



Tuan Binh Wind Power JSC

# Environmental and Social Impact Assessment - Volume 1

Loi Hai 2 Wind Power Project, Ninh Thuan  
Province

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# Environmental and Social Impact Assessment - Volume 1

Loi Hai 2 Wind Power Project, Ninh Thuan Province

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## Acronyms and Abbreviations

<b>Name</b>	<b>Description</b>
ADB	Asian Development Bank
ASEAN	Association of South East Asian Nations
COD/TOC	Commercial Operation Date
CSP	Services and Productions
CSR	Compensation, Support and Resettlement
DoNRE	Department of Natural Resources and Environment
EHS	Environmental, Health and Safety
EIA	Environmental Impact Assessment
EPP	Environmental Protection Plan
ESIA	Social Impact Assessment
ESMP	Environmental and Social Management Plan
EVN	Vietnam Electricity
FS	Feasibility Study
GHG	Greenhouse Gas
IFC	International Finance Corporation
MOIT	Ministry of Industry and Trade
MW	Mega Watt
PCs	People's Committees
PPAs	Power Purchase Agreements
REMDP	Resettlement and Ethnic Minority Development Plan
SEA	Strategic Environmental Assessment
SPS	Safeguard Policy Statement
TBW	Thuan Binh Wind Power JSC
UXO	Unexploded ordnance
VEPA	Vietnam Environment Protection Agency
WTG	Wind Turbine Generator

## 1. INTRODUCTION

### 1.1 Purpose of the Report

This Environmental and Social Impact Assessment (ESIA) presents an assessment of the potential environmental and social impacts associated with the proposed Loi Hai 2 Wind Power Project in Vietnam.

ERM Vietnam (ERM) was commissioned by Thuan Binh Wind Joint Stock Company (hereinafter as “TBW” or “Client”) to undertake an ESIA of the Loi Hai 2 Wind Power Project. The purpose of the ESIA is to inform TBW and their Project partners of the environmental and social impacts associated with the Project and in particular the extent to which the Project aligns with the expectations of the International Finance Corporation (IFC) Performance Standards and associated World Bank Group Environmental, Health and Safety (EHS) Guidelines.

The ESIA assesses the environmental and social impacts based on the agreed scope of baseline data collection and impact assessment and precludes the preparation of an Environmental and Social Management Plan (ESMP).

### 1.2 Project Background

Loi Hai 2 Wind Power Project (hereinafter as “Loi Hai 2”) has installed capacity of 30MW with seven turbines situated in a study area of 523 ha in Loi Hai commune, Thuan Bac district, Ninh Thuan province. The project will require permanent land acquisition for the turbine bases, transmission line tower foundations, turbine connection road and access road. A local Environmental Impact Assessment (EIA) was prepared by a local consultant in July 2017 and approved by the Ninh Thuan Province People’s Committee in Decision No. 1505/QD-UBND dated 1st August 2018. An Environmental and Social Impact Assessment (ESIA) for Loi Hai 2 was completed in 2017 by AF-Consult Switzerland Ltd and VATEC in compliance with KfW’s Sustainability Guidelines, Asian Development Bank (ADB) 2009 Safeguard Policy Statement (SPS) and 2013 Land Law of Vietnam.

As to the time of this reporting, the construction of the Project is expected to start by the end of December 2020. The Commercial Operation Date is scheduled in November 2021.

### 1.3 Environmental and Social Impact Assessment Objective

The objective of this ESIA is to assess the potential impacts of the wind power project on the environment, biodiversity and socio-economic development of affected areas, and to propose measures in order to avoid, reduce or mitigate negative impacts against the applicable standards to support TBW’s application for finance from International Lenders.

### 1.4 Structure of the ESIA

The structure and contents of the ESIA are as follows:

Volume	Chapter	Chapter Title
<b>Executive Summary</b>		
1	1	Introduction
	2	Project Description
	3	Administrative Framework
	4	Impact Assessment Methodology
	5	ESIA Screening and Scoping

Volume	Chapter	Chapter Title
	6	Stakeholder Engagement
2	7	Environmental Baseline
	8	Socio-economic Baseline
3	9	Environmental Impact Assessment
	10	Social Impact Assessment
	11	Unplanned Events
	12	Cumulative Impact Assessment
4	13	Environmental and Social Management Plan

## Appendices

## 2. PROJECT DESCRIPTION

The following section provides a description of the site and project selection process and explores the alternatives to meet the energy demand in Vietnam. It then focuses on the Project assessed in this ESIA including the Project site and associated infrastructure, facilities and project management during construction and operation phases.

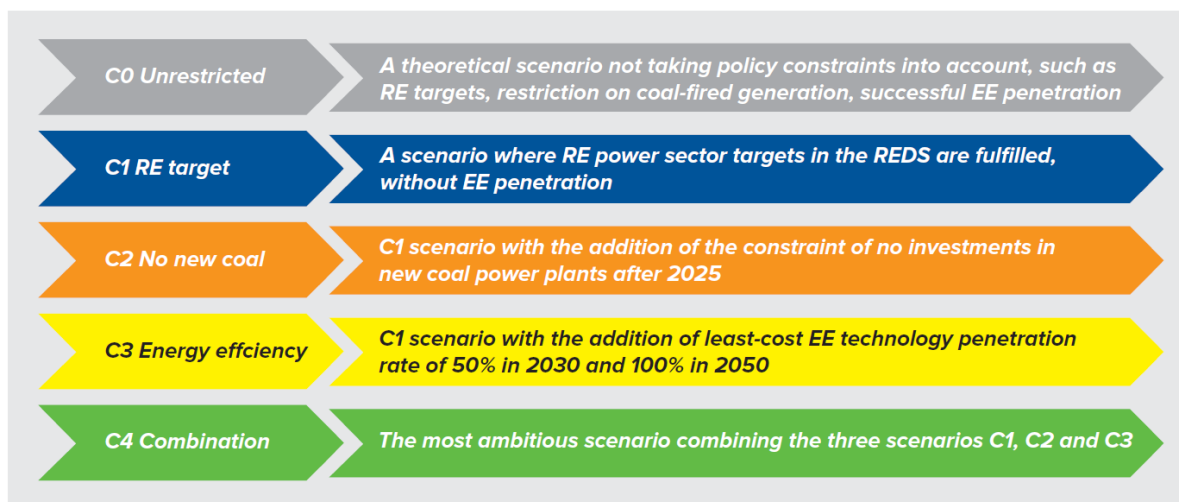
### 2.1 Project Alternative

An Alternatives Analysis was undertaken through a systematic approach, to identify and analyse alternative options for the Project's development in an effort to best balance economic, environmental and social needs. The purpose of the analysis is to identify the most feasible options for meeting the sustainable development objectives of the Project. IFC PS Guidance Note 1 defines the analysis as:

"An examination of technically and financially feasible alternatives to the source of such impacts, and documentation of the rationale for selecting the particular course of action proposed."

#### 2.1.1 No Project Scenario

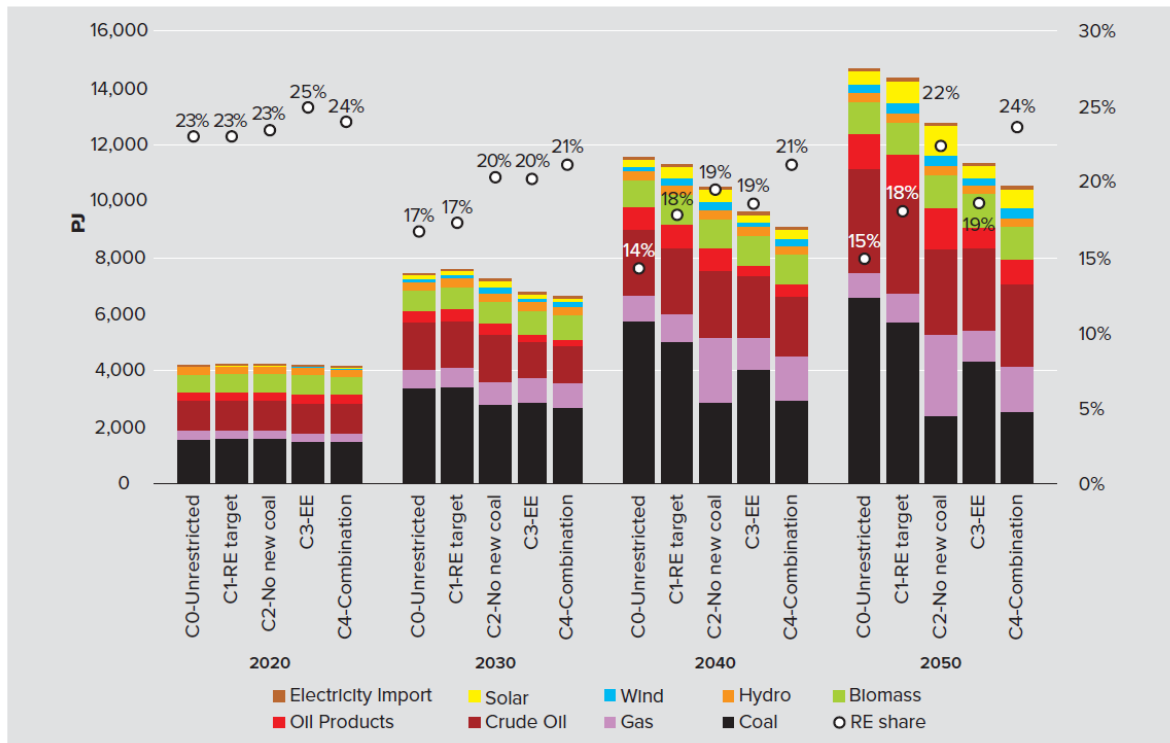
Over the last decades, Vietnam has been one of the fastest growing economies in Asia with a GDP growth rate above 6% per annum. Together with that, the overall power consumption in Viet Nam continues to rise rapidly over the years to fuel the socio-economic development of the country. The Vietnam Energy Outlook Report 2019 (EOR19) presents 05 scenarios (Figure 2.1) for the development of the energy system towards 2050 as follows:



Source: Vietnam Energy Outlook Report 2019

**Figure 2.1 The Five Scenarios Analyzed and Compared in the EOR19**

The report also presents some findings such as the trend of increasing use of coal continues, but if coal expansion is constrained, this trend can be reversed in 2030. Renewable energy (RE) resources, like wind, solar, hydro and biomass, can supply up to 24% of the primary energy by 2050 (Figure 2.2) and achieve a RE share up to 59% in the power generation. The report also concludes that by 2030, all scenarios show a massive increase in import of coal and oil, and the most effective way to reduce this import dependency is to replace coal-fired power plant projects by the combination of new RE projects and at the same time, increase energy efficiency of existing power plants. One of the key recommendations of the report is RE must be in focus in the coming Power Development Plan Revision 8 to ensure the necessary basis for the RE expansion for the next 10 years, and special attention must be given to wind power which in a least-cost perspective would develop to generate more power than solar in the next 10 years.



Source: Vietnam Energy Outlook Report 2019

**Figure 2.2 Total Primary Energy Supply (TPES) and RE Share in TPES across Analyzed Scenarios in the Period 2020-2050**

The Government of Vietnam plans for renewable energy to increase from 0.3% in 2016 to 21% of total capacity in 2030. In January 2020, Vietnam Electricity (“EVN”), the state-owned power company of Vietnam, announced its support for the development of wind power to meet the country’s renewable energy targets.

As of February 2020, nine wind power projects have reached commercial operations in Vietnam (350 MW), and additional 31 projects (1,645 MW) have signed power purchase agreements (“PPAs”) with EVN. EVN has committed to prioritizing the dispatch of maximum capacity from renewable energy and to operate traditional power sources for the purpose of meeting load capacity only.

In order to support for the development of the wind power project, dated 25/11/2015, the Prime Minister has issued the Decision No.2068/QĐ-TTg approving the development strategy of renewable energy of Vietnam by 2030 with a vision to 2050 and dated 18/3/2016, the Prime Minister has issued the Decision No.428/QĐ-TTg approving adjusted the master plan on electricity development in the 2011-2020 period with orientation to 2030, the Decision is clearly indicated:

“Bringing the total current wind power capacity from 140MW to about 800 MW by 2020, about 2,000 MW by 2025 and about 6,000 MW by 2030; increase the proportion of wind power production up to 0.8% in 2020; about 1% in 2025 and 2.1% in 2030”.

In this context, should the Project be developed, it will help the country to meet the growing power demand, and on the other hand, contribute significantly to reducing Vietnam’s reliance on fossil fuel, especially from imported sources, as well as reducing the GHG emission intensity and air pollution of the country’s power sector. Therefore, “No Project Scenario” is not a preferable option.

## 2.1.2 Alternative Methods of Power Generation

Renewable energy projects have a relatively minor impact on the environment compared to larger thermal power stations. These technologies support economic growth without the social and environmental impacts of most traditional power plants.

Concerns regarding adequate energy supply as a result the intermittent nature of wind power generation reduced with power supplemented by nearby power plants providing a greater capacity to meet energy demands. Table 2.1 provides a comparison between typical power generation methods.

**Table 2.1 Comparison of Power Generation Methods**

System	Advantage	Disadvantage
Thermal Power	Thermal power station has less initial cost as compared to hydroelectric generating station. It requires less space as compared to the hydroelectric power station. Thus, the cost of generation is less as compared to diesel power station	It pollutes the atmosphere due to production of large amount of smoke and fumes. Maintenance cost is more, and necessary land required for storage of coal and ash.
Hydro Power	Hydropower does not pollute the air like power plants that burn fossil fuels. It relies on the water cycle and is thus a renewable power source.	Hydropower can affect water quality and flow. Hydropower plants can cause low dissolved oxygen levels in the water, a problem that is harmful to riparian (riverbank) habitats and addressed using various aeration techniques, which oxygenate the water. Maintaining minimum flows of water downstream of a hydropower installation is also critical for the survival of riparian habitats. When water is not available, the hydropower plants cannot produce electricity.
Solar Power	Solar power is a renewable source of energy that can be gathered practically anywhere in the world. Solar power plants do not produce any air, water, or noise pollution and do not emit any greenhouse gases. Large-scale power plants can disturb local plant and wildlife due to their size, but compared to fossil fuels, still have a lower environmental footprint. Solar power plants also have less safety risks than fossil fuel plants. Once built, solar power plants have extremely low operating costs, since their major input, sunlight, is free.	Solar panels cannot collect solar energy at night and the amount they collect during the day varies based on the season and time of day. Solar panels are not efficient at converting sunlight to electricity - most solar panels have at best a 20% efficiency rate. In addition, their costs are high.
Wind Power	The main advantages include an unlimited, free, renewable resource (the wind itself), economic value, maintenance cost, and placement of wind harvesting facilities. Primarily, wind is an unlimited, free, renewable resource. Wind is a natural occurrence and harvesting the kinetic energy of wind does not affect currents or wind cycles in any way. Harvesting wind power is a clean, non-polluting way to generate electricity. Unlike thermal power plants, it emits no air pollutants or greenhouse gases. The WTGs generate electricity from wind passing by.	The two major disadvantages of wind power include initial cost and technology immaturity. The presence of WTGs may result in visual impacts and present hazards to flying birds and bats. WTGs may also generate noise emissions.

System	Advantage	Disadvantage
Nuclear Power	A properly functioning nuclear power plant can run uninterrupted for extended periods, resulting in fewer brownouts or other power interruptions. Such facilities do not produce smoke or emit gases, including GHG. A smaller amount of uranium is needed to produce the same amount of energy as coal or oil, which lowers the cost of producing the same amount of energy.	Despite the high level of sophistication of safety systems, human aspect present risks. Nuclear plants have a limited life and the construction costs are high and must be recovered as soon as possible, raising the cost of electricity. Potential pollutants released may include heavy metals, toxic chemicals and radioactive material.

## 2.2 Project Permitting

The Thuan Binh Wind Power Joint Stock Company (TBW) was approved by the government (Letter No.1235/UBND-TH, 27<sup>th</sup> March 2013 by the Ninh Thuan Province Peoples Committee (PPC)) to conduct survey, wind measurement and feasibility study for wind energy project in the Ninh Thuan province. The Project development was approved in the Wind Power Master Plan for Power Development of Ninh Thuan province in the period of 2011-2020 with the vision to 2030 by Ministry of Industry and Trade in Decision No. 2574/QĐ-BCT dated 23<sup>rd</sup> April 2014. On 25<sup>th</sup> June, 2020, the Prime Minister issued Letter No. 795/TTg-CN on approval for supplementing a list of wind farm projects and transmission grid, including Loi Hai 2 Wind Farm Project (28.9MW), to the Power Master Plan VII (adjusted).

In the initial investment staging, construction of Loi Hai Wind Farm was proposed, with an estimated total capacity of 50 MW, located on 523 ha in Loi Hai commune, Thuan Bac District, Ninh Thuan Province, and divided into two stages. A Project Feasibility Study (FS) Report and an Environmental Impact Assessment (EIA) Report for “Loi Hai 1 Wind Farm – 24 MW” were prepared following Vietnamese standards approved under Decision No. 1438/QĐ-UBND, dated 22<sup>nd</sup> July 2014 by Ninh Thuan Province People’s Committee. However, due to overlapping of planning between an expected express highway and a new high speed rail link on the western side of the project location, implementation of Loi Hai 1 Wind Farm became unfeasible.

TBW, after that, decided to re-prepare another investment project called “Loi Hai 2 Wind Farm” in Loi Hai Commune, Thuan Bac District, Ninh Thuan Province with capacity of 30 MW. The feasibility study of Loi Hai 2 Wind Farm was prepared by PECC3, a Vietnamese engineering consultancy and got approval by Ninh Thuan Province Department of Industry and Trade (DoIT) in the Document No. 1334/SCT-QLNT dated 11<sup>th</sup> September 2017. The regulatory EIA following Vietnamese standards was also prepared by a local consultant and approved by the Ninh Thuan Province People’s Committee in August 2017.

The Project received Decision on Investment Policy by the Ninh Thuan Province People’s Committee in the Document No. 320/QĐ-UBND dated 29<sup>th</sup> September 2017, with some adjustment as stated in the Document No. 369/QĐ-UBND dated 26<sup>th</sup> November 2020.

The Construction Department of Ninh Thuan Province approved the exemption of project construction permit in Document No. 2195/SXD-PTĐT & HTKT dated 25<sup>th</sup> July 2018.

Land use for the Project was legally approved by the Provincial People's Council of Ninh Thuan province in the Document No. 106/HDND-VP dated 27<sup>th</sup> July 2018 about agreement in principle for land acquisition and change of land use purpose for rice cultivation land in 2018 to implement the Loi Hai 2 project. Affected land users will be compensated through the regulatory process in Vietnam and in accordance with the IFC Performance Standards.

Additionally, in seeking for financial support from German Development Bank (KfW), in 2017, the Project contracted with AF-Consult Switzerland Ltd and VATEC consultants to carry out an Environmental and Social Impact Assessment (ESIA) for Loi Hai 2 in compliance with KfW’s Sustainability Guidelines, Asian Development Bank (ADB) 2009 Safeguard Policy Statement (SPS) and 2013 Land Law of Vietnam. The ESIA and its associated management plans, including a Social Impact Assessment (SIA) and Resettlement and Ethnic Minority Development Plan (REMDP) were developed and approved by KfW in the end of 2017.

In August 2013, TBW got approval letter No. 2920/EVN-KH from Vietnam Electricity (EVN), the single buyer of electricity in Vietnam, agreeing to purchase the electricity generated by Loi Hai 2 Wind Farm project, up to a maximum of 50 MW export capacity (24 MW for phase 1 and 26 MW for phase 2).

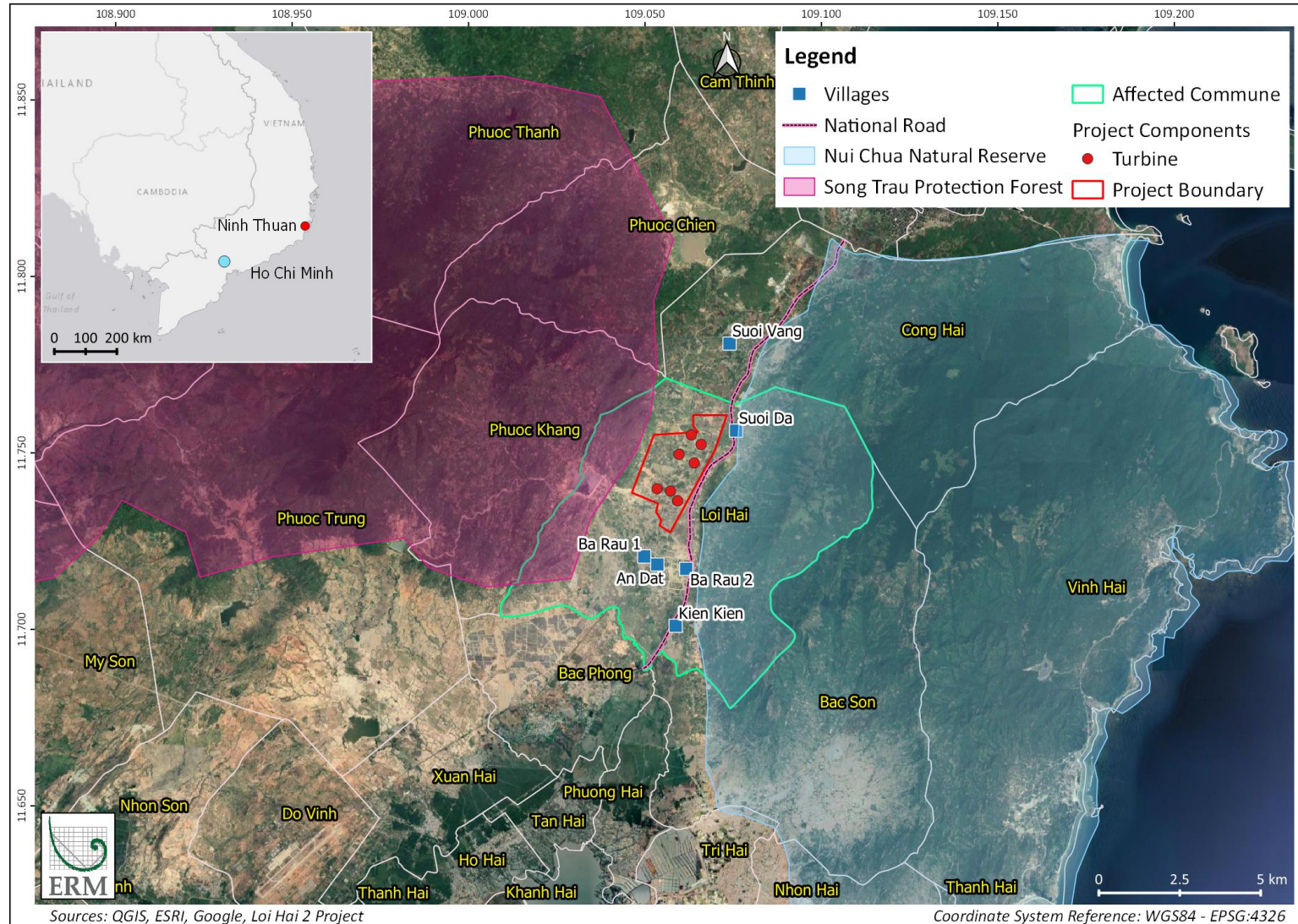
## 2.3 Project Location

The location for construction of wind farm is in the commune of Loi Hai, Thuan Bac district, Ninh Thuan province; close to the railway North-South and Highway 1A, the area possesses high potential of wind energy.

The current status of land use: the total area is about 523 ha located in agricultural land, relatively flat terrain, elevation varies from 25m to 50m, the west sites closed to mountain range with elevation about 60m. The study area (about 523 ha) has been approved by Ninh Thuan provincial People's Committee in the Official Letter No.1235/UBNDKT dated 27/03/2013 with installed capacity of 30 MW. The wind farm will be constructed in a flat agricultural area situated between the higher elevations of the Nui Chua National Park to the East and a forested upland to the West.

The physical boundaries surrounds of the Project are described as follow:

- To the North: Project is adjacent to Suoi Vang Village, Cong Hai Commune;
- To the West: Project is adjacent to the foot of the protected forest of Song Trau;
- To the East: Project is near the North-South railway and National Highway 1A; and
- To the South: Project is adjacent to Ba Rau 1 and Ba Rau 2 Villages, Loi Hai Commune.



**Figure 2.3** Location of Loi Hai 2 Wind Farm Project

## 2.4 Project Components

Key components of Loi Hai 2 Wind Farm include:

- Seven (07) wind turbine towers;
- Seven (07) wind turbines, capacity of 4.2 MW each (29.4 MW in total);
- Construction yard;
- A booster transformer station 22/110kV;
- Transmission line 110kV for connection;
- Control system, Communication & SCADA;
- Overhead transmission lines 22kV;
- Underground cable 22kV and outgoing feeders;
- Internal and external access roads;

A summary of the location of the key Project component is presented in Figure 2.4.

