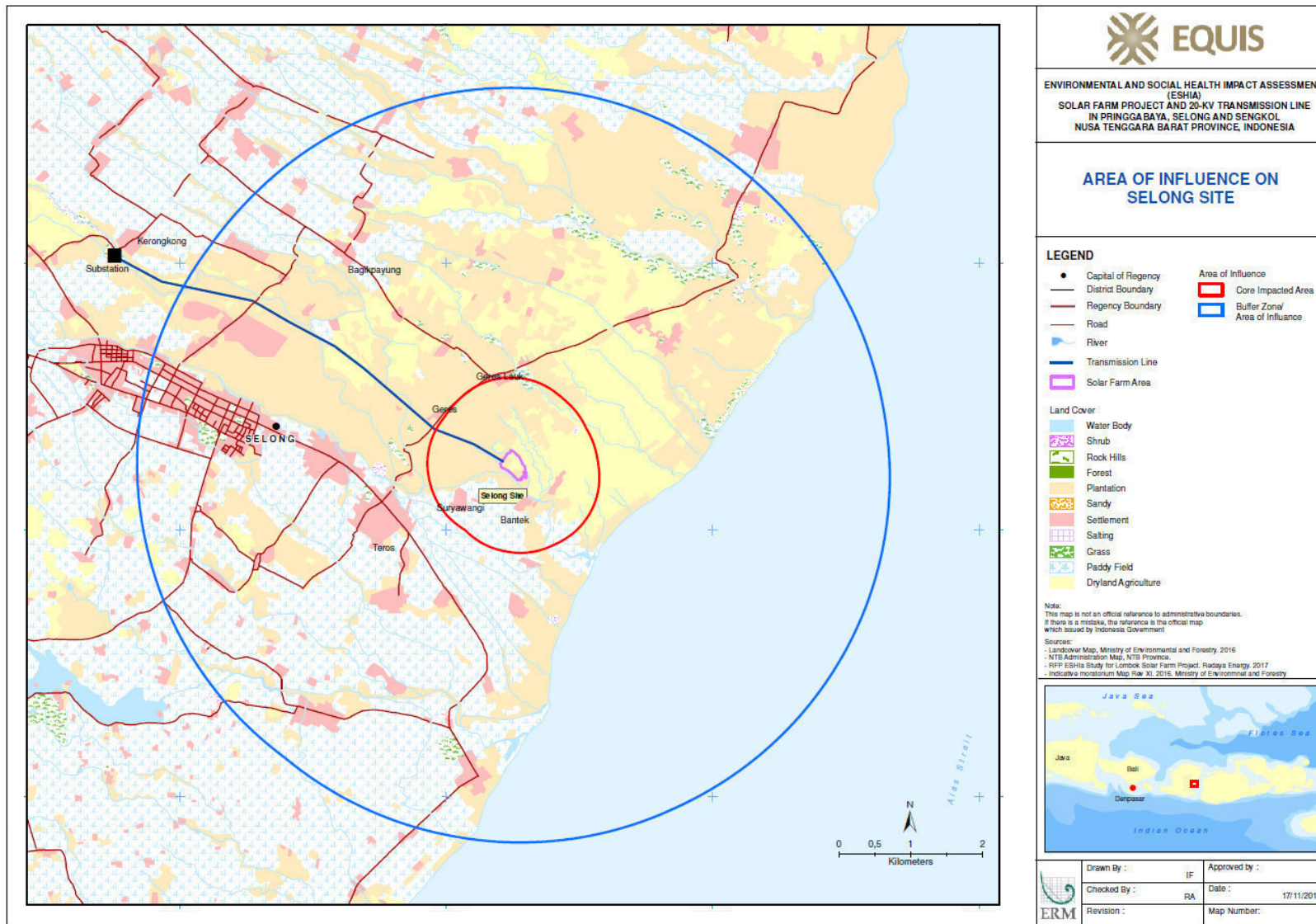


Figure 6-2 Aoi Map of Selong Solar Farm

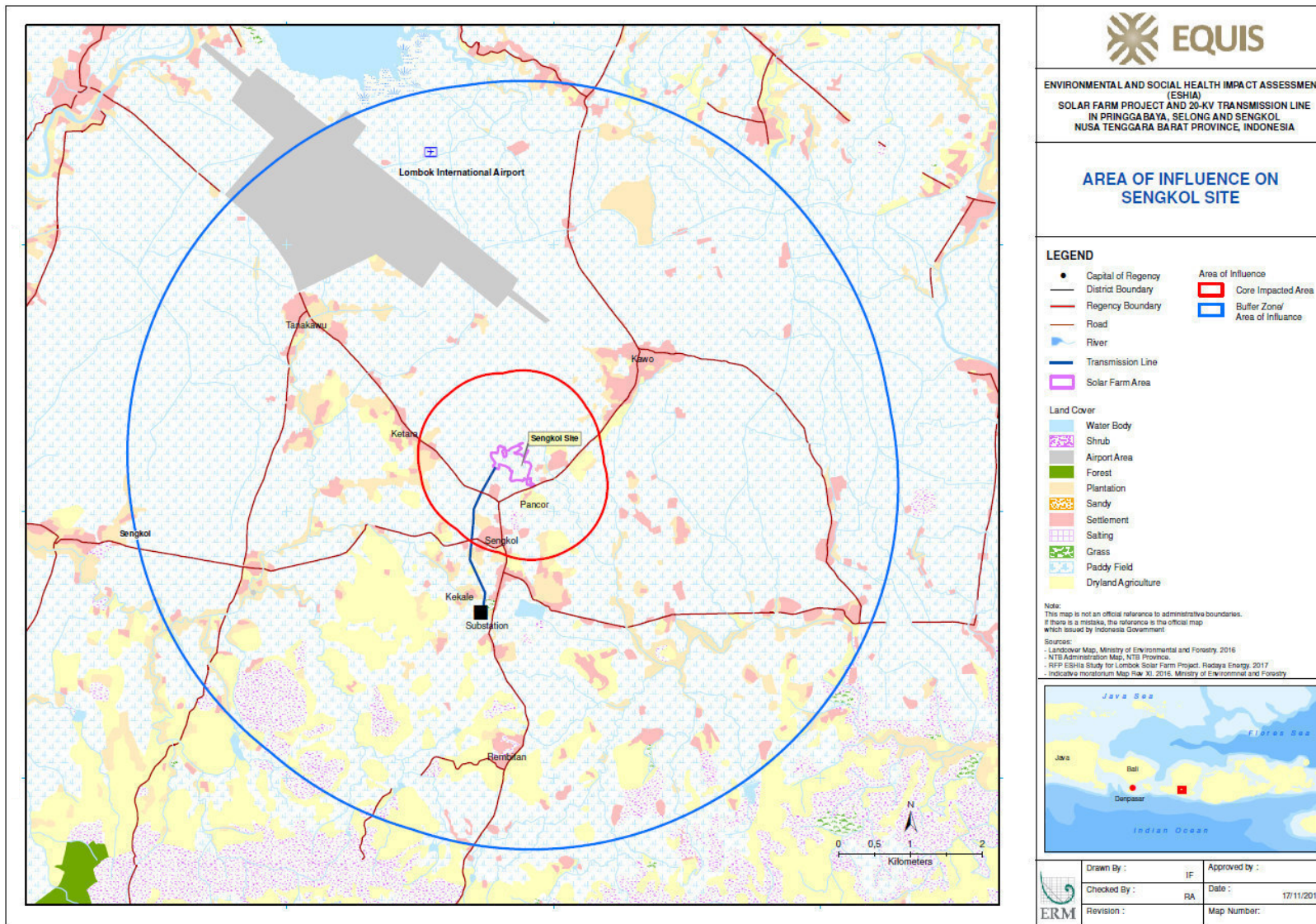


Figure 6-3 Aol Map of Sengkol Solar Farm

6.2 Environmental Baseline

The baseline conditions within the Project area have been characterized based on a consideration of secondary data from published sources, baseline data collected during preparation of the UKL-UPL by LPPM Universitas Mataram, and scoping site visit by ERM conducted on 25-28 July 2017. The following secondary information sources were drawn on throughout the environmental baseline chapter:

- IUCN Red List;
- Government Regulation of Indonesia Number 7 Year 1999;
- UKL -UPL baseline data, which include:
 - Climate (secondary data)
 - Topography (secondary data)
 - Terrestrial biodiversity (primary data)
- Field observations during ERM site visit

6.2.1 Climate

Lombok Tengah regency is a regency of Nusa Tenggara Barat Province which is located between 116° - 117° E and 8° - 9° S. Lombok Timur regency area is 2,679.88 km² consist of terrestrial area of 1,605.55 km² (59.91%) and sea area of 1,074.33 km² (40.09%), have a tropical climate.

Typically, there is a wet season in the Lombok Tengah regency from November to April. In Pringgabaya, Selong and Sengkol, September is the driest month with precipitation at 8 mm, 5 mm, and 14 mm respectively, whereas in January, the precipitation reaches its peak at an average of 200 mm, 254 mm, and 302 mm respectively.

Air temperature is relatively constant throughout the year, with a typical 3 °C range in the average high temperature during the year, and average low temperatures recorded for the region. The average air temperature for the year in Lombok Timur regency is 27.0°C.

6.2.2 Topography

The site topography in Pringgabaya and Selong is generally flat. The altitude of Pringgabaya site is 730 m above mean sea level (msl), whereas Selong site is 190 m above msl. Both sites can be classified as simple terrain.

In Sengkol site, the topography is mostly flat with some terraced area. The terraced landscape was not found to have irrigation function. The altitude of the site is 90 m above msl. The PV area in Sengkol can also be classified as simple terrain.

6.2.3 Hydrology and Drainage

Pringgabaya Site

Pringgabaya site is adjacent to a creek which is filled with river water during rainy season; the creek was dry by the time of the site visit in the end of July 2017 as can be seen in Figure 6-4 below. The creek crosses a village road which will be used as access for the mobilization of equipment and materials.

It is understood that local communities rely on groundwater wells (\pm 100 m depth) owned by Pringgabaya Utara village, which is located approximately 100-200 m from the site.



Figure 6-4 Creek Adjacent to Pringgabaya Site

Selong Site

The nearest river is located approximately 200 m from residential area in Geres sub-district. Most of the people in community use water from local water company (PDAM), however sometimes the water does not flow continuously. Therefore, most of the houses have a water tank to collect water from Belimbing river which is streamed through a channel.

Sengkol Site

A watercourse is located in the northern boundary of the site. During the visit in July 2017, this watercourse was filled with water but there was no visible flow (Figure 6-5).



Figure 6-5 Natural Watercourse near Sengkol Site

6.2.4 Biodiversity and Ecosystem Services

A flora/fauna survey was undertaken in 2016 by LPPM Universitas Mataram for all three sites. The survey consisted of a site walkover to confirm vegetation and likely habitats within the site while interviews with the local community were also conducted. Opportunistic observations of bird species and other fauna were also conducted.

6.2.4.1 Flora and Vegetation

Pringgabaya Site

The Project area is dominated by agricultural plants and some natural-grow wild plants. Seventeen flora species were identified in and around the project site. There are 12 cultivated plants and 5 other species are defined as wild plants that spread throughout Indonesia. Some wild plants were deliberately left due to their benefits for farmers like Doub Palm. There is no endemic flora species

identified and no flora species defined as significant conserved species according to IUCN Red List and Government Regulation No. 27 Year 1999.

Selong Site

The Project area is dominated by agricultural plants and some natural grow wild plants. Nine flora species were identified in and around the site with three cultivated plants and six wild plants that are commonly spread throughout Indonesia. There is no endemic flora species and no significant conserved flora species according to IUCN Red List and Government Regulation No. 27 Year 1999.

Sengkol Site

The Project area is dominated by agricultural plants and some natural grow wild plants. A total of 19 flora species were identified in and around the site. There is no endemic flora species and no significant conserved flora species according to IUCN Red List and Government Regulation No. 27 Year 1999.

6.2.4.2 Fauna

Pringgabaya Site

Fauna field observations in April 2016 was limited only to mammals, birds, herpetofauna (reptiles and amphibians), and insect. Observation results showed at least 45 fauna species were identified in the project site and surrounding areas. No endemic species are found in the area. All species listed have spread quite widely in Indonesia, especially in agricultural areas.

According to IUCN Red List, no significant conserved fauna species are identified. However according to Government Regulation No. 7 Year 1999, one species is classified as a protected species i.e. Banded linsang (*Priodon linsang*). Lizard (*Varanus sp*) species from *Varanus* genus found in the project site has potential to be regarded as protected species based on Indonesia regulations.

Selong Site

Field observations on the presence of fauna were conducted in December 2016 limited to mammals, birds, herpetofauna (reptiles and amphibians) and insects. Observations suggest there are at least 28 fauna species in the project and surrounding areas. no endemic species were found in the survey area. All species listed are spread quite widely in Indonesia, especially in dry land agricultural areas and also have good adaptation in this area. No fauna species are listed as protected species under Government Regulation No. 7 Year 1999 or under the IUCN Red List.

Sengkol Site

All species that recorded in the Sengkol project and surrounding area is the common species in cultivated area and no endemic species was identified. In this site, also no species that identified as species of concern (endangered or critically endangered) Based on IUCN Red List. However, Monitor lizard (*Varanus Sp*) which observed in this area potentially listed as protected species under Government Regulation No. 7 Year 1999.

6.2.4.3 Legally Protected Area and International Recognized Areas

The Project sites are located in areas that have been developed as agricultural land. The areas have been established as Other Use (APL) refers to the forestry status which means it can be converted for

Project activities. There is no protected area, protected forest or conservation forest directly within or near to the Project locations.

Given the considerable distance between the Project locations and Mount Rinjani National Park (5-6 km from Pringgabaya site; 17 km from Selong site; and 30 km from Sengkol site), bird biodiversity in Rinjani Area will not be affected by any Project activities.

Based on the migratory route by Burung Nusantara, there are no migratory areas close to the Project location. Based on the UKL-UPL documents, no migratory species were identified in the three Project areas.

6.3 Social Baseline

Information presented in this section has been obtained from published documentation available, confirmed with key informant interviews and field observations by the ESHIA team. The findings presented in this chapter will be used as a baseline to assess the potential impacts of the Project on social and health aspects and also to prepare necessary mitigation measures.

6.3.1 Demographics

6.3.1.1 Population

Population figures of the three villages of Project areas are summarized in the Table 6-1 below.

Table 6-1 Summary of Population Figures in the villages of Project Areas

Village	Household	Population			Sex Ratio	Area (km ²)	Population Density (person/km ²)
		Male	Female	Total			
Pringgabaya Utara	1,588	2,453	3,229	5,682	75.96	9.70	586
Geres	1,463	2,349	2,393	4,742	98.16	5.66	838
Sengkol	3,802	5,892	6,404	12,296	91	18.36	670

6.3.1.2 Growth and Migration

From three villages, the highest population growth per year is in Geres village with 0.25% per year. Meanwhile population growth is 0.15% and 0.11% respectively for Pringgabaya and Sengkol village.

Regarding the migration rate, there is no official data available for three villages. However, in Nusa Tenggara Barat, the common reasons for the migration are work or business. Lombok Timur is on the first rank of the largest pockets of Indonesian migrant workers in Indonesia. While Lombok Tengah is on the fifth rank. Lack of local employment in both regencies is a key reason why local people go overseas for work.

6.3.2 Religion

The majority religion of Pringgabaya Utara village is Islam accounting for approximately 99.8% of the total population in 2016 (the rest is Hindu, Christian and Catholic). The same situation was observed at Geres village where 100% of the population is Muslim. In Sengkol village 95.44 % of the population is Muslim (0.23% is Hinduism).

People in the regency typically have a strong religious nature, but also possess strong kinship and a sense of mutual cooperation. As such the potential for religious conflict or political turmoil in both regencies (Lombok Timur and Lombok Tengah) are considered to be low.

6.3.3 Education

Three villages have good distribution of education facilities, ranging from elementary school to private-owned universities and academies located in Lombok Timur regency. There is only one State-University (University of Mataram or UNRAM) located in Mataram City.

Elementary school level is the highest pass rate for people in both Lombok Tengah and Lombok Timur regencies.

6.3.4 Community Livelihood

The main livelihood source in the three villages (Pringgabaya Utara, Geres, and Sengkol) where the project is located is contributed from agriculture activities.

6.3.5 Labor Market

The data from BPS Lombok Timur regency in Figures (2017), mentioned the number of registered job seekers was 16,292 people, comprising 14,871 males and 1,421 females. Out of this number, most are elementary school graduates with 73 percent or 11,908 people. The remaining were 13.40 percent and 13.51 percent that includes junior high school and senior high school graduates, respectively.

Meanwhile, the data from BPS Lombok Tengah regency in Figures (2017), mentioned the number of registered job seekers in Lombok Tengah regency was 11,901 people, comprises 9,760 males and 2,141 females. Out of this number, most they are elementary school graduates with 52 percent or 11,908 people.

There is no data available for labour markets at the village and district level. However, the labour markets in Lombok Timur and Lombok Tengah regencies have a low education level hence typically enter into jobs such as construction workers or cleaning services.

6.3.6 Farming and Plantation

Lombok Timur Regency

Based on Pringgabaya Utara village profile in 2017, the rice field area is 152.96 hectares; the production of paddy is 8 tons per hectare or 1,224 tons in total. The other commodities are maize, corn and cassava. However, field observation showed there is no paddy field near the Project site. Most of the lands are dry land utilized for rain fed agriculture with main commodities being cassava, tobacco, coconut, and sweetsop fruit.

There is no data from Geres village regarding the paddy production. However, the data from BPS Labuhan Haji district in Figures 2016, indicated production of paddy is 15,734 tons for 3,588 hectares of rice field.

For livestock population, cows are the main products in Pringgabaya and Labuhan Haji districts. In Pringgabaya and Labuhan Haji districts (4,377 and 6,894 respectively).

All the cows are sold to the traditional market, exported to other districts or provinces, cooperatives and retailers. In particular during the Eid-Mubarak festive, there are many orders from outside West Nusa Tenggara (NTB) due to the known high meat quality.

Lombok Tengah Regency

Utilization of land in Lombok Tengah regency is mostly used for agriculture. Total dry field/garden area in 2016 was 23,122 hectares, and total area of wetland paddy and dryland paddy were 84,065 hectares and 6,674 hectares respectively. Therefore, the rice fields are mostly utilized by local households. In Lombok Tengah, there is no data available for paddy production from the village level to regency level.

Unlike Lombok Timur regency, people in Lombok Tengah also rely on the top three crops, coconut (9,982.99) kilograms, cashew (908.09 kilograms), and coffee (398.90 kilograms). In Sengkol village, cows are the most favorable livestock population with 2,158.

6.3.7 Poverty

Lombok Timur Regency

Considering the population in Lombok Timur regency, poverty has become a heavy burden, with about 18.46 percent or 216,000 people considered poor. Lombok Timur is ranked as having the second largest percentage of poor people. The categorization is decided by the local regency government (monthly income is Rp 382,861 or less).

Rapid observation in the Project location of Selong site revealed diverse economic profiles of the neighbouring communities. In the Geres Barat neighbourhood, some houses are made of bamboo sheets whilst some are adequately built with concrete materials. Random interviews with community members during the field visit informed that typically concrete houses belong to those who work overseas as migrant workers. Some females (teenager and adult) sold stones which have been crushed manually using hammers to get additional income.

Pringgabaya village is observed to be more developed. According to the village head, Pringgabaya village has various sources of income streams such as agriculture, stone crushing, and the power industry. These contribute to the availability of employment opportunities in the village. Regardless, Pringgabaya Utara village also receives subsidy programs from the national government in the health, education, and livelihood sectors.

Lombok Tengah Regency

The number of pre-prosperous and prosperous families in Lombok Tengah regency in 2016 (based on BPS Lombok Tengah regency in Figures 2017) totalled 147,370 pre-prosperous families contributing 15.80 percent of total population of Lombok Tengah regency. According to data from the Sengkol village authorities, as of 2016, out of 3,094 families in Sengkol village, 1,207 families are categorized as poor.

6.3.8 Socio-Cultural

6.3.8.1 Ethnic Groups Diversity

There was no statistical information on the population of ethnic groups and the diversity in Lombok Timur and Lombok Tengah regencies.

Eighty percent of Lombok Timur and Lombok Tengah regencies are from the Sasak Tribe. Further, there are diverse ethnic groups also living in the three villages (Pringgabaya Utara, Geres and Sengkol) from other provinces (East Java, Madura, and Bali).

6.3.8.2 Social/Customary Institutions and Figures

There are a number of respected key figures in Pringgabaya Utara, Geres and Sengkol village; religious leaders are the most respected, followed by government officials and education professionals.

Based on 2016 Sengkol village profile data, there were 9 village institutions available in Sengkol village such as customary institutions, farmer groups, PKK, Karang Taruna and Posyandu. Based on 2017 Pringgabaya Utara village profile data, there are 15 village institutions such as customary institutions, farmer groups, saving and loan cooperatives, PKK and Karang Taruna. There is no available information regarding village institutions in Geres village.

6.3.8.3 Women Role in Community

Women have an important role in the village, for example the Village Consultative Body or BPD or Badan Permusyawaratan Desa in Geres village has 2 females. This situation is contrary with the other two villages (Pringgabaya Utara and Sengkol) where there are no female representatives in the Village Consultative Body or BPD.

The Family Welfare Guidance/Pembinaan Kesejahteraan Keluarga (PKK) in three villages (Pringgabaya Utara, Geres and Sengkol) are active in terms of participating in the villages' development e.g. organizing the integrated health service (Posyandu) focusing on children and maternity health care.

6.3.9 Community Safety and Security

6.3.9.1 Transportation and Road Safety

In 2016, there were 518 cases of traffic accidents reported in Lombok Timur regency with 100 casualties (source: BPS Lombok Timur regency in Figures 2017). Whereas in Lombok Tengah regency in 2016, there were 184 cases of traffic accidents reported with 110 casualties (source: BPS Lombok Tengah regency in Figures 2017).

No official data on the number of traffic accidents at district and village levels of Lombok Tengah is available. Field observations show that the road conditions in the village and the surrounding area are adequate with no traffic congestion. Although few people use helmets when driving motorcycles.