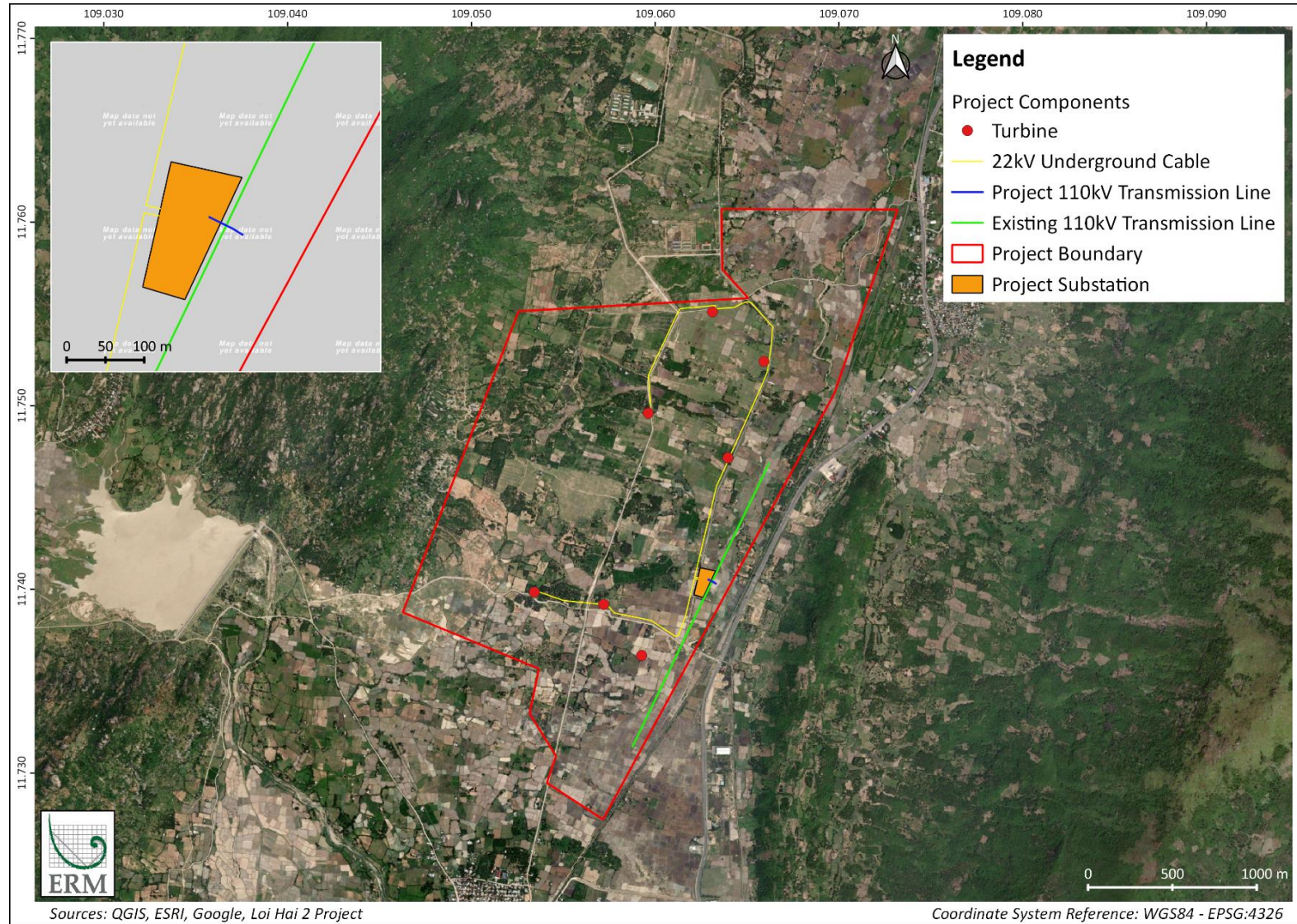


Figure 2.4 Project Layout

**Table 2.2 Land Area and Household Affected by the Project Components**

Item	Number of items	Total area (m <sup>2</sup> )	Estimated number of affected households
<b>Fixed-term land occupation: 26,886 m<sup>2</sup> total</b>			
Turbine foundations	7	8,796	10 households
Internal roads and 22kV underground cable	-	29,530	Under measurement process
110kV Substation & Operation house	1	12,662	7 households 1 organization (Loi Hai commune People's Committee)
<b>Temporary land occupation: 48,356 m<sup>2</sup> total</b>			
Laydown area (blades and towers)	7	18,826	10 household 1 organization (Son Tay Company)
Construction site (Crane installation area)	7	5,427	7 households 1 organization (Son Tay Company)
<b>25m Transmission Line/Safety Corridor</b> (Activities will be restricted on the land under the transmission line and in the safety corridor)			
Transmission line 110kV for connection	1	-	1 household

**Note:** some households are impacted by the land acquisition of more than one Project component. The estimated number includes all affected households of each component without removing the same households affected between components.

Source: TBW, 2020.

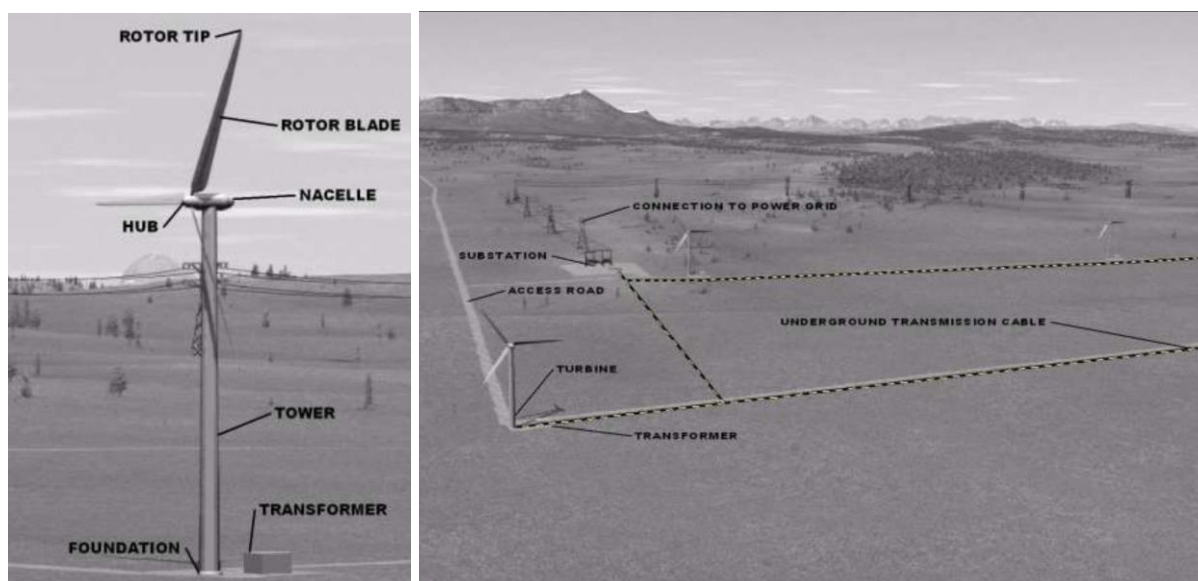


**Figure 2.5** Agriculture Land in the Turbine Area

### 2.4.1 Detailed Design Elements

Structural elements of a wind energy project include wind turbines, transformers, underground or aboveground collector transmission cables between the wind turbines, substations, and aboveground transmission lines to connect to an existing power grid and access roads (See Figure 2.6 (right) below)

Generally, a wind turbine consists of a foundation, tower, nacelle, rotor blades, a rotor hub, and a transformer, see Figure 2.6 (left) below. The foundation is used to bolt the tower in place. The tower contains the electrical conduits, supports the nacelle, and provides access to the nacelle for maintenance. Typically, three (3) blades are connected to the hub which then connects with the nacelle; the box-like component that sits atop the tower and which most importantly contains the gear box (which steps up the revolutions per minute to a speed suitable for the electrical generator) and the generator (which converts the kinetic energy into electricity).



Source: WBG 2015

**Figure 2.6** Typical Structural Components of a Wind Turbine (left), Typical Components of a Wind Farm (right)

### 2.4.1.1 Wind Turbine Generator

There will be 07 wind turbine towers to be built. The selected turbine model is V150-4.2 manufactured by Vestas Wind Systems A/S (Denmark), with the following specifications:

**Table 2.3** Wind Turbine Specification

Description	Unit	Design Data
<b>Rotor</b>		
Wind Turbine Model	-	Vestas V150-4.2
Type	-	3-bladed, horizontal axis
Rated Power	kW	4,200 kW
Hub Height	m	105
Rotor Diameter	m	150
Inflow Angle (vertical)	(degrees)	8
Blade Length	m	73.7
No. of Blades	-	3
Swept area	m <sup>2</sup>	17,671 m <sup>2</sup>
Cut-in Wind Speed	m/s	3
Cut-out Wind Speed	m/s	22.5
<b>Generator</b>		
Type	-	Asynchronous with cage rotor

Description	Unit	Design Data
Rated Power [P <sub>N</sub> ]	kW	4450
Frequency [f <sub>N</sub> ]	Hz	0-100
Voltage, Stator [U <sub>NS</sub> ]	V	3 x 800 (at rated speed)
Number of Poles	-	6
Winding Type	-	Form with VPI (Vacuum Pressurized Impregnation)
Winding Connection	-	Delta
Rated rpm	rpm	1450-1550
Overspeed Limit Acc. to IEC (2 minutes)	rpm	2400
Generator Bearing	-	Hybrid/ceramic
Temperature Sensors, Stator	-	3 PT100 sensors placed at hot spots and 3 as back up
Temperature Sensors, Bearings	-	1 per bearing
Insulation Class	-	H
Enclosure	-	IP54

Source: Performance Specification of V150-4.0/4.2 MW, Vestas 2020.

### 2.4.1.2 Turbine Tower

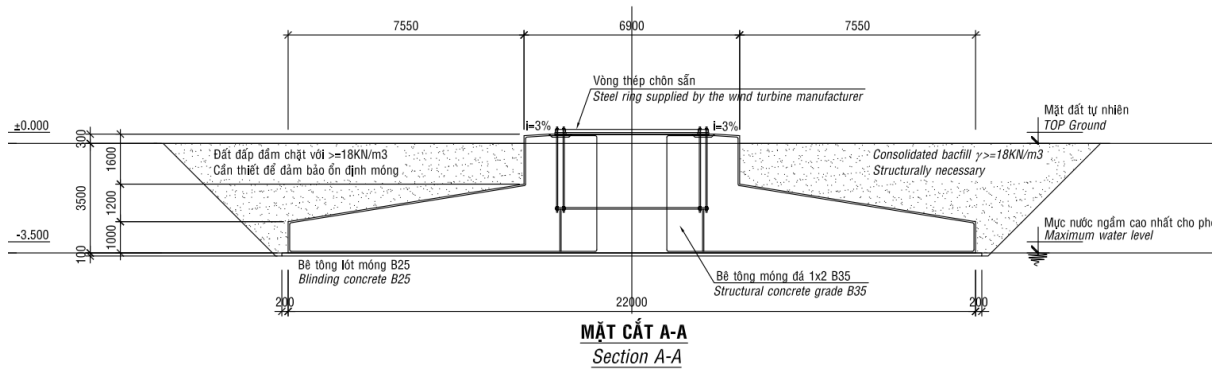
The turbine tower for Loi Hai 2 project will be supplied and imported to Vietnam and erected on site by the EPC contractor. The tower type is cylindrical/conical tubular tower with flange connections, and is designed with the majority of internal welded connections replaced by magnet supports to create a predominantly smooth-walled tower.

Magnets provide load support in a horizontal direction and internals, such as platforms, ladders, etc., are supported vertically by a mechanical connection. The smooth tower design reduces the required steel thickness, rendering the tower lighter compared to one with all internals welded to the tower shells.

Based on the geological conditions of the Project area, the EPC contractor will propose suitable height of each tower in detailed design.

### 2.4.1.3 Turbine foundation

Foundations will be constructed to bolt the tower of the turbine in place. The EPC Contractor will be constructing 07 foundations (one for each turbine), with the diameter of 22 m, made from B35 reinforced concrete, and backfilled with soil with dry density  $\geq 18 \text{ KN/m}^3$  up to natural ground level. Embed steel ring will be supplied by the turbine manufacturer. The structural design of the foundation is shown in Figure 2.7.



Source: PECC 3, 2015

**Figure 2.7 Structural Design of Turbine Foundation**

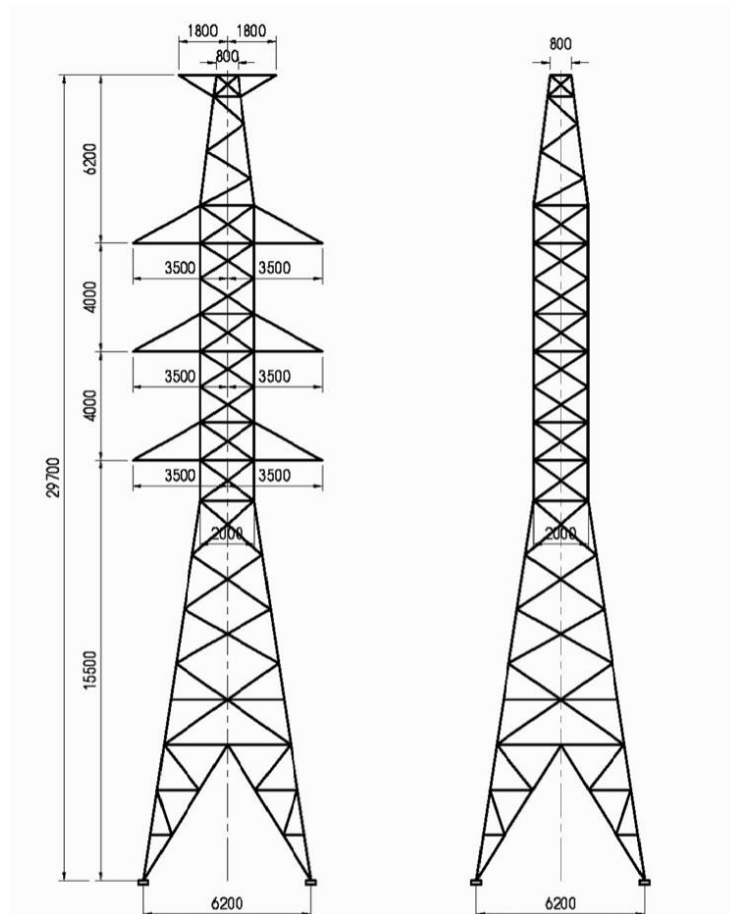
#### 2.4.1.4 22kV Transmission Line

Wind turbines generate 3-phase electricity at a voltage of 690V. Each wind turbine generator will be equipped with a 0.69/22 kV transformer and electricity output will be distributed to the internal 22 kV underground transmission line, then connected to 22kV busbar at 22/110kV-40MVA Loi Hai substation, before changing to 110 kV at Thap Cham 2 - Cam Ranh substation.

According to the Decision No. 2574/QĐ-BCT dated 04 July 2013 of the Ministry of Industry and Trade on the approval of Power development master plan of Ninh Thuan province, period 2011 to 2020 and vision towards 2030, and the connection agreement No. 05/2014/TTDN between Khanh Hoa Electricity Company and TBW, the 22/110 kV substation of Loi Hai 2 wind farm will be connected to the 110 kV line of Thap Cham 2 - Cam Ranh substation.

#### 2.4.1.5 Transmission Line and Tower

The Project will use a double-circuit towers made from SS400 steel to support the 110 kV transmission line. Typical design of a tower is presented in Figure 2.8.

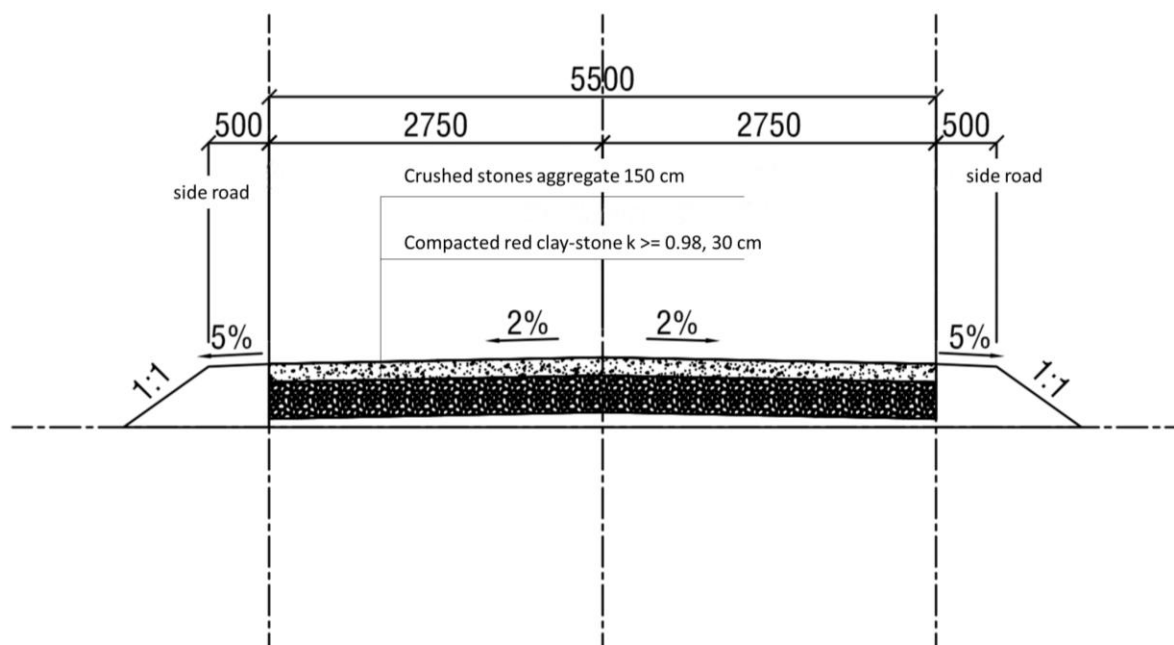


Source: PECC3 2020

**Figure 2.8** Transmission Tower, Route Vertical (left) and Horizontal (right)

### 2.4.1.6 Internal Roads

There will be 04 internal roads, named No.01 to No.04, with the total length of 6 km, connecting the wind turbines with the existing local roads. The width of the road is 5.5 m, with side roads of 2 x 0.5 m. Maximum longitudinal slope of 8 degrees and maximum slope length of 60 m are recommended to be able to accommodate large goods vehicles (LGVs) during construction phase. While roads No. 3 and No.4 are made from concrete, other roads are made from crushed stones and compacted clay-stone. The structure of road is depicted in Figure 2.9.



Source: PECC3 2020

**Figure 2.9** Typical Vertical cross Section of Internal Road No. 02

### 2.4.1.7 Administration Building

The building will consist of facilities such as a control room, server room, warehouse and rest room.

### 2.4.1.8 Other Components

- Supervisory control and data acquisition (SCADA) system;
- Closed-circuit television (CCTV) system;
- Lightning protection system;
- Fire prevention systems;
- Public lighting systems;
- Earthing systems;
- Wind monitoring system with meteorological sensors.

## 2.5 Project Schedule and Activities

As to the time of this reporting and in accordance with available information, the construction of the project is planning to start by early December 2020. The commercial operation date is scheduled in November 2021 and expected to operate for 25 years. The schedule of the Project development is presented in Table 2.4.

**Table 2.4** Project Development Schedule

Phase	Approx. timing
FS, Technical Agreement, PPA Signing	Q3/2020
Land clearance and UXO detection	Sep-Nov 2020

Phase	Approx. timing
Technical and Construction design	Nov 2020-March 2021
Selecting Owner engineer	Q2 2020
Selecting EPC Contractor	Nov 2020
Land compensation	Nov 2020-Jan 2021
Construction permit and Commercial construction of Project	Dec 2020
Civil works	Q4/2020
Procurement, transportation and installation	Q1-Q2/2021
Testing, calibration, reliability test run for substation and WTGs	Q3/2021
COD (Commercial Operation Date)	Oct 2021

Source: TBW 2020

### 2.5.1 Pre-construction Phase

The Pre-Construction activities includes the following:

- Seek construction permit to build the wind farm or permits for the transport of heavy equipment;
- Conduct some field surveys such as geotechnical survey, socio-economic survey, environmental survey;
- Developing operation house and 22/110Kv substation;
- Land acquisition for clearance: The Project Owner will coordinate with local authorities to measure and conduct inventory of loss, then develop the compensation, support and resettlement plan;
- Demining and Unexploded ordnance (UXO) clearance in the Project area, by hiring a military unit with such capabilities;
- Preparing temporary office and temporary access road; and
- Mobilization of Equipment & Machineries.
- In this phase, the identification and purchase of land is a key component of the planning and pre-construction phase. The process of purchasing land can be divided into two phases (a) land verification and (b) purchase of land/land compensation.

### 2.5.2 Construction Phase

Construction phase activities for the onsite facilities includes:

- Mobilize the manpower;
- Develop New Road & Connect Existing Road;
- Develop the Turbines Foundation;
- Develop O&M Building and Hazardous Waste Area;
- Install underground cable: earthing rod, copper wire, HDPE for WTG;
- Excavate and install conduit manhole, earth bar from transformer to WTG;
- Install MV cable, FO cable from WTG to Transformer;
- Testing and commissioning;

Key milestones within the Construction Schedule are summarised in Figure 2.10.

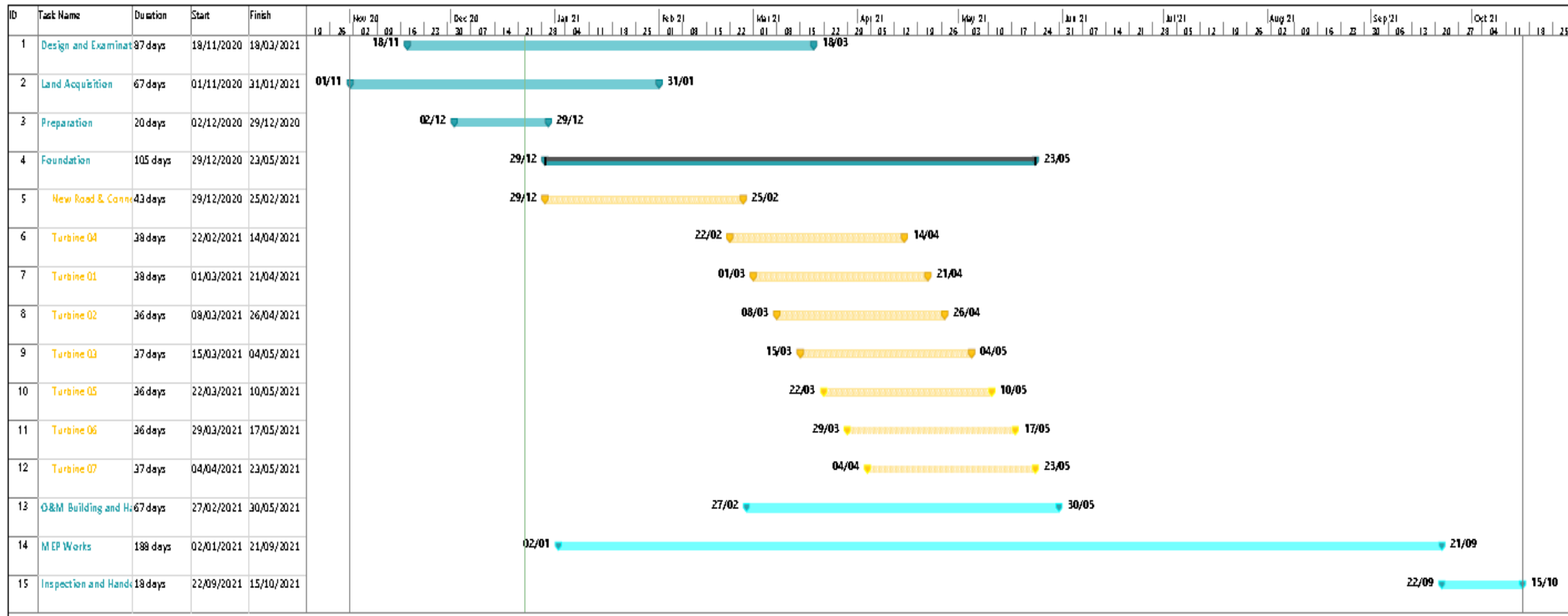


Figure 2.10 Project Construction Schedule

### 2.5.2.1 Construction of New Road & Connect Existing Road

Because the roads will be used to transport machinery, equipment and materials to the site, the construction of access roads will be prioritized for any wind farm development project.

The work will involve the construction of new internal access roads and connection road from the site to the nearest existing communal roads. Upgrade of existing roads can be necessary to accommodate large goods vehicles.

### 2.5.2.2 Materials and equipment delivery

#### 2.5.2.2.1 Main equipment

The main equipment such as parts of turbine, blade, tower will be imported and unloaded at Cam Ranh port in Khanh Hoa province, then transported to laydown areas of project site in Loi Hai commune (about 29 km) through National Highway 1A. The transportation will also involve the use of local roads of Loi Hai commune. The transportation route is presented in the figure below.

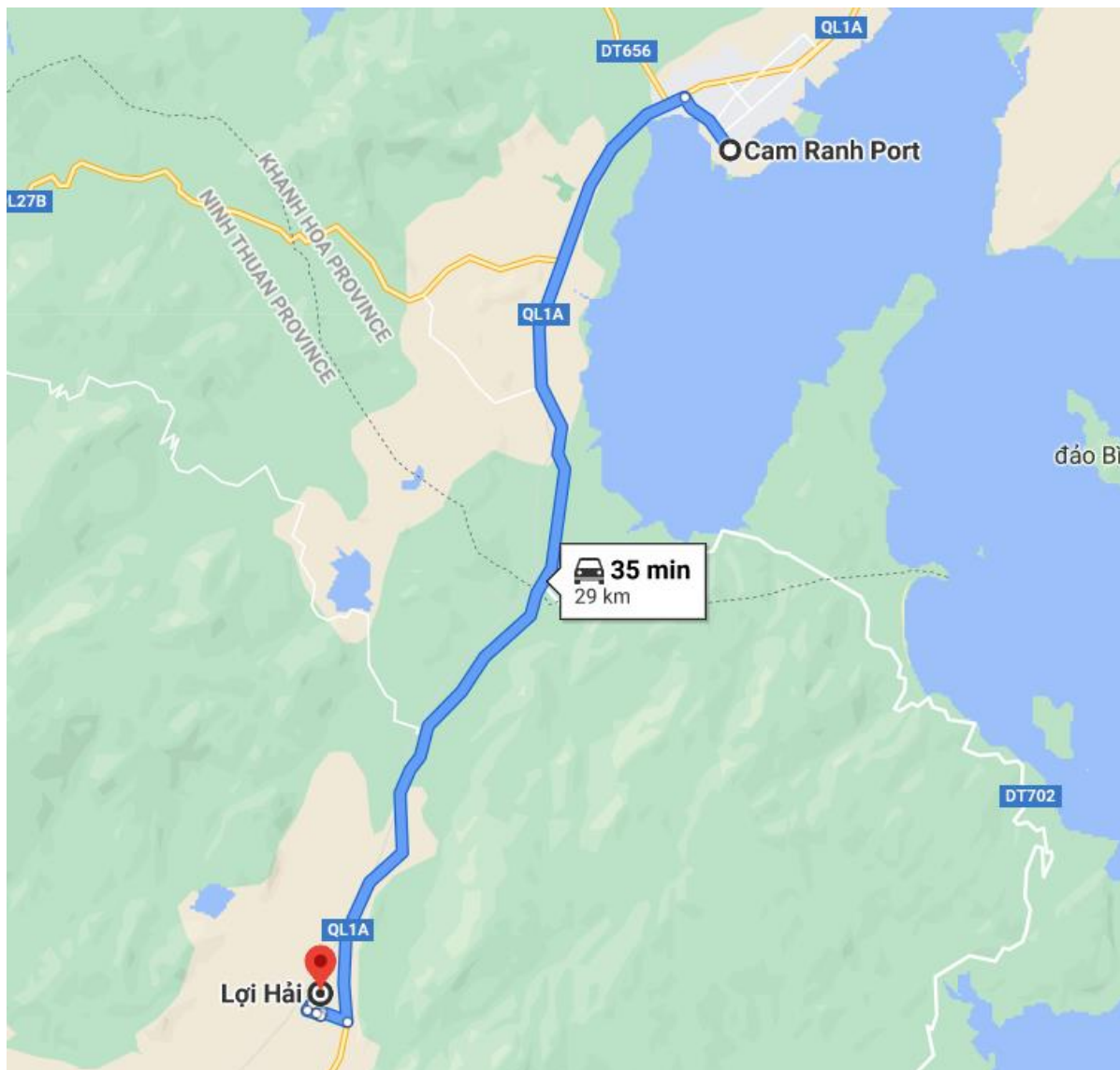


Figure 2.11 Transportation Route of Main Equipment

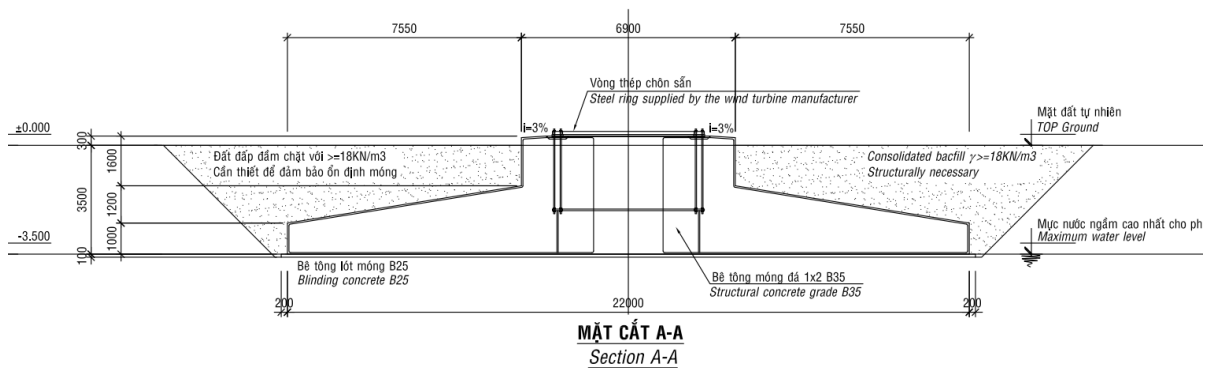
### 2.5.2.2.2 Materials

Other electrical materials and equipment will be procured by contractors in Ho Chi Minh City. Building materials, such as cement, stone and sand will be delivered by suppliers in Binh Thuan province or neighbouring localities.

### 2.5.2.3 Wind turbine layout construction

#### 2.5.2.3.1 Wind turbine foundation

Based on the geological conditions of the Project area, the Project Owner proposed to use the round shaped shallow mat type wind turbine tower foundation, with the diameter of 22 m and thickness of 3.5 m to support the foundation of the 07 turbines (Figure 2.12). The turbine foundation is made from high-strength reinforced concrete grade B35, and is delivered as ready mix from mobile batching plants set up in a strategic location inside the site boundary. Embedded steel ring will be supplied by turbine manufacturer.



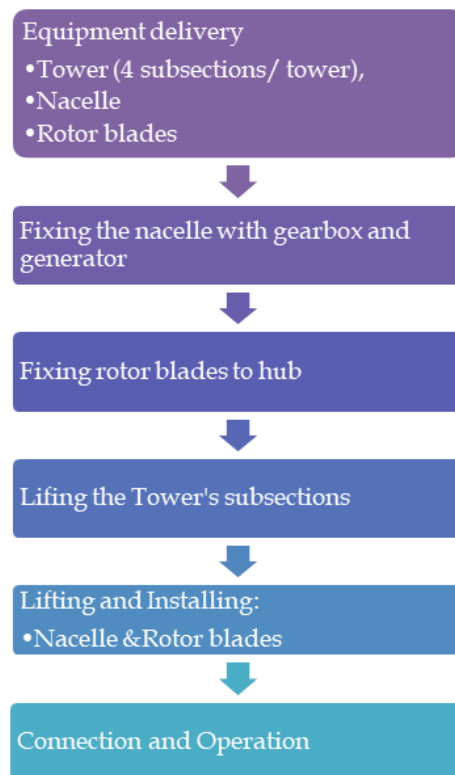
Source: PECC3 2015

**Figure 2.12 Structural Design of Wind Turbine Foundation**

#### 2.5.2.3.2 Turbine installation

After completing construction of the wind turbine foundation, the next steps will be to assembly the wind turbine components. Lifting works will begin with the lowest tower subsections. Complete nacelles, with gearboxes and generators already installed, will be lifted onto the tower tops. The rotor blades will be fixed to the hub before being lifted and connected to the nacelle. It is noted that installation of some components cannot occur when the wind speed is greater than 10 m/s due to safety constraints of the cranes.

The key processes required for WTG installation are presented in Figure 2.13.



**Figure 2.13** Flow Chart of Turbine Installation Process

#### 2.5.2.4 Substation and operation building

The construction of the substation and control house includes but is not limited to the following activities:

- Earthworks:
  - Levelling;
  - Access road;
  - Digging and covering soil.
- Assembly of towers and metal structures:
  - Producing and installing steel components.
- Installation of electrical equipment:
  - Transformers;
  - Outdoor and indoor equipment.

#### 2.5.2.5 Transmission lines

The construction of the transmission lines includes the key the following activities:

- Building the internal access road system connecting the pylons;
- Building the transmission pylons foundation, including:
  - Soil excavation;
  - Installing the reinforced concrete foundation
- Assembling the pylons;
- Installation of insulation and accessories;

- Straining of rope to measure deflection;
- String power lines; and
- Grounding installation work.

### 2.5.2.6 Power Supply

According to the regulatory EIA and FS, power for the Construction Phase will be taken from two sources:

- Source 1: Power supply from diesel generators;
- Source 2: Power supply from the existing 22 kV transmission line near the construction site.

The project will construct a new single-circuit 3-phase overhead line with the length of 728m, connected to the existing 22 kV 476 Ninh Hai line using a 12m high centrifugal concrete pylon and a 160 kVA-22/0.4 kV transformer station to supply electricity for project construction.

For the construction of transmission line, the electricity is required for concrete work, repair of reinforced concrete foundation, and will be supplied from local sources as well as diesel generators.

### 2.5.2.7 Water Supply

According to the EIA, construction water will be taken from Ba Rau reservoir and stored in tanks, while domestic water will be supplied from Loi Hai commune water supply station. In dry season, water can be delivered from other lakes to the site by tank trucks.

### 2.5.2.8 Waste and wastewater

The amount of construction waste and domestic waste generated in construction phase is estimated to be 0.032 tons and 20 kg per day respectively.

Hazardous waste including spent oil and grease, oil-impregnated cloth, is estimated to be 1,480kg during one year of construction.

All wastes generated on site during construction phase will be managed by the EPC contractor. Construction waste will be recycled. Non-recyclable and hazardous wastes will be collected, treated and disposed by licensed waste treatment contractor. Wastewater will be treated to meet QCVN 14: 2008/BTNMT, Class B before discharging to the common sewer system.

## 2.5.3 Operation Phase

Upon the completion of construction, turbine installation and wiring of the transmission lines, the Project will be tested for operation before entering its operation phase. Electricity generated from the Project will be purchased by the EVN (Vietnam Electricity).

To ensure operation safety, inspection and maintenance will be carried out within 24 days before handover. This process includes check-ups on bolts, lubricant, transmission and clean-ups for machines and transmission lines.

Activities to be carried out during the operation phase includes:

- Scheduled maintenance activities at each WTG location as per the supplier's specifications;
- Routine inspection of all WTGs as per supplier's specifications;
- Operations and maintenance of ancillary facilities such as yards, stores, supervisory control and data acquisition system (SCADA), building facilities;
- Inspection and maintenance of transmission lines;
- Inspection and maintenance of intra-site pathways/ access roads; and

- Recommended ESMP during operation as well as specific management plan (BMP, SEP & LRP).

The wind turbines will operate continuously, provided that wind speeds are suitable, with the exception of downtime required for maintenance activities. For the most part, day-to-day facility operations will be automated through the use of computerized networking systems.

Electricity will be supplied from the 22 kV Ninh Hai line, while water will be supplied from water supply station of Loi Hai commune.

## 2.5.4 Decommissioning Phase

Execution plan and solution for decommissioning: the investor will be responsible for establishing a management board to plan for decommissioning execution including measures for dismantling, environment recovery plan, safety as well as waste processing.

Execution cost: Implementation costs of the entire dismantling works will be investor's responsibility with funding mainly from either the liquidation of assets or from business operating profit.

## 2.6 Project Sponsor

Loi Hai 2 Wind Power Plant is developing by TBW-a member company of REE Group.

- TBW: established in 2009, developer and operator of Phu Lac 1 and 2 Wind Power Plant
- Current paid up capital: VND 163 billion / US\$ 7 million (for Phu Lac 1 WF's development)
- Budget paid up capital: VND 500 billion / US\$ 22,5 million (to be fully contributed in 2020 – 2021 to develop Loi Hai 2 Wind Farm and Phu Lac 2 Wind Farm)

Current shareholdings of TBW:

- REE (~50%), Thac Mo Hydro PP (20%), Da Nhim-Ham Thuan-Da Mi Hydro PP (20%), PECC 3 (10%)

A summary of the Project development information is presented in Table 2.5.

**Table 2.5 Project Development Information**

Loi Hai 2 Wind Power Plant	Information
Sponsor	Thuan Binh Wind Power Joint Stock Company
Capacity	29 MW
Location	Loi Hai Commune, Ninh Thuan Province
Project Land Area	523 ha
Investment Scheme	Build – Own – Operate (BOO)
PPA Offtaker	EVN
Net electricity output	91,967,880 kWh
Capacity Factor	36%
Estimated Capex (incl. VAT & interests paid)	VND 1,114 billion / US\$ 48 million

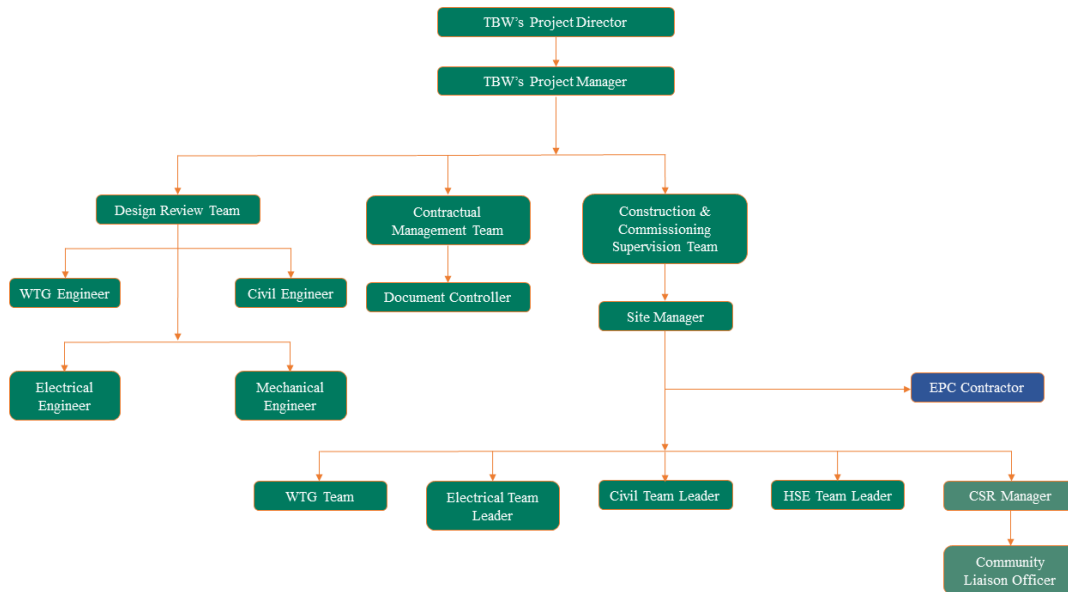
Source: TBW 2020.

## 2.7 Project Management

Some key agencies involve in project management, including:

- Project owner: Thuan Binh Wind Joint Stock Company;
- EPC Construction unit: Central (Civil Work), Fichtner (Mechanical Electrical Plumbing), VESTAS (Equipment Supplier);
- Operation : Thuan Binh Wind Joint Stock Company
- Maintenance: VESTAS

The current organisation structure for construction process is showed in Figure 2.14.



**Figure 2.14 Project Management Structure during the Construction Phase**

## 2.8 Employment

Workers can be hired during construction for a short-term contract. During the construction phase, time of most crowded worker gathering is 100 persons. While during the operation process, the number of staffs will be expected around 10 persons. When decommissioning happened, the expected number of workers are 15 persons staying in the worker camp.

### 3. ADMINISTRATIVE FRAMEWORK

This chapter provides legal and regulatory framework, covering national requirements as well as applicable international treaties, guidelines and standards. The intent of this Chapter is to discuss the regulatory context, which is directly related to environmental compliance, which must be adhered to by all parties involved in the Project throughout the planning, construction and operation.

#### 3.1 Overview

There are two levels of regulatory provisions applicable to the Project. The first is the Vietnamese assessment and approvals process, which must be followed to achieve environmental approval by regulators. Secondly, as the Project proponent seeks to meet international standards, the International Finance Corporation Performance Standards 1-8 (IFC PS) and the World Bank Group EHS Guidelines are also applicable. The primary means of the IFC PS and EHS expectations into the construction and operations phases of the Project is through the preparation of this ESIA.

The Project has obtained regulatory approval for its Environmental Impact Assessment (EIA), however, in applying international standards to the Project there are additional international standards and expectations which the Project will be required to fulfil throughout the construction and operation phases. While some synergies exist between Vietnamese regulatory EIA and ESIA, there are also some key differences which have necessitated the preparation of this ESIA.

#### 3.2 National Regulatory Framework of Vietnam

The various regulatory frameworks that will be adopted for this Project throughout the project implementation process, designed in stages of preparation, construction, operation and other stages of the project are detailed below.

##### 3.2.1 Law on Environmental Protection

The Law on Environmental Protection No. 55/2014/QH13, dated 23<sup>rd</sup> June, 2014 is the main piece of environmental legislation currently in force in Vietnam. The law assigns national responsibility to environmental strategy, the drafting of regulations and standards and all monitoring to the Ministry of Natural Resources and Environment (MoNRE), and the Vietnam Environment Protection Agency (VEPA). Responsibility for implementation of environmental policy at the local level is assigned to the provincial assemblies through their Department of Natural Resources and Environment (DoNRE).

##### 3.2.2 Environmental Regulations/Standards

###### 3.2.2.1 Regulations

- Decree No. 38/2015/ND-CP dated 24<sup>th</sup> April, 2015 on waste and scrap management;
- Decree No. 40/2019/ND-CP dated 13<sup>th</sup> May, 2019 amending a number of articles of decrees that guiding the implementation of the Law on Environmental Protection;
- Decree No. 80/2014/ND-CP dated 06<sup>th</sup> August, 2014 on the drainage and treatment of wastewater;
- Circular No. 31/2016/TT-BTNMT dated on 14<sup>th</sup> October 2016 on environmental protection for industrial clusters, concentrations of businesses, service providers, trade villages, and production, commercial and service establishment;
- Circular No. 36/2015/TT-BTNMT dated 30<sup>th</sup> June, 2015 on hazardous waste management;
- Circular No. 04/2015/TT-BXD dated 03<sup>rd</sup> April, 2015 Providing guidance on a number of articles of the government Decree No. 80/2014/ND-CP dated 06<sup>th</sup> August, 2014 on drainage and wastewater treatment;
- Circular No. 08/2017/TT-BXD dated 16<sup>th</sup> May, 2017 on construction waste management;

- QCVN 03-MT:2015/BTNMT - National Technical Regulation on the allowable limits of heavy metals in the soils;
- QCVN 05:2013/BTNMT - National Technical Regulation on Ambient Air Quality;
- QCVN 06:2009/BTNMT - National Technical Regulation on Hazardous Substances in Ambient Air;
- QCVN 07:2009/BTNMT - National Technical Regulation on Hazardous Waste Thresholds;
- QCVN 08-MT:2015/BTNMT - National Technical Regulation on Surface Water Quality;
- QCVN 09-MT:2015/BTNMT - National Technical Regulation on Ground water Quality;
- QCVN 14:2008/BTNMT - National Technical Regulation on Domestic Wastewater;
- QCVN 40:2011/BTNMT - National Technical Regulation on Industrial Wastewater;
- QCVN 26:2010/BTNMT - National Technical Regulation on Noise.

### 3.2.3 Environmental Impact Assessment

The Law on Environmental Protection states that all enterprises, as prescribed by the Government within the law, shall conduct a Strategic Environmental Assessment (SEA), an Environmental Impact Assessment (EIA) or Environmental Protection Plan (EPP) and obtain approval prior to the development and operation of a facility. The key EIA regulations are given below:

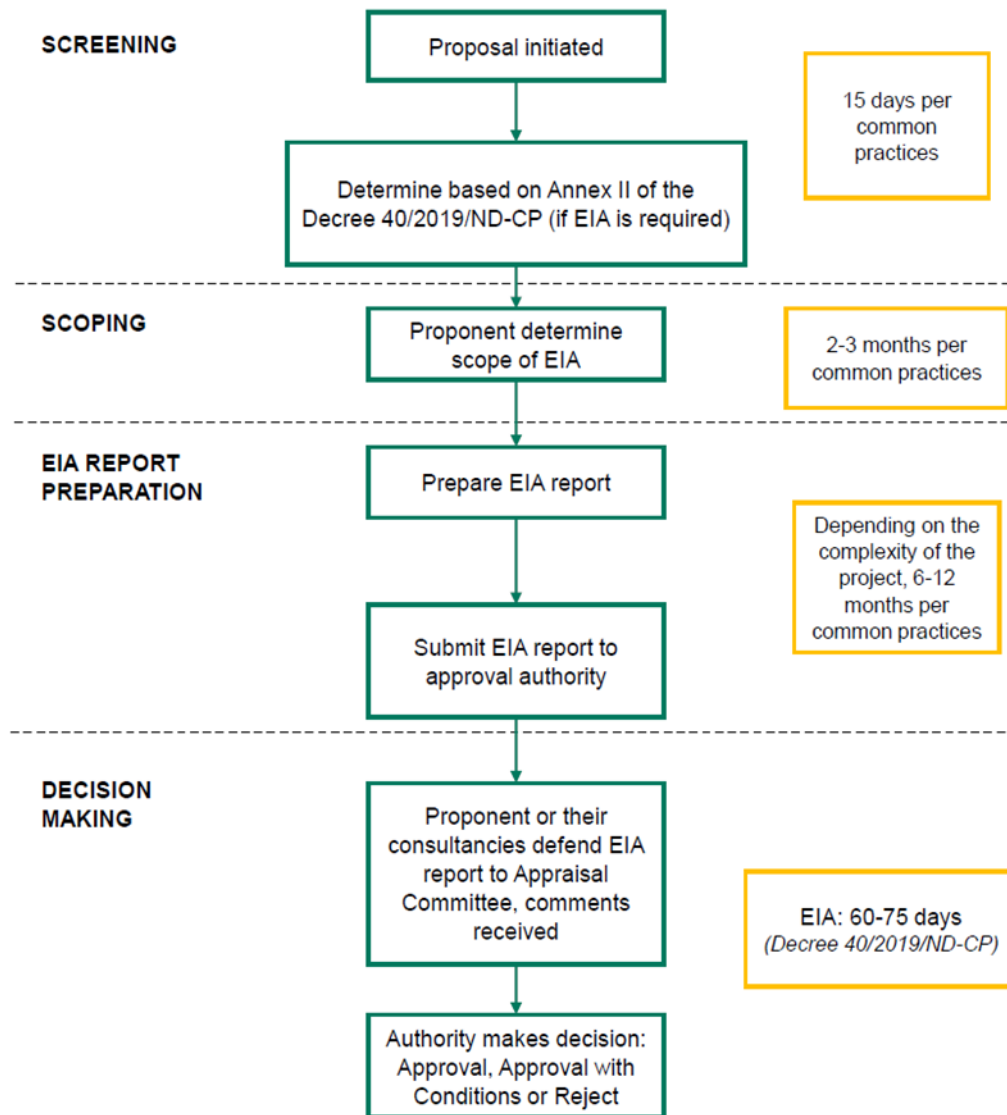
- The Law on Environmental Protection No. 55/2014/QH13, dated 23<sup>rd</sup> June, 2014;
- Decree No. 18/2015/ND-CP dated 14<sup>th</sup> February, 2015 on environmental protection planning, SEA, EIA and EPP;
- Decree No. 19/2015/ND-CP dated 14<sup>th</sup> February, 2015 detailing the implementation of a number of articles of the law on environmental protection;
- Circular No. 25/2019/TT-BTNMT dated 31<sup>st</sup> December, 2019 providing detailed regulations for Decree No. 40/2019/ND-CP.

#### Stakeholder engagement during the EIA process

*Decree No. 18/2015/ND-CP* dated 14<sup>th</sup> February 2015 on Strategic Environmental Assessment, Environmental Impact Assessment and Environmental Protection Commitment stipulates that community consultation is a compulsory item in the EIA process and must meet the following criteria:

- **With authorities:** The Project Owner shall send a local EIA report to the People's Committee of the communes where the project is located and the directly affected organisations (e.g. manufactories, co-operatives) together with a written request for opinions of the authorities and organisations. These opinions will be stated in the Public Consultation chapter of the local EIA.
- **With communities:** Consultation with the directly affected communities shall be carried out in the form of a community consultation meeting co-chaired by the project owner and the Fatherland Front and People's Committee of the commune where the project is located. All opinions of audiences attending the meeting must be sufficiently and honestly stated in the meeting minutes. These opinions and meeting minutes then will be described in and attached with the local EIA. Separate community consultation meetings are sometimes conducted for different affected communes.

Vietnam's regulatory EIA process is shown in Figure 3.1 below.



**Figure 3.1 Vietnam's Regulatory EIA Process**

### 3.2.4 Law on Forestry 2017 and Law on Biodiversity 2008

The Law on Forestry 2017 regulates the rights and obligations of the forest owners<sup>1</sup> organisations who are allocated forest in Vietnam for management. They must manage, protect, develop and use the forest sustainably in compliance with forest management regulations, provisions stated herein and other regulations required by relevant law. Those regulations stipulate that forest owners must:

- Comply with regulations on inspection of forest development;
- Return the forest that the State appropriates according to provisions stated herein;
- Conserve forest biodiversity, forest plants and animals;
- Ensure forest fire safety, prevent and eliminate forest pests;

<sup>1</sup> "forest owner" may be an organisation, household, individual or community that is allocated or leased out a forest by the State; allocated or leased out land for afforestation, forest regeneration or development; receives transfer of the forest, receives the forest as a gift or inherits the forest according to regulations of law

- Facilitate management, inspection or actions against violations carried out by a competent state authority; and
- Fulfil financial obligations and other obligations.