6.3.9.2 Crime and Community Security Systems

In accordance with Pringgabaya Utara village profile data 2017, crime such as robbery, theft, or violence cases are minimal in the village. While in Sengkol village, based on Sengkol village profile data in 2016, there were numbers of crime cases, such as theft, gambling and excessive alcohol consumption has been reported to often cause fighting between young men. There is no information regarding any crime cases in Geres village.

In terms of community, crimes are processed internally by involving the village government if they cannot resolve the issue it is dealt with via the police or courts.

6.3.9.3 Community Perceptions of the Project

Based on UKL/UPL documents the community members of Sengkol and Geres villages are aware of the Project. It also concluded there are both positive and negative attitudes towards the Project. The community expects that the Project will provide benefits through local employment, and other economic opportunities for increasing harvesting of local agriculture products.

However, some concerns were also recorded related to the road traffic accidents during construction, potential road damage caused by potential increased number of heavy equipment and vehicles as well as noise, dust and vibration. Radiation was also raised as a concern from the solar panels.

6.3.10 Community Health

6.3.10.1 Key Health Indicator

Data from the Lombok Tengah regency in Figures (2017) identified that the life expectancy rate in Lombok Timur regency in 2016 was 64.73 years. While in Lombok Tengah regency in 2016 was 65.01 years. Those figures were slightly below the West Nusa Tenggara Province life expectancy rate in 2016 which was 69.35 years. This number has increased from the previous year, i.e. 65.38 in 2015. According to the National Statistics Office, the life expectancy at the national level in 2010-2015 was at 70.1.

Regarding mortality rates, BPS Labuhan Haji district in Figures 2016, Geres village indicated 13 people (11 males and 2 females) had died. In Pringgabaya Utara, BPS Pringgabaya district in Figures 2016, mortality rates indicated 25 people; consist of 15 males and 10 females died. No official data records are available on mortality rates at Sengkol village.

6.3.10.2 Disease Status

The common cold is the most prevalent disease in Lombok Timur regency (which also covers Pringgabaya Utara and Geres villages); an increase from the previous year (2015) which amounted to 72,874 cases. Meanwhile, fever is the most prevalent disease in Lombok Tengah regency (which also covers Sengkol village).

6.3.10.3 Water Availability

Local people in Lombok Tengah regency rely on water distributed from PDAM (regional water company). In 2015 there were 42,470 household customers recorded by PDAM.

Similar with Lombok Tengah, people in Lombok Timur regency also rely on water distributed by PDAM. In 2015, there were 20,177 household customers benefitting from PDAM with a total water distributed reached 419,842 m³.

6.3.10.4 Environmental Sanitation

Access to latrines, waste disposal facilities (SPAL) and landfills (SPS) is still low. The number of people who access proper latrines until 2015 has reached 824,156 people or 70.80% of total population in Lombok Timur. Waste disposal in Lombok Timur regency is not well managed. Only a small percentage of people are served by garbage trucks, so most people throw garbage in any place including river, sewer or drainage. In addition, the river or drainage is also used as a place to defecate the community.

However, based on field survey, team found a house utilises water sources from rain fed water reservoir and water hose that connects to local PDAM.

6.3.10.5 Waste Management

Based on the field observation, generally the community disposes of the waste in their backyards/gardens. This condition shows that waste is not well managed and may result in future environmental and public health issues, especially with the potential additional population of the village once the Project starts construction.

6.3.10.6 Health Facility and Infrastructure

With regard to health facilities, in Pringgabaya Utara village of Pringgabaya district, it has two traditional midwives (dukun beranak) and 11 Posyandu or Integrated Health Post. Geres village of Labuhan Haji district, has one midwife, one Pustu or Supported-Health Care Centre, one Polindes or village Maternity Hut and five Posyandu.

In Lombok Timur regency, there are three hospitals which consist of one regional public hospital (RSUD R Sudjono), two private hospitals.

In Sengkol village of Pujut district, the health facilities in that village, there were one Puskesmas, and three doctor practices. While number of health personnel in Sengkol village, there were 18 Health Chiefs, three midwives, and 10 trained traditional midwives.

In Lombok Tengah regency, there are three hospitals, one regional public hospital (RSUD Praya), and one private hospital.

7 Environmental and Social Management

This ESHS-MS Manual is developed to address the issues identified in the UKL-UPL and ESHIA, and provide measures and actions to mitigate/manage potential adverse impacts, to enhance positive or beneficial impacts based on the following mitigation hierarchy:

- Avoidance;
- Minimization; and
- Compensation/offset

PT ITA, PT ITB, and PT ITC shall allocate financial resources and designate responsible personnel within the organization to implement the management program. A procedure to adjust the ESHS-MS Manual and to adapt actions and mitigations based on the environmental and social monitoring data shall be developed.

7.1 Environmental and Social Management Framework

The environmental management framework allows for the identification of environmental and social impacts, the development of mitigation and/or management actions, and the establishment of a structure to ensure the effective implementation and adoption of mitigation and management measures. It is illustrated in the Figure 7-1 below.

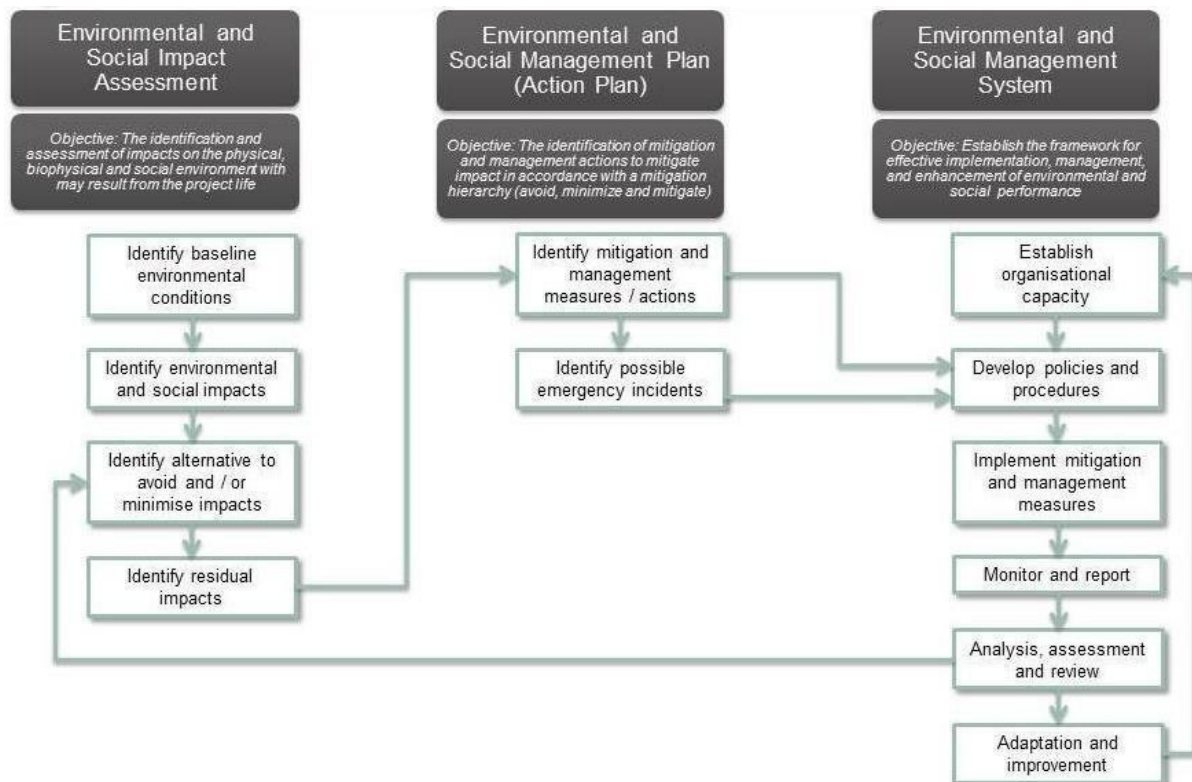


Figure 7-1 Environmental and Social Impact Assessment and Management

7.2 Environmental and Social Impact Assessment and Management

Environmental impacts associated with the Project have been identified as part of UKL-UPL study conducted by LPPM Universitas Mataram and ESHIA study conducted by ERM. Based on the results of scoping and assessment in those studies, the following environmental impacts are identified and predicted during construction and operation of the Project:

Table 7-1 Significance of the Identified Impacts

No.	Impact Description	Significance of impact	Residual Impact
1	Impacts from loss of land resource	Negligible	Negligible
2	Impact to local economy from employment and business opportunities during the project construction and operation	N/A	N/A
3	Construction impacts on air quality	Minor	Minor
4	Construction impacts on ambient noise level	Minor	Minor
5	Construction impacts from vegetation clearing	Minor	Minor
6	Construction impacts on habitat and wildlife	Minor	Negligible
7	Construction impacts on soil erosion and surface water quality	Negligible	Negligible
8	Impacts from project construction and operation on water demand	Moderate	Minor
9	Spills and soil/water contamination	Minor	Negligible
10	Construction impacts on occupational health and safety of construction workers	Moderate	Minor
11	Construction impacts on occupational health and safety of operation workers	Minor	Negligible
12	Impact to community safety	Minor	Minor

7.2.1 Impacts from loss of land resource

The land for three solar farm sites is being purchased from 47 landowners. Land acquisition is complete and landowners who worked in agriculture reportedly used the compensation money to buy cattle as an alternative livelihood or purchased replacement land in other locations.

The magnitude of this impact is considered to be small, given that the land used for rain-fed agriculture activities affected 12 people and in a relatively small area in relation to the total area of arable land in the area. The nature of the impact is predicted to be temporary given that existing landowners have already purchased replacement land. The availability of replacement land is high and there are alternatives of land for farming available nearby the location for the land owners, sharecroppers, and land users, resulting in a low Sensitivity. The significance of impact is therefore assessed as being *Negligible*.

The Project will implement the following in order for the Project to meet IFC PS:

- Ensure proper documentation for the consultation and negotiation process with landowners.
- Ensure documentation to demonstrate fair compensation rates.
- Develop and implement grievance mechanism for concerns related to the land acquisition to be channeled. The system will be informed to the affected communities and made easily accessible. Relevant grievances will be addressed immediately.
- Develop and implement corporate social responsibility programs where the affected people will be prioritized as the beneficiaries.
- Where possible, the Project will prioritize the affected people to be employed by the Project during construction phase.

The residual impact is then considered to be *Negligible*.

7.2.2 Impact to local economy from employment and business opportunities during project construction and operation.

The project is expected to create short-term and long-term beneficial impacts on the local economy and employment. Construction and maintenance of infrastructure of solar PV during operation activities can be an adequate means to create short-term jobs and build long-term capacity for local development. Local job creation for skill and unskilled labour is needed during construction and operation activities. However, Project's positive impact to the local economy and employment is limited to the project footprint area, where considered geographical conditions of three villages located adjacent to the project.

To optimise the Project benefits to local community through employment and business opportunities, the Project will implement the following additional mitigation measures:

- Have a clear stipulation of using local labor in the EPC contract and instruct the contractor to prioritize qualified local people as construction workers in accordance with the needs of the Project.
- Conduct due diligence throughout local suppliers to identify and evaluate the quality of services and products provided by local suppliers in line with the required standards.
- Determine numbers of skilled, semi-skilled and unskilled labor requirements for each phase and assess local resource levels through involving local village heads, customary heads or community leaders.
- Provide and communicate clear information about the Project's requirement related to employment and business opportunities and prioritize locals where feasible.
- Implement Project specific training and community development programs to increase the skills of local workers and the capacity of local businesses to meet the needs and requirements of the Project.
- Workers will have contracts in place prior to commencement setting out working conditions, terms of employment and EHS responsibilities.
- Prior to the construction phase is ended where the project will reduce number of labors during operation phase, the project will carry out an analysis of alternatives to retrenchment. The retrenchment plan will be developed and implemented to reduce the adverse impacts of retrenchment on workers.

- A grievance mechanism will be developed for workers and included in the ESMS. Workers will be informed about this mechanism at the time of hiring. Grievance mechanism will be extended to non-employee workers in future.

7.2.3 Impacts on air quality

Air quality impacts are likely to be restricted to increased dust generation and small and heavy vehicle emissions during construction. Project operations would not impact air quality emissions of any particular note. Onsite earth works and deliveries will occur for a period of eight months and will result in only a temporary generation of air quality impacts. Site civil works are confined to the site and although the nearest human receptors are located within 500 m for all three sites, the nearest houses distance from Pringgabaya, Selong, and Sengkol sites are located in the range of 120 – 250 m for each site. The significance of impacts on air quality is expected to be *Minor*.

Mitigation measures:

- Preventive measures such as storage of construction under cover, covering of construction materials during
- Emissions from the emergency generator set and other stationary machines will be controlled by ensuring that the engines are always properly tuned and maintained.
- Minimize stockpiling by coordinating excavations, spreading, re-grading and compaction activities;
- Speed of vehicles on site will be limited to 10-15 km/hr which will help in minimizing fugitive dust emissions due to vehicular movement;
- Cease or phase down work if excess fugitive dust is observed. Investigate the source of dust and ensure proper suppression measures;
- Proper maintenance of engines; and
- Idling of vehicles and equipment will be prevented
- Ambient air monitoring during construction period to be established.

It is expected that the use of dust suppression on access roads, and exposed areas onsite through the watering of roads used during dry periods will assist in managing potential air quality impacts. Residual impacts are expected to remain as *Minor* and not of significance.

7.2.4 Impacts on Ambient Noise Level

Noise generating activities are likely to occur during construction and as a result of site clearing, site establishment and civil works, and PV field installation and construction. Construction will occur for a period of approximately eight months and generally during the hours of 7am until 6 pm, however there is a potential to work at night.

Project construction is unlikely to significantly increase noise above background conditions. Noise level increase during construction will generally occur from 7am until 6 pm every day, so it is unlikely that the activity will cause noise disturbance during night time under routine conditions. With the nearest residential receptor located in the range of 120 – 250m, the significance of impact is assessed as being *Minor*.

Implementation of the following mitigation measures is recommended during construction activities to minimize the impact of noise increase which is generated:

- No night-time (6pm – 7am) transportation or construction activities under routine conditions;
- All the noise generating equipment such as emergency generator sets, batching plant etc. to be sited away from receptors such as settlements;
- High noise activities will be undertaken over short periods and where possible scheduled to avoid simultaneous operation of high noise generating plant;
- Complaints tracking and grievance log will be established to address community complaints; and
- Noise monitoring program to be established

While implementation of the above measures is likely to be able to assist in managing potential impacts, the residual impact significance is expected to remain as *Minor*.

7.2.5 Impacts from vegetation clearing

Land clearing will occur within a total area of 31.8 Ha. In Pringgabaya and Selong, the vegetation is modified habitat consisting of predominantly dryland plantation with corn and cassava. In Sengkol the vegetation is also modified and consists of mostly rice field and plantation with paddy, coconuts, and cassava dominant.

The Project would affect a small area of vegetation and this is unlikely to affect the viability or function of this vegetation type. In addition, the vegetation type is modified and is unlikely to be of significant ecological importance. Therefore, the significance of the impact from land clearing is assessed as negative and *Negligible*.

As vegetation clearing cannot be avoided, therefore a number of management and monitoring measures will be put in place to ensure impacts associated with vegetation clearing are reduced and do not result in a disturbance to the surrounding vegetation:

- Vegetation clearing only in designated areas for the Project footprint;
- Restricting work to designated/cleared boundaries;
- Topsoil will be stored separately during clearing and will be used to fill and level the area once grubbing activities have been completed, thereby maintaining the seed bank;
- No disturbance to vegetation outside marked areas; and
- Undertaking site revegetation to assist with soil stabilization, where possible; and
- On completion of construction activities, land used for temporary facilities will be restored to the extent possible.

While the management measures listed above will assist in managing vegetation clearing activities and ensuring impacts on surrounding vegetation are reduced, the significance of residual impact remains as *Minor*.

7.2.6 Impacts on habitat and wildlife

The habitat that will be affected in the three project areas are dryland farming and paddy fields which are modified habitat. Habitat with this type of vegetation is common and widespread throughout the surrounding area, with the Project area representing a small proportion of the wider available habitat. Loss of this habitat will not cause a substantial change in species population. Species that presence in

this area will be able to move and adapt to surrounding area of project that have similar habitat. The significance of impact is deemed to be *Minor*.

In addition to the mitigation measures outlined for the clearance of vegetation that will also assist in managing habitat loss, the following will further manage the impact on habitat and species:

- Worker training on wildlife through induction, posters.
- Establishment and implementation of a clearance protocol to manage encounters with fauna;
- Apply no hunting and no poaching policy inside project area;
- Strict prohibition on use of fuel wood and shrubs from nearby areas as fuel;
- Non-constructed area will be rehabilitated and revegetated as soon as land clearing and land preparation has been completed; and
- Local species should be prioritized in rehabilitation and re-vegetation program.

The impact of loss of habitat will be limited in the project area and the residual impact is judged to be *Negligible*.

7.2.7 Soil erosion and surface water quality impacts

The removal of stabilized top soil has the potential to result in slope destabilization and increased soil erosion. Soil erosion has the potential to result in increased sedimentation in surface water runoff, and potential impact to surface water quality.

The land use change will be primarily for PV field, main station, inverter station, and internal roads. The diversion of land for solar facility will lead to a permanent change in land use. This change has the potential to affect run off when raining. The run off may carry soil to surface waters and increase the turbidity, Total Dissolved Solids (TDS), Total Suspended Solids (TSS) in the water body and downstream. However, based on climate data, the highest rain fall will be in January and December (two months in a year). On consideration of the low rainfall levels in the area, the impact significance is considered to be *Negligible*.

It is expected that the following industry standard management and mitigation measures will be implemented by the Project. These are expected to manage the volumes of erosion estimated to occur as a result of clearing:

- Preparation and implementation of a soil and erosion management plan during construction to incorporate requirements such as use of dust suppression, soil stabilization during construction and storm water and sediment management and control;
- Vegetation cover will be maintained for as long as possible in order to prevent the erosion (water) of soil.
- Solid stabilization to be implemented following completion of construction, this may include establishment of grass cover or other forms of ground cover across the site;
- Implementation of an operational runoff and storm water drainage system to control runoff volumes; and
- Topography shall be restored to the extent possible and re-vegetated to prevent soil erosion to the extent possible.

The significance of residual impacts will be *Negligible*.

7.2.8 Impacts from project water demand

Water will be required for civil work during the construction of the foundation and building structure of all facilities, as well as for worker needs water for their daily use. The Project's water use has the potential to result in decreased water availability for other users, particularly in the Project area where there are known water resource challenges.

Based on information provided in Section 5.5 and Section 6.2.3, the sensitivity of the water resource in the area is therefore considered as Medium at the three locations due to the fact that the Project will require permit for the use of water which will consider the capacity, and community's access to alternative sources of water. The potential impact on water resource due to 8-month construction activities and maximum usage of water for operation is considered as Medium, resulting in an impact significance of *Moderate*.

The impact is considered moderate due to ground water use that should first apply and obtain permit from local government referring to government regulation No. 121 of 2015 regarding usage of water resources. The further study is required to assess the nature and potential impact on water resources at the Project location.

The residual impact is then considered to be *Minor*. The project proponent/EPC will follow the requirement in the water usage permit.

7.2.9 Spills and soil/water contamination

Soil contamination during the construction phase may result from leaks and spills of oil, lubricants, or fuel from heavy equipment, improper handling of chemical/fuel storage and wastewater. These are required in small quantities during the construction phase; such spills could have an impact on soil and water quality, but are expected to be localized in nature. The impact significance is considered to be *Minor*.

Mitigation measures:

- Spill control measures such as the storage and handling of chemicals and fuel in concrete areas with secondary containment will be implemented to minimize impacts in the event of a spill;
- Use of spill control kits to contain and clean small spills and leaks;
- Transport vehicles and equipment should undergo regular maintenance to avoid any oil leakages; and
- Unloading, loading and refueling protocols are required for the transfer of diesel, oil and used oil respectively and workers trained to prevent/contain spills and leaks.

The significance of impact will be reduced to Negligible on effective implementation of the mitigation measures.

7.2.10 Impacts on occupational health and safety of workers

Occupational Health and Safety (OHS) of workers is important during construction and operation phases where involve local and migrant workers. The activities include in the construction phase that have potentially impact to OHS of workers are land clearance for establishment of labor camp, batching plant, access road, mobilization of equipment, solar PV installation, and other activities during construction phase. In addition, operation of solar PV and its maintenance also have risks and impacts to OHS of workers in their daily activities. Therefore, a primary area of concern is the potential

adverse impact on workers, since they are the first people who are exposed to the potential hazards of construction and operation activities.

The Project has planned a good practice of occupational health and safety policy and procedure. Impacts are expected to be temporary or permanent as they depend on case-by-case events, while the nature of proposed activities are likely to significantly reduce number of accidents and incidents. The significance of impact is therefore assessed as being *Moderate* during construction phase and significance of impact during operation phase is assessed as *Minor*.

The above identified risks are typical on any construction site of this nature therefore it is anticipated that the EPC will have the necessary management measures in place to manage potential occupational health and safety (OHS) issues under their responsibility. Appropriate OHS procedures are also expected to be in place to align with the Indonesia regulations, as well as IFC PS 2. The procedure will include, at minimum, the following measures:

- Develop and implement a health and safety plan to be followed throughout all phases of a project;
- Provide occupational health and safety orientation training to all employees consisting of basic hazard awareness, site-specific hazards, safe working practices, and emergency procedures;
- The EPC will be committed to ensure all H&S measures are in place to prevent accidents and reduce the consequences of non-conformance events;
- The EPC will provide training, awareness and supervision to ensure all of its construction workers comply with the OHS procedures;
- The EPC will provide all appropriate resources i.e. personal protective equipment (PPE) to all workers onsite; and
- An emergency response procedure and infrastructure will be available on site to ensure provision of first aid for personnel in case of an emergency.

As a result of the implementation of the proposed additional measures, the residual impact associated with occupational health and safety during construction phase is considered as *Minor* and residual impact in operation phase is considered as *Negligible*.

7.2.11 Impacts to community safety

Construction Phase – Throughout this phase there will be many potential health and safety risks to the communities in the area. These include risks associated with increased traffic and the influx of workers. The specific interactions of influx workers on local communities are discussed further here. It is recognized that there will population influx to the area from a variety of sources including domestic and international sources whether seeking formal or informal; direct or supply chain related jobs. The interactions between the various stakeholders will determine the level of impact.