### 3.2.5 Regulations on Land Acquisition, Compensation, Support and Resettlement

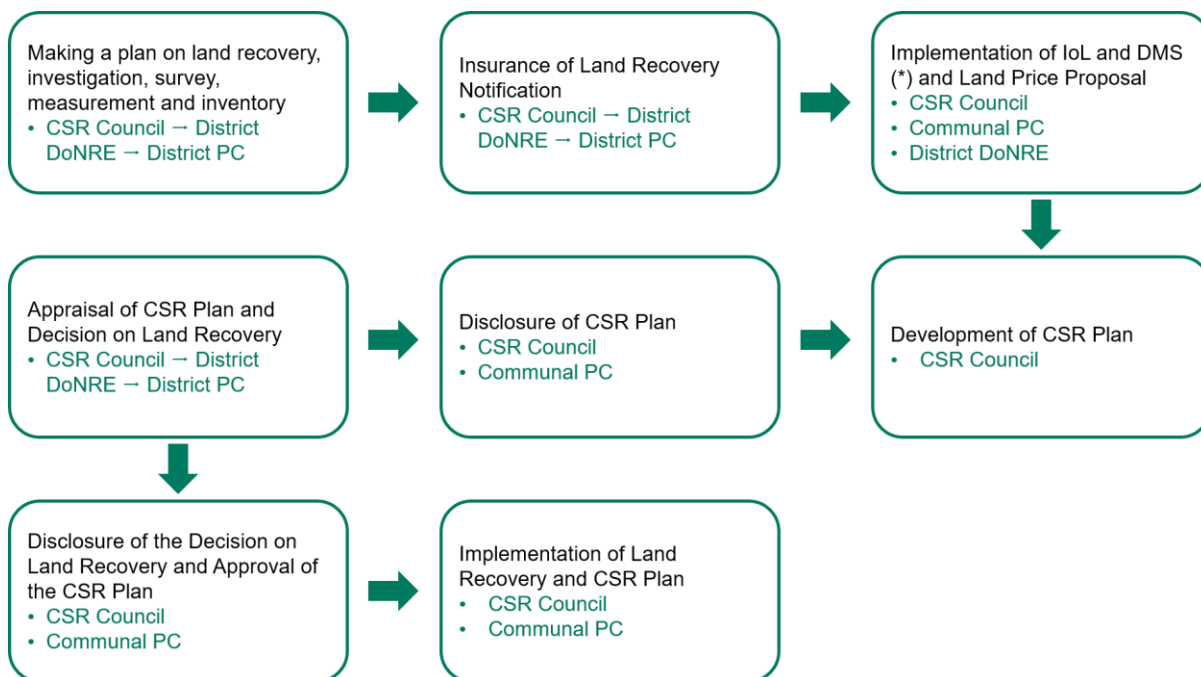
#### 3.2.5.1 National Level

The Land Law No. 45/2013/QH13, dated November 29, 2013 is the existing supreme legal regulation prescribing land use rights and land management in Vietnam, including those of land acquisition, compensation, support and resettlement (CSR). Besides the Land Law, the following regulations apply to the land acquisition, compensation, support, and resettlement process.

- Decree No. 47/2014/ND-CP dated 15 May 2014 of the Government on regulating CSR Policies when land is acquired by the government;
- Decree No. 43/2014/ND-CP dated 15 May 2014 of the Government detailing a number of articles of the Land Law 2013;
- Decree No. 01/2017/ND-CP dated 6 January 2017 of the Government on amendments to the Decrees on the implementation of the Land Law;
- Decree No. 136/2018/ND-CP dated 5 October 2018 amending certain Decrees providing for regulatory requirements for trade and investment in the environment and natural resource sector;
- Decree No. 44/2014/ND-CP dated 15 May 2014 of the Government prescribing Land Prices;
- Circular No. 33/2017/TT-BTNMT dated 29 September 2017 detailing the implementation of Decree No. 01/2017/ND-CP;
- Circular No. 30/2014/TT-BTNMT dated 2 June 2014 of MoNRE regulating documents on land allocation, land lease, land use change and land acquisition; and
- Circular No. 37/2014/TT-BTNMT dated 30 June 2014 of MoNRE detailing regulations on compensation, support, and resettlement upon land expropriation by the state.

#### 3.2.5.2 Provincial Level

A typical land compensation, support and resettlement process that complies with Vietnamese regulation includes the following main steps.



Note: Inventory of Loss (IoL) and Detailed Measurement Survey (DMS) are conducted under the presence of members of the CSR Council and affected household's representative(s). IoL and DMS results will be disclosed to the Project affected persons (PAPs) for review and signature. All DMS results will be collected and sent back to the PC at provincial or district level who is tasked with the CSR process for signing and stamping.

**Figure 3.2 Land Compensation, Support and Resettlement Process Required in Vietnam**

### 3.2.6 National Regulations on Electricity

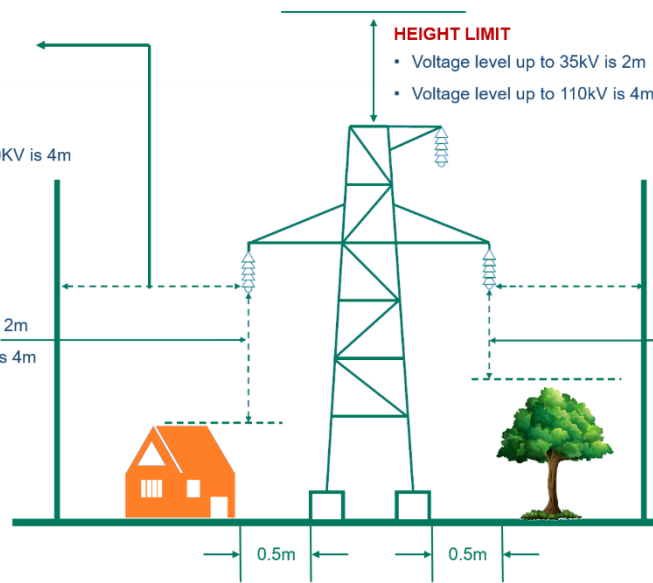
The Law on Electricity No. 28/2004/QH11 dated 3 December 2004, and Decree No. 14/2014/ND-CP dated 26 February 2014 stipulate in detail the implementation of the Law on Electricity, especially regarding electricity safety. Key regulations stipulated in the Decree are as follows:

- For any 110kV lines outside cities and towns, the distance from the highest point of the trees vertically to the height of the lowest conducting line at the state of maximum deflection must not be less than 3m. In any case where the trees are outside the safety corridor of overhead conducting lines and outside cities, towns etc., the distance from any part of tree when the tree falls to any part of line must not be less than 1m. Rice, crops and plants must be planted at least 0.5m from the edge of pole foundation (Article 12);
- Houses and constructional works are permitted to exist within the safety corridor of overhead conducting lines with voltage 110kV if they meet the following conditions: (i) Roof and walls must be made of non-combustible materials; (ii) There must be no obstruction of the entry or exit of the house or works during testing, maintenance and replacement of parts of the high-voltage grid; (iii) The distance from any part of the house or works to the nearest conducting line when the line is at the state of maximum deflection must not be less than 4m; (iv) The electric field intensity must be less than 5kV/m at any point outside the house or works, and one meter from the ground and less than or equal to 1kV/m at any point inside the house and one meter from the ground (Article 13).

**WIDTH LIMIT**

- Voltage level up to 22kV:
  - Wire wrapped is 1m
  - Bare wire is 2m
- Voltage level up to 35kV:
  - Wire wrapped is 1.5m
  - Bare wire is 3m
- Bare wire voltage level 110KV is 4m

- Voltage level up to 35kV is 2m
- Voltage level up to 110kV is 4m



**HEIGHT LIMIT**

- Voltage level up to 35kV is 2m
- Voltage level up to 110kV is 4m

**TRANSMISSION LINE IN CITY, COMMUNE AND TOWN**

- Voltage level up to 35kV:
  - Wire wrapped is 0.7m
  - Bare wire is 1.5m
- Bare wire voltage level 110KV is 2m

**TRANSMISSION LINE OUTSIDE CITY, COMMUNE AND TOWN**

- Voltage level up to 35kV:
  - Wire wrapped is 0.7m
  - Bare wire is 2m
- Bare wire voltage level 110KV is 3m

**Figure 3.3 Safety Corridor Required for Transmission Lines**

■ Safety corridor for power station is stipulated as follows (Article 15):

a. For power stations without wall or fence, the safety corridor is limited by the space surrounding the power station with the distance to the nearest charged objects of the station as specified in the following table:

Voltage	Up to 22 kV	35 kV
Distance	2.0 m	3.0 m

b. For the power station with fixed wall or fence, the safety corridor is limited to the outmost point of foundation or protection embankment of wall or fence; the height of corridor is from the deepest foundation bottom of the power station to the highest point of the power station plus the vertical safety distance specified at Point c, Clause 1, Article 11 of this Decree; and

c. For integrated substations or power distribution stations with metal case, the safety corridor is limited to the outer side of metal case.

Houses and constructional works near the safety corridor of power station must ensure no damage to any part of power station; no obstruction to the way in and out, the water supply and drainage system, the safety corridor of underground cable and overhead conduction line, the ventilation system of the power system and no wastewater intrusion causing damage to the electrical works.

■ Safety corridor for underground cable is stipulated as follows (Article 14):

**The width of corridor is limited by:**

- a. The outer side of the cable trench for cables placed in the trench;
- b. Two vertical sides from the outer side of cable shell or outmost cable on both sides of the underground cable for cable placed directly under the ground in the following table:

Type of electric cable	Underground	
	Stable ground	Unstable ground
Distance	1.0 m	1.5 m

**The height is from the ground to:**

- a. Outer side of foundation bottom of cable trench for cable placed in cable trench;
- b. The depth is 1.5 m lower than the lowest point of cable shell for cable placed directly in the ground.

Other regulations on electricity in Vietnam include:

- Circular No. 31/2014/TT-BCT dated 02nd October, 2014 regulating details on electrical safety;
- QCVN 25:2016/BYT – National Technical Regulation on Industrial Frequency Electromagnetic Fields – Permissible Exposure Level of Industrial Frequency Electromagnetic Fields in the Workplace; and
- QCVN 21:2016/BYT – National Technical Regulation on High Frequency Electromagnetic - Permissible Exposure Level of High Frequency Electromagnetic Intensity in the Workplace.

### 3.2.7 National Regulations on Grievances

The Law on Grievance 2011 issued by the National Assembly on 11 November 2011 and taken into effect from the 1 July 2012 shows that the raising of grievances and the settlement of grievances must comply with the law and ensure objectiveness, transparency, democracy, and timeliness. In specific, it provides the framework for grievances and the settlement of grievances against administrative decisions or acts of state administrative agencies; or competent persons in these agencies, grievances and the settlement of grievances. These grievances related to disciplinary decisions against cadres; or civil servants, and reception of citizens, management and supervision of complaint settlement work.

Circular No. 07/2014/TT-TTCP issued by the Government Inspectorate on 31 October 2014 and taken into effect on 15 December 2014 prescribes the process of receiving, categorising, investing, and resolving community grievances.

The Law on Administrative Procedures 2015 issued by the National Assembly on 25 November 2015, and taken into effect on 1 July 2016, prescribes the fundamental principles in administrative procedures; tasks, powers, and responsibilities of procedure-conducting agencies and persons. It also provides rights and obligations of procedure participants and related agencies, organisations, and individuals. Besides, it contains the order and procedures for instituting lawsuits, settling administrative cases, executing administrative judgments and settling complaints, and denunciations in administrative procedures.

The Civil Procedure Code 2015 issued by the National Assembly and taken into effect on the 1 July 2016, provides the basic principles in civil proceedings. It also contains; the order and procedures for initiating lawsuits at the People's Court to settle civil cases such as marriage and family, business, trade, and labour, including grievances on environmental pollution between individuals and organisations.

In addition to these regulations, a grievance procedure has been developed for the Project to receive and resolve Project development activity-related grievances. More details can be found in the Project Stakeholder Engagement Plan (SEP).

### 3.2.8 National regulations on Occupational Health and Safety (OHS)

The Law No. 84/2015/QH13 on occupational safety and hygiene dated 25 June 2015, deals with occupational hygiene and safety assurance, policies and benefits for victims of occupational accidents and occupational diseases (hereinafter referred to as victims), the rights and obligations of organisations or individuals relating to occupational hygiene and safety, and the roles of regulatory agencies in occupational hygiene and safety.

In addition to this law, a number of Decrees, Circulars, Decisions and Standards have been issued relating to labour rights, health and safety. Decree No. 39/2016/ND-CP dated 15 May 2016 detailing

the implementation of some articles of the Law on occupational safety and sanitation. Decree No. 45/2013/ND-CP, dated 10 May 2013, provides provisions on the Labour Code on OHS. The employer has the responsibility to fully provide employees with the technical equipment required for labour safety and labour sanitation and to improve their working conditions wherever possible. The employee must follow regulations on labour safety, labour sanitation and the labour regulations of the business. All organisations and individuals associated with labour and production must observe national legislations on labour safety, labour sanitation and environmental protection.

### 3.2.9 National Regulations on Chemicals

The Law No. 06/2007/QH12 sets national requirements on the classification, labelling, packaging, transportation, storage and use of chemicals. For any projects where chemicals listed in Appendix IV of Decree No. 113/2017/ND-CP are used onsite, the project owners are required to (i) develop and implement chemical-related incident prevention and response plans and establish safety distances; or (ii) develop and implement chemical-related incident prevention and response measures. A list of chemicals subject to conditional production or trading, chemicals restricted from production or trading, as well as banned chemicals were provided in Decree No. 77/2016/ND-CP and Decree No. 113/2017/ND-CP. Several circulars under these decrees guide project owners on labelling, packaging, storage and usage of chemicals. TCVN 5507:2002 stipulates the arrangements of hazardous chemical storage.

The Stockholm Convention was signed on 22 May 2001 and entered into force on 17 May 2004 with the aim of protecting human health and the environment from the risks of Persistent Organic Pollutants (POPs). Vietnam ratified the Stockholm Convention on 22 July 2002 and was the 14<sup>th</sup> party to the Convention. To implement the Stockholm Convention, Vietnam issued the National Implementation Plan for the Stockholm Convention, under Decision No. 184/2006/QĐ-TTg dated 10 August 2006 pertaining to safety management, minimisation and eventual elimination of POPs in Vietnam. The Decision meets both the requirements of the Stockholm Convention and Vietnam's goal of sustainable development.

### 3.2.10 National Regulations on Fire Prevention and Fire Fighting

The Law No. 27/2001/QH10 on Fighting and Fire Prevention mandates that every entity has responsibilities in fire prevention and firefighting and that the heads of agencies, organisations and households must support the organisation and regularly inspection of fire prevention and firefighting activities, within the ambit of their respective responsibilities. Fire prevention and firefighting plans for all developments listed in Annex IV of Decree No. 79/2014/ND-CP dated 31 July 2014 of the Government must be prepared, appraised, and approved by the relevant authorities before project construction. To have a fire prevention and firefighting plan approved, a dossier must be prepared and submitted to the Fire Police for appraisal and approval, as specified in Article 15 of Decree No. 79/2014/ND-CP.

### 3.2.11 National Regulations on Labour Rights

The main legislation in Vietnam relating to labour rights, health and safety is the Labour Code No. 10/2012/QH13 which was issued on 18 June 2012 by the Vietnam National Assembly. It stipulates that everyone has the right to work without discrimination based on sex, nationality, social background, beliefs or religion. Maltreatment of an employee and forced labour in any form are strictly forbidden. The government protects workers through its relevant legislation on employment, apprenticeship, labour contracts, collective labour accord, salary, work and break time, labour discipline, material liability, specific provisions for female workers, minors and other types of workers (elderly workers, disabled workers, highly-skilled professionals and technically-skilled workers, employees working for foreign organisations and individuals in Vietnam, foreigners working in Vietnam and Vietnamese employees working abroad, as well as other types of labour), social insurance, trade unions, and settlement of labour disputes.

Recently Vietnam government has issued an updated version of the current labour code, Labour Code No. 45/2019/QH14 issued on 20<sup>th</sup> November 2019 will be effective on 1<sup>st</sup> January 2021.

### 3.2.12 National Regulations on Ethnic Minorities

- Resolution No. 22/NQ-TW dated 27<sup>th</sup> November 1989 the Politburo of the Central Committee Communist Party of Vietnam on guidelines and master policies on socio-economic development of mountainous regions;
- Resolution No. 24-NQ/TW by IX Central Committee of the Communist Party of Vietnam dated 12<sup>th</sup> March 2003 on ethnic minority issues;
- Conclusion No. 65-KL/TW dated 30<sup>th</sup> October 2019 by the Politburo of the Central Committee Communist Party of Vietnam on continued implementation of Resolution No. 24-NQ/TW;
- Resolution No. 88/2019/QH14 dated 18 November 2019 by the National Assembly on approving the Master Plan of socio-economic development of ethnic minority and mountainous regions in 2021-2030; and
- The Government is formulating the National Target Program of Socio-Economic Development of Ethnic Minority and Mountainous Regions in 2021-2030.

## 3.3 International Requirement Framework

The Applicable International Standards that will be adopted for this Project are as follows.

### 3.3.1 Equator Principles IV (2020)

The “Equator Principles 4”<sup>2</sup> which have been adopted by 111 of the world’s leading investment banks in 37 countries in developed and developing countries, are based on IFC’s Performance Standards, covering the majority of international project finance debt within developed and emerging markets. The EP4 must be implemented by 1 October 2020.

The EPs establish voluntary principles for addressing environmental and social risks and issues in global project finance transactions, including adherence to IFC PS. The EPs are designed to serve as a benchmark for the financial industry to manage social and environmental risks in project financing. They apply to all new project financings with total project capital costs of USD10 million or more, across all industry sectors. Key aspects of the advice addressed in the final EP4 text, include:

- Revision on the approach to Free, Prior and Informed Consent (FPIC) in Designated Countries;
- Strengthened commitments on human rights;
- Recognition of the Paris Agreement and introduction of the Climate Change Risk Assessment for physical and transition risks, aligned with the risk categories of the TCFD (Task Force on Climate Related Financial Disclosure);
- Broadened scope including reduced threshold for Project;
- Related Corporate Loans and named reporting of these transactions. Identification of a lead EPFI to promote consistency in name reporting. Removal of exemption for sovereign borrowers for all Category A Projects; and
- Commitment to develop guidance and undertake training amongst members to successfully implement these new commitments.

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<sup>2</sup> Equatorial Principle 4, 2020, retrieved on 4th December 2020, at <https://equator-principles.com/wp-content/uploads/2020/05/The-Equator-Principles-July-2020-v2.pdf>

The Principles (EPs 1 to 10) are:

- Principle 1: Review and Categorisation;
- Principle 2: Environmental and Social Assessment;
- Principle 3: Applicable Environmental and Social Standards;
- Principle 4: Environmental and Social Management System and Equator Principles Action Plan;
- Principle 5: Stakeholder Engagement;
- Principle 6: Grievance Mechanism;
- Principle 7: Independent Review;
- Principle 8: Covenants;
- Principle 9: Independent Monitoring and Reporting; and
- Principle 10: Reporting and Transparency.

The EP IV can be found on the Equator Principles website<sup>3</sup>.

### 3.3.2 IFC's Performance Standards on Environmental and Social Sustainability (2012)

In April 2006, the IFC, a member of the World Bank Group, released a set of Performance Standards (PS) based upon the original World Bank Group Safeguard Policies, which recognised further the specific issues associated with private sector projects. The IFC PS have been broadened to include issues such as greenhouse gases, human rights, community health, and safety and security. A revised set of PS came into force on January 1, 2012. The complete list of IFC PS is provided in Figure 3.4 and more details can be found on the IFC website<sup>4</sup>.



Figure 3.4 IFC Performance Standards

<sup>3</sup> The Equator Principles, 2020, retrieved on: December 2020, at: <https://equator-principles.com/wp-content/uploads/2020/05/The-Equator-Principles-July-2020-v2.pdf>

<sup>4</sup> IFC, 2012, retrieved on: December 2020, at : [http://www.ifc.org/wps/wcm/connect/Topics\\_Ext\\_Content/IFC\\_External\\_Corporate\\_Site/IFC+Sustainability/Sustainability+Framework/Sustainability+Framework++2012/Performance+Standards+and+Guidance+Notes+2012/](http://www.ifc.org/wps/wcm/connect/Topics_Ext_Content/IFC_External_Corporate_Site/IFC+Sustainability/Sustainability+Framework/Sustainability+Framework++2012/Performance+Standards+and+Guidance+Notes+2012/)

### 3.3.3 World Bank General EHS Guidelines (2007)

#### 3.3.3.1 General EHS Guidelines

Supplementing the IFC PS are the General EHS Guidelines that were released in April 2007. The EHS Guidelines are technical reference documents with general and industry-specific examples of Good International Industry Practice (GIIP). They are categorised by environment, occupational and community health and safety, and construction and decommissioning. The General EHS Guidelines are designed to be used together with the relevant Industry Sector EHS Guidelines, which provide guidance to users on EHS issues within specific industry sectors.

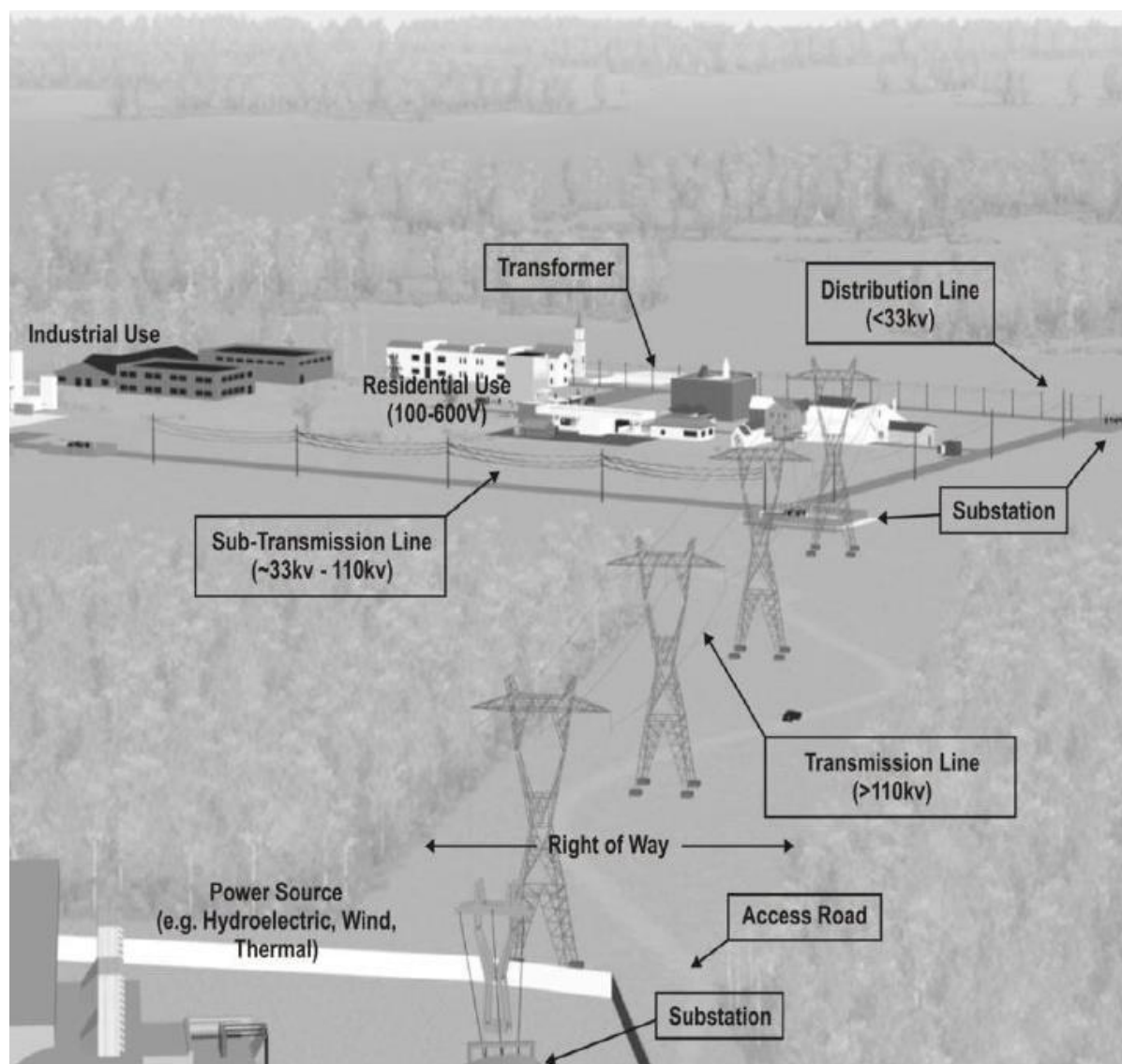
#### 3.3.3.2 EHS Guidelines for Electric Power Transmission and Distribution (2007)

The EHS Guidelines for Electric Power Transmission and Distribution include information relevant to power transmission between a generation facility and a substation located within an electricity grid, in addition to power distribution from a substation to consumers located in residential, commercial, and industrial areas.

The EHS Guidelines for Electric Power Transmissions and Distribution are organised in the following sections:

- Section 1.0 – Industry – Specific Impacts and Management;
- Section 2.0 – Performance Indicators and Monitoring;
- Section 3.0 – References and Additional Sources; and
- Annex A – General Description of Industry Activities provide a description of the facilities and activities associated with the construction and operation of power transmission and distribution projects including:
  - Power Transmission Systems
  - Power Distribution Systems
  - Electrical Substations
  - Rights-of-Way (ROW) Management

Typical components of a power transmission and distribution project are illustrated in Figure 3.5.



**Figure 3.5 Electric Power Transmission and Distribution Illustration**

### 3.3.3.2.1 EHS Guidelines for Wind Energy

The EHS Guidelines for Wind Energy include information relevant to environmental, health, and safety aspects of onshore and offshore wind energy facilities. It should be applied to wind energy facilities from the earliest feasibility assessments, as well as from the time of the environmental impact assessment, and continue to be applied throughout the construction and operational phase.

### 3.3.4 IFC and EBRD's Guidance Note on Workers' Accommodation: Processes and Standards

This guidance was issued by IFC and EBRD to provide specific and practical guidance on appropriate policies and standards relating to workers' accommodation, which is required in IFC Performance Standard 2 and EBRD Performance Requirement 2.

The Guidance Note on Workers' Accommodation is organised in the following sections:

- Section I: Planning and assessing requirements for workers' accommodation. This section provides guidance on assessing the need for workers' accommodation, assessing potential impacts of workers' accommodation on communities, and types of workers' accommodation; and

- Section II: Standards for and management of workers' accommodation. This section provides instruction on standards applicable to a project, including national/ local standards as well as international standards and good practices on general living facilities; sanitary facilities; canteen, cooking and laundry facilities; and nutrition and food safety.

## 3.4 International Conventions

### 3.4.1 The Kyoto Protocol on Climate Change

Vietnam became a signatory to the United Nations Frameworks Convention on Climate Change in 1998 with full accession in 2002. This obligates Vietnam to assure that future development in the country meets the conditions of the Convention. Relevant to this project are the requirements associated with the potential generation of greenhouse gas. Further conditions of relevance include:

- Enhancement of energy efficiency in relevant sectors;
- Protection and enhancement of sinks and reservoirs of greenhouse gases;
- Promotion of sustainable forest management practices, afforestation and reforestation;
- Promotion of sustainable forms of agriculture;
- Implementation of measures to limit and/ or reduce emissions of greenhouse gases; and
- Limitation and/ or reduction in methane emissions.

In 2015, at the 21<sup>st</sup> Conference of parties in Paris, 196 parties including Vietnam adopted the Paris Agreement. Its goal is to limit global warming to well below 2, preferably to 1.5 degrees Celsius, compared to pre-industrial levels. To achieve this long-term temperature goal, countries aim to reach global peaking of greenhouse gas emissions as soon as possible to achieve a climate neutral world by mid-century. This agreement works on a 5- year cycle of increasingly ambitious climate action carried out by countries. The Prime Minister issued Decision No. 2053/QĐ-TTg dated 28<sup>th</sup> October 2016 declaring Vietnam's action plan to implement the Paris Agreement on Climate Change. Vietnam has submitted the first updated nationally determined contribution (NDC) in July 2020.

### 3.4.2 The United Nations Convention on Biodiversity 1992

This Convention seeks to conserve biodiversity and promote its sustainable use. It requires the identification and monitoring of the biodiversity in an area and adopting the necessary conservation measure. Vietnam became party to this Convention on 16<sup>th</sup> November 1994.

### 3.4.3 The Basel Convention 1989

This was developed under the auspices of the United Nations Environmental Programme (UNEP) in response to the growing worldwide awareness of the problem of international traffic in hazardous waste. The Basel Convention 1989 is the first and foremost global environmental treaty that strictly regulates the trans-boundary movement of hazardous wastes. It obligates parties to ensure environmentally sound management, especially during the disposal process.

The objectives of the Convention are to:

- Ensure that waste is disposed of as near as possible to the place or source of its generation;
- Reduce trans-boundary waste and where it cannot be avoided, to be disposed of in an environmentally sound and efficient manner; and
- Provide assistance to developing countries in the management of hazardous waste and the generation.
- The Convention places a ban on the export of hazardous waste from Organization for Economic Cooperation and Development (OECD) countries to non-OECD countries.

- Vietnam participated in Basel Convention on 13<sup>th</sup> March, 1995 and this convention entered into force for Vietnam on 11<sup>th</sup> June 1995.

### **3.4.4 International Union for Conservation of Natural and Natural Resources, Red List of Threatened Species**

The IUCN Red List, in 1964, was founded in order to provide a comprehensive inventory of the global conservation status of biological species, and to set of precise criteria to evaluate the extinction risk of thousands of species and subspecies. These criteria are applicable to all species and all regions of the world. Following the guidelines of the IUCN Red List, Vietnam's Red List was produced in 1992, updated in 2007, and has been an effective guideline for conservation of extinction species in Vietnam.

### **3.4.5 The United Nations Declaration on the Rights of Indigenous Peoples**

The United Nations Declaration on the Rights of Indigenous Peoples was adopted on 13<sup>th</sup> September, 2007. Currently, the Declaration is the most comprehensive international instrument on the rights of indigenous peoples. It establishes a universal framework of minimum standards for the survival, dignity and well-being of the indigenous peoples of the world and it elaborates on existing human rights standards and fundamental freedoms as they apply to the specific situation of indigenous peoples.

### **3.4.6 International Covenant on Economic, Cultural and Social Rights**

The International Covenant on Economic, Social and Cultural Rights is a multilateral treaty adopted by the United Nations General Assembly on 16<sup>th</sup> December, 1966 and came in force from 3<sup>rd</sup> January 1976. It commits its parties to work toward the granting of economic, social, and cultural rights, including labour rights and the right to health, the right to education, and the right to an adequate standard of living.

### **3.4.7 The International Labour Organization (ILO)-International Labour Standards**

The international labour standards developed and adopted by The International Labour Organization (ILO) sets out basic principles and rights at work. They are conventions which are legally binding international treaties that may be ratified by member states. The six fundamental Conventions of ILO which Vietnam has ratified as follow:

- C111 - Discrimination (Employment and Occupation) Convention, 1958 - Convention concerning Discrimination in Respect of Employment and Occupation;
- C138 - Minimum Age Convention, 1973 - Convention concerning Minimum Age for Admission to Employment;
- C182 - Worst Forms of Child Labour Convention, 1999 - Convention concerning the Prohibition and Immediate Action for the Elimination of the Worst Forms of Child Labour;
- C029 - Forced Labour Convention, 1930 - Convention concerning Forced or Compulsory Labour
- C098 - Right to Organize and Collective Bargaining Convention, 1949 - Convention concerning the Application of the Principle(s) of the Right to Organize and to Bargain Collective/y;
- C100 - Equal Remuneration Convention, 1951 - Convention concerning Equal Remuneration for Men and Women Workers for Work of Equal Value.

Vietnam has been a member of ILO since 1994. Afterwards, labour management regulations in Vietnam have also been developed, updated and issued to ensure the alignment with requirements of the above convention. Therefore, local regulations on labour management, together with above conventions are requirements applicable to a project developed in Vietnam.

### 3.5 Project Standards

The maximum permissible limits are defined by comparing values stated in both applicable National Technical Regulations (QCVNs) as well as international applicable standards. The more stringent limits will be considered for the Project compliance.

#### 3.5.1 Ambient Air Quality

**Table 3.1 Project Standards for Ambient Air Quality**

Parameter	QCVN 05:2013/BTNMT			WBG General EHS Guideline			Project Standard		
	1-hr average	8-hr average	24-hr average	1-hr average	8-hr average	24-hr average	1-hr average	8-hr average	24-hr average
SO <sub>2</sub>	<b>350</b>		125			<b>20</b>	350		20
CO	<b>30.000</b>	<b>10.000</b>					30.000	10.000	
NO <sub>2</sub>	<b>200</b>		<b>100</b>	<b>200</b>			200		100
O <sub>3</sub>	<b>200</b>	120			<b>100</b>		200	100	
TSP	<b>300</b>		<b>200</b>				300		200
PM <sub>10</sub>			150			<b>50</b>			50
PM <sub>2.5</sub>			50			<b>25</b>			25
Pb			<b>1.5</b>						1.5

Note:

All values are given in µg/m<sup>3</sup>. Blank space means parameter not regulated;

1-year average does not apply because the construction period is expected to last less than this period of time.

Applicable maximum permissible limits for the project are shown in bold

#### 3.5.2 Noise

**Table 3.2 Project Standards for Noise Levels**

Area	QCVN 26:2010/BTNMT		WBG General EHS Guideline		Project standard	
	6:00 - 21:00	21:00 - 6:00	07:00 - 22:00	22:00 - 07:00	6:00 - 21:00	21:00 - 6:00
Special (Kindergarten, schools, hospital, church, pagoda)	55	45	55	45	55	45
Normal (residential area, hotel, and administrative centre)	70	55	<b>55</b>	<b>45</b>	55	45
Industrial; commercial.	-	-	<b>70</b>	<b>70</b>	70	70

Note:

All values are given in dBA for one-hour LAeq;

The time windows of Project Standard are chosen to reflect local context;

The definition of "Residential; institutional; educational area" in General EHS guideline covers both "Special" and "Normal" area of QCVN 26:2010/BTNMT.

Applicable maximum permissible limits for the project are shown in bold

### 3.5.3 Domestic Wastewater

**Table 3.3 Project Standard for Treated Domestic Wastewater**

Parameter	Unit	QCVN 14:2008/BTNMT (Class B) <sup>1</sup>	WBG General EHS Guideline	Project standard
pH	-	5 - 9	<b>6 - 9</b>	6 - 9
BOD <sub>5</sub> (20°C)	mg/l	50	<b>30</b>	30
COD	mg/l	-	<b>125</b>	125
Total Suspended Solids	mg/l	100	<b>50</b>	50
Total Dissolved Solids	mg/l	<b>1000</b>	-	1000
Sulphur (as H <sub>2</sub> S)	mg/l	<b>4.0</b>	-	4.0
Ammonium (as N)	mg/l	<b>10</b>	-	10
Nitrate (NO <sub>3</sub> <sup>-</sup> ) (as N)	mg/l	<b>50</b>	-	50
Oil and Grease <sup>2</sup>	mg/l	20	<b>10</b>	10
Total surfactants	mg/l	<b>10</b>	-	10
Phosphate (PO <sub>4</sub> <sup>3-</sup> ) (as P)	mg/l	<b>10</b>	-	10
Total Nitrogen	mg/l	-	<b>10</b>	10
Total Phosphorous	mg/l	-	<b>2</b>	2
Total Coliform Bacteria	MPN <sup>3</sup> / 100ml	5.000	<b>400</b>	400

Note:

(1) Class B for wastewater discharging into water bodies not used for the purpose of domestic water supply;

(2) QCVN 14:2008 defines as "Vegetable Oil and Grease" while General EHS Guideline defines as "Oil and Grease";

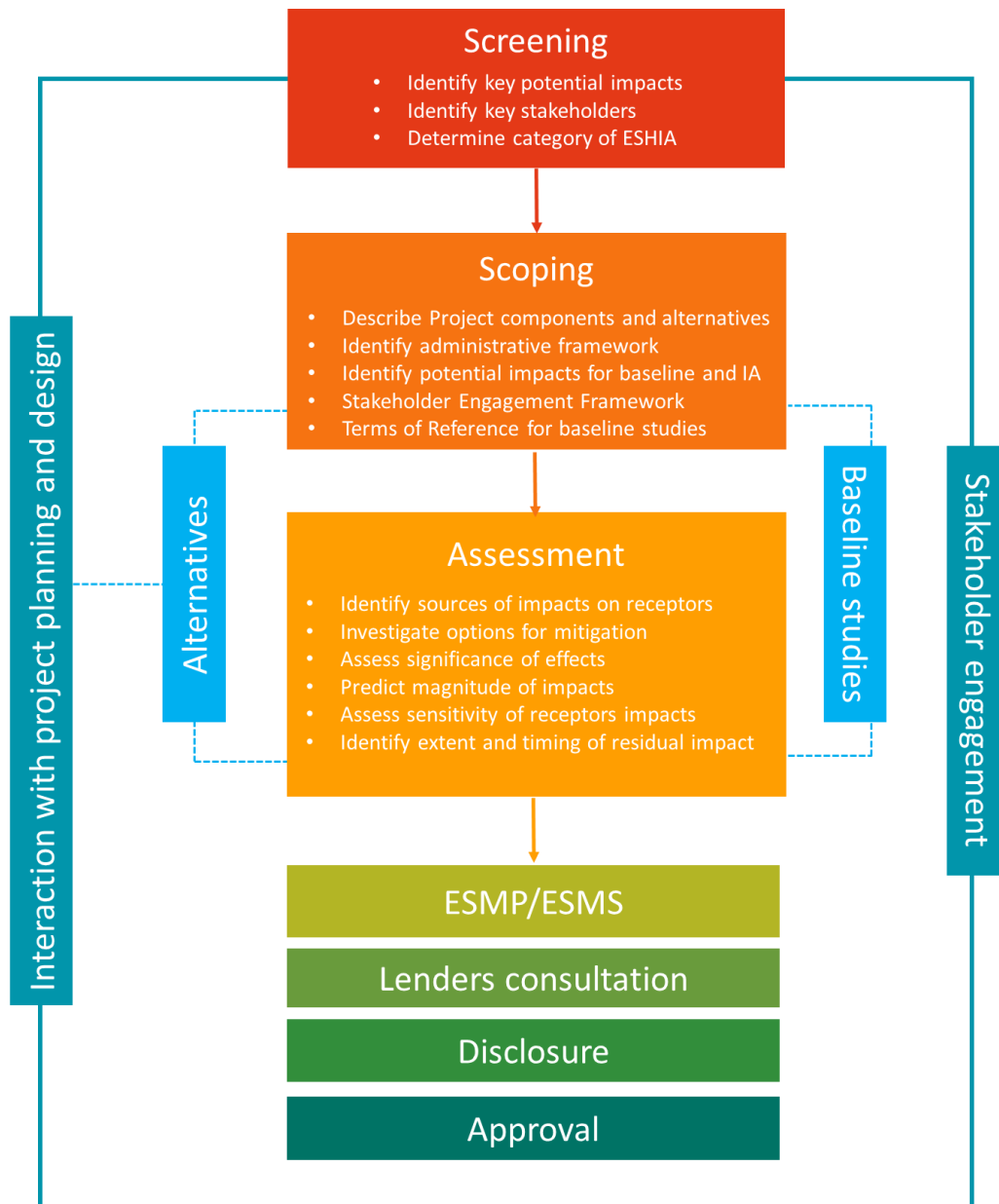
(3) MPN: Most probable number.

Applicable maximum permissible limits for the project are shown in bold

## 4. IMPACT ASSESSMENT METHODOLOGY

### 4.1 Introduction

This section presents the methodology used to conduct this ESIA, which follows the approach illustrated in Figure 4.1. This ESIA has been undertaken following a systematic process that: evaluates the potential impacts the Project could have on aspects of the physical, biological, social/socio-economic and cultural environment; identifies preliminary measures that the Project will take to avoid, minimise/reduce, mitigate, offset or compensate for potential adverse impacts; and identifies measures to enhance potential positive impacts where possible.



**Figure 4.1 Process for Producing an ESIA**

This section also details the methodology used for the collection and analysis of primary and secondary data used in this report. Primary and secondary information from the Project Owner, government sources, non-governmental organisations (NGOs) and other Project-related stakeholders have been collected to support the preparation of this report.

## 4.2 Screening

At the initial stage of this ESIA, preliminary information was provided by the developer to aid in the determination of what legal and other requirements should be applied to the Project. This step was completed utilising a high-level description of the Project and its associated facilities.

## 4.3 Scoping

Scoping has been undertaken to delineate the potential Area of Influence for the Project (and thus the appropriate Study Area), and to identify potential interactions between the Project and environmental and social resources/receptors in the Area of Influence (i.e., identifying the potential impacts that could result from these interactions). It also helped in developing and selecting alternatives to proposed action and in identifying the issues to be considered in this ESIA.

The content of this ESIA report has been prepared according to the output from the scoping process, which is further detailed within Chapter 5.

## 4.4 Project Description

To set out the scope of the Project features and activities, with particular reference to the aspects which have the potential to impact the environment and social context of the area of interest, a Project Description has been prepared. Details of the Project facilities' design characteristics, as well as planned and possible unplanned Project activities, are provided in Chapter 2 of this ESIA Report.

## 4.5 Baseline Conditions

To provide the context within which the impacts of the Project can be assessed, a description of physical, biological, social/socio-economic and cultural conditions that would be expected to prevail in the absence of the Project is presented. The Baseline includes information on all resources/receptors that were identified during scoping as having the potential to be significantly affected by the Project.

The baseline characterisation is reported in Chapter 7 and Chapter 8 of the ESIA Report.

## 4.6 Stakeholder Engagement

An effective ESIA Process will require engagement with relevant stakeholders throughout the key stages. This assists in understanding stakeholder views on the Project and in identifying issues that should be taken into account in the prediction and evaluation of environmental and social impacts.

Details of the Stakeholder Engagement activities that have been undertaken for this Project upto date are presented in Chapter 6 of this ESIA Report.

## 4.7 Impact Assessment

Impact identification and assessment starts with scoping and continues throughout the remainder of the ESIA Process. The main ESIA steps are summarised below and comprise of:

**Potential Impact Identification:** to determine what could potentially happen to environmental and social resources/receptors as a consequence of the Project and its associated activities;

**Impact Evaluation:** to evaluate the significance of the predicted environmental and social impacts by considering their magnitude and likelihood of occurrence, and the sensitivity, value and/or importance of the affected resource/receptor;

**Management and Mitigation Enhancement Measures:** to identify appropriate and justified measures to mitigate potential negative environmental and social impacts and enhance potential positive impacts; and

**Residual Impact Evaluation:** to evaluate the significance of potential environmental and social impacts assuming an effective implementation of mitigation and enhancement measures.



Source: ERM, 2019

**Figure 4.2 IA Process**

### 4.7.1 Prediction of Impacts

Prediction of impacts is essentially an objective exercise to determine what is likely to happen to the environment and social context at the area of interest as a consequence of the Project and its associated activities. From the potentially significant interactions identified during the Scoping phase, the impacts to the various environmental and social resources/receptors are identified and evaluated. The diverse range of potential impacts considered in the ESIA Process typically results in a wide range of prediction methods being used, including quantitative, semi-quantitative and qualitative techniques.

### 4.7.2 Evaluation of Environmental and Social Impacts

Once the identification of potential impacts is complete, each potential impact is described in terms of its various relevant characteristics (e.g. type, scale, duration, frequency, extent). The terminology and designations used to describe impact characteristics are shown in Table 3.1.

**Table 4.1 Impact Characteristic Terminology**

Characteristic	Definition	Designations
<b>Type</b>	A descriptor indicating the relationship of the potential impact to the Project (in terms of cause and effect).	<ul style="list-style-type: none"> <li>■ Direct</li> <li>■ Indirect</li> <li>■ Induced</li> </ul>
<b>Extent</b>	The “reach” of the potential impact (e.g., confined to a small area around the Project footprint, projected for several kilometres, etc.).	<ul style="list-style-type: none"> <li>■ Local</li> <li>■ Regional</li> <li>■ International</li> </ul>
<b>Duration</b>	The time period over which a resource / receptor is potentially affected.	<ul style="list-style-type: none"> <li>■ Temporary</li> <li>■ Short-term</li> <li>■ Long-term</li> </ul>

Characteristic	Definition	Designations
<b>Scale</b>	The size of the potential impact (e.g. the size of the area with the potential to be damaged or impacted, the fraction of a resource that could potentially be lost or affected, etc.)	[no fixed designations; intended to be a numerical value or a qualitative description of “intensity”]
<b>Frequency</b>	A measure of the constancy or periodicity of the potential impact.	[no fixed designations; intended to be a numerical value or a qualitative description]

The definitions for the type designations are shown in Table 4.2. Definitions for the other designations are resource/receptor-specific, and are discussed in the resource/receptor-specific IA chapters presented later in this ESIA.

**Table 4.2 Impact Type Definitions**

Type	Definition
<b>Direct</b>	Potential impacts that result from a direct interaction between the Project and a resource/receptor (e.g. between occupation of a plot of land and the habitats which are affected).
<b>Indirect</b>	Potential impacts that follow on from the direct interactions between the Project and its environment as a result of subsequent interactions within the environment (e.g. viability of a species population resulting from loss of part of a habitat as a result of the Project occupying a plot of land).
<b>Induced</b>	Potential impacts that result from other activities (which are not part of the Project) that happen as a consequence of the Project (e.g. influx of camp followers resulting from the importation of a large Project workforce).

The above characteristics and definitions apply to planned and unplanned events. An additional characteristic that pertains only to unplanned events is *likelihood*. The likelihood of an unplanned event occurring is designated using a qualitative scale, as described in Table 4.3.

**Table 4.3 Definitions for Likelihood Designations**

Likelihood	Definition
<b>Unlikely</b>	The event is unlikely but may occur at some time during normal operating conditions.
<b>Possible</b>	The event is likely to occur at some time during normal operating conditions.
<b>Likely</b>	The event will occur during normal operating conditions (i.e., it is essentially inevitable).

Once impact characteristics are defined, the next step in the IA phase is to assign each potential impact a ‘magnitude’. Magnitude is typically a function of some combination (depending on the resource/receptor in question) of the following impact characteristics:

- Extent;
- Duration;
- Scale;
- Frequency; and
- Likelihood (for unplanned event).

Magnitude essentially describes the intensity of the change that is predicted to occur in the resource/receptor as a result of the potential impact. The magnitude designations themselves are universally consistent, but the definitions for these designations vary depending on the resource/receptor. The universal magnitude designations are:

- Positive;
- Negligible;
- Small;
- Medium; and
- Large.

In the case of a potential positive impact, no magnitude designation (aside from 'positive') is assigned. It is considered sufficient for the purpose of the ESIA to indicate that the Project is expected to result in a potential positive impact, without characterising the exact degree of positive change likely to occur.

In the case of potential impacts resulting from unplanned events, the same resource/receptor-specific approach to concluding a magnitude designation is utilised. However, the 'likelihood' factor is considered, together with the other impact characteristics, when assigning a magnitude designation.

In addition to characterising the magnitude of impact, the other principal impact evaluation step is definition of the sensitivity/vulnerability/importance of the impacted resource/receptor. There are a range of factors to be taken into account when defining the sensitivity/vulnerability/importance of the resource/receptor, which may be physical, biological, cultural or human. Other factors may also be considered, such as legal protection, government policy, stakeholder views and economic value. As in the case of magnitude, the sensitivity/vulnerability/importance designations themselves are universally consistent, but the definitions for these designations vary on a resource/receptor basis. The sensitivity/vulnerability/importance designations used herein for all resources/receptors are:

- Low;
- Medium; and
- High.

Once magnitude of impact and sensitivity/vulnerability/importance of resource/receptor have been characterised, the significance can be assigned to each impact. Impact significance is designated using the matrix shown in Table 4.4.

**Table 4.4 Impact Significance**

		Sensitivity/Vulnerability/Importance of Resource/Receptor		
		Low	Medium	High
Magnitude of Impact	Negligible	Negligible	Negligible	Negligible
	Small	Negligible	Minor	Moderate
	Medium	Minor	Moderate	Major
	Large	Moderate	Major	Major

The matrix applies universally to all resources/receptors, and all impacts to these resources/receptors, as the resource/receptor-specific considerations are factored into the assignment of magnitude and sensitivity/vulnerability/importance designations that enter into the matrix. The context for what the various impact significance ratings signify is presented in the box below.

It is important to note that impact prediction and evaluation take into account any embedded controls (i.e., physical or procedural controls that are already planned as part of the Project design, regardless of the results of the ESIA Process). This helps avoid a situation where an impact is assigned a magnitude based on a hypothetical version of the Project that considers none of the embedded controls.

## Context of Impact Significance

An impact of **negligible** significance is one where a resource/receptor (including people) will essentially not be affected in any way by a particular activity or the predicted effect is deemed to be 'imperceptible' or is indistinguishable from natural background variations.

An impact of **minor** significance is one where a resource/receptor will experience a noticeable effect, but the impact magnitude is sufficiently small and/or the resource/receptor is of low sensitivity/vulnerability/importance. In either case, the magnitude should be well within applicable standards.

An impact of **moderate** significance has an impact magnitude that is within applicable standards, but falls somewhere in the range from a threshold below which the impact is minor, up to a level that might be just short of breaching a legal limit. Clearly, to design an activity so that its' effects only just avoid breaking a law and/or cause a major impact is not best practice. The emphasis for moderate impacts is therefore on demonstrating that the impact has been reduced to a level that is as low as reasonably practicable (ALARP). This does not necessarily mean that impacts of moderate significance have to be reduced to minor, but that moderate impacts are being managed effectively and efficiently.

An impact of **major** significance is one where an accepted limit or standard may be exceeded, or large magnitude impacts occur to highly valued/sensitive resource/receptors. An aim of ESIA is to get to a position where the Project does not have any major residual impacts, certainly not ones that would endure into the long-term or extend over a large area. However, for some aspects there maybe be major residual impacts after all practicable mitigation options have been exhausted (i.e., ALARP has been applied). An example might be the visual impact of a facility. It is then the function of regulators and stakeholder to weigh such negative factors against the positive ones, such as employment, in coming to a decision on the Project.