Operations Phase – Permanent staff employed for normal operations will reside the project areas. Similar issues for permanent workers and their impact on local communities exist although on a much smaller scale.

The magnitude of impact on Community Health, Safety and Security is considered to be Small. Sensitivity is assessed as being Medium, considering there are many influx workers who work during

construction phase in comparison to a small local population. The significance of impact is therefore assessed as being *Minor*.

Mitigation measures:

It is assumed that a range of management measures (that adhere to international best practice approaches around occupational health and safety) will be in place. In addition, the Project is expected to implement the following additional mitigation measures:

Vehicle/Equipment/Personnel Movements:

- Consultation with the communities on key Project traffic routes, timing of peak movements, type of vehicles and heavy equipment and provision of road safety awareness to the surrounding community, through corporation with the local police;
- Enforce speed limit regulations to all Project construction vehicles, along with an emergency response procedure should any incidents with other road users or pedestrians occurs; and
- The proposed grievance mechanism should be accessible for all villagers to report concerns associated with health and safety. Where complaints on accidents or near misses are submitted the Project will undertake an immediate investigation.

Influx on Non-Local Workers:

- Compulsory medical examinations for Project workers, including contractors to ensure they are fit for work and to monitor the prevalence of communicable diseases detected through annual medical check-ups;
- Zero tolerance towards inappropriate behavior from and amongst the workforce;
- Conduct an induction and training on the Project's Code of Conduct regarding do's and don'ts in relation with interaction with locals;
- Establish a grievance mechanism and accessible for all community groups to report concerns associated with potential Project health impacts. Where complaints are submitted the Project will undertake an immediate investigation;
- Regular engagement with local authorities relevant to crime (local police) or other social problems (e.g. village leaders) for prevention of issues and for mitigation when issues arise; and
- Conduct appropriate workers-community engagement such as sporting or cultural events to improve understanding and cohesions between non-local workers and the surrounding communities.

As a result of implementation of proposed additional measures, the residual impact on the community associated with non-local presence to community health will remain *Minor*.

7.3 Environmental and Social Management Plan (ESMP)

This section outlines the construction ESMP which will be developed for future construction and operation of the Project. Specific standalone tables are provided for the following requirements:

- Land use management;
- Soil erosion and contamination management;

- Air quality management;
- Noise management;
- Terrestrial biodiversity;
- Surface water and sedimentation management;
- Social management; and
- Occupational and community health and safety.

These tables detail minimum requirements for mitigation measures that will be implemented during construction and operation to avoid, or mitigate environmental or social impacts as a result of the Project.

Table 7-2 Pre-Construction Environmental and Social Management Plan

Activity/ Aspect	Potential Impacts	Mitigation Measures	Implementation Responsibility	Means of Verification that Mitigation has been met	Timing and Frequency of Monitoring	Monitoring Responsibility	Supervision responsibility	Reporting Requirement
Social								
Survey and Investigation	The emergence of public perception, either positive or negative, regarding the solar farm development plan	Provide the necessary information to public about the solar farm development plan	PT ITA PT ITB PT ITC	Conduct interview to identify any public involvement, especially public figure, religious leaders or any other leaders such as head of village, to receive the positive or negative public perception regarding the presence of solar farm development project.	Once during pre-construction phase	PT ITA PT ITB PT ITC	<ul style="list-style-type: none"> - Pringgabaya village officials - Geres village officials - Sengkol village officials - Pujut district officials - Environmental and Hygiene agency of Lombok Timur - Land agency of Lombok Timur and Lombok Tengah 	UKL-UPL Implementation report every 6 months
Land procurement	The emergence of public perception, either positive or negative, regarding the solar farm development plan	<ul style="list-style-type: none"> - Conduct land acquisition periodically - Accommodate suggestions, opinions and responses from community related to the solar farm development plan 	PT ITA PT ITB PT ITC	<ul style="list-style-type: none"> - Observation - Questionnaire - Descriptive and qualitative data analysis - Conduct interview to identify any involvement of community, religious leaders and head of village, to receive the positive public perception on the project. 	Once during pre-construction phase	PT ITA PT ITB PT ITC	<ul style="list-style-type: none"> - Pringgabaya village officials - Geres village officials - Sengkol village officials - Pujut district officials - Environmental and Hygiene agency of Lombok Timur - Land agency of Lombok Timur and Lombok Tengah 	UKL-UPL Implementation report every 6 months
Land procurement	Economic benefit of increased land and	<ul style="list-style-type: none"> - Conduct land acquisition periodically 	PT ITA	<ul style="list-style-type: none"> - Observation - Questionnaire 	Once during pre-	PT ITA	<ul style="list-style-type: none"> - Pringgabaya village officials 	UKL-UPL Implementation

Environmental, Social, Health and Safety Management System (ESHS-MS)

Activity/ Aspect	Potential Impacts	Mitigation Measures	Implementation Responsibility	Means of Verification that Mitigation has been met	Timing and Frequency of Monitoring	Monitoring Responsibility	Supervision responsibility	Reporting Requirement
	building value which may reduce the number of complaints received due to land acquisition	Accommodate suggestions, opinions and responses from community related to the solar farm development plan	PT ITB PT ITC	<ul style="list-style-type: none"> - Descriptive and qualitative data analysis - Conduct interview to identify any involvement of community, religious leaders and head of village, to receive the positive public perception on the project. 	construction phase	PT ITB PT ITC	<ul style="list-style-type: none"> - Geres village officials - Sengkol village officials - Pujut district officials - Environmental and Hygiene agency of Lombok Timur - Land agency of Lombok Timur and Lombok Tengah 	report every 6 months
Public socialization and consultation	The emergence of public perception, either positive or negative, regarding the solar farm development plan	<ul style="list-style-type: none"> - Accommodate suggestions, opinions and responses from community related to the solar farm development plan - Provide solution or input to public suggestions, opinions or responses on the solar farm development plan 	PT ITA PT ITB PT ITC	Monitoring is conducted by counselling or taking personal approach to the farmers within the planned solar farm area and/or to the community that is impacted by the project activity through the head of village within the related district.	Once during pre-construction phase	PT ITA PT ITB PT ITC	<ul style="list-style-type: none"> - Pringgabaya village officials - Geres village officials - Sengkol village officials - Pujut district officials - Environmental and Hygiene agency of Lombok Timur - Land agency of Lombok Timur and Lombok Tengah 	UKL-UPL Implementation report every 6 months
Public socialization and consultation	Economic benefit of increased land and building value which may reduce the number of complaints received	<ul style="list-style-type: none"> - Accommodate suggestions, opinions and responses from community related to the solar farm development plan - Provide solution or input to public suggestions, opinions 	PT ITA PT ITB PT ITC	Monitoring is conducted by counselling or taking personal approach to the farmers within the planned solar farm area and/or to the community that is impacted by the project	Once during pre-construction phase	PT ITA PT ITB PT ITC	<ul style="list-style-type: none"> - Pringgabaya village officials - Geres village officials - Sengkol village officials - Pujut district officials 	UKL-UPL Implementation report every 6 months

Environmental, Social, Health and Safety Management System (ESHS-MS)

Activity/ Aspect	Potential Impacts	Mitigation Measures	Implementation Responsibility	Means of Verification that Mitigation has been met	Timing and Frequency of Monitoring	Monitoring Responsibility	Supervision responsibility	Reporting Requirement
	due to land acquisition	or responses on the solar farm development plan		activity through the head of village within the related district.			<ul style="list-style-type: none"> - Environmental and Hygiene agency of Lombok Timur - Land agency of Lombok Timur and Lombok Tengah 	
Permit compliance	The emergence of public perception, either positive or negative, regarding the solar farm development plan	Mitigation is conducted by counselling or taking a personal approach to the farmers within the planned solar farm area and/or to the community that is impacted by the project activity through the Head of Village within the related district.	PT ITA PT ITB PT ITC	<ul style="list-style-type: none"> - Observation - Questionnaire - Descriptive and qualitative data analysis - Conduct interview to identify any involvement of community, religious leaders and head of village, to receive the positive public perception on the project. 	Once during pre-construction phase	PT ITA PT ITB PT ITC	<ul style="list-style-type: none"> - Pringgabaya village officials - Geres village officials - Sengkol village officials - Pujut district officials - Environmental and Hygiene agency of Lombok Timur and Lombok Tengah - Land agency of Lombok Timur and Lombok Tengah - Investment Board and One Stop Service Centre of Lombok Timur and Lombok Tengah - Regional Disaster Management agency of Lombok Timur and Lombok Tengah - Public Works and Spatial Planning agency 	UKL-UPL Implementation report every 6 months

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Activity/ Aspect	Potential Impacts	Mitigation Measures	Implementation Responsibility	Means of Verification that Mitigation has been met	Timing and Frequency of Monitoring	Monitoring Responsibility	Supervision responsibility	Reporting Requirement
Land Use Changes								
Land acquisition	Decreased income from farming activities resulted from the land acquisition	<ul style="list-style-type: none"> - Ensure proper documentation for the consultation and negotiation process with land owner; - Ensure documentation to demonstrate fair compensation rates; - Develop and implement grievance mechanism for concerns related to the land acquisition to be channeled. The system will be informed to the affected communities and made easily accessible. Relevant grievances will be addressed immediately; - Develop and implement corporate social responsibility programs where the affected people will be prioritized as the beneficiaries; and - Where possible, the project will prioritize the affected people to be employed by the Project during the construction phase. 	PT ITA PT ITB PT ITC	<ul style="list-style-type: none"> - Documentation in place - Visual observation on site - Period monitoring through audit and review of effectiveness of CSR program 	Once during pre-construction phase	PT ITA PT ITB PT ITC	PT ITA, PT ITB, PT ITC Community Relations/CSR Officer	<ul style="list-style-type: none"> - CSR program report including its audit report - Number of affected people employed

Table 7-3 Construction Environmental and Social Management Plan

Activity/ Aspect	Potential Impacts	Mitigation Measures	Implementation Responsibility	Means of Verification that Mitigation has been met	Timing and Frequency of Monitoring	Monitoring Responsibility	Supervision responsibility	Reporting Requirement
Local Economy and Employment								
Procurement of labor	Increase of job opportunity and income	<ul style="list-style-type: none"> - Prioritizing the local workforce, especially for unskilled workforce to be employed according to the qualification and requirements needed - Supervise the recruitment process by the contractor in accordance with Law No. 7 Year 1981 	PT ITA PT ITB PT ITC Contractor	<ul style="list-style-type: none"> - The triangulation approach includes observation, interview and secondary data collection activities - Preparing employment reports 	During construction phase	PT ITA PT ITB PT ITC Contractor	<ul style="list-style-type: none"> - Manpower and Transmigration agency of Lombok Timur and Lombok Tengah - Environmental and Hygiene agency of Lombok Timur 	UKL-UPL Implementation report every 6 months
Procurement of labor	Social gap/ inequalities	<ul style="list-style-type: none"> - Prioritizing the local workforce, especially for unskilled workforce to be employed according to the qualification and requirements needed - Social issue will arise as a result of local community that fail during the recruitment process 	PT ITA PT ITB PT ITC Contractor	The triangulation approach includes observation, interview and secondary data collection activities	During construction phase	PT ITA PT ITB PT ITC Contractor	<ul style="list-style-type: none"> - District government and community - Environmental and Hygiene agency of Lombok Timur 	UKL-UPL Implementation report every 6 months
Procurement of labor	Social issue	Provide and communicate clear information about the Project's requirement related to employment and business	PT ITA PT ITB PT ITC	The triangulation approach includes observation, interview and secondary data collection activities	During construction phase	PT ITA PT ITB PT ITC	<ul style="list-style-type: none"> - Community and religious leaders - Local community - Local police 	UKL-UPL Implementation report every 6 months

Environmental, Social, Health and Safety Management System (ESHS-MS)

Activity/ Aspect	Potential Impacts	Mitigation Measures	Implementation Responsibility	Means of Verification that Mitigation has been met	Timing and Frequency of Monitoring	Monitoring Responsibility	Supervision responsibility	Reporting Requirement
		opportunities and priorities locals where feasible	Contractor			Contractor	- Environmental and Hygiene agency of Lombok Timur	
Construction of solar farm and its supporting facilities	Local business opportunity	<ul style="list-style-type: none"> - Conduct due diligence throughout local suppliers to identify and evaluate the quality of services and products provided by local suppliers in line with the required standards; - Provide and communicate clear information about the Project's requirement related to employment and business opportunities and prioritize locals where feasible. 	PT ITA PT ITB PT ITC Contractor	<ul style="list-style-type: none"> - Periodic monitoring through audit and review of contractors - Periodic monitoring through audit and review throughout local suppliers who provide services to company - Periodic monitoring through audit and review of effectiveness of capacity building/technical assistance and assistance 	During construction phase	PT ITA PT ITB PT ITC	PT ITA, PT ITB, PT ITC: <ul style="list-style-type: none"> - Human resource officer - Community relations/ CSR officer - Procurement officer 	Quarterly report regarding workforce number and composition and consultation report
Construction of solar farm and its supporting facilities	Local employment	<ul style="list-style-type: none"> - Stipulation of using local labor in the EPC contract and instruct the EPC to prioritize qualified local people as construction workers in accordance with the needs of the Project: - Determine numbers of skilled, semi-skilled and unskilled labor requirements for each phase and assess 	PT ITA PT ITB PT ITC Contractor	<ul style="list-style-type: none"> - Periodic monitoring on recruitment plan such as number of local workers, payment of entitlements, outcomes of assistance provided - Periodic monitoring through audit and review of contractors - Periodic monitoring through audit and review 	During construction phase	PT ITA PT ITB PT ITC	PT ITA, PT ITB, PT ITC: <ul style="list-style-type: none"> - Human resource officer - Community relations/ CSR officer - Procurement officer 	Quarterly report regarding workforce number and composition and consultation report

Environmental, Social, Health and Safety Management System (ESHS-MS)

Activity/ Aspect	Potential Impacts	Mitigation Measures	Implement ation Responsibil ity	Means of Verification that Mitigation has been met	Timing and Frequency of Monitoring	Monitoring Responsibil ity lity	Supervision responsibility	Reporting Requirement
		<p>local resource levels through involving local village heads, customary heads or community leaders;</p> <ul style="list-style-type: none"> - Provide and communicate clear information about the Project's requirement related to employment and business opportunities and prioritize locals where feasible; - Implement Project specific training and community development programs to increase the skills of local workers and the capacity of local businesses to meet the needs and requirements of the Project. - Workers will have contracts in place prior to commencement setting out working conditions, terms of employment and EHS responsibilities. - Prior to the construction phase is ended where the project will reduce number of labors during operation 		<p>of effectiveness of capacity building/technical assistance and assistance</p>				

Environmental, Social, Health and Safety Management System (ESHS-MS)

Activity/ Aspect	Potential Impacts	Mitigation Measures	Implement ation Responsibil ity	Means of Verification that Mitigation has been met	Timing and Frequency of Monitoring	Monitoring Responsibil ity lity	Supervision responsibility	Reporting Requirement
		<p>phase, the project will carry out an analysis of alternatives to retrenchment. The retrenchment plan will be developed and implemented to reduce the adverse impacts of retrenchment on workers.</p> <ul style="list-style-type: none"> - A grievance mechanism will be developed for workers and included in the ESMS. Workers will be informed about this mechanism at the time of hiring. Grievance mechanism will be extended to non-employee workers in future. 						
Mobilization of Equipment and Workers								
Mobilization of equipment, material and worker	Disturbance to community activities as a result of project mobilization	<ul style="list-style-type: none"> - Usage of haulers with minimum noise - Employing capable drivers - Limiting the speed of vehicles in the residential area (max 30 km/hr) - Avoiding exposure of materials during mobilization 	PT ITA PT ITB PT ITC Contractor	<ul style="list-style-type: none"> - Observation and interview of local community and workers on site - Descriptive and qualitative data analysis - Enforce PPE and implementation of SOP on site. 	During construction phase	PT ITA PT ITB PT ITC Contractor	<ul style="list-style-type: none"> - Manpower and Transmigration agency of Lombok Timur and Lombok Tengah - Environmental and Hygiene agency of Lombok Timur and Lombok Tengah 	UKL-UPL Implementation report every 6 months

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Activity/ Aspect	Potential Impacts	Mitigation Measures	Implementation Responsibility	Means of Verification that Mitigation has been met	Timing and Frequency of Monitoring	Monitoring Responsibility	Supervision responsibility	Reporting Requirement
		- Placement of security guards in every junction on the project route.						
Mobilization of equipment, material and worker	Potential incident with community as a result of increase in Project traffic on a public road	- Ensure the involvement of community in obeying the traffic regulation - Placement of security in the area with high accident risk - Limiting the speed of project vehicles (max 30 km/hr)	PT ITA PT ITB PT ITC Contractor	Recording of traffic accident	During construction phase	PT ITA PT ITB PT ITC Contractor	- Communication agency of Lombok Timur - District and regional police - Environmental and Hygiene agency of Lombok Timur - Transportation agency of Lombok Tengah	UKL-UPL Implementation report every 6 months
Mobilization of equipment, material and worker	Increase in people, materials and activities	- Usage of haulers with minimum noise - Employing capable drivers - Manage the movement schedule to avoid disturbing the community bedtime	PT ITA PT ITB PT ITC Contractor	Observation and interview of local community and workers on site	During construction phase	PT ITA PT ITB PT ITC Contractor	- Manpower and Transmigration agency of Lombok Timur and Lombok Tengah - Environmental and Hygiene agency of Lombok Timur - Transportation agency of Lombok Tengah - Public Works and Spatial Planning agency of Lombok Tengah	UKL-UPL Implementation report every 6 months
Mobilization of equipment,	Potential incident with community as a result of increase in	- Consultation with the communities on key Project traffic routes, timing of peak movements, type of vehicles	PT ITA PT ITB PT ITC	- Visual observation - Periodic monitoring through audit and review of effectiveness of	During construction phase	PT ITA PT ITB PT ITC	PT ITA, PT ITB, PT ITC: - Community relations officer	- Community development plan (health, safety, and

Environmental, Social, Health and Safety Management System (ESHS-MS)

Activity/ Aspect	Potential Impacts	Mitigation Measures	Implement ation Responsibil ity	Means of Verification that Mitigation has been met	Timing and Frequency of Monitoring	Monitoring Responsibil ity lity	Supervision responsibility	Reporting Requirement
material and worker	Project traffic on a public road	and heavy equipment and provision of road safety awareness to the surrounding community, through corporation with the local police; - Enforce speed limit regulations to all Project construction vehicles, along with an emergency response procedure should any incidents with other road users or pedestrians occurs; and - The proposed grievance mechanism should be accessible for all villagers to report concerns associated with health and safety. Where complaints on accidents or near misses are submitted the Project will undertake an immediate investigation.	Contractor	community development plan (health, safety, and security program) - Monitoring the status of community health and safety grievances and how they are resolved			- Health and safety officer - Security officer	security program) including its audit report - Community health, safety, and security incident report
Construction of solar farm and its supporting facilities	Community health and safety incident from influx on non- local	- Compulsory medical examinations for Project workers, including contractors to ensure they are fit for work and to	PT ITA PT ITB PT ITC	- Visual observation - Periodic monitoring through audit and review of effectiveness of community development	During construction phase	PT ITA PT ITB PT ITC	PT ITA, PT ITB, PT ITC: - Community relations officer - Health and safety officer	- Community development plan (health, safety, and security

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Activity/ Aspect	Potential Impacts	Mitigation Measures	Implement ation Responsibil ity	Means of Verification that Mitigation has been met	Timing and Frequency of Monitoring	Monitoring Responsibil ity lity	Supervision responsibility	Reporting Requirement
	workers	<p>monitor the prevalence of communicable diseases detected through annual medical check-ups;</p> <ul style="list-style-type: none"> - Zero tolerance towards inappropriate behavior from and amongst the workforce; - Conduct an induction and training on the Project's Code of Conduct regarding do's and don'ts in relation with interaction with locals; - Establish a grievance mechanism and accessible for all community groups to report concerns associated with potential Project health impacts. Where complaints are submitted the Project will undertake an immediate investigation; - Regular engagement with local authorities relevant to crime (local police) or other social problems (e.g. village leaders) for prevention of issues and for mitigation when issues arise; and 	Contractor	<p>plan (health, safety, and security program) including management of influx population</p> <ul style="list-style-type: none"> - Periodic monitoring on the implementation of worker CoC - Monitoring the status of security investigation for proper resolution of security incidents - Monitoring the status of community health and safety grievances and how they are resolved 			Security officer	<p>program) including its audit report</p> <ul style="list-style-type: none"> - Community health, safety, and security incident report

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Activity/ Aspect	Potential Impacts	Mitigation Measures	Implement ation Responsibil ity	Means of Verification that Mitigation has been met	Timing and Frequency of Monitoring	Monitoring Responsibil ity lity	Supervision responsibility	Reporting Requirement
		- Conduct appropriate workers-community engagement such as sporting or cultural events to improve understanding and cohesions between non-local workers and the surrounding communities.						
Construction of Project and Facilities								
Construction of 20kV transmission line	Public perception	- Acquisition of land is conducted periodically and recorded properly - Accommodate suggestions, opinions and responses from community related to construction and route of 20kV transmission line - Informing the community about the route of transmission line	PT ITA PT ITB PT ITC Contractor	Observation on site to identify any public involvement, especially public figure, religious leaders or any other leaders such as head of village, to receive the positive or negative public perception regarding the land acquisition and construction of 20kV transmission line	During construction phase	PT ITA PT ITB PT ITC Contractor	- Pringgabaya village officials - Geres village officials - Sengkol village officials - Pujut district officials - Environmental and Hygiene agency of Lombok Timur and Lombok Tengah - Land agency of Lombok Timur and Lombok Tengah - PLN	- UKL-UPL Implementati on report every 6 months
Commissioning	Public perception	- Informing the community about the commissioning schedule - Accommodate suggestions, opinions and responses from	PT ITA PT ITB PT ITC Contractor	Observation on site to identify positive or negative public perception regarding solar farm commissioning plan	During construction phase	PT ITA PT ITB PT ITC Contractor	- Environmental and Hygiene agency of Lombok Timur and Lombok Tengah - Public Health Agency of Lombok Timur	- UKL-UPL Implementati on report every 6 months

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Activity/ Aspect	Potential Impacts	Mitigation Measures	Implement ation Responsibil ity	Means of Verification that Mitigation has been met	Timing and Frequency of Monitoring	Monitoring Responsibil ity lity	Supervision responsibility	Reporting Requirement
		community related to the solar farm development plan					- Land agency of Lombok Timur and Lombok Tengah - PLN	
Air Quality								
Land preparation	Reduced air quality	<ul style="list-style-type: none"> - Technology approach is used by maintaining project equipment or vehicles - Cleaning the vehicles from soil or materials - Cleaning the trucks' tire prior to leaving the project site to avoid contamination on public road - Sprinkling the road to reduce dust 	PT ITA PT ITB PT ITC Contractor	<ul style="list-style-type: none"> - Air sampling by using spectrophotometer - Sampling of CO by using Non-Dispersive Infrared (NDIR) - Sampling of NOx, SOx and particulate by using High Volume Sampler 	During construction phase	PT ITA PT ITB PT ITC Contractor	<ul style="list-style-type: none"> - Public Health Agency of Lombok Timur and Lombok Tengah - Environmental and Hygiene agency of Lombok Timur 	- UKL-UPL Implementati on report every 6 months
Construction of solar farm and its supporting facilities	Reduced air quality	<ul style="list-style-type: none"> - Managing the reduction of air quality to maintain it in accordance with Government Regulation No. 41 Year 1999 - Technology approach is used by maintaining project equipment or vehicles - Cleaning the vehicles from soil or materials - Cleaning the trucks' tire prior to leaving the project 	PT ITA PT ITB PT ITC Contractor	<ul style="list-style-type: none"> - Air sampling by using spectrophotometer - Sampling of CO by using Non-Dispersive Infrared (NDIR) - Sampling of NOx, SOx and particulate by using High Volume Sampler 	During construction phase	PT ITA PT ITB PT ITC Contractor	<ul style="list-style-type: none"> - Public Health Agency of Lombok Timur and Lombok Tengah - Environmental and Hygiene agency of Lombok Timur 	- UKL-UPL Implementati on report every 6 months

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Activity/ Aspect	Potential Impacts	Mitigation Measures	Implement ation Responsibil ity	Means of Verification that Mitigation has been met	Timing and Frequency of Monitoring	Monitoring Responsibil ity lity	Supervision responsibility	Reporting Requirement
		site to avoid contamination on public road - Sprinkling the road to reduce dust - Covering the pick-up truck with tarpaulin to minimize dust						
Air emissions generated during construction activities will come from vehicle engine exhausts, generators, construction equipment and dust from earthworks and vehicles movement.	Impact on air quality	- Preventive measures such as storage of construction under cover, covering of construction materials during transportation will be undertaken, for reducing dust. - Emissions from the emergency generator set and other stationary machines will be controlled by ensuring that the engines are always properly tuned and maintained. - Minimize stockpiling by coordinating excavations, spreading, re-grading and compaction activities; - Speed of vehicles on site will be limited to 10-15 km/hr which will help in minimizing	EPC Company	Site inspection, training records, visual assessment	Monthly	PT ITA PT ITB PT ITC HSE Dept.	PT ITA, PT ITB, PT ITC: HSE Dept.	Monthly HSE report

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Activity/ Aspect	Potential Impacts	Mitigation Measures	Implement ation Responsibil ity	Means of Verification that Mitigation has been met	Timing and Frequency of Monitoring	Monitoring Responsibil ity lity	Supervision responsibility	Reporting Requirement
		fugitive dust emissions due to vehicular movement; - Cease or phase down work if excess fugitive dust is observed. Investigate the source of dust and ensure proper suppression measures; - Proper maintenance of engines; and - Idling of vehicles and equipment will be prevented - Ambient air monitoring during construction period to be established.						
Noise								
Land preparation	Increase of noise	- Technology approach is used by maintaining project equipment or vehicle - Providing earplugs for workers - Limiting the working period in the high noise area	PT ITA PT ITB PT ITC Contractor	Measure the intensity of noise and exposure time against the standard noise level by using Sound Level Meter	During construction phase	PT ITA PT ITB PT ITC Contractor	- Public Health Agency of Lombok Timur and Lombok Tengah - Environmental and Hygiene agency of Lombok Timur	UKL-UPL Implementation report every 6 months
Construction of solar farm and its	Increase of noise	- Socio culture approach is used through training or seminar to promote awareness on health and	PT ITA PT ITB PT ITC	Measure the intensity of noise and exposure time against the standard noise	During construction phase	PT ITA PT ITB PT ITC	- Public Health Agency of Lombok Timur and Lombok Tengah	UKL-UPL Implementation report every 6 months

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Activity/ Aspect	Potential Impacts	Mitigation Measures	Implement ation Responsibil ity	Means of Verification that Mitigation has been met	Timing and Frequency of Monitoring	Monitoring Responsibil ity lity	Supervision responsibility	Reporting Requirement
supporting facilities		safety to the workers during construction phase - Technology approach is used through implementation of SOP on every equipment utilized during construction phase - Coordination with village and district officials as well as local clinics should there be any disease arise as a result of increase noise level and increase vibration - Managing the increase of noise to maintain the noise level in accordance with Ministerial Decree No. 48 Year 1996	Contractor	level by using Sound Level Meter		Contractor	- Environmental and Hygiene agency of Lombok Timur	
Noise generated from all construction activities and machine and/or vehicle	Impact on ambient noise level	- No night-time (6pm – 7am) transportation or construction activities under routine conditions; - All the noise generating equipment such as emergency generator sets, batching plant etc. to be sited away from receptors such as settlements;	EPC Company	Site inspection, training records, visual assessment	Monthly	PT ITA PT ITB PT ITC HSE Dept.	PT ITA, PT ITB, PT ITC: HSE Dept.	Monthly HSE report

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Activity/ Aspect	Potential Impacts	Mitigation Measures	Implement ation Responsibil ity	Means of Verification that Mitigation has been met	Timing and Frequency of Monitoring	Monitoring Responsibil ity lity	Supervision responsibility	Reporting Requirement
		<ul style="list-style-type: none"> - High noise activities will be undertaken over short periods and where possible scheduled to avoid simultaneous operation of high noise generating plant; - Complaints tracking and grievance log will be established to address community complaints; and - Noise monitoring program to be established. 						
Vegetation Clearing								
Vegetation clearance, solar farm and transmission line	Change in land use	<ul style="list-style-type: none"> - Vegetation clearing only in designated areas for the Project footprint; - Restricting work to designated/cleared boundaries; - Topsoil will be stored separately during clearing and will be used to fill and level the area once grubbing activities have been completed, thereby maintaining the seed bank; - No disturbance to vegetation outside marked areas; and 	EPC Company	Site inspection, visual assessment	Weekly	PT ITA PT ITB PT ITC HSE Dept.	PT ITA, PT ITB, PT ITC: HSE Dept.	Weekly HSE report

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Activity/ Aspect	Potential Impacts	Mitigation Measures	Implement ation Responsibil ity	Means of Verification that Mitigation has been met	Timing and Frequency of Monitoring	Monitoring Responsibil ity lity	Supervision responsibility	Reporting Requirement
		- Undertaking site revegetation to assist with soil stabilization, where possible.						
Vegetation clearance, solar farm and transmission line	Change in land use	- On completion of construction activities, land used for temporary facilities will be restored to the extent possible.	EPC Company	Site inspection, visual assessment	Monthly	PT ITA PT ITB PT ITC HSE Dept.	PT ITA, PT ITB, PT ITC: HSE Dept.	Monthly HSE report
Habitat and Wildlife								
Base camp preparation and operation	Disturbance on biodiversity	- Avoid the occurrence of reduced land flora around the base camp - Take a technology and social approach	PT ITA PT ITB PT ITC Contractor	- Ensure the greening effort is undertaken to conserve the habitat of biota - Undertake surveys, observations and inventories of biota condition around the power plant site - Monitor the presence of species in and around the power plant site	During construction phase	PT ITA PT ITB PT ITC Contractor	- Department of Agriculture of Lombok Timur and Lombok Tengah - Environmental and Hygiene agency of Lombok Timur	UKL-UPL Implementation report every 6 months
Base camp preparation and operation	Disturbance on environmental sanitation conditions	Socialization or taking a personal approach to the workers that reside in the base camp and/or undertake activities on site	PT ITA PT ITB PT ITC	- Observation; - Questioner; - Descriptive and qualitative data analysis;	During construction phase	PT ITA PT ITB PT ITC	- Pringgabaya village officials - Geres village officials - Sengkol village officials - Pujut district officials	UKL-UPL Implementation report every 6 months

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Activity/ Aspect	Potential Impacts	Mitigation Measures	Implementation Responsibility	Means of Verification that Mitigation has been met	Timing and Frequency of Monitoring	Monitoring Responsibility	Supervision responsibility	Reporting Requirement
			Contractor	- Conduct interview to identify any involvement of community, religious leaders and head of village, to receive the positive public perception on the project.		Contractor	- Environmental and Hygiene agency of Lombok Timur and Lombok Tengah	
Mobilization of equipment, material and worker	Disturbance on biodiversity	<ul style="list-style-type: none"> - Avoid the occurrence of reduced land flora around the base camp - Take a technology and social approach 	PT ITA PT ITB PT ITC Contractor	<ul style="list-style-type: none"> - Ensure the greening effort is undertaken to conserve the habitat of biota - Undertake surveys, observations and inventories of biota condition around the power plant site - Monitor the presence of species in and around the power plant site 	During construction phase	PT ITA PT ITB PT ITC Contractor	<ul style="list-style-type: none"> - Department of Agriculture of Lombok Timur and Lombok Tengah - Environmental and Hygiene agency of Lombok Timur 	UKL-UPL Implementation report every 6 months
Construction of 20kV transmission line	Disturbance on biodiversity	<ul style="list-style-type: none"> - Providing compensation for landowners that are affected in the area - Planting similar plant on other area around the SUTM (transmission line) 	PT ITA PT ITB PT ITC Contractor	<ul style="list-style-type: none"> - Ensure the greening effort is undertaken to conserve the habitat of biota - Undertake surveys, observations and inventories of biota 	During construction phase	PT ITA PT ITB PT ITC Contractor	<ul style="list-style-type: none"> - Department of Agriculture of Lombok Timur and Lombok Tengah - Environmental and Hygiene agency of Lombok Timur 	UKL-UPL Implementation report every 6 months

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Activity/ Aspect	Potential Impacts	Mitigation Measures	Implement ation Responsibil ity	Means of Verification that Mitigation has been met	Timing and Frequency of Monitoring	Monitoring Responsibil ity lity	Supervision responsibility	Reporting Requirement
				condition around the power plant site - Monitor the presence of species in and around the transmission line route				
Land clearing for Solar Farm and Facilities	Loss of habitat and disturbance to fauna	<ul style="list-style-type: none"> - Worker training on wildlife through induction, posters. - Establishment and implementation of a clearance protocol to manage encounters with fauna; - Apply no hunting and no poaching policy inside project area; - Strict prohibition on use of fuel wood and shrubs from nearby areas as fuel; - Non-constructed area will be rehabilitated and revegetated as soon as land clearing and land preparation has been completed; and - Local species should be prioritized in rehabilitation and revegetation program. 	PT ITA PT ITB PT ITC Contractor	<ul style="list-style-type: none"> - Observation in the project area during construction phase to make sure the land clearing just conducted in the constructed area and all policy is followed by EPC and Worker - Monitor and recording the rehabilitation and revegetation area and observing the biodiversity in the area every 6 month - Evaluation and awareness every three month to ensure all employee and worker understand with policy and applying in their activity - Monitor and record all sign board condition related to prohibition 	Every 3 months, during construction and operation	PT ITA PT ITB PT ITC Contractor	PT ITA, PT ITB, PT ITC: HSE Dept.	Every 6 months

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Activity/ Aspect	Potential Impacts	Mitigation Measures	Implement ation Responsibil ity	Means of Verification that Mitigation has been met	Timing and Frequency of Monitoring	Monitoring Responsibil ity lity	Supervision responsibility	Reporting Requirement
				and awareness to ensure the sign board easy to read and understand				
Soil Erosion and Surface Water Quality								
Vegetation clearance, site clearance	Soil erosion	<ul style="list-style-type: none"> - Preparation and implementation of a soil and erosion management plan during construction to incorporate requirements such as use of dust suppression, soil stabilization during construction and storm water and sediment management and control; - Vegetation cover will be maintained for as long as possible in order to prevent the erosion (water) of soil. - Solid stabilization to be implemented following completion of construction, this may include establishment of grass cover or other forms of ground cover across the site; - Implementation of an operational runoff and storm 	EPC Company	<ul style="list-style-type: none"> - Site inspection, visual assessment - Monitor and recorded the placement area of topsoil including the volume, condition and maintenance to keep the soil quality 	Monthly	PT ITA PT ITB PT ITC HSE Dept.	PT ITA, PT ITB, PT ITC: HSE Dept.	Monthly HSE report

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Activity/ Aspect	Potential Impacts	Mitigation Measures	Implementation Responsibility	Means of Verification that Mitigation has been met	Timing and Frequency of Monitoring	Monitoring Responsibility	Supervision responsibility	Reporting Requirement
		water drainage system to control runoff volumes; and - Topography shall be restored to the extent possible and re-vegetated to prevent soil erosion to the extent possible.						
Water Resource Use								
Construction of solar farm and its supporting facilities	Increase of run off volume	- Preparing a retention water pool or equivalent at each project site to avoid muddy water from flowing directly into the road and drainage - Providing pump to pumping out the excess puddle water	PT ITA PT ITB PT ITC Contractor	Visual observation on sites	Daily during the construction of drainage	PT ITA PT ITB PT ITC Contractor	- Regional Disaster Management Agency of Lombok Timur and Lombok Tengah - Environmental and Hygiene agency of Lombok Timur and Lombok Tengah	UKL-UPL Implementation report every 6 months
Daily water uses for worker and water use for civil works	Impact on water availability	- Project to conduct a water balance study to assess the Project demand on the supply of water accessible to the local community.	EPC Company	Water balance study and assessment of community use and recharge rates	Before construction	PT ITA PT ITB PT ITC HSE Dept.	PT ITA, PT ITB, PT ITC: HSE Dept.	Water balance study
Spills and Soil/Water Contamination								
Accidental leaks and spill	Soil and water contamination	- Spill control measures such as the storage and handling of chemicals and fuel in concrete areas with	EPC Company	Site inspection, record keeping, training records, visual assessment	Monthly	PT ITA PT ITB PT ITC	PT ITA, PT ITB, PT ITC: HSE Dept.	Weekly HSE report

Environmental, Social, Health and Safety Management System (ESHS-MS)

Activity/ Aspect	Potential Impacts	Mitigation Measures	Implement ation Responsibil ity	Means of Verification that Mitigation has been met	Timing and Frequency of Monitoring	Monitoring Responsibil ity lity	Supervision responsibility	Reporting Requirement
		secondary containment will be implemented to minimize impacts in the event of a spill; - Use of spill control kits to contain and clean small spills and leaks; - Transport vehicles and equipment should undergo regular maintenance to avoid any oil leakages; - Unloading, loading and refueling protocols are required for the transfer of diesel, oil and used oil respectively and workers trained to prevent/contain spills and leaks.				HSE Dept.		
Occupational Health and Safety								
Land preparation	Potential impacts to workers' health and safety during construction phase	- Socio culture approach is used through training or seminar to promote awareness on health and safety to the workers during construction phase - Technology approach is used through implementation of SOP on every equipment	PT ITA PT ITB PT ITC Contractor	- Ensure the greening effort is undertaken to conserve the habitat of biota - Undertake surveys, observations and inventories of biota condition around the power plant site	During construction phase	PT ITA PT ITB PT ITC Contractor	- Manpower and Transmigration agency of Lombok Timur and Lombok Tengah - Environmental and Hygiene agency of Lombok Timur	UKL-UPL Implementation report every 6 months

Environmental, Social, Health and Safety Management System (ESHS-MS)

Activity/ Aspect	Potential Impacts	Mitigation Measures	Implement ation Responsibil ity	Means of Verification that Mitigation has been met	Timing and Frequency of Monitoring	Monitoring Responsibil ity lity	Supervision responsibility	Reporting Requirement
		<ul style="list-style-type: none"> utilized during construction phase - Preparing first aid box 		<ul style="list-style-type: none"> - Enforce PPE and implementation of SOP on site. 				
Construction of solar farm and its supporting facilities	Increase vibration	<ul style="list-style-type: none"> - Socio culture approach is used through training or seminar to promote awareness on health and safety to the workers during construction phase - Technology approach is used through implementation of SOP on every equipment utilized during construction phase - Coordination with village and district officials as well as local clinics should there be any disease arise as a result of reduced air quality and increase vibration 	PT ITA PT ITB PT ITC Contractor	Monitoring the PPV value	During construction phase	PT ITA PT ITB PT ITC Contractor	<ul style="list-style-type: none"> - Public Health agency of Lombok Timur and Lombok Tengah - Environmental and Hygiene agency of Lombok Timur 	UKL-UPL Implementation report every 6 months
Construction of solar farm and its supporting facilities	Occupational Health and Safety of Workers	<ul style="list-style-type: none"> - Develop and implement a health and safety plan to be followed throughout all phases of a project. - Provide occupational health and safety orientation training to all employees consisting of basic hazard 	PT ITA PT ITB PT ITC Contractor	<ul style="list-style-type: none"> - Periodic monitoring through a review of effectiveness of HSE training - Period monitoring on HSE report (injuries, illnesses, and fatalities) 	During construction phase	PT ITA PT ITB PT ITC Contractor	PT ITA, PT ITB, PT ITC: HSE Dept.	<ul style="list-style-type: none"> - Monthly OHS report (injuries, illnesses, and fatalities) - OHS training report every 6 months

Environmental, Social, Health and Safety Management System (ESHS-MS)

Activity/ Aspect	Potential Impacts	Mitigation Measures	Implement ation Responsibil ity	Means of Verification that Mitigation has been met	Timing and Frequency of Monitoring	Monitoring Responsibil ity lity	Supervision responsibility	Reporting Requirement
		<p>awareness, site-specific hazards, safe working practices, and emergency procedures.</p> <ul style="list-style-type: none"> - The EPC will be committed to ensure all H&S measures are in place to prevent accidents and reduce the consequences of non-conformance events; - The EPC will provide training, awareness and supervision to ensure all of its construction workers comply with the OHS procedures; - The EPC will provide all appropriate resources i.e. personal protective equipment (PPE) to all workers onsite; and - An emergency response procedure and infrastructure will be available on site to ensure provision of first aid for personnel in case of an emergency. 		<p>and how they are resolved</p> <ul style="list-style-type: none"> - Visual observation on site throughout the safety signage in locations where physical and non-physical (e.g., chemical) hazards might occur - Regular monitoring and review of health and safety plan implementation - Periodic monitoring on HSE matters, ambient working environments and other HSE indicators. 				<ul style="list-style-type: none"> - OHS audit report every 6 months

Table 7-4 Operation Environmental and Social Management Plan

Activity/ Aspect	Potential Impacts	Mitigation Measures	Implement ation Responsib ility	Means of Verification that Mitigation has been met	Timing and Frequency of Monitoring	Monitoring Responsibil ity	Supervision responsibility	Reporting Requirement
Employment and Income								
Procurement of labor	Increase of job opportunity and income	<ul style="list-style-type: none"> - Socializing the recruitment process to the community, especially about the number of vacancies, qualifications and available positions - Prioritizing the local workforce to be employed according to the qualification and requirements needed - Supervise the recruitment process by the contactor in accordance with Law No. 7 Year 1981 	PT ITA PT ITB PT ITC	<ul style="list-style-type: none"> - The triangulation approach includes observation, interview and secondary data collection activities - Secondary data from Central Bureau of Statistics - Interviewing local community 	During operation phase	PT ITA PT ITB PT ITC	<ul style="list-style-type: none"> - Public Health agency of Lombok Timur and Lombok Tengah - Environmental and Hygiene agency of Lombok Timur and Lombok Tengah - Sengkol Village Officials - Pujut District Officials 	UKL-UPL Implementation report every 6 months
Procurement of labor	Social gap/ inequalities	Prioritizing the local workforce to be employed according to the qualification and requirements needed	PT ITA PT ITB PT ITC	<ul style="list-style-type: none"> - The triangulation approach includes observation, interview and secondary data collection activities - Secondary data from Central Bureau of Statistics - Interviewing local community 	During operation phase	PT ITA PT ITB PT ITC	<ul style="list-style-type: none"> - Environmental and Hygiene agency of Lombok Timur and Lombok Tengah - Environmental Agency of Nusa Tenggara Barat province - Sengkol Village Officials - Pujut District Officials 	UKL-UPL Implementation report every 6 months

Environmental, Social, Health and Safety Management System (ESHS-MS)

Activity/ Aspect	Potential Impacts	Mitigation Measures	Implementation Responsibility	Means of Verification that Mitigation has been met	Timing and Frequency of Monitoring	Monitoring Responsibility	Supervision responsibility	Reporting Requirement
Procurement of labor	Social and safety issue	Provide and communicate clear information about the Project's requirement related to employment and business opportunities and priorities locals where feasible	PT ITA PT ITB PT ITC	<ul style="list-style-type: none"> - The triangulation approach includes observation, interview and secondary data collection activities - Secondary data from Central Bureau of Statistics - Interviewing local community 	During operation phase	PT ITA PT ITB PT ITC	<ul style="list-style-type: none"> - Local public figure, religious leaders and the community - Local police - Environmental and Hygiene agency of Lombok Timur and Lombok Tengah 	UKL-UPL Implementation report every 6 months
Operation of solar farm	Economic benefit to locals as a result of the Project employment and business opportunities	Prioritizing the local workforce to be employed according to the qualification and requirements needed	PT ITA PT ITB PT ITC	Increase in economic level of the community around the solar farms	During operation phase	PT ITA PT ITB PT ITC	<ul style="list-style-type: none"> - Environmental and Hygiene agency of Lombok Timur and Lombok Tengah - Government of Lombok Timur and Lombok Tengah 	UKL-UPL Implementation report every 6 months
Operation of solar farm	Economic benefit to the regency	Coordinating with the regency officials in the operation of the Solar Farm to report and communicate transparently on the operation of the Solar Farm and help developing the regency	PT ITA PT ITB PT ITC	Increase in economic level of the regency	During operation phase	PT ITA PT ITB PT ITC	<ul style="list-style-type: none"> - Environmental and Hygiene agency of Lombok Timur and Lombok Tengah - Government of Lombok Timur and Lombok Tengah 	UKL-UPL Implementation report every 6 months