### 4.7.3 Identification of Mitigation and Enhancement Measures

Once the significance of a potential impact has been characterised, the next step is to evaluate what mitigation and enhancement measures are warranted. For the purposes of this ESIA, ERM has adopted the following Mitigation Hierarchy:

- **Avoid at Source, Reduce at Source:** avoiding or reducing at source through the design of the Project (e.g., avoiding by siting or re-routing activity away from sensitive areas or reducing by restricting the working area or changing the time of the activity);
- **Abate on Site:** add something to the design to abate the impact (e.g., pollution control equipment, traffic controls, perimeter screening and landscaping);
- **Abate at Receptor:** if an impact cannot be abated on-site then control measures can be implemented off-site (e.g., noise barriers to reduce noise impact at a nearby residence or fencing to prevent animals straying onto the site);
- **Repair or Remedy:** some impacts involve unavoidable damage to a resource (e.g. agricultural land and forestry due to creating access, work camps or materials storage areas) and these impacts can be addressed through repair, restoration or reinstatement measures; and
- **Compensate in Kind, Compensate Through Other Means:** where other mitigation approaches are not possible or fully effective, then compensation for loss, damage and disturbance might be appropriate (e.g., planting to replace damaged vegetation, financial compensation for damaged crops or providing community facilities for loss of fisheries access, recreation and amenity space).

The priority in mitigation is to first apply mitigation measures to the source of the potential impact (i.e., to avoid or reduce the magnitude of the potential impact from the associated Project activity), and then to address the resultant effect to the resource/receptor via abatement or compensatory measures or offsets (i.e., to reduce the significance of the effect once all reasonably practicable mitigations have been applied to reduce the impact magnitude).

#### 4.7.4 Residual Impact Evaluation

Once mitigation and enhancement measures are declared, the next step in the ESIA Process is to assign residual impact significance. This is essentially a repeat of the IA steps discussed above, considering the implementation of the proposed mitigation and enhancement measures.

#### 4.7.5 Management, Monitoring and Audit

The final stage of the ESIA Process is defining the basic management and monitoring measures that are needed to identify whether: a) impacts or their associated Project components remain in conformance with applicable standards; and b) mitigation measures are effectively addressing impacts and compensatory measures and offsets are reducing effects to the extent predicted.

A Register of Commitments, which is a summary of all actions the Project Proponent has committed to executing, with respect to environmental/social/health performance for the Project, is also included as part of this Report. The Register of Commitments includes mitigation measures, compensatory measures and offsets, and management and monitoring activities.

### 4.8 Cumulative Impact

According to IFC Good Practice Handbook (2013), “Cumulative impacts (CI) are those that result from the successive, incremental, and/or combined effects of an action, project, or activity when added to other existing, planned, and/or reasonably anticipated future ones”. Furthermore, IFC Good Practice Handbook (2013) also mentions that the assessment and management of cumulative impacts is necessary when the Project and other developments under consideration could contribute to generating cumulative impacts on valued environmental and social component.

In order to gain an understanding of the projects overall contribution to impacts, a cumulative impact assessment (CIA) was undertaken. Whilst total cumulative impacts due to multiple projects within a given area should be identified within government- led spatial planning efforts, the Project owner needs to determine the degree to which it is contributing to these overall cumulative impacts. In this regards, the objectives of the CIA are twofold:

- Determine if the cumulative impacts caused by the Project and other existing or predictable future projects would threaten the sustainability of valuable environmental component (VEC) in the area; and
- Develop mitigation measures to prevent unacceptable conditions of VECs. The measures could include additional mitigation measures for Project and also additional mitigation measures for other existing or predictable future projects in the area.

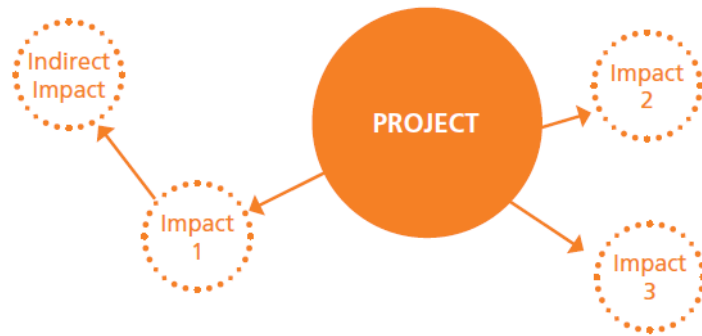
The ESIA and CIA are prepared based on similar logical framework, analytical process and tools. Unlike the ESIA that centres on the Project as a source of impacts, the CIA focuses on VECs under influence from different projects (Figure 4.3). In a CIA, the overall resulting condition of the VEC and its related viability are assessed.

This CIA closely follows the six (6) steps of the IFC Guidance (IFC Good Practice Handbook 2013), as shown in Figure 4.4.

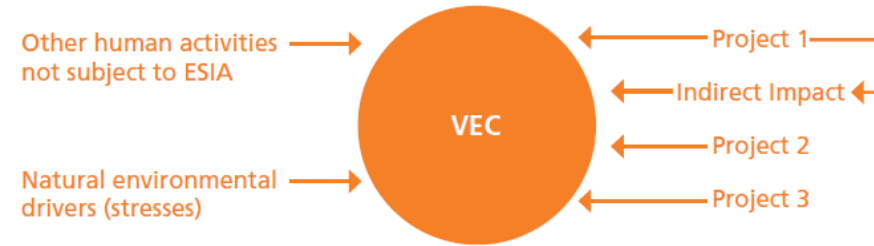
IFC Guidance takes into consideration the limitations that a private developer may face carrying out a CIA as part of an ESIA, or difficulties encountered in compiling such information. The limitations applicable to this CIA include:

- Incomplete information about other projects and activities (e.g. the information is not available in the public domain);
- Uncertainty with respect to the implementation of future projects; and
- Difficulty in establishing thresholds or limits of acceptable change for VECs, and therefore the significance of cumulative impacts.

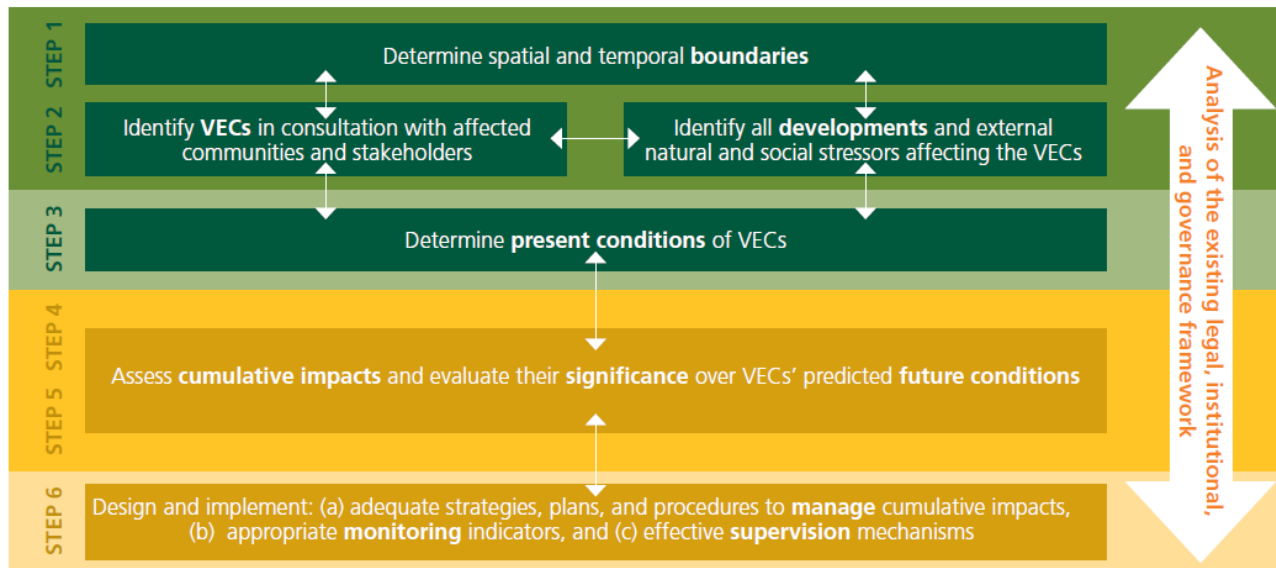
**ESIA: Project-Centred Perspective**



**CIA: VEC-Centred Perspective**



**Figure 4.3 ESIA and CIA Analysis (IFC Good Practice Handbook 2013)**



**Figure 4.4 Six-Step Approach for CIA (IFC Good Practice Handbook 2013)**

## 4.9 Risk Assessment for Unplanned Events

To evaluate potential impacts from unplanned events, a risk-based approach is used to define: 1) the most likely unplanned events leading to environmental, social and/or community health impacts; and 2) those unplanned events with the most significant potential environmental, social and/or community health impacts overall. Impact significance for unplanned events is therefore determined by evaluating the combination of likelihood and consequence.

### 4.9.1 Assess the Scale of Consequence

Indicative levels of consequence for potential impacts from unplanned events can be defined for the physical, biological, and social environment as provided in Table 4.5.

**Table 4.5 Indicative Levels of Consequence for Potential Impacts from Unplanned Events**

	Incidental	Minor	Moderate	Major	Severe
Physical Environment	Impacts such as localised or short term effects or environmental media, meeting all environmental standards	Impacts such as widespread, short-term impacts to environmental media, meeting all environmental standards	Impacts such as widespread, long-term effects on environmental media, meeting all environmental standards	Impacts such as significant, widespread and persistent changes in environmental media OR Exceedance of environmental standards	Exceedance of environmental standards and fine/prosecution
Biological Environment	Impacts such as localised or short term effects on habitat or species	Impacts such as localised, long term degradation of sensitive habitat or widespread, short-term impacts to habitat or species	Impacts such as localised but irreversible habitat loss or widespread, long-term effects on habitat or species	Impacts such as significant, widespread and persistent changes in habitat or species	Impacts such as persistent reduction in ecosystem function on a landscape scale or significant disruption of a sensitive species.
Social Environment	Slight, temporary, adverse impact on a few individuals	Temporary (<1 year), adverse impacts on community which are within international health standards	Adverse specific impacts on multiple individuals that can be restored in <1 year OR One or more injuries, not severe.	Adverse long-term, multiple impacts at a community level, but restoration possible. OR One or more severe injuries to a member of the public including permanently disabling injuries.	Adverse long-term, varied and diverse impacts at a community level or higher – restoration unlikely. OR Fatalities of public.

## 4.9.2 Assess the Likelihood

For the purposes of assessment, the likelihood of an unplanned event occurring can be classified as follows:

- 1- Remote, not known in the industry;
- 2- Very unlikely, known of in the industry;
- 3- Unlikely, may occur once or more in life of the Project;
- 4- Likely, may occur once or twice per year;
- 5- Expected, may occur more than twice per year.

## 4.9.3 Assess the Significance

The consequences and likelihood of potential unplanned events are combined to determine the overall impact significance using the risk matrix shown in Table 4.6.

For potential impacts that are determined to have an impact significance of Moderate or Major, risk reduction measures are identified; these can include measures that reduce the likelihood of the event from occurring (i.e. preventive barriers), those that reduce the consequences on sensitive receptors/resources if the event were to occur (i.e. mitigation or recovery measures), and those that affect the likelihood and consequence.

**Table 4.6 Risk Matrix for Potential Unplanned Events**

		Likelihood of Occurrence				
		1	2	3	4	5
Consequence	Incidental	Negligible	Negligible	Negligible	Negligible	Negligible
	Minor	Negligible	Minor	Minor	Minor	Moderate
	Moderate	Minor	Minor	Moderate	Moderate	Major
	Major	Moderate	Moderate	Major	Major	Major
	Severe	Major	Major	Major	Major	Major

## 5. ESIA SCREENING AND SCOPING

ESIA screening and scoping forms the basis of identifying important environmental and social impacts to be assessed in the ESIA and ideally, avoids detailed assessment of impacts which are deemed unlikely to be of significance or which can be easily addressed through implementation of appropriate management or mitigation measures.

ESIA screening and scoping forms the basis of identifying important environmental and social impacts to be assessed in the ESIA and ideally, avoids detailed assessment of impacts which are deemed unlikely to be of significance or which can be easily addressed through implementation of appropriate management or mitigation measures.

### 5.1 Objective

To identify environmental and social risks that are relevant to the Project, the Client completed a Feasibility Study and a local regulatory EIA, which was approved by Ninh Thuan DONRE in August 2017. Upon checking the latest draft local EIA against international standards, multiple gaps have been identified. ERM Vietnam was commissioned to start the current ESIA on November 2020, supplementing gaps within previous studies and impact assessments to align with the expectations of various international standards. The developer has prepared a previous ESIA back in 2017 which was prepared by Vatec, same that we have used as reference in this 2020 ESIA.

The ESIA has been prepared to target only the important environmental and social risks, in specifically selected areas, which fall out of the scope of the regulatory EIA process, or those impacts, which are considered likely to be significant in the context of the Project.

In relation to this Project, this primarily applies to the following:

- The social and environment impact assessment conducted during the EIA will be updated in ESIA to update to show impact happened at the current stage;
- A Critical Habitat Assessment (CHA) is required under IFC PS6 and this assessment will be completed by using available biodiversity data. Recommendation to conduct the CHA is due to insufficient data in previous ESIA. Based on the CHA, specific management plan on Biodiversity Management Plan (BMP) is designed. Avifauna survey is conducted to understand specific management plan for bats and birds species. These considerations are updated in this ESIA;
- Consideration of CIs, associated facilities and non-routine events are not assessed in the existing EIA. These considerations are updated in this ESIA; and
- Consideration of impacts to indigenous peoples and cultural heritage are not considered within the EIA. These considerations are updated in this ESIA.

Based on the level of Project information provided by developer and available during the desktop information assessment, ERM has a reasonable level of confidence regarding the important environmental and social interactions that have been identified and presented within this Section.

### 5.2 Scoping Results

Based on the preliminary environmental and social review for this Project and Chapter 5 of ESIA report, Loi Hai 2 Wind Power Project could be classified as Category A project in accordance with the IFC categorisation system<sup>5</sup>. This ESIA is prepared based on the requirement of category A, where at this stage the preliminary review suggests that the project activities shows potential significant adverse environmental or social risks and/or impacts that are diverse, irreversible, or unprecedented.

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<sup>5</sup> Details of the Categorization assessment is in Chapter 5 of the ESIA.

The rationale for selecting **Category A** for the Project includes:

- The Project will be constructed on flat agricultural land. There is two nearby protected areas (Nui Chua Natural Reserve and Song Trau Protection Forest) to the project location that might be impacted;
- No households will be relocated as the result of land acquisition for the Project development. However, due to safety reason, approximately 38 houses located within the safety buffer zone of the turbines are expected to be relocated. It is noted that these houses are farm watching houses but the elderly people living there for looking after of their farms and cattle. Detail is discussed in Chapter 10-Social Impact Assessment.
- The land acquisition for the construction of the Project components will result the economical displacement of 33 Raglai households who are identified as the Indigenous People during the Scoping phase of this Project;
- The impacts are generally site-specific and impacts will be contained within the Project boundary;

The initial stage of the ESIA is the scoping assessment, which results in a scoping report that identifies a screening of potential environmental and social Project impacts, using information provided by the Client (e.g. EIA and Feasibility Study) and Project area mapping assessment. Details of the scoping study for the Project are presented in Section 5.3 below.

### 5.3 Scope of the Assessment

The aim is to focus the assessment on those that have a reasonable potential to experience significant impacts, which the Project Owner should seek to avoid through the Project design. Scoping also aims to identify key data gaps and ways to fill those gaps.

The ESIA and the scoping study cover all phases of project development including pre-construction, construction and operation activities for the entire 30 MW wind power development. A scoping site visit was conducted by ERM to confirm the environmental and social receptors identified in the mapping assessment in November 2020. Key sensitive receptors of the Project were defined to inform the key aspects covered in the IA.

Based on ERM's initial understanding of the site, primary and secondary baseline data review, activities (both planned and unplanned) associated with the Project and associated facilities during construction and operation phases have been considered with respect to their potential to interact with environmental and social resources/receptors. The following section details the methodology and results.

### 5.4 Project Area of Influence (AOI)

The AOI varies depending on the nature of the project and receptor. Under the IFC PS1 definition, an AOI would include the physical boundary of a project's activities as the core area, plus a wider buffer zone covering access to the project and any natural or community receptors which may be affected by the project.

For this Project, the appropriate AOI has been extended to cover construction and operation of the Project facilities as discussed in Section 2.4. It should be noted that the AOI for a particular resource/receptor may vary depending on the nature of the change caused by Project activities and the type of effect being considered, but in each case it is defined as including the entire area likely to experience significant impacts. As such, the AOI will be discussed in terms of the specific environmental/ social aspects (e.g., biodiversity, social, noise) that will be impacted.

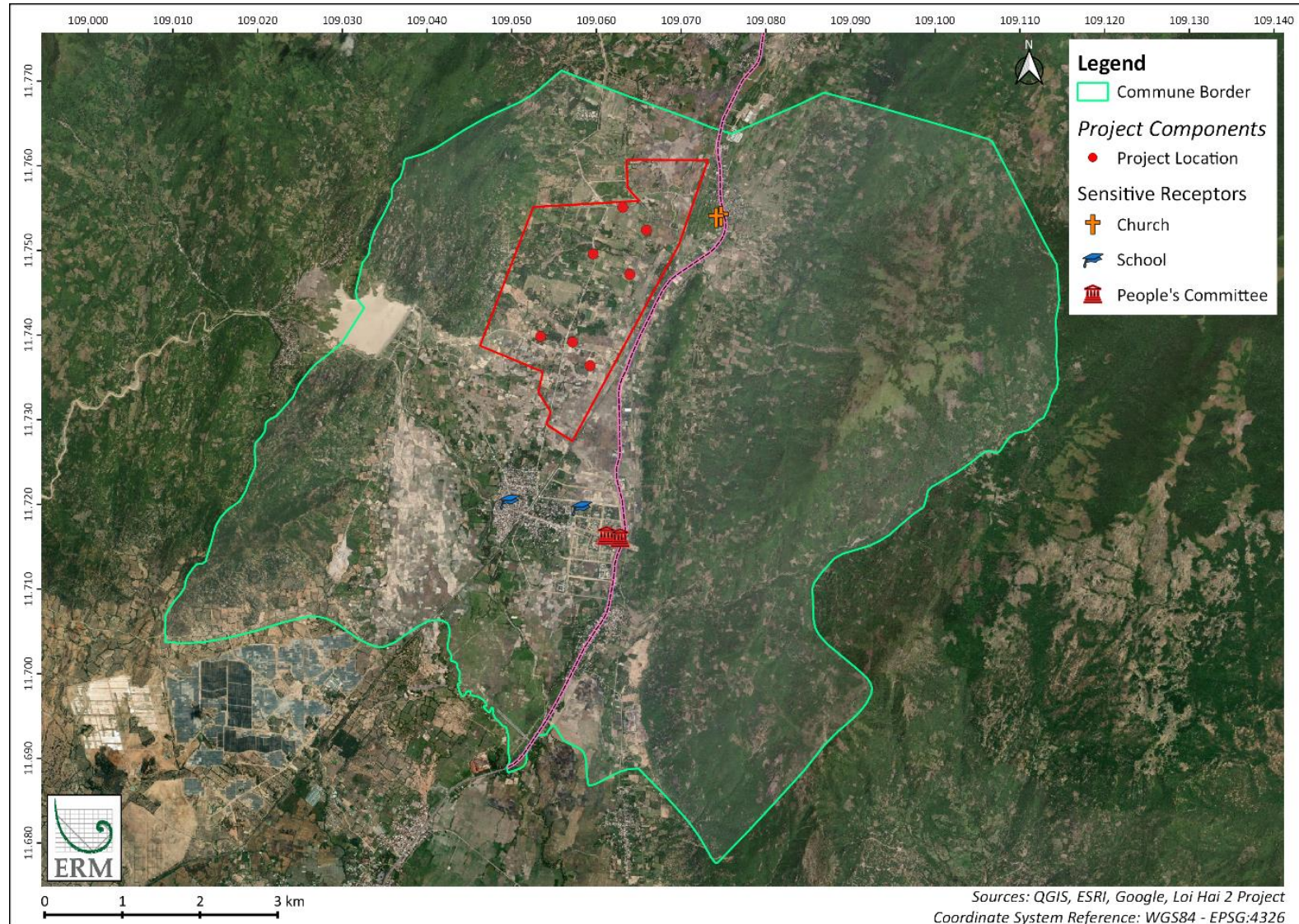
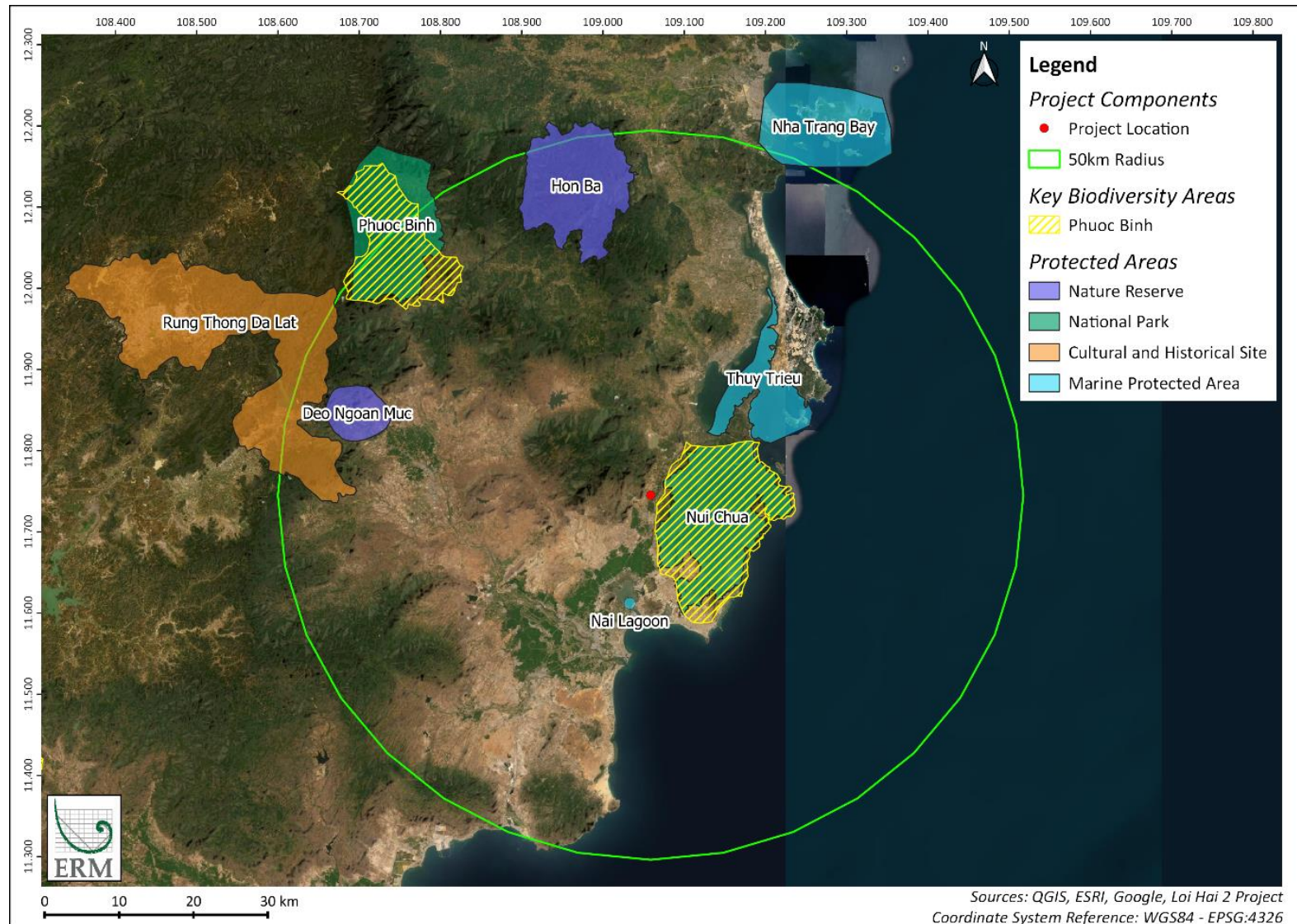


Figure 5.1 Sensitive Receptors (Social and Environmental Impact)



**Figure 5.2 Sensitive Receptors (Ecological Impact)**

## 5.5 Potential Interactions

Following the determination of AOI, the Potential Interactions Matrix (PIM) is used as a tool to support a methodological identification of potential interactions of each Project activity and the resources/receptors within the AOI. This PIM comprises two axis: project activities and receptors. The Project activities during the construction phase and operation phase are listed down the vertical axis while the environmental and socio-economic receptors are listed across the horizontal axis of the matrix. Each resulting cell on the PIM thus represents a potential interaction between a Project activity and a resource or receptor. Note that the potential interactions identified in the PIM may change as new information becomes available.

Potential impacts have been classified in one of the three categories:

- **No interaction:** where the Project is unlikely to interact with the resource or receptor. These impacts are illustrated as white cells in the PIM and will be “scope out” of further consideration in the impact assessment process.
- **Interaction likely, but not likely to be significant:** where there is likely to be an interaction but resultant impact is unlikely to change baseline conditions in an appreciable/detectable way. Those interactions that are grey cells in the PIM and are also “scope out” or integrated into major interactions, but the IA report may include a discussion that presents the evidence basis used to justify the basis upon which this decision was made.
- **Significant interaction:** where there is likely to be an interaction and the resultant impact has a reasonable potential to cause significant effect on the resource or receptor. Those cells shaded black in the PIC and are retained for further consideration in the ESIA process.