Environmental, Social, Health and Safety Management System (ESHS-MS)

Activity/ Aspect	Potential Impacts	Mitigation Measures	Implementation Responsibility	Means of Verification that Mitigation has been met	Timing and Frequency of Monitoring	Monitoring Responsibility	Supervision responsibility	Reporting Requirement
Community Health, Safety, and Security								
Vehicle and worker movements	Potential incident with community as a result of increase in Project traffic on a public road	<ul style="list-style-type: none"> - Consultation with the communities on key Project traffic routes, timing of peak movements, type of vehicles and heavy equipment and provision of road safety awareness to the surrounding community, through corporation with the local police; - Enforce speed limit regulations to all Project construction vehicles, along with an emergency response procedure should any incidents with other road users or pedestrians occurs; and - The proposed grievance mechanism should be accessible for all villagers to report concerns associated with health and safety. Where complaints on accidents or near misses are submitted the Project will undertake an immediate investigation. 	PT ITA PT ITB PT ITC	<ul style="list-style-type: none"> - Visual observation - Periodic monitoring through audit and review of effectiveness of community development plan (health, safety, and security program) - Monitoring the status of community health and safety grievances and how they are resolved 	During operation phase	PT ITA PT ITB PT ITC	PT ITA, PT ITB, PT ITC: <ul style="list-style-type: none"> - Community Relations Officer - Health and Safety Officer - Security Officer 	<ul style="list-style-type: none"> - Community development plan (health, safety, and security program) including its audit report - Community health, safety, and security incident report

Environmental, Social, Health and Safety Management System (ESHS-MS)

Activity/ Aspect	Potential Impacts	Mitigation Measures	Implementation Responsibility	Means of Verification that Mitigation has been met	Timing and Frequency of Monitoring	Monitoring Responsibility	Supervision responsibility	Reporting Requirement
Operation of Solar Farm	Worker interaction with community	<ul style="list-style-type: none"> - Compulsory medical examinations for Project workers, including contractors to ensure they are fit for work and to monitor the prevalence of communicable diseases detected through annual medical check-ups; - Zero tolerance towards inappropriate behavior from and amongst the workforce; - Conduct an induction and training on the Project's Code of Conduct regarding do's and don'ts in relation with interaction with locals; - Establish a grievance mechanism and accessible for all community groups to report concerns associated with potential Project health impacts. Where complaints are submitted the Project will undertake an immediate investigation; - Regular engagement with local authorities relevant to crime (local police) or other 	PT ITA PT ITB PT ITC	<ul style="list-style-type: none"> - Visual observation - Periodic monitoring through audit and review of effectiveness of community development plan (health, safety, and security program) including management of influx population - Periodic monitoring on the implementation of worker CoC - Monitoring the status of security investigation for proper resolution of security incidents - Monitoring the status of community health and safety incidents and how they are resolved 	During operation phase	PT ITA PT ITB PT ITC	PT ITA, PT ITB, PT ITC: <ul style="list-style-type: none"> - Community Relations Officer - Health and Safety Officer - Security Officer 	<ul style="list-style-type: none"> - Community development plan (health, safety, and security program) including its audit report - Community health, safety, and security incident report

Environmental, Social, Health and Safety Management System (ESHS-MS)

Activity/ Aspect	Potential Impacts	Mitigation Measures	Implementation Responsibility	Means of Verification that Mitigation has been met	Timing and Frequency of Monitoring	Monitoring Responsibility	Supervision responsibility	Reporting Requirement
		social problems (e.g. village leaders) for prevention of issues and for mitigation when issues arise; and - Conduct appropriate workers-community engagement such as sporting or cultural events to improve understanding and cohesions between non-local workers and the surrounding communities.						
Waste								
Management of environment sanitation system	Increase of liquid waste	Domestic waste from toilet is directly flown through 4" PVC pipe to the portable sept tank. Then, the liquid waste inside the sept tank will be collected by licensed officer (an official agreement will be prepared separately)	PT ITA PT ITB PT ITC	Monitor and control the collection of liquid waste by third party	During operation phase	PT ITA PT ITB PT ITC	- Public Health agency of Lombok Timur and Lombok Tengah - Environmental and Hygiene agency of Lombok Timur and Lombok Tengah	UKL-UPL Implementation report every 6 months
Management of environment sanitation system	Increase of solid waste	All solid waste is stored inside a black plastic bag and will be collected by hygiene officials of Lombok Timur regency or third party (village) officials who managing the waste	PT ITA PT ITB PT ITC	- Activation of lay stall - Separating organic and inorganic solid waste	During operation phase	PT ITA PT ITB PT ITC	- Public Health agency of Lombok Timur and Lombok Tengah - Environmental and Hygiene agency of	UKL-UPL Implementation report every 6 months

Environmental, Social, Health and Safety Management System (ESHS-MS)

Activity/ Aspect	Potential Impacts	Mitigation Measures	Implementation Responsibility	Means of Verification that Mitigation has been met	Timing and Frequency of Monitoring	Monitoring Responsibility	Supervision responsibility	Reporting Requirement
							Lombok Timur and Lombok Tengah	
Management of environment sanitation system	Increase of hazardous waste	<ul style="list-style-type: none"> - All hazardous waste is stored in hazardous waste lay stall - Hazardous waste is stored 30 working days at the maximum - Collection and management of hazardous waste is undertaken by a recommended third party 	PT ITA PT ITB PT ITC	<ul style="list-style-type: none"> - Activation of lay stall - Reporting the number of hazardous waste produced 	During operation phase	PT ITA PT ITB PT ITC	<ul style="list-style-type: none"> - Public Health agency of Lombok Timur and Lombok Tengah - Environmental and Hygiene agency of Lombok Timur and Lombok Tengah - Environmental agency of Nusa Tenggara Barat 	UKL-UPL Implementation report every 6 months
Water Resource								
Monitoring and evaluation	Reduction in groundwater volume due to cleaning of solar panel	<ul style="list-style-type: none"> - Using groundwater only if necessary - Groundwater extraction is adapted to the groundwater or well water supply available - Undertake reforestation program 	PT ITA PT ITB PT ITC	-	During operation phase	PT ITA PT ITB PT ITC	<ul style="list-style-type: none"> - Environmental and Hygiene agency of Lombok Timur and Lombok Tengah - Energy and Mineral Resources agency of Nusa Tenggara Barat 	UKL-UPL Implementation report every 6 months
Daily water uses for worker and water use for solar PV	Impact on water availability	- All of the permit requirement (SIPA) for utilized ground water will be fulfilled prior to construction of deep well.	PT ITA PT ITB PT ITC	Site inspection, record keeping, training records, visual assessment	Monthly	PT ITA PT ITB PT ITC	PT ITA, PT ITB, PT ITC: HSE Dept.	Monthly HSE report

Environmental, Social, Health and Safety Management System (ESHS-MS)

Activity/ Aspect	Potential Impacts	Mitigation Measures	Implementation Responsibility	Means of Verification that Mitigation has been met	Timing and Frequency of Monitoring	Monitoring Responsibility	Supervision responsibility	Reporting Requirement
cleaning once per month		<ul style="list-style-type: none"> - Water utilization will consider the quantity of deep water resource and allowed amount according to SIPA - Optimizing water usage in all facilities area by application of water conservation measures such as sensor based taps, low flush urinal, etc. 						
Spills and Soil/Water Contamination								
Accidental leaks and spill	Soil and water contamination	<ul style="list-style-type: none"> - Spill control measures such as the storage and handling of chemicals and fuel in concrete areas with secondary containment will be implemented to minimize impacts in the event of a spill; - Use of spill control kits to contain and clean small spills and leaks; - Transport vehicles and equipment should undergo regular maintenance to avoid any oil leakages; 	PT ITA PT ITB PT ITC	Site inspection, record keeping, training records, visual assessment	Monthly	PT ITA PT ITB PT ITC	PT ITA, PT ITB, PT ITC: HSE Dept.	Monthly HSE report

Environmental, Social, Health and Safety Management System (ESHS-MS)

Activity/ Aspect	Potential Impacts	Mitigation Measures	Implementation Responsibility	Means of Verification that Mitigation has been met	Timing and Frequency of Monitoring	Monitoring Responsibility	Supervision responsibility	Reporting Requirement
		<ul style="list-style-type: none"> - Unloading, loading and refueling protocols are required for the transfer of diesel, oil and used oil respectively and workers trained to prevent/contain spills and leaks. 						
Occupational Health and Safety								
Operation of solar farm	Potential impacts to workers' health and safety during operation phase	<ul style="list-style-type: none"> - Socio culture approach is used through training or seminar to promote awareness on health and safety to the workers - Technology approach is used through implementation of SOP on every equipment utilized 	PT ITA PT ITB PT ITC	<ul style="list-style-type: none"> - Observation and interview of workers on site - Enforce PPE and implementation of SOP on site. 	During operation phase	PT ITA PT ITB PT ITC	<ul style="list-style-type: none"> - Manpower and Transmigration agency of Lombok Timur and Lombok Tengah - Environmental and Hygiene agency of Lombok Timur and Lombok Tengah 	UKL-UPL Implementation report every 6 months
Operation of solar farm	Potential impacts to workers' health and safety during operation phase	<ul style="list-style-type: none"> - Develop and implement a health and safety plan to be followed throughout all phases of a project. - Provide occupational health and safety orientation training to all employees consisting of basic hazard awareness, site-specific hazards, safe working 	PT ITA PT ITB PT ITC	<ul style="list-style-type: none"> - Periodic monitoring through a review of effectiveness of HSE training - Period monitoring on HSE report (injuries, illnesses, and fatalities) and how they are resolved - Visual observation on site throughout the 	During operation phase	PT ITA PT ITB PT ITC	PT ITA, PT ITB, PT ITC: HSE Dept.	<ul style="list-style-type: none"> - Monthly OHS report (injuries, illnesses, and fatalities) - OHS training report every 6 months

Environmental, Social, Health and Safety Management System (ESHS-MS)

Activity/ Aspect	Potential Impacts	Mitigation Measures	Implementation Responsibility	Means of Verification that Mitigation has been met	Timing and Frequency of Monitoring	Monitoring Responsibility	Supervision responsibility	Reporting Requirement
		<p>practices, and emergency procedures.</p> <ul style="list-style-type: none"> - The EPC will be committed to ensure all H&S measures are in place to prevent accidents and reduce the consequences of non-conformance events; - The EPC will provide training, awareness and supervision to ensure all of its construction workers comply with the OHS procedures; - The EPC will provide all appropriate resources i.e. personal protective equipment (PPE) to all workers onsite; and - An emergency response procedure and infrastructure will be available on site to ensure provision of first aid for personnel in case of an emergency. 		<p>safety signage in locations where physical and non-physical (e.g., chemical) hazards might occur</p> <ul style="list-style-type: none"> - Regular monitoring and review of health and safety plan implementation - Periodic monitoring on HSE matters, ambient working environments and other HSE indicators. 				<ul style="list-style-type: none"> - OHS audit report every 6 months

Table 7-5 Post-Operation Environmental and Social Management Plan

Activity/ Aspect	Potential Impacts	Mitigation Measures	Implementation Responsibility	Means of Verification that Mitigation has been met	Timing and Frequency of Monitoring	Monitoring Responsibility	Supervision responsibility	Reporting Requirement
Ambient Air Quality								
Decommissioning of solar farm and re-forestation	Improvement on air quality and noise level	<ul style="list-style-type: none"> - Government Regulation of Republic Indonesia Number 41 Year 1999 regarding Air Pollution Control - Decree of State Minister for The Environment Number KEP-45/MENLH/10/1997 regarding Air Pollution Standard Index 	PT ITA PT ITB PT ITC	<ul style="list-style-type: none"> - Undertake re-forestation effort by planting local plant which has economic value - Sampling by using grab sampling method 	During de-commissioning	PT ITA PT ITB PT ITC	<ul style="list-style-type: none"> - Manpower and Transmigration agency of Lombok Timur and Lombok Tengah - Environmental and Hygiene agency of Lombok Timur and Lombok Tengah 	UKL-UPL Implementation report every 6 months
Social								
Work termination	Decrease of income leading to reduced community welfare as the solar farm is no longer in operation	Maximizing the quality of workers that are terminated through training according to the agreed contract	PT ITA PT ITB PT ITC	<ul style="list-style-type: none"> - Providing information and communicating clearly to the worker about the work termination - Providing stipend fairly in accordance with the government regulation - Involve the community in monitoring and managing the project after operation phase 	Prior to de-commissioning	PT ITA PT ITB PT ITC	<ul style="list-style-type: none"> - Manpower and Transmigration agency of Lombok Timur and Lombok Tengah - Environmental and Hygiene agency of Lombok Timur and Lombok Tengah 	UKL-UPL Implementation report every 6 months

8 Organizational Commitment

8.1 Organization Chart

PT ITA, PT ITB, and PT ITC will establish, maintain, and strengthen as necessary an organizational structure that defines roles, responsibilities, and authority to implement the Environmental and Social Management System (ESMS). Specific personnel, including management representative(s) with clear lines of responsibility and authority, will be designated.

The organizational arrangement for three Lombok solar farms is presented in Figure 8-1 below. The key personnel responsible for implementation of ESHS-MS and oversee the compliance of commitments set in the ESMP are Equis Energy ESG team, Environmental/Community Specialist, HSE Coordinator, Environmental Officer, Community Liaison Officers (CLOs), and Human Resource Manager. Equis Energy Technical Team role is also important in supporting the implementation of ESHS-MS.

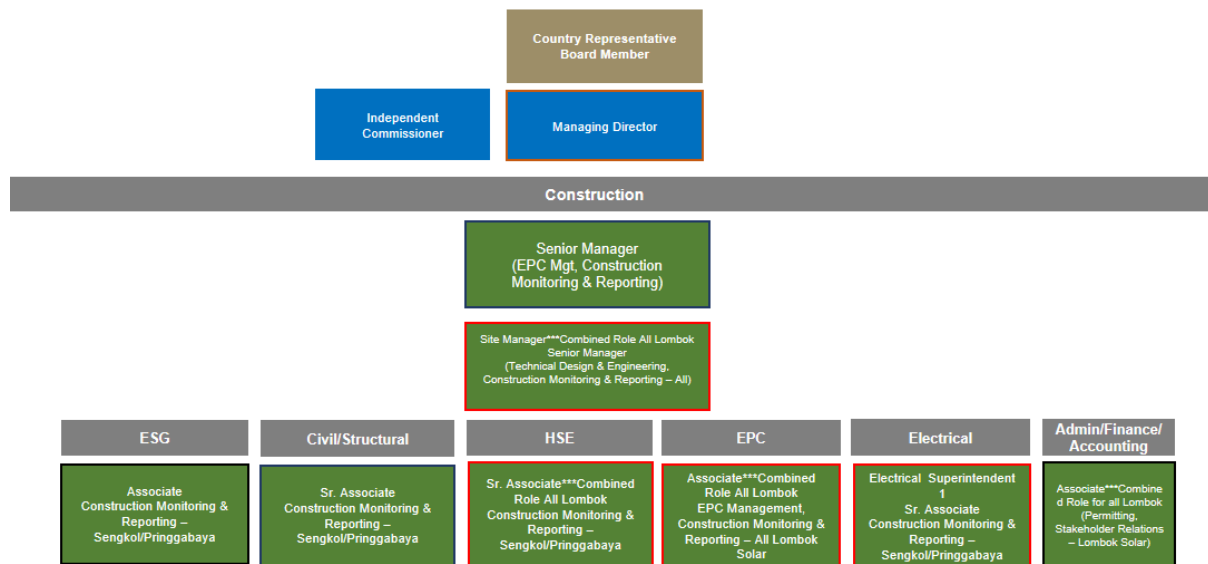


Figure 8-1 Organizational Arrangement for Lombok Solar Farms

8.2 Roles and Responsibilities

Table 8-1 Roles and Responsibilities of the key personnel in ESHS-MS Implementation

Role	Responsibilities	Competencies
Equis ESG Manager	<p>Coordinate the ESHS-MS during project implementation</p> <p>Oversee the development of procedure and guideline to facilitate implementation of the ESHS-MS</p> <p>Monitor the implementation and operation of the ESMP</p> <p>Responsible for all the physical-chemical monitoring of inflow and outflow water quality and air quality as well as other environmental parameters such as ecological monitoring as required in UKL-UPL/ESHIA documents</p> <p>Responsible for monitoring the performance of the EPC contractor against statutory requirements and the agreed objectives and targets</p> <p>Review and approved the Contractor Management Plans prepared by the EPC, and specialist procedures and identify any area for improvement</p> <p>Identify the environmental competence of all contractors and sub-contractors working on the Project</p> <p>Act as a main contact between the contractor team on environmental and social issues</p>	<p>Understands the ESHS-MS and how to build cross-functional support for the ESHS-MS, especially with construction staffs and integrate ESHS-MS requirements into overall management system.</p> <p>Experienced as an EHS professional, including impact assessments, social performance and human rights issues, and management plans.</p> <p>Understanding of local ESMS-related GoI regulations and policy issues, such as AMDAL/UKL-UPL.</p> <p>Leadership, project management, analytical and planning skills.</p> <p>Understands and undertakes continual improvement steps.</p> <p>Leverages lessons learned from inside and outside the Project and applies best practices</p>
Environmental Specialist	<p>Explain to every employee the importance and needs of the ESHS-MS</p> <p>Develop procedures and guidelines to facilitate implementation of the ESHS-MS</p> <p>Monitor the implementation and operation of the ESMP</p> <p>Review, analyze and interpret data and records emanating from monitoring activities to assess their effectiveness and the overall ESMP for improvement</p> <p>Assist in the revision/updates of the Emergency Preparedness and Response Plan where appropriate</p>	<p>Hold the National and/or International standard training Course as an EO, such as ISO 14,001 training or SMK3L from GoI.</p> <p>Understands the ESHS-MS and how to build cross-functional support for the ESHS-MS, especially with construction staffs and integrate ESHS-MS requirements into overall management system.</p> <p>Experienced as an EHS professional, including impact assessments, social performance and human rights issues, and management plans.</p>

Environmental, Social, Health and Safety Management System (ESHS-MS)

Role	Responsibilities	Competencies
	<p>Review, analyze and interpret data and records emanating from monitoring activities to assess the effectiveness of the monitoring process and the overall ESMP for continual improvement</p> <p>Ensure adherence to associated monitoring protocols and program</p> <p>Maintain a repository of material safety data sheets</p> <p>Review and approved the Contractor Management Plans prepared by the EPC, and specialist procedures and identify any area for improvement</p> <p>Review method statements for environmental aspect and advise of any suggested improvements prior to the start of work</p> <p>Monitor construction activities to ensure the identified and appropriate control measures are effective and in compliance with the ESMP</p> <p>Coordination of hazardous material management and disposal</p> <p>Liaise closely with the HSE Coordinator with respect to areas of overlapping concern in the ESMP</p> <p>Contribute to training and capacity building in the area of environmental management</p> <p>Prepare and submit to regional DLH (Dinas Lingkungan Hidup – Environmental Office) the six-monthly monitoring report, among others, as required in the regulations</p> <p>Take lead in the processing of the application and renewal of the required clearances/permits</p> <p>Maintain records of the analytical data</p>	<p>Understanding of local ESMS-related GoI regulations and policy issues, such as AMDAL/UKL-UPL.</p> <p>Leadership, project management, analytical and planning skills.</p> <p>Understands and undertakes continual improvement steps.</p> <p>Leverages lessons learned from inside and outside the Project and applies best practices</p>
HSE Coordinator	<p>Develop procedures and guidelines to facilitate implementation occupational and community health and safety aspects of the ESMP</p> <p>Monitor the implementation and operation of the occupational and community health and safety aspects of the ESMP</p> <p>Ensure adherence to associated monitoring protocols and programs</p>	<p>AK3 Qualified; AK3-Umum at the minimum</p> <p>Understands the ESHS-MS and how to build cross-functional support for the ESHS-MS, especially with construction staffs and integrate ESHS-MS requirements into overall management system.</p>

Environmental, Social, Health and Safety Management System (ESHS-MS)

Role	Responsibilities	Competencies
	<p>Assists in the review, analysis and interpretation of data emanating from monitoring activities to assess their effectiveness and the overall ESMP for continual improvement</p> <p>Assist in the revision/updating the Emergency Preparedness and Response Procedures where appropriate</p> <p>Liaise closely with the Environmental Specialist with respect to areas of overlapping concern in the ESMP</p> <p>Contribute to training and capacity building in the area of occupational and community health and safety</p> <p>Maintain occupational and community health and safety records</p>	<p>Experienced as an EHS professional, including impact assessments, social performance and human rights issues, and management plans.</p> <p>Understanding of local ESMS-related GoI regulations and policy issues, such as AMDAL/UKL-UPL.</p> <p>Leadership, project management, analytical and planning skills.</p> <p>Understands and undertakes continual improvement steps.</p> <p>Leverages lessons learned from inside and outside the Project and applies best practices</p>
Community Liaison Officer (CLO)	<p>Assure compliance with the ESHS-MS, including leading, resourcing, and serving as advocate for the Stakeholder Engagement Procedure, and the Grievance Mechanism, to ensure that these are understood, meet commitments of the ESHS-MS, and add value. External stakeholder issues primarily relate to Performance Standards 1, 4, 5, 7, and 8.</p> <p>Lead the implementation, measurement, audit, and continual improvement (of effectiveness and efficiency) of the procedures, plans, and Grievance Mechanism.</p> <p>Benchmark Project against competitors and top performers in the region.</p> <p>Maintain and deliver stakeholder engagement training</p> <p>Maintain a database of approved external stakeholder engagement consultants.</p> <p>Integrate and align relevant stakeholder information into business planning and decision making.</p> <p>Develop and maintain a Stakeholder Engagement Plan to document engagement and communications plans and activities.</p> <p>Carry out regular review of regulatory and other issues that may affect the Project and ensure related stakeholders are engaged.</p> <p>Ensures stakeholder issues are satisfactorily closed out (addressed) in timely manner.</p>	<p>Understands the ESHS-MS and how to build cross-functional support for the ESHS-MS and integrate supply chain requirements into overall management system. Includes Stakeholder Engagement Procedure, and the Grievance Mechanism.</p> <p>Understanding of the key stakeholders and their issues.</p> <p>Leadership, analytical, planning, and project management skills.</p> <p>Understands and undertakes continual improvement steps.</p> <p>Leverages lessons learned from inside and outside the Project and applies best practices</p> <p>Has completed related training.</p> <p>Understands community development principles and planning processes.</p> <p>Proficient in engaging stakeholders, per the Stakeholder Engagement Procedure.</p>

Environmental, Social, Health and Safety Management System (ESHS-MS)

Role	Responsibilities	Competencies
	Develop, maintain, and implement the Project Community Development Plan/CSR.	
Human Resources Manager	<p>Assure compliance with the ESHS-MS, particularly relating to PS 2 (Labor and Working Conditions), to ensure that it is understood, meets commitments of the ESHS-MS, and adds value.</p> <p>Lead the implementation, measurement, audit, and continual improvement (of effectiveness and efficiency) for labor and working conditions commitments of the ESHS-MS.</p> <p>Benchmark Project against competitors and top performers in the region.</p> <p>Maintain and deliver training.</p>	<p>Understands the ESHS-MS and how to build cross-functional support for the ESHS-MS and integrate human resources requirements into overall management system.</p> <p>Understands key stakeholders and their issues relating to human resources.</p> <p>Leadership, analytical, planning and project management skills.</p> <p>Understands and undertakes continual improvement steps.</p> <p>Leverages lessons learned from inside and outside the Project and applies best practices.</p>

8.3 Training

PT ITA, PT ITB, and PT ITC shall identify the knowledge and skills necessary for implementation of the management systems and its derivative plans and programs, and also identify training requirements for the organization's personnel.

All persons responsible for undertaking work during the life of the project shall be trained on the contents of the ESHS-MS Manual. PT ITA, PT ITB, and PT ITC are also responsible for identifying the knowledge and skills necessary for the implementation of the ESHS-MS Manual and associated programs as well as to identify training requirements for the workers and staff involved in the implementation of the action plan.

The training is to ensure that all site personnel have a basic level of environmental and social awareness training. PT ITA, PT ITB, and PT ITC's technical personnel in-charge shall provide support in explaining the technical issues and to answer questions.

9 Labor and Working Condition

9.1 Human Resources Policies and Procedures

As new companies operating in Indonesia, PT ITA, PT ITB and PT ITC are to develop robust human resources policies and procedures that are consistent with global standards and national law. The policies and procedures are to be clear and understandable and comprehensively cover worker rights under national labor and employment law and applicable collective agreements, including rights related to hours of work, wages, overtime, compensation, and benefits upon beginning the working relationship and when any material changes occur. PT ITA, PT ITB, and PT ITC will comply with local regulations related to labor and working conditions and maintain a human rights policy that is consistent with global standards.

9.2 Indonesian Labor Law

It is important to note that Indonesian labor regulations are comprehensive, and as such fully conform to ILO requirements (Table 9-1). PT ITA, PT ITB, PT ITC has developed Human Resources Policies and procedures in accordance with national labor regulations reflected in a formal Company Regulation approved by management and to be approved by GOI (*Peraturan Perusahaan* in Bahasa Indonesia) and appropriately communicated to employees. The Company Regulation will detail Working Conditions and Terms of Employment (see Appendix 1).

Table 9-1 Summary of Core ILO Conventions Ratified by GOI

Four Core Conventions	Ratified by Indonesian Government
ILO Convention 87 on Freedom of Association and Protection of the Right to Organize	In Force in 09 Jun 1998
ILO Convention 98 on the Right to Organize and Collective Bargaining	In Force in 15 Jul 1957
ILO Convention 29 on Forced Labor	In Force in 12 Jun 1950
ILO Convention 105 on the Abolition of Forced Labor	UU-19-1999
ILO Convention 138 on Minimum Age (of Employment)	UU-20-1999
ILO Convention 182 on the Worst Forms of Child Labor	UU-01-2000
ILO Convention 100 on Equal Remuneration	UU-80-1957
ILO Convention 111 on Discrimination (Employment and Occupation)	UU-21-1999

Source: Indonesian Labor Law No 13/2003 on Labor

Indonesian law prohibits harmful child labor and forced labor. It also requires equal employment opportunity and includes articles against workplace harassment. This approach affects most aspects of its business, from recruitment, training, and development, to supply chain (purchasing). The Project will aim to ensure gender equality by creating job opportunities for women.

9.3 Working Conditions and Management of Worker Relationship

Working conditions, treatment of workers, and worker's terms of employment shall be communicated to workers verbally and/or in writing. This includes but not limited to:

- Conditions in the workplace refer to the physical environment, health, and safety precautions, and access to facilities (including all basic services such as sanitary facilities, access to drinking water, etc.).
- Treatment of workers refers to all aspects related to respect for the worker's personal dignity, disciplinary practices and reasons, and process for termination.
- Terms of employment refer to remuneration and benefits, deductions, hours of work, breaks, rest days, overtime arrangements, overtime compensation, medical insurance, pension, and leave for illness, vacation, maternity/paternity, or holiday.

9.4 Protecting the Workforce

9.4.1 Child Labor

The Project will not employ children in any manner that is economically exploitative, or is likely to be hazardous or to interfere with the child's education, or to be harmful to the child's health or physical, mental, spiritual, moral, or social development. The Project will identify the presence of all persons under the age of 18. Where employment of minors is allowed under Indonesian law, the Project will follow applicable laws. Children under the age of 18 will not be employed in hazardous work. All work of persons under the age of 18 is subject to an appropriate risk assessment and regular monitoring of health, working conditions and hours of work.

9.4.2 Forced Labor

The Project does not employ forced labor, including any kind of involuntary or compulsory labor (e.g. indentured labor, bonded labor, or similar labor-contracting arrangements). The Project does not employ trafficked persons.

9.5 Non-Discrimination and Equal Opportunity

The principles of equal opportunity and non-discrimination shall be applied through effective methods and as applicable to country specific aspects and the relevant legislation. The basis for recruitment, training, and advancement shall be based on the experience, skill, and qualifications, and the process for recruitment and promotion shall be transparent and consistent. Avoid systematic applications of job requirements that would disadvantage certain groups.

Labor policies and procedures shall address and protect disabled persons and shall include appropriate working conditions, access and egress.

A grievance mechanism shall be available to all workers and a procedure shall be developed to address complaints, handle appeals, and provide recourse for employees. The grievance mechanism shall be developed to protect the confidentiality of the worker.

9.6 Worker Organizations

All workers shall be free to join workers' organizations and may enter into collective bargaining agreements with the employer. In the event that some employees are covered by collective bargaining agreements and others are not, the terms and conditions of employment as well as benefits of all employees in similar positions shall be equivalent. Where collective bargaining agreements are in

place, the employer should verify that these meet the requirements of the applicable legislation. In the absence of such agreements, or where the agreements do not address the particular working conditions and terms of employment, the employer shall provide reasonable working conditions and terms of employment that, at a minimum, to comply with the applicable legislation.

Services to workers shall be provided in a non-discriminatory manner and comply with the applicable legislation as well as international standards for quality, security, and safety.

9.7 Occupational Health and Safety

PT ITA, PT ITB, PT ITC are committed to providing a safe and healthy work environment, taking into account inherent risks, including physical, chemical, biological and radiological hazards and specific threats to women. The Project takes steps to prevent accidents, injury and disease arising from, associated with, or occurring during work by minimizing, as far as reasonably practicable, the causes of hazards. PT ITA, PT ITB, PT ITC will maintain a comprehensive occupational health and safety program to assess the risk of exposure to occupational health hazards and implement adequate controls for the workforce. Every workplace job task will include an evaluation of physical hazards, as well as the potential consequences related to occupational illness.

PT ITA, PT ITB, PT ITC will develop an overall EHS management system consistent with the World Bank Group Environmental, Health and Safety Guidelines to address:

- Identification of potential hazards to workers, particularly those that may be life-threatening;
- Provision of preventive and protective measures, including modification, substitution, or elimination of hazardous conditions or substances;
- Training of workers;
- Documentation and reporting of occupational accidents, diseases, and incidents; and
- Emergency prevention, preparedness, and response arrangements.

In addition, PT ITA, PT ITB, PT ITC will comply with applicable Indonesian laws, most notably Minister of Health Decree No 1405 of 2002 on Health Requirements in the Office and Industry Working Environment and Regulation of Minister of Public Works no. 05/PRT/M/2014 regarding Health and Safety Management System (SMK3) guidelines for Public Constructions.

9.8 Workers Engaged by Third Parties

With respect to contracted workers the Project takes commercially reasonable efforts to ascertain that the third parties who engage these workers are reputable and legitimate enterprises and have an appropriate ESMS that allows them to operate in a manner consistent with the requirements of performance standards. The Project has established policies and procedures for managing and monitoring the performance of such third-party employers in relation to the requirements of performance standards. In addition, the Project incorporates these requirements in contractual agreements with such third-party employers. The Project's grievance mechanism will be made available to contract workers.

9.9 Supply Chain

It is important to manage supply chain during the Project's, especially to address risk of child labor or forced labor in the primary supply chain. The Project is to identify those risks through a disciplined and documented process. If child labor or forced labor cases are identified, the Project takes appropriate steps to remedy them. The Project monitors its primary supply chain on an ongoing basis in order to identify any significant changes in its supply chain and if new risks or incidents of child and/or forced labor are identified, appropriate steps are taken to remedy them.

Even given that PT ITA, PT ITB, PT ITC have not operated in Lombok previously, the Project is confident that its Supply Chain procedures will identify suppliers that do not use child and forced labor (e.g., at the concrete aggregate quarries during construction). Additionally, PT ITA, PT ITB, PT ITC will develop contractor management procedures and mitigation measures to ensure that suppliers take steps to address high risk significant safety issues. For example, purchase order(s) or supply contract(s) shall contain environmental and social conditions or requirements relevant to the particular materials, equipment or machineries that shall bind the suppliers for compliance.

10 Stakeholder Engagement Plan

PT ITA, PT ITB, PT ITC has established framework for Stakeholder Engagement Plan (SEP) as result of UKL-UPL and ESHIA study. This SEP document (Appendix 2) shall be treated as live document and shall be revised regularly as the Project progresses.

Stakeholder Engagement Plan (SEP) is designed with the aim of providing a platform for consultation and disclosure with Project stakeholders throughout all phases of the solar farm. The SEP sets out the approach the Project will adopt in order to implement an effective engagement program with stakeholders over the life of the Project. Good relations between the Project and its surrounding communities and relevant stakeholders will be essential for the Project to acquire and maintain its social license to operate. It is also an important means for receiving community feedback on project related concerns, perceptions and expectations as well as enabling the Project to disseminate information to the community.

The SEP document shall include and provide adequate details on

1. Project description and social economic setting of Project area
2. Key Indonesian legislation and international guidelines concerning stakeholder engagement which apply to the Project, as well as key principles concerning public or stakeholder consultation and the disclosure of Project information
3. Consultations undertaken to date
4. Stakeholder engagement plan that shall cover
 - a. Stakeholder identification
 - b. Issues and concerns raised by stakeholder during consultation
 - c. Stakeholder analysis (interest, influence, and perception) towards the Project
 - d. Stakeholder engagement methodology
 - Stakeholder engagement materials
 - Communication channels
 - Planned future stakeholder engagement
5. Community grievance mechanism (GM)
6. Management of SEP implementation:
 - a. Dedicated resource for managing SEP and GM
 - b. Monitoring and tracking of stakeholder engagement activities
 - c. Disclosure of grievance mechanism
 - d. Reporting

11 Community Health and Safety Management Plan

PT ITA, PT ITB, PT ITC shall during the project life, continue to seek opportunities (not limited to those identified in the environmental and social impact and risk assessment) to improve environmental conditions which affects the surrounding communities (such as improvement of potable water availability or sanitary wastewater collection, treatment, or discharge) especially where these can be provided at marginal cost to the project.

Community Health, Safety, and Security Management Plan (CHSSMP) document (see Appendix 3) is prepared by PT ITA, PT ITB, PT ITC which provides measures and plans in managing and mitigating impacts from the Project that may cause disturbance to community's health, safety, and security, as provided in UKL-UPL and ESHIA documents. It shall also set out protocol for disclosure of Project's health, safety, and security related information, as well as mechanism for grievances registering and resolution. The document should also include mechanism for ongoing report to the affected community.

The measures and plans set out in CHSSMP is to be implemented by EPC contractor during construction phase and O&M contractor during operational phase. Along with implementation of SEP, PT ITA, PT ITB, PT ITC will also be responsible for disclosing information and communicating it to local community, addressing grievances received, and ongoing reporting to the affected community.

Throughout the Project's lifetime, PT ITA, PT ITB, PT ITC will:

- Notify the affected communities of construction and operation activities prior to the implementation of concerned activities and update them whenever there is a material change to the information provided. This will include, but not limited to:
 - Transportation route and schedule of construction materials, heavy vehicles, and equipment mobilization;
 - Risks, prevention measures, and available treatment for the use of security personnel; and
 - Emergency Preparedness and Reponses Plan.
- Station a community liaison staff who is fluent in local language at the site;
- Aim for rapid response times in resolving grievances, if any; and
- Report to the affected communities on progress of this Community HS&S Management Plan.

The CHSSMP will also include regulations and standard in which the plan should be in compliant with; description of baseline on health, social, and economic condition of the Project area; communication strategy; grievance mechanism; information disclosure and communication in the event of emergency; as well as measures and actions necessary to address community health, safety, and security specific issues and impacts.

12 Contractor Management Plans

12.1 Construction HSE Management Plan

Construction Health, Safety, and Environment Management Plan (CHSEMP) is to be developed to identify the health, safety, and environmental management and mitigation actions required to execute the Project in accordance with the requirements of the International Finance Corporation's (IFC) Performance Standards and applicable Indonesian national and local laws, standards, and regulations. It provides a summary of the potential impacts associated with the solar farm and sets out the management measures required to mitigate these potential impacts. The site specific CHSEMP is to be prepared and implemented by the contractors and subcontractors commissioned by PT ITA, PT ITB, PT ITC for the Project and shall form the basis of activity-specific procedures prepared by the contractors as part of their construction work plan.

The potential impacts and associated mitigation measures and management procedures in CHSEMP shall be based on the management system laid out in the ESHS-MS document as well as baseline information and assessments provided in the UKL-UPL and ESHIA documents. The CHSEMP should be treated as living document and shall be updated as required during the Project construction.

12.2 Recruitment Plan

Contractor shall provide recruitment plan prior to construction commencing. This recruitment plan shall be focusing on local recruits to address requirement stipulated in UKL-UPL document. The recruitment plan shall detail the number and role/position of worker required for the Project; applicable regulation related to worker procurement; types of working arrangement including work time and wage/benefit; as well as method and procedure for worker recruitment.

12.3 Training Matrix and Management Plan

In order to ensure the personnel involved in the construction activities of the Project have the required skills and knowledge to perform their jobs/activities, it is important for the contractor to propose a Training Management Plan (TMP). The plan shall identify the training needs of the personnel through needs analysis and training matrix. It shall also refer to the applicable international standard related to the training, for example ISO 140001 regarding internationally recognized environmental system standard. The TMP shall provide adequate details on plan, schedule, and type of training to be conducted, as well as the qualification of trainers. The trainings that have been conducted shall be documented.

12.4 Waste Management Plan

Waste Management Plan (WMP) is to be prepared by the contractor that shall cover waste management during construction period. The document shall be use as guidance in the effort to reduce the production of waste to a minimum, to reuse or recycle where practical and to ensure that people or the environment is not compromised by poor waste management practices.

At minimum, the WMP document shall provide details on

- Applicable regulatory requirements that the Project must be in compliance with
- Roles and responsibilities of involved parties and personnel
- Waste classification, that shall include hazardous and non-hazardous waste

- Waste handling procedure, including waste collection, segregation, storage, transportation, and disposal
- Estimation of amount and type of waste to be generated during the construction period
- Proposed storage location in the Project area and the available disposal facilities around the area
- Management of contaminated land
- Recording and reporting

12.5 Security Management Plan

Contractor is required to establish Security Management Plan (SMP) in which the objective is to guide the Contractor's actions at the project in protecting against and mitigating risks of a security (as well as human rights) that could threaten communities, employees, facilities, and ability to operate, as well as the reputation of the Contractor, the Company, and its global operations.

The SMP document shall be formulated and implemented so to ensure that all Company's and Contractor's staff, sub-contractors, and visitors working at the project site and in the project area are able to do so in a safe and secure environment. It is also to ensure that all facilities are kept safe and secure, and that all project operations are unhindered. The contractor shall provide effective security-operational support to all project activities.

12.6 Emergency Preparedness and Response Plan

Emergency Preparedness and Response Plan (EPRP) is to be prepared by the contractor to be used as a guidance in managing emergency event, through the following

- Providing a management structure to manage the tactical and strategic issues resulting from an emergency
- Documenting the relationships between the Corporate Crisis Management Teams and the site-specific Emergency Response Groups
- Documenting the roles, responsibilities and checklist of the individual Emergency Management Team members
- Documenting the interfaces of the Emergency Management Team with external agencies. Providing relevant supporting performance, guidelines and contact lists.

12.7 Traffic Management Plan

Contractor is to establish Traffic Management Plan (TMP) to be implemented during construction period. The objective is to minimize the likelihood of traffic accident and disturbance to community during the construction period.

The TMP shall provide background on local context and key transportation issue in the area, existing condition of the road and its capacity. The management plan shall cover strategy for information disclosure, safety mitigation, type of signage and places to put temporary signage and flag-persons, Project's vehicles requirement, and driver discipline.

12.8 Worker's Accommodation Plan

At the current stage of the Project (as per November 2017), accommodation arrangements during construction are yet to be confirmed by the EPC. The base case is that the non-local workforce would stay in available accommodation within the local community. Onsite worker's accommodation may

be established if the available accommodation is not adequate to accommodate all the non-local workforce.

Should on site worker's accommodation is required during the construction period, the Contractor is obligated to prepare Worker's Accommodation Management Plan (WAMP). The WAMP document shall provide details on the arrangement of the worker's accommodation and shall ensure that the arrangement is in compliant with the requirements of the IFC/EBRD standard for the construction and operation of the worker's accommodation.

13 Implementation Plan

13.1 Time Scheduling

The ESHS-MS requirements set in this document should be implemented throughout the lifetime of the Project. Full use should be made of existing environmental protocols, programs, systems and recording systems where appropriate.

13.2 Communication

PT ITA, PT ITB, PT ITC shall establish and maintain procedures for the following:

- a) Internal communication between various functions and levels
- b) Receiving, documenting, and responding to external party interests

13.3 Incidents Management, Non-conformance, and Corrective Action

PT ITA, PT ITB, PT ITC shall provide a summary report of incidents and investigation outcomes for key incidents in the routine reports.

Notifiable environmental and social incidents of relevance to this ESMP include:

- Regulatory non-compliance including permit/licenses exceedance, liquids loss of containment (oils, diesel, hazardous liquids, chemicals);
- Solids loss of containment - > 40kg hazardous materials;
- Any stakeholder complaint or grievance; and
- Event that has heightened social impact or community concern or has the potential to attract adverse media attention.

Corrective actions (those that correct an actual deficiency) and preventive actions (those that remove the causes of a potential issue) are identified in response to a variety of management process and operational outcomes including the following:

- Risk assessments;
- Communications;
- Incidents and emergencies;
- Emergency preparedness and response planning;
- Audits; and
- Reviews.

PT ITA, PT ITB, PT ITC will develop a system for tracking all actions, including corrective and preventive actions as described above. Actions are prioritized, periodically reviewed, and completed in a timely manner. PT ITA, PT ITB, PT ITC Action Log tracks and manages actions including email notification of new actions and reminders for actions requiring completion, editing of action information by the responsible person, and action status reporting.

Corrective and preventive actions arising from non-conformances and incidents at the solar farm activities are managed in accordance with the incident management plan. Tracking of corrective and preventive actions should be provided, once responsibilities have been assigned and accepted, and completion deadlines have been set. Details of corrective actions are recorded in the incident logs and the actions are tracked to completion. Actions managed in an external contractor's system shall still be summarized in the incident logs. Recorded details of actions include:

- A clear description of the task;
- The action creator (the 'Assigned By' person in the incident logs);
- The action assignee (the 'Assigned To' person in the incident logs); and
- The required completion date;
- The person responsible for checking and closing the action.

Under the incident management system, contractors/sub-contractors are responsible for the implementation of all corrective actions and controls necessary to prevent recurrence of incidents within their areas of responsibilities.

Contractors and sub-contractors are to review and analyze all corrective actions and may propose corrective controls to prevent recurrences. The principal contractor HSE Manager or Safety Officer is accountable to ensure that the controls put in place are in compliance with relevant standards by:

- Analyzing all processes, operations, concessions, environmental records, reports including complaints, to detect and eliminate potential causes of non-compliance;
- Initiating preventative actions to deal with problems to a level corresponding to the risk encountered;
- Maintaining records of reviews and corrective actions;
- Maintaining a log of corrective and preventative actions for all incidents; and
- Tabling incident logs tabled at weekly progress meetings and monitored to ensure their effectiveness and timely close out of corrective actions.

Contractors shall be required to maintain a Non-Conformance/Incident Register and provide details of any such event in the Monthly Report to the ESHSU. The Register should be available for inspection by stakeholders approved by PT ITA, PT ITB, PT ITC.

13.4 Documentation

PT ITA, PT ITB, PT ITC shall maintain information relating to key elements of the ESHS-MS in hard copy and electronic format.

A documentation control system should be established and maintained to ensure that documentation is prepared in a standardized manner, stored, and retrieved for use and review.

13.5 Monitoring

PT ITA, PT ITB, PT ITC shall have systems in place to monitor and report environmental and social performance, as well as to assess and audit the effectiveness of the contractors' systems and plans (and those of their sub-contractors) to be able to manage and mitigate risks.

The contractors should develop and implement monitoring programs in their respective areas to measure the performance of various project activities against pre-approved objectives, standards or measures to meet the statutory approval regimes under all applicable Indonesia environmental and social laws. Monitoring required under these jurisdictions shall be conducted by suitably qualified persons. The monitoring methods, locations, parameters, and frequency are specified in the relevant approval conditions under these authorities.