**Table 5.1 Potential Interactions Matrix**

PROJECT PHASES AND ACTIVITIES	ENVIRONMENT								SOCIAL									
	Air Quality	Greenhouse gas	Noise and Vibration	Hydrology, Soils and Erosion	Marine Water Quality	Freshwater Quality	Terrestrial Fauna and Flora	Avian fauna	Livelihoods	Land use	Infrastructure and Public Services	Community Health and Safety	Occupational Health and Safety	Land and Marine Traffic	Tourism	Visual Amenity	Cultural Heritage	Economy and Employment
Pre-Construction																		
Land acquisition									■	■								■
Relocation for safety reason									■	■		■						■
Construction																		
Labour influx											■	■	■	■				■
Land preparation and civil works	■		■	■		■	■		■	■		■	■	■				■
WTG piling and foundation	■			■								■	■					
Construction of substation, transmission line and laydown area and office			■						■	■			■			■		■
Operation of associated facilities such as the concrete batching plant.			■			■				■			■					
Construction water use				■						■								
Transportation of equipment, workers and materials		■	■								■	■	■	■				■
WTG installation			■								■	■	■			■		
Waste and wastewater from construction activities and from workers' activities						■	■				■	■						
Hazardous materials storage and handling				■		■	■			■		■	■					

PROJECT PHASES AND ACTIVITIES	ENVIRONMENT								SOCIAL									
	Air Quality	Greenhouse gas	Noise and Vibration	Hydrology, Soils and Erosion	Marine Water Quality	Freshwater Quality	Terrestrial Fauna and Flora	Avian fauna	Livelihoods	Land use	Infrastructure and Public Services	Community Health and Safety	Occupational Health and Safety	Land and Marine Traffic	Tourism	Visual Amenity	Cultural Heritage	Economy and Employment
<b>Operation</b>																		
Labour influx																		
WTG operation (including shadow flicker) and inspection and maintenance																		
Waste, emissions (including electromagnetic interference) and discharge generation, handling and disposal																		
Presence of the turbine																		
<b>Unplanned Events</b>																		
Fire and explosion, including Unexploded Ordnance (UXO)																		
Floods, Storm, Earth quake																		
Spillage of fuel, oil, chemicals and hazardous materials																		
Blade throw																		
<b>Key Consideration</b>																		
Scope out																		
Scoped Out or integrated with other major interactions																		
Further Consideration in Impact Assessment																		
Interaction likely to lead to Potential Positive Impacts																		

**Table 5.2 Preliminary Interaction Matrix**

Interactions		Justification for Expectation of Potential Impacts	Applicable Performance Standards
Activities/Hazards	Receptors/Resource		
<b>Pre-Construction Phase</b>			
Land acquisition	Livelihoods	<ul style="list-style-type: none"> <li>Land acquisition process will impact Raglai people. This group of people is identified as Indigenous People. However, the land acquisition process will not cause physical displacement. This livelihood change is caused by change of land use from agricultural land to project components.</li> </ul>	PS5
	Land use	<ul style="list-style-type: none"> <li>Location surrounding project location will experience land use change from rice field, perennial tree, seasonal agriculture, irrigation area, and community access road. All of these land types will be converted into project components.</li> </ul>	PS5
	Economy and Employment	<ul style="list-style-type: none"> <li>As economic displacement will impact productive land such as rice field, perennial tree and seasonal agriculture.</li> </ul>	PS5
Relocation for safety reason	Livelihoods	<ul style="list-style-type: none"> <li>As required by Circular 02/2019/TT-BCT, for safety reason the wind power work must be 300 m away from the residential area. People living in the to-be-relocated houses will be disturbed in terms of their livelihoods.</li> </ul>	PS4 and PS5
	Land use	<ul style="list-style-type: none"> <li>Some non-permanent huts in agriculture land should be resettled outside the 300 m suggested safety zone and the acquired land use purpose to be shifted to industrial land.</li> </ul>	PS5
	Community Health and Safety	<ul style="list-style-type: none"> <li>Some health and safety impacts are expected to happen due to land clearance around the proximity of wind turbine before constructing the land turbine foundation.</li> </ul>	PS4
	Economy and employment	<ul style="list-style-type: none"> <li>Resettlement process will temporarily disturb the economic activities of affected land owner.</li> </ul>	PS5

Interactions		Justification for Expectation of Potential Impacts	Applicable Performance Standards
Activities/Hazards	Receptors/Resource		
<b>Construction Phase</b>			
Labour influx	Infrastructure and public services	<ul style="list-style-type: none"> <li>■ Pressure on the local infrastructure and public services.</li> </ul>	PS4
	Land and marine traffic	<ul style="list-style-type: none"> <li>■ Increase of traffic volume during construction due to transportation of workers, equipment and construction materials.</li> </ul>	
	Community health and safety	<ul style="list-style-type: none"> <li>■ Transmission potential of communicable diseases;</li> <li>■ Introduce antisocial and new lifestyles and habit to local community;</li> <li>■ Conflict between local people (Raglai) and migrant community (other ethnicities) due to different culture</li> <li>■ Potential gender based violence due to increase number of migrant worker and men working in construction site</li> </ul>	PS2, PS4 and PS 7
	Economy and employment	<ul style="list-style-type: none"> <li>■ Increase local employment and income;</li> <li>■ Community discontent due to high expectation to be hired as unskilled worker;</li> <li>■ Provide temporary direct employment for the Project and induced employment;</li> <li>■ Potential violation of recruitment process (discrimination, unequal payment, child labour, gender inequality)</li> <li>■ Reduction of economic opportunities to local business when the worker demobilisation happened by the end of construction;</li> </ul>	PS2 and PS5
Land preparation and civil works	Air quality	<ul style="list-style-type: none"> <li>■ Land preparation and civil works will cause the increase of dust levels in the atmosphere, thus, affect the air quality of the locality.</li> </ul>	PS3 and PS4
	Noise and vibrations	<ul style="list-style-type: none"> <li>■ Land preparation and civil works will involve the use of heavy machines and equipment and will cause elevated noise and vibration levels in the construction sites and nearby areas.</li> </ul>	PS3 and PS4

Interactions		Justification for Expectation of Potential Impacts	Applicable Performance Standards
Activities/Hazards	Receptors/Resource		
	Terrestrial Fauna and Flora	<ul style="list-style-type: none"> <li>Land preparation will cause displacement of and disturbance to terrestrial fauna and flora.</li> </ul>	PS6
	Hydrology, soil and erosion	<ul style="list-style-type: none"> <li>The activities will occur mainly around turbine foundations, and impact of excavation and construction works to soil and erosion will be minimal</li> </ul>	PS3 and PS4
	Freshwater quality	<ul style="list-style-type: none"> <li>The activities will occur mainly around turbine foundations, and impact of excavation and construction works to freshwater quality will be minimal.</li> </ul>	PS3 and PS4
	Livelihoods	<ul style="list-style-type: none"> <li>Disturbance to agricultural production due to land use changes (agricultural land change into project components).</li> <li>Some other livelihood opportunities might appear as a result for the project construction process.</li> <li>Ethnic minority settlement and agricultural area in Loi Hai commune</li> </ul>	PS5 and PS7
	Community health and safety	<ul style="list-style-type: none"> <li>Some health and safety impacts are expected to happen due to land clearance, ground work, and civil work around the proximity of wind turbine before and during constructing the WTG foundation.</li> </ul>	PS 4
WTG piling and foundation	Noise and vibrations	<ul style="list-style-type: none"> <li>The piling and foundation works will involve the use of heavy machines and equipment and will cause elevated noise and vibration levels in the construction sites and nearby areas.</li> <li>Increased noise and vibration levels may also disturb terrestrial fauna.</li> </ul>	PS3 and PS4
	Air Quality	<ul style="list-style-type: none"> <li>Adverse effect on ambient air quality and human health due to the mechanical generation of coarse dust particles (2.5 - 20 µm) distributed by wind;</li> <li>Dust deposition and/or visible dust plumes can cause nuisance, affecting local amenities and quality of life; and</li> <li>Dust deposition and/or visible dust plumes can cause nuisance affecting local amenities and quality of life.</li> </ul>	PS3 and PS4
	Freshwater quality	<ul style="list-style-type: none"> <li>The impact will be assessed together with other construction activities in general</li> </ul>	PS3 and PS4

Interactions		Justification for Expectation of Potential Impacts	Applicable Performance Standards
Activities/Hazards	Receptors/Resource		
	Community health and safety	<ul style="list-style-type: none"> <li>Continues vibration, noise, emission may influence disruption to mental and physical health and wellbeing of people residing near by the turbine.</li> </ul>	PS 4
	Occupational health and safety	<ul style="list-style-type: none"> <li>Some health and safety impacts are expected to happen due to ground work, and civil work in the project area and around the proximity of wind turbine during constructing the WTG foundation, such as increase number of potential occupational hazard to workers especially unskilled worker.</li> </ul>	PS 2
Construction of substation, transmission line and laydown area and admin building	Noise and vibrations	<ul style="list-style-type: none"> <li>The construction of substation, transmission line, laydown area and admin building will involve the use of heavy machines and equipment and will cause elevated noise and vibration levels in the construction sites and nearby areas, which can cause the nuisance.</li> <li>Increased noise and vibration levels may also disturb terrestrial fauna.</li> </ul>	PS3, PS4 and PS6
	Air Quality Greenhouse gas	<ul style="list-style-type: none"> <li>The activities will occur in some scattered sites, and the impact on air quality will be minimal.</li> </ul>	PS3 and PS4
	Freshwater quality Terrestrial fauna and flora	<ul style="list-style-type: none"> <li>Surface sediment runoff affects to freshwater quality and terrestrial (aquatic) fauna and flora.</li> </ul>	PS3, PS4 and PS6
	Livelihoods	<ul style="list-style-type: none"> <li>Access limitation to enter certain agricultural area due to land use conversion into project components will impact community income</li> <li>Construction of transmission line will establish safety corridor which will restrict some livelihood activities such as growing tree or developing house within the safety height.</li> </ul>	PS5
	Occupational health and safety	<ul style="list-style-type: none"> <li>Accidents, injuries, fatalities and safety risk may arise from inappropriate working or unsafe condition, fatigue, lack of H&amp;S training, insufficient PPE, and equipment failure.</li> </ul>	PS2

Interactions		Justification for Expectation of Potential Impacts	Applicable Performance Standards
Activities/Hazards	Receptors/Resource		
Operation of associated facilities such as the concrete batching plant	Freshwater quality	<ul style="list-style-type: none"> <li>If concrete is produced on site in a batching plant, the highly alkaline wastewater and surface sediment runoff from the plant can negatively affect water quality of the receiver.</li> </ul>	PS3 and PS4
	Noise and vibrations	<ul style="list-style-type: none"> <li>Noise will be generated during the operation of the associated facilities</li> </ul>	PS3 and PS4
	Air Quality	<ul style="list-style-type: none"> <li>Mainly dust generation affects human receptors and terrestrial ecology</li> </ul>	PS3 and PS4
	Terrestrial fauna and flora	<ul style="list-style-type: none"> <li>The impact will be assessed together with other construction activities in general</li> </ul>	PS6
Construction water use	Hydrology, soil and erosion	<ul style="list-style-type: none"> <li>The construction water will be taken from Ba Rau reservoir. However, due to the demand is quite small, the impact on hydrology regime will be minimal.</li> </ul>	PS3 and PS4
	Infrastructure and public services	<ul style="list-style-type: none"> <li>The water supply for domestic use will be taken from Loi Hai water supply station. However, due to small number of workers (15 people), the impact on current public services will be minimal.</li> </ul>	PS4
Transportation of equipment, workers and materials	Air Quality	<ul style="list-style-type: none"> <li>Dust and other emission from vehicle operation will be generated during the transportation.</li> </ul>	PS3 and PS4
	Noise and vibrations	<ul style="list-style-type: none"> <li>The transportation of equipment and materials will involve the use of heavy trucks and will cause elevated noise in communities along the route such as local roads of Lo Hai commune and National Highway 1A section passing Cam Ranh city.</li> </ul>	PS3 and PS4
	Infrastructure and public services	<ul style="list-style-type: none"> <li>The transportation of equipment and materials, especially oversized cargo, will increase pressure on the current infrastructure of the localities along the route, particularly Cam Ranh port, the National Highway 1A section from Cam Ranh port to the project site (about 22 km) and communal roads of Loi Hai commune.</li> </ul>	PS3 and PS4
	Community health and safety	<ul style="list-style-type: none"> <li>The movement of project vehicles will increase the risk of traffic collision in localities, considering that National Highway 1A is the main highway of the country with high traffic volume.</li> </ul>	PS4

Interactions		Justification for Expectation of Potential Impacts	Applicable Performance Standards
Activities/Hazards	Receptors/Resource		
	Occupational health and safety	<ul style="list-style-type: none"> <li>Impacts on worker rights, occupational health and safety due to recruitment and employment of construction workers, higher risk activities, use of vehicles/heavy equipment and worker's accommodation</li> </ul>	PS2
	Land and marine traffic	<ul style="list-style-type: none"> <li>The transportation of equipment and materials, especially oversized cargo, will likely cause some disruption to the local traffic at Cam Ranh port and major junctions along the route.</li> </ul>	PS4
WTG installation	Noise and vibrations	<ul style="list-style-type: none"> <li>The installation of WTG will cause elevated noise levels. Due to the continuity of the work, the installation will likely occur even during the night time.</li> </ul>	PS3 and PS4
	Community health and safety	<ul style="list-style-type: none"> <li>Risk of injury to local community entering construction area with unauthorised access where heavy equipment and hazardous material stored.</li> <li>Community settlement or activities within 300 m distance from WTG installation may expose to risk of equipment failure during installation process.</li> </ul>	PS 2 and PS 4
	Occupational health and safety	<ul style="list-style-type: none"> <li>Accidents, injuries, fatalities and safety risk may arise from inappropriate working or unsafe condition, fatigue, lack of H&amp;S training, insufficient PPE, and equipment failure.</li> </ul>	PS 2 and PS 4
Waste and wastewater from construction activities and from workers' activities	Freshwater quality	<ul style="list-style-type: none"> <li>Storm water, domestic and construction waste and wastewater will affect freshwater quality bodies in or near project area, such as Dai Hoa river.</li> </ul>	PS3
	Community Health and Safety	<ul style="list-style-type: none"> <li>The construction of wind turbines and other project components will generate solid waste, wastewater and hazardous waste, and will affect local health and hygiene condition.</li> </ul>	PS4

Interactions		Justification for Expectation of Potential Impacts	Applicable Performance Standards
Activities/Hazards	Receptors/Resource		
<b>Operation Phase</b>			
Labour influx	Affected community and worker during construction	<ul style="list-style-type: none"> <li>Demobilisation/retrenchment process happened in the beginning of operation phase.</li> <li>Reduction of working opportunities will reduce income to local economy.</li> <li>Available working opportunity only available for small number skilled worker, which will limit working opportunity for local unskilled worker.</li> </ul>	PS2
WTG operation (including shadow flicker) and inspection and maintenance	Greenhouse gas	<ul style="list-style-type: none"> <li>No CO<sub>2</sub> is released into the atmosphere when electricity is generated with wind turbines.</li> </ul>	PS3
	Noise and vibrations	<ul style="list-style-type: none"> <li>The operation of WTG will cause elevated noise levels at receptors near the wind farm.</li> </ul>	PS3 and PS4
	Avifauna	<ul style="list-style-type: none"> <li>The operation of WTG can increase mortality of birds and bats as the result of collision and barotrauma - internal injuries caused by exposure to rapid pressure changes near the trailing edges of moving blades.</li> </ul>	PS6
	Community Health and Safety of people staying in the huts nearby the wind turbine location	<ul style="list-style-type: none"> <li>Longer term of exposure to shadow flicker will effect to annoyance and disturbance which lead to stress.</li> </ul>	PS4
	Visual amenity	<ul style="list-style-type: none"> <li>Visual impacts will be on the residents in the farming watching houses and people who do farming in the agriculture land nearby the Project site.</li> <li>The Project area being rural and may make the turbines visually noticeable from a distance within the valley and may be a transient impact on the people traversing through the National road nearby</li> </ul>	PS4
Waste, emissions (including electromagnetic interference) and discharge generation, handling and disposal	Community Health and Safety	<ul style="list-style-type: none"> <li>Research on the effects of Electric and Magnetic Fields on an individual's health has been inconclusive. Nonetheless, health concerns remain with the general public.</li> </ul>	PS4

Interactions		Justification for Expectation of Potential Impacts	Applicable Performance Standards
Activities/Hazards	Receptors/Resource		
Presence of the turbine	Tourism	<ul style="list-style-type: none"> <li>As experienced from other wind farm projects in Vietnam, the location with presence of wind farm will likely become a tourist attraction and a favourite place for photography enthusiasts.</li> </ul>	PS5
	Visual amenity	<ul style="list-style-type: none"> <li>Although highly subject to personal perspective, the presence of wind farm may bring some concern about their effect on perceived scenic quality.</li> </ul>	PS4
	Economy and employment	<ul style="list-style-type: none"> <li>As more and more people visit the wind farm, there will be an increase on the demand for accommodation and other services associated with tourism activities.</li> </ul>	PS5
<b>Unplanned Events</b>			
Fire and explosion, including Unexploded Ordnance (UXO)	Occupational Health and Safety	<ul style="list-style-type: none"> <li>Fire and explosion can cause significant human injuries and property damages, but if happen, the extent will be limited within project area, and will affect project workers/staff only.</li> <li>The explosion from UXO may cause land use changes and pose as safety issues within project boundary.</li> </ul>	PS2
	Infrastructure and public services	<ul style="list-style-type: none"> <li>If fire happens at turbines or substation, local power transmission system will likely be affected</li> </ul>	PS4
Spillage of fuel, oil, chemicals and hazardous materials	Soil and groundwater quality	<ul style="list-style-type: none"> <li>Spillage of hazardous materials will cause contamination of soil and groundwater.</li> </ul>	PS3 and PS4
	Infrastructure and public services	<ul style="list-style-type: none"> <li>The spills can end up in common sewer system and clean-up activities might be necessary</li> </ul>	
Blade throw	Community Health and Safety	<ul style="list-style-type: none"> <li>Rotor failure may result in blade throws that can endanger people living/working close to the wind farm.</li> </ul>	PS4
Flood, storm, earth quake	Community Health and Safety	<ul style="list-style-type: none"> <li>Natural hazard may exacerbate and trigger all the above mentioned and posed risk to affected community surrounding the project location as well as worker during construction and operation.</li> </ul>	PS4
	Occupational Health and Safety		PS2

## 6. STAKEHOLDER ENGAGEMENT

### 6.1 Stakeholder Analysis

#### 6.1.1 Stakeholder Identification

During the recent stakeholder engagement following ESIA and ESMP requirements, a list of stakeholders was developed by taking into account the following consideration:

- Potential Project's impacts during its life cycle;
- Type of stakeholder engagement mandated by laws and Project standards;
- Potentially people / organizations (directly and indirectly) affected by potential impacts in the Project's area of influence; and
- Vulnerable groups<sup>6</sup> required special engagement efforts.

#### 6.1.2 Stakeholder Categorisation

After stakeholders had been identified and grouped, the stakeholders were categorised based on their concerns on the Project development activities. These include:

- **Environmental** – this includes alteration of current environmental baseline conditions such as emissions and local air quality, elevated noise/ disturbance levels, damage and depletion to ecological systems, generations and disposal of waste and reduction in aesthetic value of the environment, changes in resources availability, electromagnetic interference;
- **Social** – this includes economic displacement due to land acquisition, livelihoods, agricultural activities, impacts on water, community health and safety, employment of temporary/local/foreign workforce, labour safety, right of way, visual impacts, impacts of shadow flicker, utility requirements, infrastructure requirements, materials supply, etc.; and
- **Technical** – this includes feasibility, traffic safety, emergency preparedness, knowledge sharing, project management issues, etc.

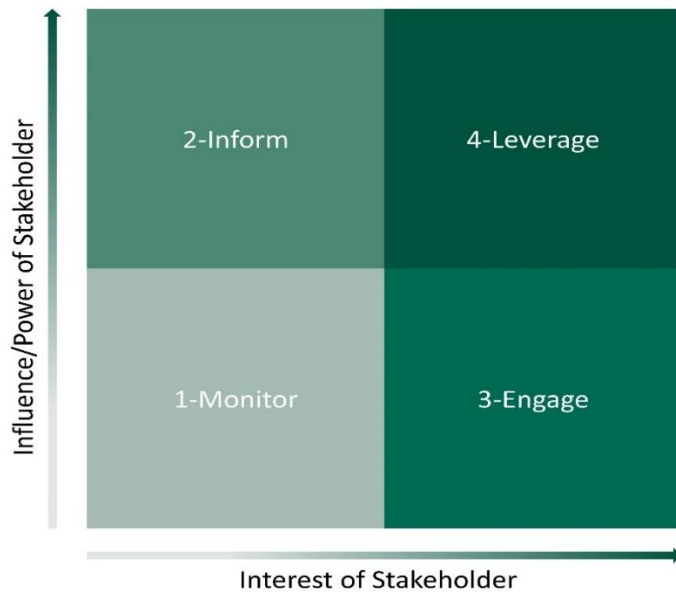
#### 6.1.3 Ranking of Stakeholder's Interest and Influence

To define stakeholder relationships, vulnerability, and interest in and influence on Project activities, stakeholders were assessed and mapped. Mapping was done according to influence, interest and the degree of potential impact based on the stakeholder mapping matrix as demonstrated in Figure 6.1. Since the interest and influence of the stakeholder and list of stakeholders may be changed over the course of Project development, the stakeholder analysis should be updated to reflect the change.

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<sup>6</sup> Vulnerable households are defined as meeting at least one of the following criteria:

- Poor or near-poor households certified by the Government;
- Female-headed households;
- Households with orphans or abandoned children;
- Households with an elderly person above the age of 60 living alone;
- Households with an elderly person from 80 years old without social welfare or insurance;
- Households with a physically disabled member;
- Households with a mentally disabled member incapable of work;
- Households with a member with HIV/AIDS and unable to work;
- Households with a single parent from a poor household who are raising children under the age of 16, or children aged 16-18 and attending school; and
- Households with an illiterate breadwinner.



**Figure 6.1 Stakeholder Mapping Matrix**

The stakeholder mapping matrix is a tool which assists in identifying where stakeholders stand depending on their influence and interest. The influence and interest of stakeholders can be classified as low or high.

A definition of each group based on the stakeholder mapping matrix in Figure 6.1 can be summarised as follows:

1. **Monitor:** low influence and low interest. Typically, this group includes those who have limited interest and influence on the Project including the media and non-governmental organisations (NGOs).
2. **Inform:** high influence and low interest. From an impact assessment perspective, these are stakeholders that have the potential to influence Project outcomes but may not have a specific interest in impact assessment related issues. Stakeholders in this group should be kept informed on the progress of the Project development and usually include statutory consultees.
3. **Engage:** low influence and high interest. This group is also an important group and includes those groups or organisations that are not adversely affected, but whose interests determine them as stakeholders. As such, this group should be kept engaged and the Project should maintain an open channel of communications with this group throughout Project phases. Typically this group would include local communities not directly affected by the Project and authorities who have limited influence on the Project.
4. **Leverage:** high influence and high interest. This group of stakeholders is often the most important to the Project as they have the ability to influence Project outcomes and also have a high level of interest in aspects of impact assessment. Stakeholders in this group should be engaged throughout the ESIA, and for many of these stakeholders beyond the ESIA and during construction and operation stages of the Project. This group of stakeholders would typically include statutory approval bodies and affected communities.

The results of stakeholder identification and categorisation are summarised in Table 6.1.

**Table 6.1 Stakeholder Analysis (at the time of reporting<sup>7</sup>)**

Categories	Stakeholders	Concerns			Influence	Interest	Level of Influence and Interest
		Environment	Social	Technical			
Local communities	Raglai community within the Project area (Loi Hai commune, in Thuan Bac district, Ninh Thuan province) who may be economically displaced during the land acquisition of the Project	✓	✓		High	High	4-Leverage
	Local communities (Loi Hai commune, in Thuan Bac district, Ninh Thuan province) who may receive impacts from the Project's activities	✓	✓	✓	High	High	4-Leverage
	Communities surrounding the Project area (Phuoc Chien, Cong Hai, Phuoc Khang communes, in Thuan Bac district, Ninh Thuan province) who may be the receptors of the Project's construction and operation's activities	✓	✓		Low	High	3-Engage
Government and local government bodies	<i>National Authorities</i>						
	Ministry of Industry and Trade	✓	✓	✓	High	Low	2-Inform
	<i>Provincial Authorities</i>						
	People Committee of Ninh Thuan Province	✓	✓	✓	High	High	4-Leverage
	Department of Natural Resources and Environment of Ninh Thuan Province (Ninh Thuan DoNRE)	✓	✓	✓	High	High	

<sup>7</sup> Since the Interest and Influence of the stakeholder and list of stakeholder will be changed over the time of the Project development, the stakeholder analysis should be updated to reflect the change.