During the construction and operation phase the monitoring programs, as set in the ESMP and required by the BLHD, shall be implemented based on the established protocols for each parameter.

A lender's third-party monitoring will also be undertaken at least in annual basis during the construction phase and number of years during the operation phase.

13.6 Auditing

PT ITA, PT ITB, PT ITC shall establish and maintain program and procedures for auditing the ESHS-MS to ascertain whether the ESHS-MS requirements have been conformed to and has been properly implemented and maintained. Auditing of compliance with the ESHS-MS shall be undertaken at least on an annual basis or more frequent if deemed necessary.

13.7 Reporting

Reporting and incident notification should be handled as part of the respective incident management processes managed by PT ITA, PT ITB, PT ITC, EPC Contractor and its sub-contractors, as well as contractors engaged during operation and decommissioning phases of the project.

The following are the reporting requirements consistent with each of the management plans:

- The EPC Contractor shall provide monthly updates on routine monitoring and auditing results;
- Non-routine monitoring and auditing results shall be communicated to the ESHSU Manager as they become available;
- As per UKL-UPL requirements, the Environmental Officer shall be responsible for the preparation and submission of regular (six monthly) monitoring report to BLHD and other related authorities;
- The Safety Officer shall prepare and submit to the regional (regency level) manpower body the occupational safety and health reports;
- Where additional reporting is required it is noted within the relevant management plan.

The EPC contractor and its sub-contractors are required to notify relevant authorities as soon as reasonably practical within a fixed period of becoming aware of incidents or non-compliances that result in (or could result in) harm. These notification requirements are specified in the Act No. 13 of 2003.

The incidents and non-compliance notifications and reporting regime may cover a range of triggers, these include but not limited to the following incidents:

- Any release of contaminants not in accordance with the conditions of the Ministry of Environment's (MoE) emissions and effluents standards;
- Accidents resulting to injuries or fatality(ies) should be reported based on the Ministry of Manpower (MoM) requirements;
- Any other non-compliance with any condition of the MOE and/or MOM regulations and/or standards;
- Any event where environmental or personal harm has been caused or may be caused; and
- Releases of any volumes of contaminants where potential serious or material environmental harm has occurred or may occur.

Apart from providing specific details of the incident or non-compliance, PT ITA, PT ITB, PT ITC should investigate the cause of the incident or non-compliance and provide the administering authority written reports, which should include:

- The root cause of the emergency or incident;
- The confirmed quantities and types of any contaminants involved in the incident;
- Number of people involved in the incident;
- Results and interpretation of any analysis of samples taken at the time of the emergency or incident (including the analysis results of any impact monitoring);
- A final assessment of the impacts from the emergency or incident including any actual or potential environmental or personal harm that has occurred or may occur in the longer term as a result of the release or incident;
- The success or otherwise of actions taken at the time of the incident to prevent or minimize environmental or personal harm;
- Results and current status of stakeholders' consultation, including commitment to resolve any outstanding issues and/or concerns; and
- Actions and/or procedural changes to prevent a recurrence of the emergency or incident.

PT ITA, PT ITB, PT ITC shall provide written advice to MOE of the results of any monitoring performed in relation to an emergency or incident that results in the release of contaminants not in accordance with, or reasonably expected not to be in accordance with, the emissions and effluents standards. The report shall be provided as soon as practicable, but not more than six weeks following the specific monitoring activities.

Observed non-conformances and incidents associated with non-conformances should be recorded and reported using the Incident Management processes that have been established by PT ITA, PT ITB, PT ITC and the EPC contractor. Where non-conformances are identified as a result of a site inspection, assessment or audit, the results should be contained in the relevant inspection, assessment and audit reports, and corrective and preventive actions assigned to responsible managers and tracked until they are closed out.

PT ITA, PT ITB, PT ITC shall require the EPC Contractor to report lagging and leading HSE indicators against targets to PT ITA, PT ITB, PT ITC monthly on the 15th business day after the end of each month. Specific measurements for the PT ITA, PT ITB, PT ITC's SO and EPC Contractor to report are set out in the OHS Plan, and may include:

- Employee and contractor working hours;
- Recordable injuries;
- Environmental or social incidents;
- Number of near misses;
- Number of observations, including hazards and positive behaviors; and
- Other leading indicators reviewed and agreed during HSE strategic planning based on the stage of business development and priority risks, and being representative of HSE management system effectiveness and HSE culture that can affect future performance and guide improvement plans.

PT ITA, PT ITB, PT ITC's EO and the EPC Contractor are responsible for ensuring that relevant metrics are tracked and reported in the monthly performance reports.

External reporting of the project's environmental and social performance (other than reporting to Regulatory authorities) is currently limited to the provision of data and case studies for public

sustainability reports prepared by the ESHSU submitted to the Lenders and other external reports as may be necessary.

The EPC Contractor shall establish and maintain procedures for identification and maintenance of EMP records.

13.8 Management Review

The purpose of management review is to:

- Ensure that management reviews are conducted regularly;
- Ensure that an accurate reporting system is in place in documenting the results of the management reviews; and
- Ensure continual development for the ESHS-MS.

The review shall be carried out by management annually. The following item of ESHS-MS shall be reviewed:

- ESHS performance;
- Changes to activities/products, and/or services, and developments in ESHS legal and other requirements related to ESHS aspects;
- Results of the internal and external ESHS-MS audits;
- Communications to stakeholders including complaints;
- Follow-up actions from previous management reviews;
- Status of corrective and preventive actions; and
- Opportunities for continual improvements

**ANNEX F LAND ACQUISITION
PROCEDURE**



**3 x 7 MWp LOMBOK SOLAR SITES
LAND ACQUISITION PROCEDURE
PT ITA, PT ITB, PT ITC**



February 2018

This Land Acquisition Procedure is prepared for the three solar sites in Lombok. This document details the land acquisition procedure as well as the outcomes of the land acquisition process.

Document REVISION Control

Document Signoff

Nature of Signoff	Person	Signature	Date	Role
Prepared by	Ratih Pujiastuti			ESG Officer (EE)
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Once printed, this is an uncontrolled document unless issued and stamped Controlled Copy.

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1 Background

1.1 Introduction

Lombok Solar Farm Project (hereinafter referred as the “Project”) involves the development of solar power generation facility with the total capacity of 15 MWac and 20 kV overhead transmission line in Lombok Island, Nusa Tenggara Barat (hereinafter referred as “NTB”) Province. The Project is spread in three sites of each 7 MWp (5 MWac) connected to a 20 kV substation in Pringgabaya, Selong, and Sengkol. The Project will be developed and will be operated by PT Infrastruktur Terbarukan Adhiguna (“ITA”), PT Infrastruktur Terbarukan Buana (“ITB”), and PT Infrastruktur Terbarukan Cemerlang (“ITC”), together referred as the “Proponent or Company”, who are Special Purpose Vehicle (SPV) companies established and owned by Equis Energy. The company has secured the land on the basis of willing-seller willing-buyer principle. This document is intended to support the completion of the land acquisition process and describe the process undertaken thereof.

1.2 Project Setting and Timeline

The land use for all sites were observed to be primarily low yield, dry land agriculture with cashew, corn and coconut trees crop type. It is classed as being suitable for solar PV use in accordance with the local spatial planning mapping. The land acquisition for this Project Component has been completed and the certification process (HGB) has also been completed. The land acquisition process had been undertaken based on a willing-buyer willing-seller principle which will be further discussed in the context of this document.

The Project is located in three different sites. Information summary of the Project is presented in Table 1 and the location of Project is presented in Figure 1 below.

Table 1 Information summary of Lombok Solar Project

Item	Pringgabaya	Selong	Sengkol
Name	Pringgabaya solar farm	Selong solar farm	Sengkol solar farm
Capacity	7 MWp (5 MWac)	7 MWp (5 MWac)	7 MWp (5 MWac)
Number of Modules	21,540 panels	21,540 panels	21,540 panels
Location	Pringgabaya Utara village, Pringgabaya district, Lombok Timur regency	Geres sub-district, Labuhan Haji district, Lombok Timur regency	Sengkol village, Pujut district, Lombok Tengah regency
Land area required	Solar farm: 8 ha	Solar farm: 8 ha	Solar farm: 8 ha
Land area acquired	11.19 Ha	8.63 Ha	8.73 Ha
Land use	Rain fed agriculture		
Grid Connection	3.5 km 20 kV overhead transmission line to PLN Pringgabaya 150/20kV substation: 3.1 km on private land and 0.4 km on existing ROW	9.2 km 20 kV overhead transmission line to PLN Selong 150/20kV substation: 3.06 km on private land and 6.12 km on existing ROW	2.6 km 20 kV overhead transmission line to PLN Sengkol 150/20kV substation: 1 or 2 poles on private land, and the rest are on existing ROW.

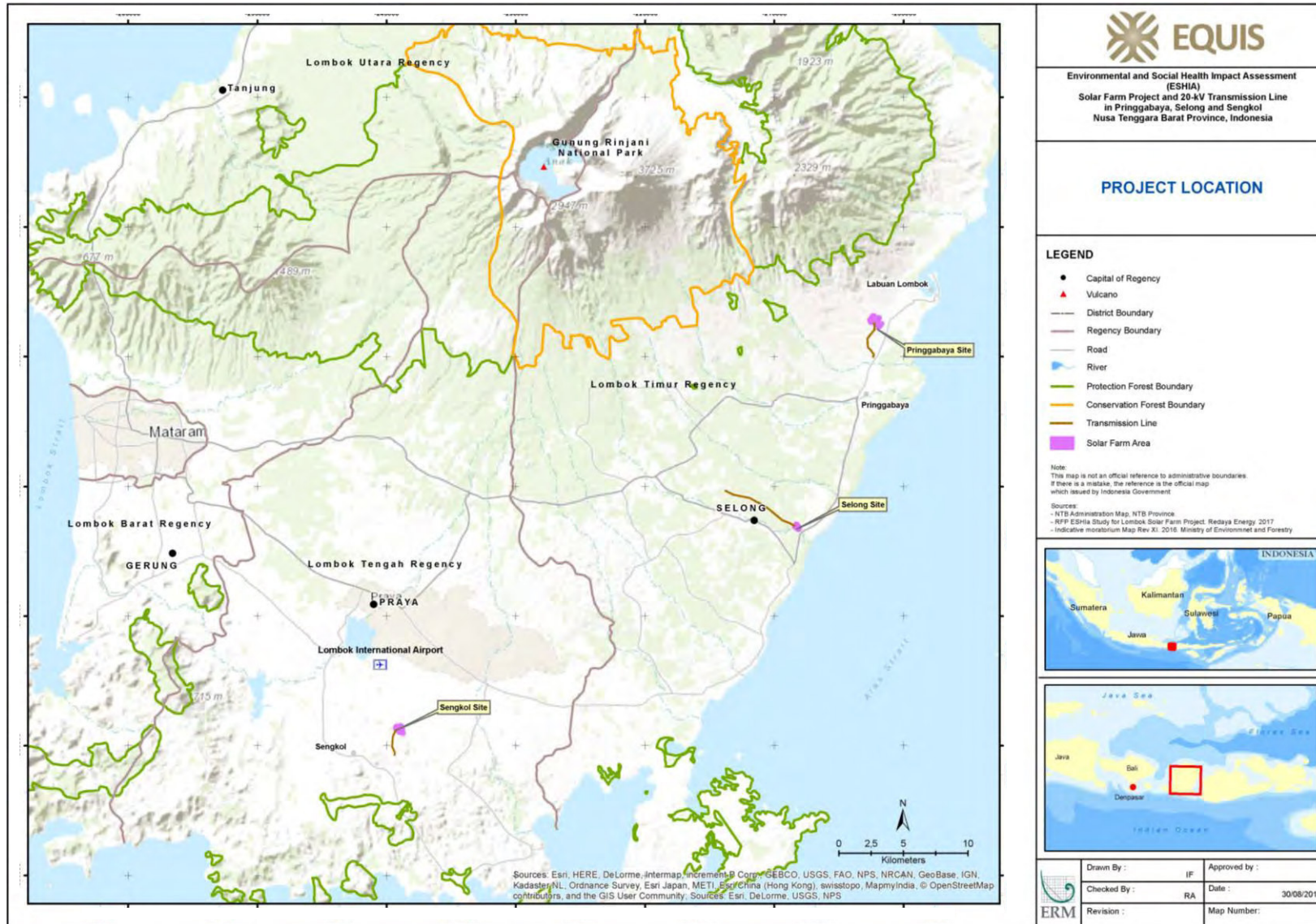


Figure 1 Project Location

The Project's construction is expected to commence in March 2018 and completed in March 2019. The detail of Project timeline is presented in Table 2.

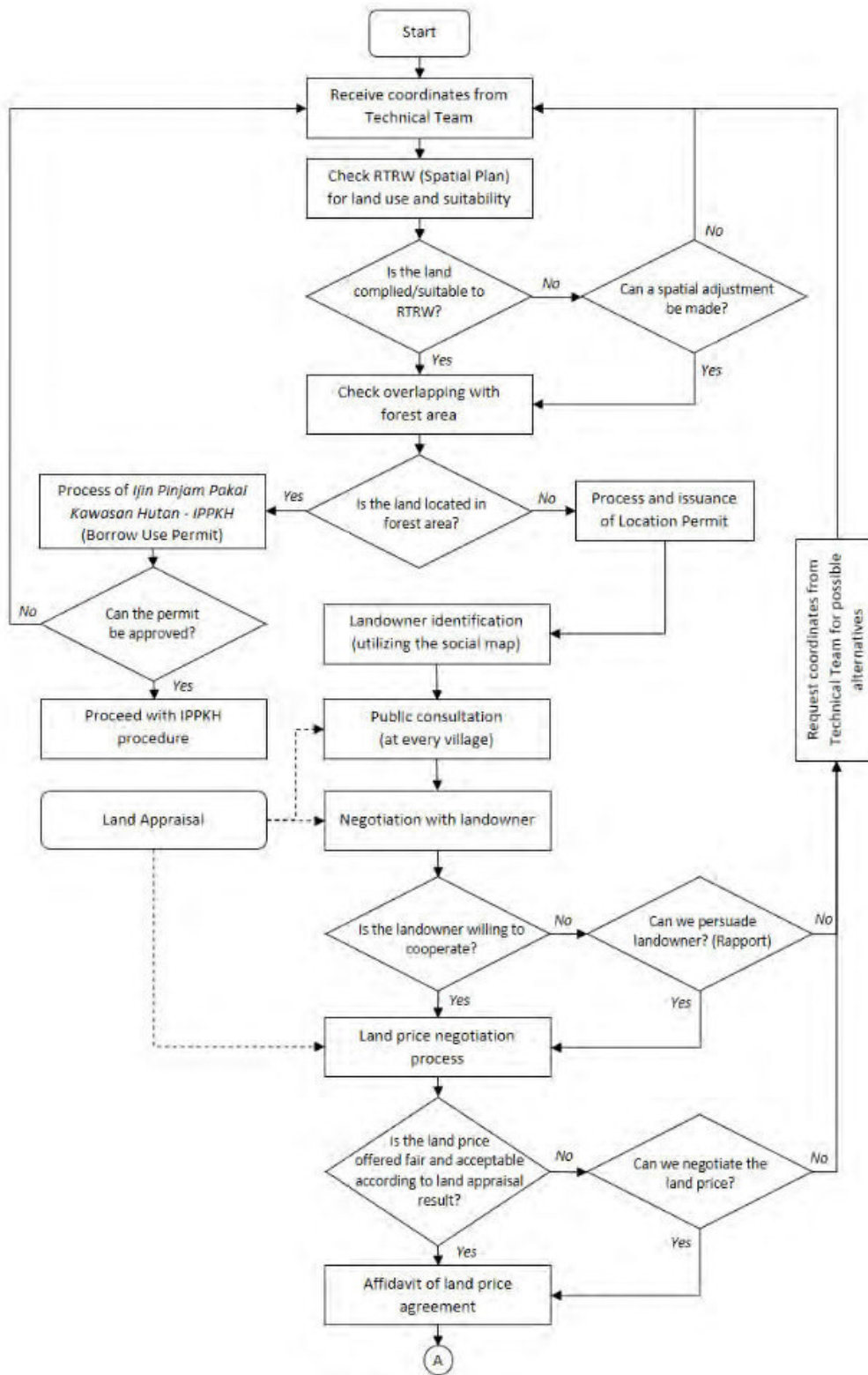
Table 2 Project Timeline

Activities	Time
PPA Sign	2 Aug 2017
Financial Close	15 Mar 2018
EPC Contract Sign	13 Nov 2017
NTP	15 Mar 2018
Commercial Operation	15 Mar 2019
Operation	Mar 2019

2 Land Acquisition

2.1 Land Acquisition Procedure

Land acquisition for renewable energy projects carried out by Equis Energy in Indonesia is conducted following the flowchart below:



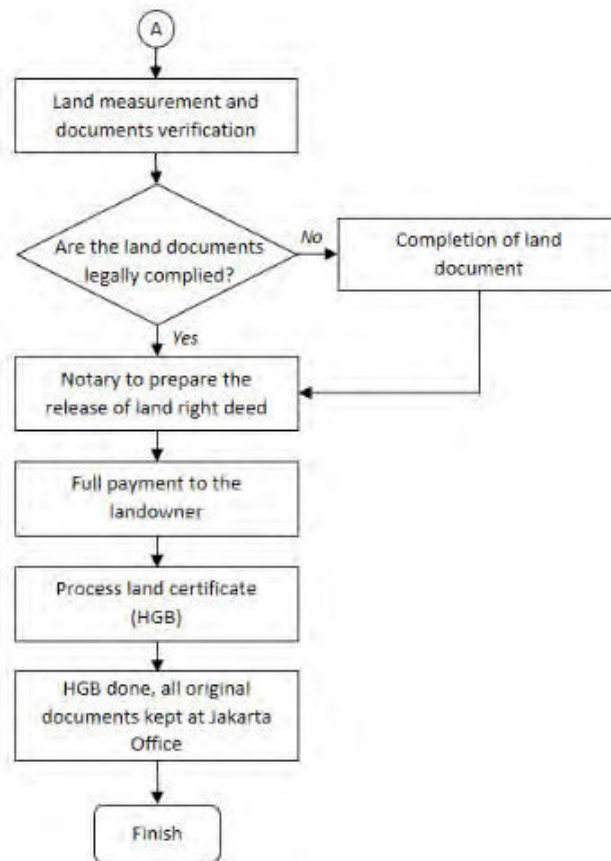


Figure 2 Land acquisition flowchart

The process in the flowchart is detailed in the following:

a. Receive coordinates from Technical Team

Based on their desk-top study, the Technical Team provides coordinates of the project area. Since the study is based on the secondary data, it is possible that the project is located in an area that is not suitable for the project. In addition, the designated project area may have different land use with the Regional Spatial Plan.

b. Check Regional Spatial Plan (RTRW)

The project area must comply with the Regional Spatial Plan (RTRW). All permits required for the project refer to the spatial plan, otherwise no permits will be granted by the government. Therefore, it is critical that the Land Management Team checks with BAPPEDA and Dinas Tata Ruang. The Land Management Team is to ensure that the relevant regulations are complied, otherwise the coordinates must be revised. The Technical Team needs to find new coordinates.

c. Land use and land suitability adjustment

If the project area is not suitable, a spatial adjustment will be required to allow the project to move forward. CLO shall submit a letter to Dinas Tata Ruang to obtain an approval for adjustment.

d. Check overlapping with forest area

The project area must also be checked to determine whether a forestry permit (IPPKH) is required. An application letter is to be submitted to BPKH to know if the project is located in forest area or non-forest area (APL). BPKH will then give a technical considerations report so that we can proceed.

e. Process of Forestry Permit (IPPKH)

If the project is in forest area, an application for forestry permit is to be submitted to the Department of Environment and Forestry. The permit is granted by the Minister. The process to obtain the permit is complicated and lengthy as it can take up to two years. The permit requires many documents before it is granted.

f. Process and issuance of Location Permit

Location permit is an essential prerequisite to commencing land acquisition in Indonesia. A location permit allows a company to acquire the land needed for its operation, and serves as a license for the transfer of rights and for utilizing the land for its investment. The location permit is obtained from the Regent with jurisdiction where such land is located. Within 12-36 months after the issuance of the location permit, the company must purchase all the land requirement from its original owners. After the lapse of the period, the company can no longer purchase land, unless they apply for location permit renewal.

g. Landowner's identification

After all land use and suitability checking is completed and that the project area is clear, the land team needs to identify the landowners of the project area and obtain their data such as name, address, occupation, land certificate, land tax, etc. CLO, together with the land team, need to start establishing good relationship with the landowners. The relationship building is very critical to the project as it will have impacts on the future of the project. CLO is recommended to use the information gathered during social mapping activities.

h. Land Appraisal

An independent consultant shall be engaged to conduct land appraisal to the proposed project area. The result of appraisal acts as a basis in determining land price as it has taken into account the market price, government determined price (e.g. NJOP), and also similar land acquisition previously undertaken by other projects (if any). The range of land price from the appraisal will be used for the land team as a reference to do the negotiation.

i. Public Consultation

During public consultation, the procedure of land acquisition will be socialized to the identified landowners in every village. Head of village and village officials shall be involved in the public consultation.

j. Landowner's willingness to cooperate

It is common that landowners are not willing to cooperate when it comes to land compensation. The reason is obvious that they wish to increase the land price. Therefore, the role of CLO is critical in making sure that the landowner can be approached.

k. Persuasion to landowner

When landowner refuse to sell their land, the land team needs to establish a good rapport with the landowners. The land team needs to persuade by explaining the following:

- the importance of the project and welfare of the community and regional economic development
- key social and environmental metrics
- all key impacts of the projects must clearly be discussed

l. Land price negotiation process

Negotiation with landowner is very critical. The land team together with CLO needs to use negotiation skills as much as possible. The ultimate target is to achieve a fair and reasonable price which is agreed by both parties. The land team must bear in mind that the agreed price will have repercussion on the future price. Therefore, the land team must be patient and careful negotiating the price.

m. Affidavit of land price agreement

During negotiation process, it is expected that there will be a land price that is agreed by both parties. Landowner and the land team are to sign an affidavit agreement which has a legal binding. The head of village (preferably also head of district) shall endorse the agreement.

n. Land measurement and documents verification

Upon the signing of price agreement, the land team will go to the site to measure the land. The land team is to be accompanied by the landowner, the neighbors and village officials. The measurement must be signed by all parties and treated as land document. In addition, the land team is also to verify all land documents which must be checked and verified by our legal staff.

o. Completion of land documents

If some of the land documents are missing, CLO must use his/her sources to ensure that all land documents are available. Notary shall be engaged to prepare the release of land right deed as well as land certification.

p. Full payment to landowner

When all land measurement and documents are verified, the land team is to arrange a payment to landowner. A down payment of 10% is allowed to be given provided that the land team has secured some of the original documents. The preferred payment method is by bank transfer; however, cash payment may also be conducted under certain circumstances in which bank transfer is not possible.

q. Original land documentation

All original land documents must be in digital format and kept by our legal staff. CLO is to keep copies. Legal Officer is to sign off all the documents for completion of the process.

2.2 Land Acquisition Outcomes

2.2.1 Project Siting

The Project, in all three sites, has secured Location Permit No. 1283/503/PM.II/2017, No. 1904/503/PM.II/2017 and No. 503.31/977/2017 for Pringgabaya, Selong and Sengkol project respectively issued by the local government. The Location Permit allows the Company to acquire the land needed for the solar farm. It is stipulated in each Location Permit that each Company can purchase all required land for the project from its original owners within 3 years after issuance of the permit.

It is also confirmed that there is no overlapping between the proposed project areas with the forestry area. All lands are entitled to be converted from agricultural land through the provision of Right to Build (locally known as Hak Guna Bangunan, abbreviated as HBG).

After Location Permit is secured, land survey was conducted through marking the location for solar PV, access roads, transmission lines, access from public roads, and pooling substation. These details were communicated to the land team who approached respective landowners for the purchase of the identified parcels of land.

If the landowner is amenable, price negotiations ensued. If not, the land team and CLO need to persuade by explaining to the landowner the importance of the project to the welfare of the community and the benefit to regional economic development, as well as all key social and environmental metrics. If the landowner is still not amenable, the land team reverted to the technical team for advice on the coordinates of an alternative site within the permitted area covered in the Location Permit.

Alternative siting was simplified by the fact that the terrain in which the Lombok Solar Farm is situated in a relatively flat area with close proximity to alternative empty land. Thus, in instances where landowners chose not to sell, alternative sites were able to be secured. The final location and layout of the Project components presented in Figure 3, Figure 4, and Figure 5 show that the Project siting was adjusted based on land made available to the Company by landowners who agreed to sell their land.

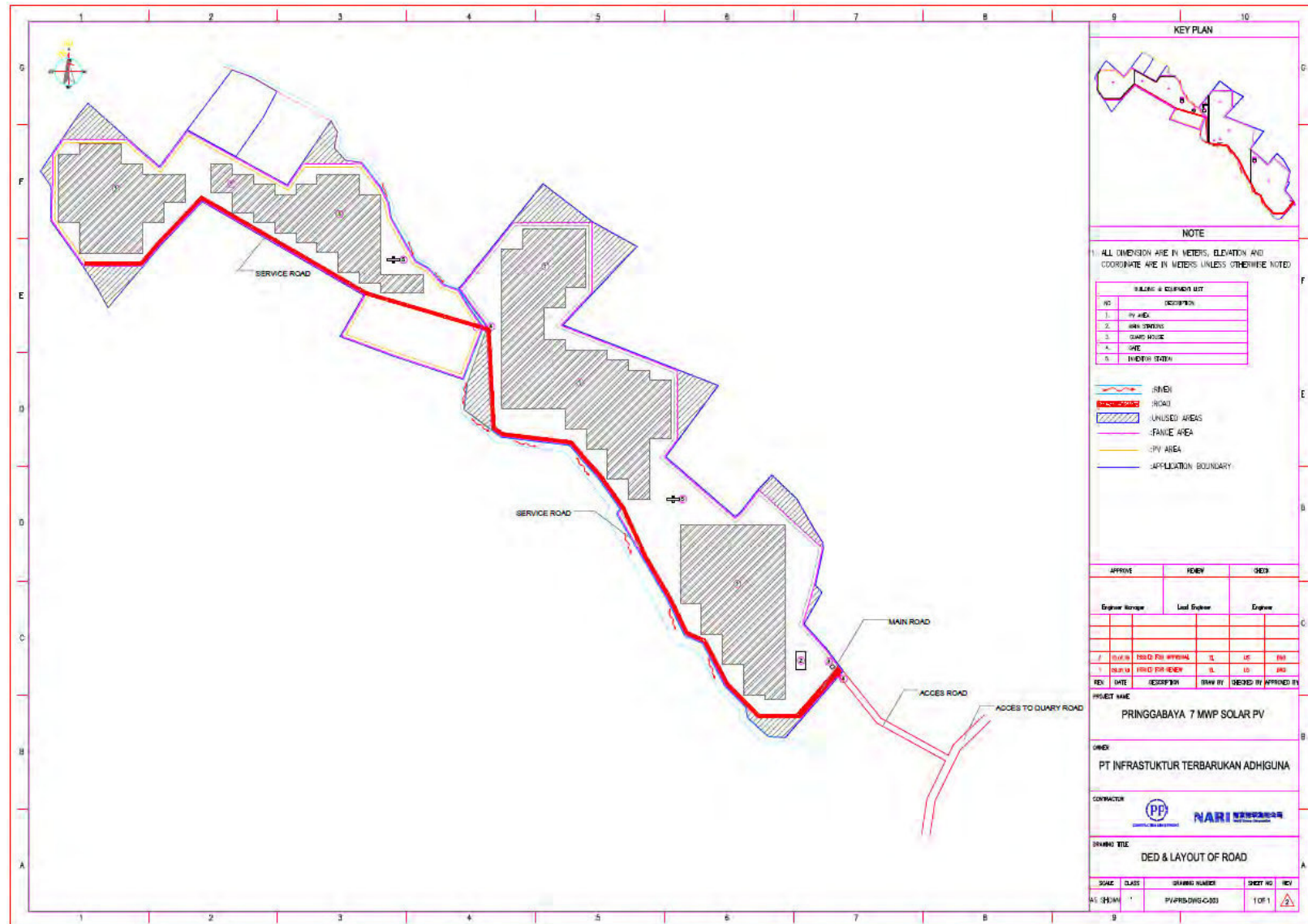


Figure 3 Pringgabaya Solar Farm Layout

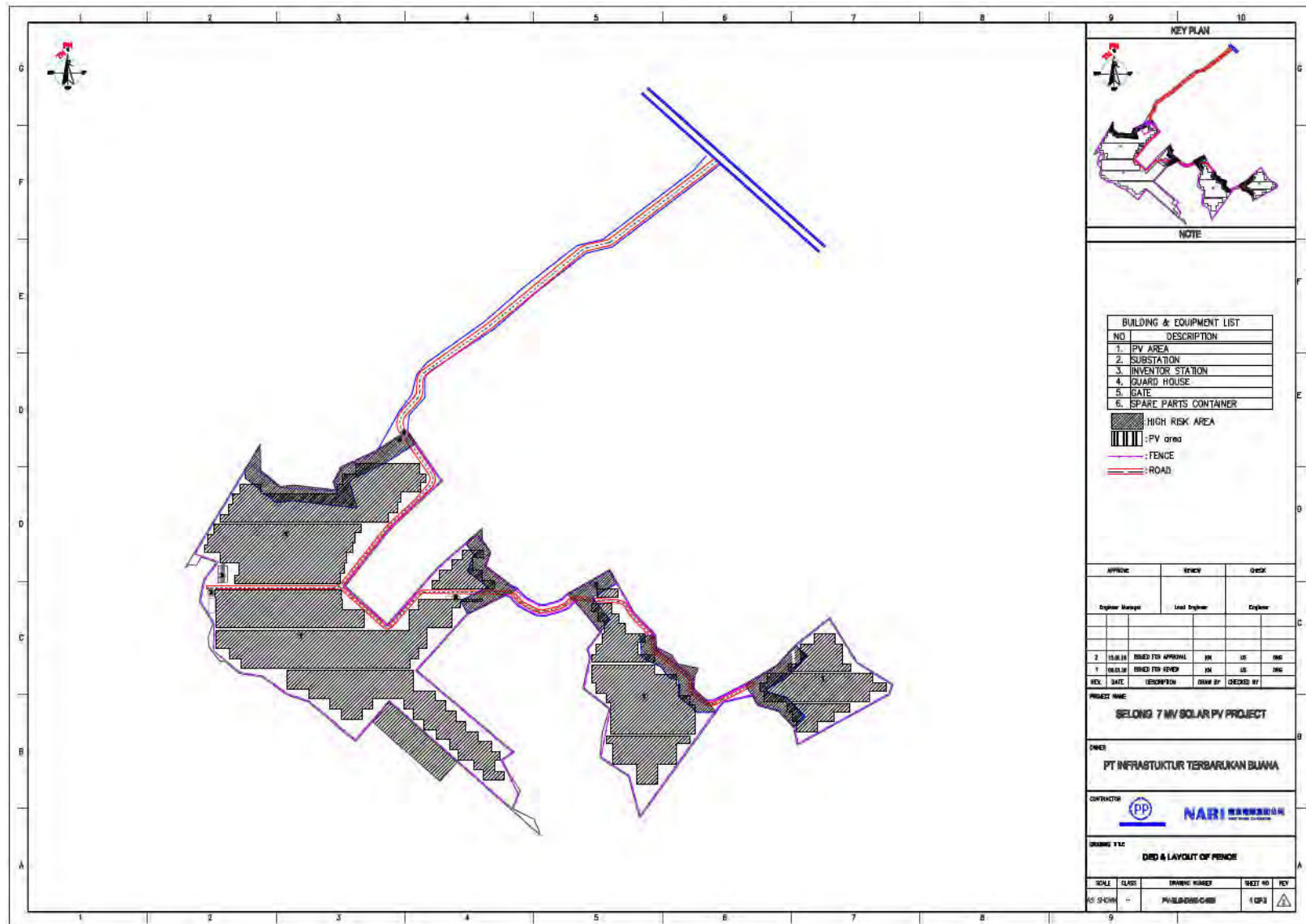


Figure 4 Selong Solar Farm Layout

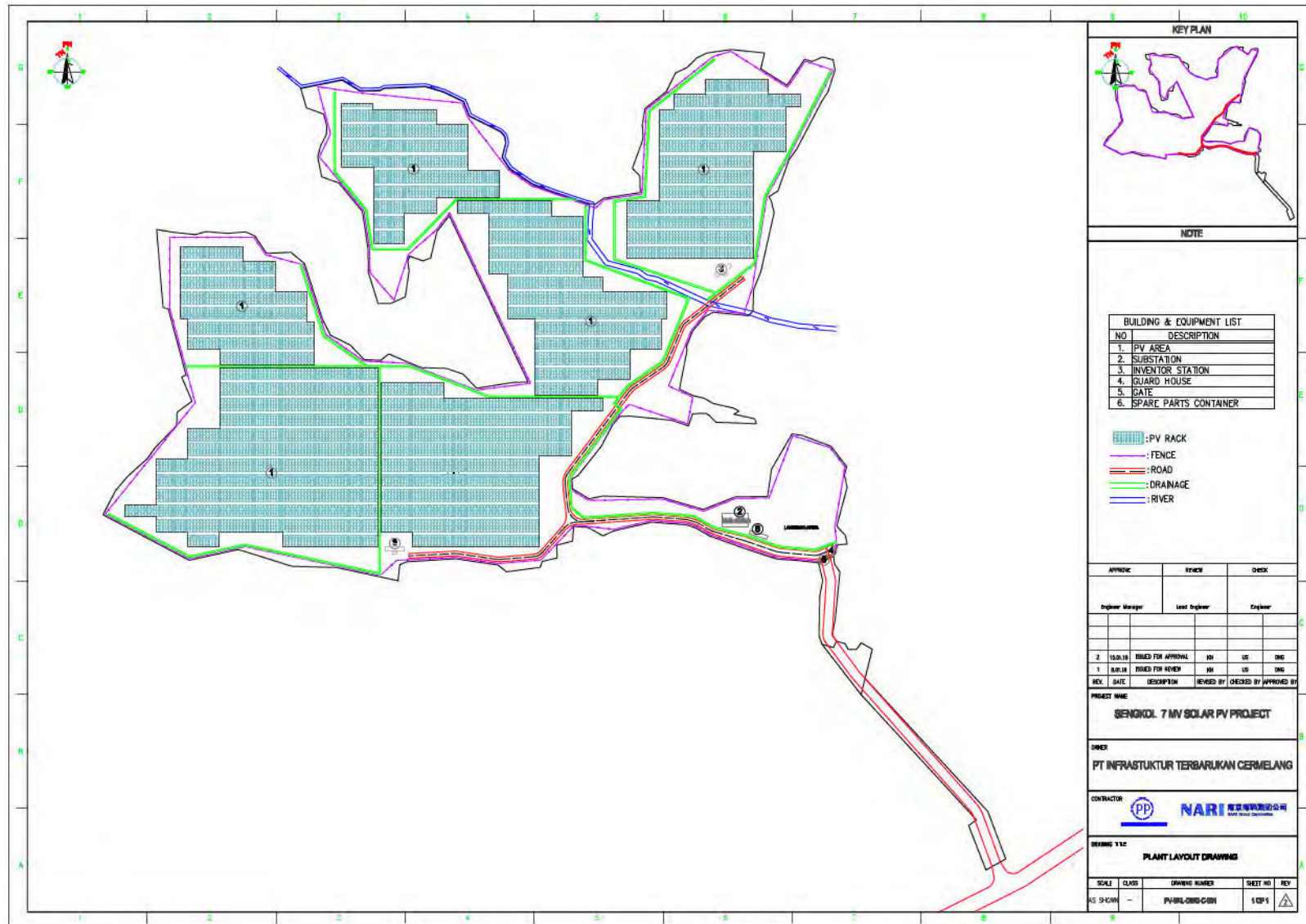


Figure 5 Sengkol Solar Farm Layout

2.2.2 Land Price

Equis Energy commissioned Office of Public Appraisal Service (KJPP) Firman Suryantoro, Sugeng Suzy Hartomo & Partners to prepare land appraisal report that was then used to compare the market price of the subject parcels of land. The majority of land purchased by the Company is located within dry agricultural and most of them are not immediately adjacent to roads.

The detailed appraised value of land in each village is presented in Table 3 below.

Table 3 Appraised value of land in each village

Site	Total land acquired	Land classification	Appraised value of property (IDR per m ²)	Appraised value of property (IDR per m ²)
Pringgabaya	11.19 Ha (16 landowners)	Low yield rainfed agriculture/dry land. Dominated with seasonal tobacco, corn and cashew.	Adjacent to the road: IDR 400,000 – 500,000 No access road – dry land: IDR 40,000 – 70,000	42,000
Selong	8.63 Ha (11 landowners)	Low yield rainfed agriculture/dry land. Mostly abandoned land.	Adjacent to the road: IDR 300,000 – 400,000 No access road – dry land: 35,000 – 60,000	39,000 – 90,000
Sengkol	8.73 Ha (15 landowners)	Low yield Rainfed agriculture/dry land. Dominated by paddy field, corn and tobacco	Adjacent to the road: IDR 1,000,000 No access road – dry land: 50,000 – 90,000	95,000 – 250,000

Negotiations with landowners resulted in the final purchase price in the range of IDR 39,000 to IDR 250,000 per m² with land adjacent to the road fetching the highest price at IDR 250,000 per m².

In Selong, land parcel adjacent to main road has an appraised value of IDR 300,000 to IDR 400,000 per m². However, the Company acquired the land at IDR 90,000 per m² (below the appraised value) because the landowner also have land in other location in which company acquired with land price higher than the appraised value. Therefore, the combined land price is still higher than the appraised value. This is also the case in Sengkol site.

In Pringgabaya, compensation was determined at village level and the rate agreed is IDR 42,000 which applied uniformly across all parcels within the village to mitigate against potentially negative effects of jealousy among landowners.

2.2.3 Land Area for Project Components

Land secured for the Project components in each sites is detailed in Table 4 as below. The total land secured for the Project is 11.19 Ha, 8.63 Ha, and 8.73 Ha for Pringgabaya, Selong, Sengkol, respectively.

Table 4 Land for project components

Site	Land for Project components (Ha)		Total (Ha)
	Solar farm	Access road	
Pringgabaya	11.13	0.06	11.19
Selong	7.79	0.84	8.63
Sengkol	8.58	0.15	8.73

2.2.4 Information Disclosure and Land Document Completion

Landowners were first informed about the project during the initial consultations held for the UKL-UPL process, in which the community was presented with the project plan, its potential impacts, and mitigation measures. However, the land acquisition process was only initiated when the Company secured Power Purchase Agreement (PPA) in August 2017 with PLN.

To facilitate completion of land requirement for the project, the Company commissioned a land aggregator to support the land team. A map of the subject parcel of land was presented to landowners for area and boundary verification. The land team accompanied by the landowner, the owners of the neighbouring lands, and village officials inspected the subject parcel of land, and in the cases of uncertified lands, or where boundaries are disputed, the district land office joined the land inspection. The confirmed land boundary and measurement was signed by all concerned parties after inspection.

Landowners were given a list of required identity and land documents for submission to the land team. A conditional land purchase agreement was entered between the Company and landowner with 10% of the purchase price as partial payment (down payment) and the full payment conditioned upon submission of all the required documents. Upon verification of the required documents by the local notary and confirmation by the Company legal counsel, the land purchase agreement was signed in the presence of a notary public with full payment of land purchase price. A community liaison officer (CLO) was assigned to ensure open communication throughout the land purchase process.

From the latest layout project map, it can be seen that the project has conducted the land acquisition voluntarily. Should land owner rejected the offer, the Company will seek another alternative land instead of insisting to the landowners to sell their land. There were also instances where the landowners refused to sell only a fraction of their land, to which the Company was asked to buy the whole plot of the land. This cases have caused the Company to buy more land than what is actually required, especially in Pringgabaya site.

2.2.5 Grievance Mechanism

With respect to the land purchase, land acquisition process (i.e. mechanism, land price determination, compensation, and eligibility), as well as grievance mechanisms were socialized to landowners as early as the three projects commencing its land acquisition in December 2016. Most of the grievances received required clarification on the land purchase processes particularly with respect to the price of land parcels, land measurements, and land ownership disputes. All

dispute/grievance can be addressed in good faith by CLO and landowners, and usually mediated by the head of village.

A flowchart of the grievance mechanism applicable at the site is as follow:

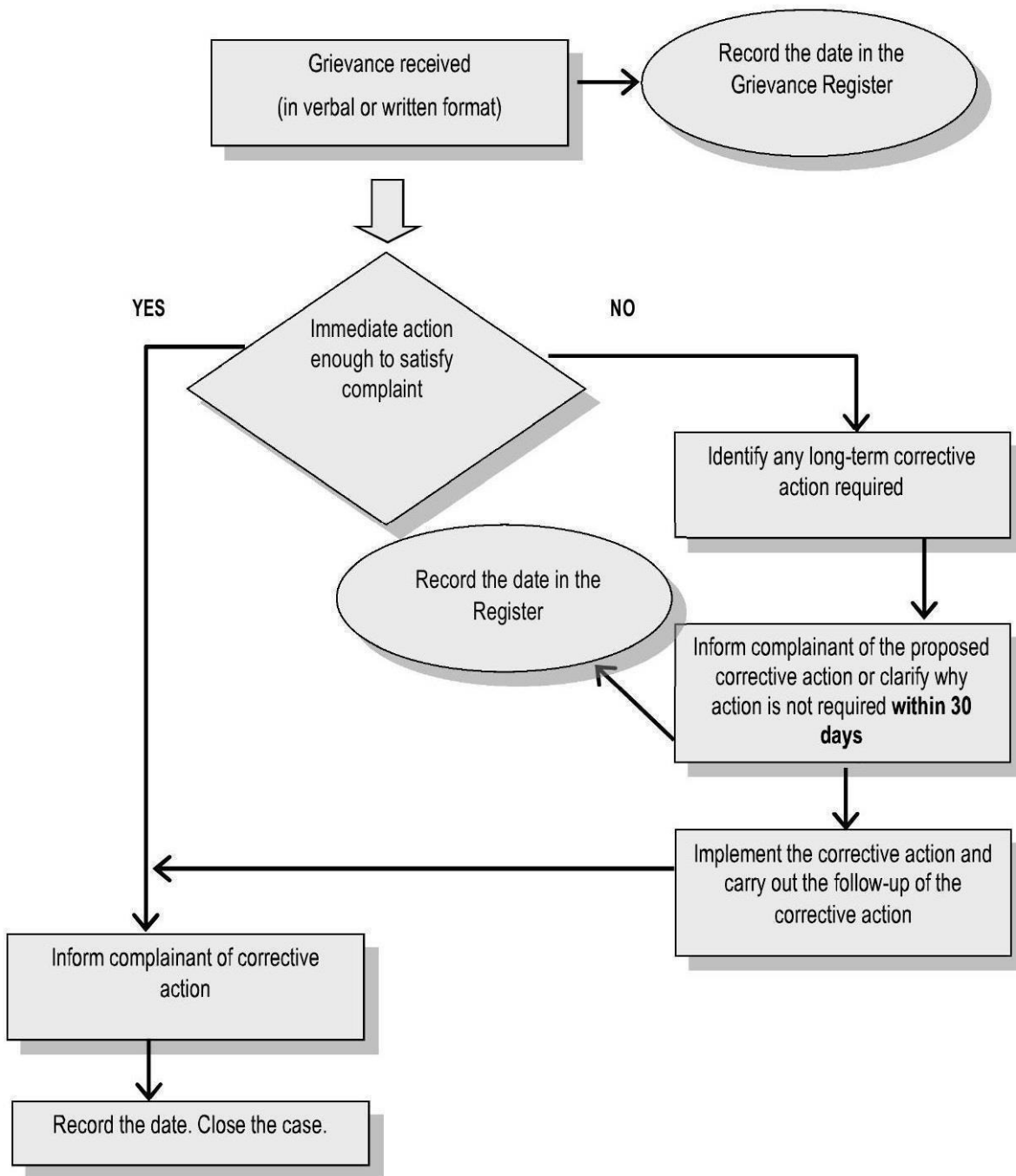


Figure 6 Grievance Mechanism Flowchart