Categories	Stakeholders	Concerns			Influence	Interest	Level of Influence and Interest
		Environment	Social	Technical			
	Department of Labour, Invalid and Social of Ninh Thuan Province (Ninh Thuan DoLISA)		✓		High	High	3-Engage
	Department of Industry and Trade of Ninh Thuan Province	✓	✓	✓	High	High	
	Department of Transport of Ninh Thuan Province		✓	✓	High	High	
	Department of Agriculture and Rural Development of Ninh Thuan Province (Ninh Thuan DARD)	✓	✓		Low	High	3-Engage
	Department of Culture, Sport and Tourism of Ninh Thuan Province (Ninh Thuan DoCST)	✓	✓		Low	High	
	Department of Planning and Investment of Ninh Thuan Province (Ninh Thuan DoPI)	✓	✓	✓	Low	High	
	Department of Industry and Trade of Ninh Thuan Province	✓	✓	✓	Low	High	
	Department of Construction of Ninh Thuan Province	✓		✓	Low	Low	1-Monitor
	Department of Finance of Ninh Thuan Province		✓		Low	Low	
<i>District Authorities</i>							
	People's Committee (PC) of Thuan Bac district including Fatherland Front of Thuan Bac district	✓	✓	✓	High	High	4-Leverage
	Committee of Ethnic Minority Affairs at district level	✓	✓		High	High	
	Division of Natural Resources and Environment of Thuan Bac district	✓	✓	✓	Low	High	3-Engage
	Division of Labour, Invalid and Social of Thuan Bac district	✓	✓		Low	High	

Categories	Stakeholders	Concerns			Influence	Interest	Level of Influence and Interest
		Environment	Social	Technical			
	Division of Agriculture and Rural Development of Thuan Bac district		✓		Low	High	
	Ho Song Trau Watershed Protection Forest Management Board	✓			Low	High	
<i>Commune Authorities</i>							
	People's Committee and Fatherland Front of Loi Hai commune	✓	✓	✓	High	High	4-Leverage
	Unions (i.e. Farmers' Union, Women's Union and Youth Union), police and health facility staff of affected commune (Loi Hai commune)	✓	✓		Low	High	3-Engage
Economically Interested Parties and Business Partners	Da Nhim – Ham Thuan – Da Mi Hydro Power Joint Stock Company	✓	✓	✓	High	High	4-Leverage
	Thac Mo Hydro Power Joint Stock Company	✓	✓	✓	High	High	
	Refrigeration Electrical Engineering Corporation (REE)	✓	✓	✓	High	High	
	Power Engineering Consulting Joint Stock Company 3	✓	✓	✓	High	High	
	Individual shareholder	✓	✓	✓	High	High	
	Central Power Corporation (EVNCP)	✓	✓	✓	High	High	
	Vietnam Electricity (EVN)	✓	✓	✓	High	High	
	Lenders	✓	✓	✓	High	High	

Categories	Stakeholders	Concerns			Influence	Interest	Level of Influence and Interest
		Environment	Social	Technical			
Contractors and suppliers	Vestas Wind Technology Vietnam LLC	✓	✓	✓	Low	High	3-Engage
	Central Construction Joint Stock Company	✓	✓	✓	Low	High	
	Fichtner GmbH & Co. KG	✓	✓	✓	Low	High	
	Other contractors and suppliers	✓	✓	✓	Low	High	
Neighbour Private Sector Bodies	Trung Nam Power Complex of Windfarm and Solar farm (in operation)	✓	✓	✓	Low	High	3-Engage
	Dam Nai Windfarm (in operation)	✓	✓	✓	Low	High	
	Xuan Thien Solar farm (in operation)	✓	✓	✓	Low	High	
	Cong Hai Windfarm (under development)	✓	✓	✓	Low	High	
	Hanbaram Windfarm (under development)	✓	✓	✓	Low	High	
Academic groups	Academic groups that will participate in project reviews in the project development	✓	✓	✓	Low	Low	1-Monitor
Non-governmental organizations(NGOS)	Catalyst Foundation	✓	✓	✓	Low	Low	1-Monitor
	Other NGOs that might be interested in the project development and its potential impacts	✓	✓	✓	Low	Low	
Media	Provincial media (i.e. Ninh Thuan Newspaper)	✓	✓	✓	Low	Low	2-Inform
	National media (i.e. Tuoi Tre News, Thanh Nien)	✓	✓	✓	Low	Low	1-Monitor

### 6.1.4 Stakeholder Engagement Strategies



**Figure 6.2 Stakeholder Engagement Strategies**

## 6.2 Stakeholder Engagement to Date

### 6.2.1 Stakeholder Engagement during EIA Process and 2017 ESIA Process

As required by Vietnam EIA regulations and KfW Sustainability Guidelines (2014), in December 2016 and May 2017, the Project Owner organized multiple public consultation sessions for the draft local EIA reports and 2017 ESIA of Loi Hai 2 Wind Power Project at affected areas where the project is located following the below approach:

- Sending letters soliciting opinions regarding Project's potential environmental impacts to Loi Hai commune People's Committees and Fatherland Front of Loi Hai commune; and
- Arranging a public consultation meeting at the Loi Hai commune PC's offices with participation of local authorities, socio-political professional organizations and directly affected residential communities in the Project area;

The purposes of these public consultation sessions were to:

- ensure their active participation and reduce the potential conflict and risks on slowing the project;
- design a resettlement and rehabilitation program as a sustainable development program, in accordance with the needs and priorities of Project's affected persons; and
- maximise economic, environmental and social benefits of investments.

As presented in Table 6.2, a total of seven consultation meetings were held, involving a total of 227 participants, represented by 91 females and 136 males. A summary of local community and authorities' comments is provided in Table 6.3. Table 6.4 presents the feedback from the Project Owner to the comments received during the EIA public consultation. The corresponding minutes of meetings with detailed discussion as well as full lists of meeting participants are attached in Appendix A.

**Table 6.2 Detailed Public Consultation Meetings Local EIA/ESIA/REMDP 2016/2017**

No.	Date	Process	Location	Number of participants		
				Female	Male	Total
1	19 <sup>th</sup> December 2016	Local EIA	Loi Hai commune People's Committee	3	11	14
2	20 <sup>th</sup> December 2016	Local EIA	Community house of Ba Rau 1 village	22	37	59
3	22 <sup>nd</sup> December 2016	Local EIA	Thuan Bac district People's Committee	3	6	9
4	From 19 <sup>th</sup> to 23 <sup>rd</sup> December 2016	Local EIA	Survey at the villages having the affected households	6	5	11
5	18 <sup>th</sup> May 2017	2017 ESIA and REMDP	Community of Suoi Da village	5	9	14
6			Community of Ba Rau 2 village	12	13	25
7	20 <sup>th</sup> May 2017	2017 ESIA and REMDP	Community of Ba Rau 1 village	40	55	95

**Table 6.3 Comments of Engaged Stakeholders on Loi Hai 2 Wind Farm Development**

No.	Comments of Stakeholders
<b>Loi Hai commune People's Committee</b>	
1	The People's Committee of Loi Hai commune agreed with the EIA report on the negative impacts of the Project during its preparation, construction and operation phases and mitigation measures for the project on natural environment, socio-economy and public health  The People's Committee of Loi Hai commune emphasize the importance of implementing clean energy project. The project was encouraged to invest in Ninh Thuan province
2	The People's Committee of Loi Hai commune recommend the Project Owner to minimize a number of affected households and support the credit loans
3	The Project Owner was requested to comply with the commitments stated in the EIA to protect environment and avoid negative impacts on the local community
4	The Project Owner and its Engineering, Procurement and Construction (EPC) were required to declare the local authorities and coordinate closely with them to manage workers, ensure security and safety in the project area
5	The Project Owner was suggested to recruit local labours in case of having demand on unqualified human resources in construction phase
<b>Fatherland Front of Loi Hai commune</b>	
6	Fatherland Front of Loi Hai commune agreed with the EIA report on the negative impacts of the Project during its preparation, construction and operation phases and mitigation measures for the project in general  Fatherland Front of Loi Hai commune realize the necessity of Loi Hai 2 Wind Power in avoiding unsustainable resources and decreasing an amount of polluted emission. The project was encouraged to invest in Ninh Thuan province
7	The Project Owner was required to disclose final location and capacity of the Project as soon as possible
8	The Project Owner was requested to comply with the commitments stated in the EIA
9	The Project Owner was suggested to recruit local employees in construction phase
10	Local communities in Loi Hai commune
11	The Project Owner was requested to ensure the sanitation and health and safety during the construction phase
12	The Project Owner was recommended to prioritize the local workforce in construction and operation phase
13	The Project Owner was suggested to have adequate compensation plan for the affected households and use land in appropriate purpose
14	The local communities agreed to greatly support the project implementation at the commune in order to provide power resource to locality
<b>Thuan Bac district People's Committee</b>	
15	The departments in particular and Thuan Bac district People's Committee in general agreed with the project implementation and expect to implement the project on schedule

No.	Comments of Stakeholders
16	The Project Owner is required to pay attention to cultivation and production practices and lifestyle of the residents so as to ensure the effective and appropriate implementation of the intervention programs and the restoration of livelihoods for the affected families

#### Affected community in Ba Rau 1 village

17	<p>The Project Owner is requested to clarify:</p> <ul style="list-style-type: none"> <li>■ whether the use the land at the poles of wind turbine is compensated;</li> <li>■ whether the land used as material gathering site by the project being compensated;</li> <li>■ whether the project affect the environment;</li> <li>■ whether they can stay in the project area;</li> <li>■ whether there is any effect to goat and ox breeding and their related diseases;</li> <li>■ status of material gathering and transportation in the construction phase;</li> <li>■ how the project affect crops;</li> <li>■ construction schedule of the project;</li> <li>■ how they will be compensated, if they plant three crops;</li> <li>■ compensation price; and</li> <li>■ when they will know the specific price</li> </ul>
18	If the compensation prices are low, the affected people will not agree

#### Affected community in Ba Rau 2 village

19	The Project Owner was required to comply with the commitments stated in the environmental impact assessment report in order to reduce waste in general and not to have negative environmental impacts on the local residents
20	The affected people felt that the relocation due to the noise during the operation of the project is unreasonable
21	The affected people wanted to know what the solution is if the construction process affects the fields of the local people
22	The affected people wanted to know about the compensation process of agricultural land

#### Affected community in Suoi Da village

23	The Project Owner was required to implement environmental protection well and will not affect their lives
24	The Project Owner was recommended to pay attention to drainage system, construction material storage
25	The Project Owner was suggested to propagate about social disease during the construction process due to the lack of knowledge of ethnic minority
26	<p>The affected people requested the Project Owner to clarify:</p> <ul style="list-style-type: none"> <li>■ if the project have lightning protection measures</li> <li>■ if they want to stay in the project area, whether they need to use the measure to cover ears while sleeping</li> </ul>
27	The affected people wanted to know what the price of crop, land and house is

No.	Comments of Stakeholders
<b>Affected household survey</b>	
28	The households in the quick interview agreed with the implementation of the project
29	Most of the residents expected <ul style="list-style-type: none"> <li>■ the Project will not acquire much productive land</li> <li>■ satisfactory compensation</li> <li>■ the Project Owner arrange other productive land if the acquired land area is wide</li> </ul>

**Table 6.4 Feedback from the Project Owner to Comments during EIA Public Consultation**

### Feedback to Comments from Loi Hai commune People's Committee, Fatherland Front of Loi Hai commune, Thuan Bac district People's Committee and Feedback to Comments of Local communities of Loi Hai commune

- The Project Owner and its contractor acknowledged the comments that were received during the consultation meeting and have committed to performing the following measures:
- Strictly apply measures to minimize negative environmental impacts during the construction and operation phases of the Project in accordance with mitigation measures presented within the EIA;
- Disclose Project information to authorities and people before commencing land clearance;
- Compensate money to affected people by the Project in accordance with current regulations; simultaneously consider to support affected people
- Comply with the provisions of the applicable law on environmental protection in construction work of the Project;
- Perform in the best way possible, the project on schedule, restore to the original state when the project finishes each facility;
- Strictly implement and comply with applicable labour health and safety requirements during Project construction as well as operation phases;
- Implement project on schedule, clean up and recover the original condition as each item is completed; and
- Make an effort to avoid electromagnetic field impacts on community health, comply with Decree No. 14/2014/NĐ – CP issued by the Government on 26th February 2014 stipulating in detail the implementation of Electricity Law regarding electricity safety

## 6.2.2 Stakeholder Engagement during 2020 ESIA Process

### 6.2.3 Meeting with Authorities and Relevant Organisations

On 29<sup>th</sup> September and 9<sup>th</sup> November 2020, the Project Owner along with the Project's consultant – ERM Vietnam Company Limited (ERM), conducted several formal meetings with regulatory bodies from district, and commune levels to:

Follow-up the current socioeconomic conditions and future socio-economic development plans on the Project area; and

Obtain opinions and concerns on the development of the Project.

The following authorities were involved in the meetings with the Project Owner and ERM:

1. People's Committee of Thuan Bac district;
2. People's Committee of Loi Hai commune;

### 3. Committee of Ethnic Minority Affair level district

A summary of discussions, concerns, and recommendations generated in the course of Project Owner's engagement with authorities during ESIA process is provided in Table 6.5 below.

**Table 6.5 Summary of Stakeholder Engagement with Authorities & Relevant Organisations - ESIA**

No.	Stakeholders	Meeting date	Topics covered in the interview meetings
1.	Loi Hai commune People's Committee	29 <sup>th</sup> September 2020	<ul style="list-style-type: none"> <li>■ Update the authority about Project development progress and current status of the ESIA;</li> <li>■ Obtain updated socio-economic data/information including infrastructure and public services development of the commune, health, livelihoods and employment of the people in the commune;</li> <li>■ Obtain feedback/perceptions on the Project development;</li> <li>■ Ask for permission and support from the People's Committee to conduct key informant interviews.</li> </ul>
2.	Thuan Bac district People's Committee	8 <sup>th</sup> November 2020	<ul style="list-style-type: none"> <li>■ Update the authority about Project development progress and current status of the ESIA;</li> <li>■ Obtain updated socio-economic data/information including infrastructure and public services development of the commune, health, livelihoods and employment of the people in the commune;</li> </ul>
3.	Loi Hai commune People's Committee		<ul style="list-style-type: none"> <li>■ Obtain feedback/perceptions on the Project development;</li> <li>■ Ask for permission and support from the People's Committee to perform household surveys and focus group discussions in the area.</li> </ul>

## 6.2.4 Engagement with Local Communities for Baseline Data and Perceptions

Simultaneously to the authority meetings, the Project team and ERM organised multiple engagement activities at a local community level during 29<sup>th</sup> September and 09<sup>th</sup> – 11<sup>th</sup> November 2020 to collect the updated socio-economic baseline data and local communities' opinions and concerns related to the development of the Project. The consultations were performed through household surveys, key informant interviews and focus groups discussions, detailed below.

### 6.2.4.1 Household Interviews

The purpose of the socio-economic survey is to develop the ESIA for the Project, all displaced households will be considered in the survey. A total of 90 households including 27 affected households in Loi Hai commune were engaged in household interviews. There were only one Kinh people household out of 90 surveyed households and the remaining households were the Raglai Ethnic Peoples. The interviewee was any appropriate adult member living in the house of interest. The household surveys were conducted face-to-face at their houses, subject to availability.

### 6.2.4.2 Key Informant Interviews (KIIs)

The village head and representatives of Raglai peoples were identified as key informants. The KIIs were semi-structured with major questions prepared in advance by ERM in the form of checklists. Two village heads and two representatives of Raglai peoples were involved in two KII. The questions for the village

heads and representatives concentrated on general information about the community, social networks, community context, employment, and perceptions about the Project. The FPIC is not trigger even though Raglai people is affected, this is due to no cultural heritage and land under customary/traditional use will be affected.

### 6.2.4.3 Focus Group Discussions (FGDs)

Focus group discussion was used in this survey since it enables ERM to observe a process of interaction among and between group members and to access their expressed views, concerns, opinions, experiences and attitudes about their socio-economic conditions. FGD is useful to get a consensus as people collectively address concerned topics which they may not have previously considered as individuals. Each focus group interviewed involved a heterogeneous group of five to eleven people with distinctive backgrounds linked to age, gender, economic and social status to obtain an inclusive perspective and objective reporting.

Topic of engagement and feedback including concerns and suggestions from the FGDs, KII and Household surveys are summarised in Table 6.6.

**Table 6.6 Summary of Stakeholder Engagement Activities with local communities during ESIA Process**

Interviewed Group	Organisations	Topics covered in the meetings
Focused group	<ul style="list-style-type: none"> <li>■ Raglai people</li> <li>■ Agriculture</li> <li>■ Women</li> <li>■ Union</li> <li>■ Vulnerable<sup>8</sup></li> </ul>	<p>Each group was addressed with a different approach, the following information was collected from the interviewed groups:</p> <ul style="list-style-type: none"> <li>■ Demographic information of the affected villages;</li> <li>■ Main livelihoods in this community;</li> <li>■ Investment cost for and income from their main livelihoods;</li> <li>■ Vulnerable status (i.e. gender, ethnicity, age, physical or mental disability, economic disadvantage, or social status that may be more adversely affected by the Project development);</li> <li>■ Support from authorities, other organisations for local community (type of support);</li> <li>■ Perception on the Project and any concerns linked to the Project development; and</li> <li>■ Cultural activities/local traditions (including Raglai people) in this community.</li> </ul>
Key informant interviews	<p>Two village heads of:</p> <ul style="list-style-type: none"> <li>■ Ba Rau 1 Village;</li> <li>■ Ba Rau 2 Village; and</li> </ul>	<p>The following information was collected:</p> <ul style="list-style-type: none"> <li>■ Historical demographic information of the affected villages;</li> <li>■ Infrastructure and services status;</li> <li>■ Main livelihoods in the area and income from those livelihoods;</li> </ul>

<sup>8</sup> Vulnerable or “at-risk” groups include people who, by virtue of gender, ethnicity, age, physical or mental disability, economic disadvantage or social status may be more diversely affected by displacement than others and who may be limited in their ability to claim or take advantage of resettlement assistance and related development benefits. Vulnerable groups in the context of displacement also include people living below the poverty line, the landless, the elderly, women- and children-headed households, Indigenous Peoples, ethnic minorities, natural resource dependent communities or other displaced persons who may not be protected through national land compensation or land titling legislation (Performance Standard 5)

Interviewed Group	Organisations	Topics covered in the meetings
	Two representatives of Raglai people	<ul style="list-style-type: none"> <li>■ Public security and health status of local community;</li> <li>■ Education and employment status;</li> <li>■ Available unions in the area and role of women as well as youth in local activities;</li> <li>■ Advantages and disadvantages of local community and support from authorities, other organisations for them.</li> </ul>
Household	90 households (all surveyed households living in Loi Hai commune)	<p>The following information was collected:</p> <ul style="list-style-type: none"> <li>■ Family status and demographics;</li> <li>■ Vulnerable status (i.e. gender, ethnicity, age, physical or mental disability, economic disadvantage, or social status that may be more adversely affected by the Project development);</li> <li>■ Livelihoods and employment (i.e. their livelihoods/employment);</li> <li>■ Household income and expenses;</li> <li>■ Housing and land (i.e. land use and land tenure);</li> <li>■ Education background (i.e. education level of members in the surveyed households);</li> <li>■ Health status/profile and health care practice;</li> <li>■ Access to and availability of public facilities (i.e. electricity, water supply, etc.);</li> <li>■ Engagement with community and society;</li> <li>■ Perception on the development of the Project and its engagement activities; and</li> <li>■ Perception about land acquisition, compensation and livelihood restoration.</li> </ul>

## 6.2.5 Concerns from the Interviewed Authorities and Community

The concerns of local authorities and people regarding environmental, health, social and economic issues relating to the Project that were collected from the aforementioned engagement activities are summarised in Table 6.7 and Table 6.8.

### 6.2.5.1 Authorities and Relevant Organisations

**Table 6.7 Feedback from Authorities and Relevant Organisations during ESIA Engagement**

Concerns	Thuan Bac district People's Committee	Loi Hai commune People's Committee	Committee of Ethnic Minority Affairs
<b>Environment</b>			
Dust, noise pollution		✓	✓
Clean water and sanitation			
Land status after construction		✓	
<b>Health</b>			

Concerns	Thuan Bac district People's Committee	Loi Hai commune People's Committee	Committee of Ethnic Minority Affairs
	No concern	No concern	No concern
<b>Social, economic, cultural issues</b>			
Loss of agricultural land and Impacts on agricultural production (cultivation and husbandry)	✓	✓	
Land acquisition and compensation process	✓		
Recruitment of local workforce for the Project	✓		✓
<b>Technical issues</b>			
	No concern	No concern	No concern

### 6.2.5.2 Community

**Table 6.8 Concerns from Focus Group Discussion during ESIA Engagement**

#### Concerns from Focus Group Discussion during ESIA Engagement

##### Environment

- Concerns on impacts of the project on the environment
- Concerns on land status after land clearance
- Noise pollution caused by wind turbines

##### Health

- No concern

##### Security and traffic safety

- Concerns on the disturbance caused by workers during the construction phase
- Concerns on the traffic safety along the access road that will be used by local community and project's vehicle during construction phase

##### Social, economic, cultural issues

- Concerns on the loss of cultivation land, impacts on cultivation activities, crop yield and production
- Concerns on the land-based livelihoods if their land is acquired by the project
- Concerns about appropriate compensation
- Concerns on how to communicate their worship traditions on land use to the project. Raglai people will need to do a ceremony to respect their ancestors when they allow the project (outsider) to use their land. In this ceremony, the Raglai people also will need to ask for the project to pay for the cost of conducting the ancestor worshipping ceremony.
- Concerns on understanding information of the Project

##### Technical issues

- Concerns on blade throw, electric issues from underground cable

### Concerns from Focus Group Discussion during ESIA Engagement

- Concerns whether presence of turbine lead to more thunder in the area

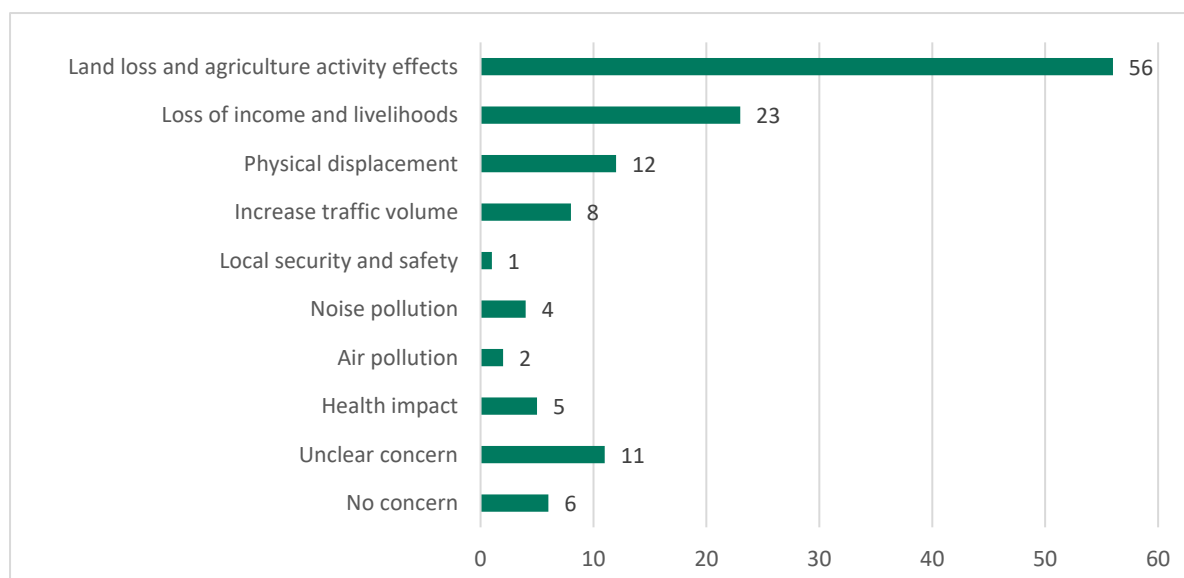
#### Local workforce

- Concerns on recruitment of worker from surrounding project location during construction and operation phase
- Concerns on migrant worker comes to project location and interact with local people

The Table 6.9 provides information about the impact levels of Loi Hai project on the affected households (AHs). Only 04 AHs stated that they had a minor impact, 08 AHs had a moderate impact, and 27 AHs suppose that they will be profoundly impacted by the Project.

**Table 6.9 The perceived Impact level from Loi Hai Project on Surveyed Affected Households**

Levels of impacts	Impact on livelihoods	
	Number of households	Percentage
No answer/ Do not know	51	57%
Minor impact	4	4%
Moderate impact	8	9%
Major impact	27	30%
Total	90	100%



**Figure 6.3 Concerns from Surveyed Household Interviews during ESIA Engagement (number of responses)**

Among 90 surveyed respondents, the majority (84 respondents or 93.3%) express their concerns about the Project while the others have no worries about it (6 respondents or 6.67%) or are not clear about Project impacts (11 respondents or 16.1%) due to their lack of information about the Project (see Figure 6.3). Within those concerns about the Project, more than 60% of respondents worried about losing main livelihood and physical displacement in consequence of land acquisition. Meanwhile, a small number

of interviewees confused about impacts from construction activities such as noise, air pollution, health or security and safety (occupied 16.67%). The health concerned did not come up in FGD but it is mentioned by respondent from household survey.

The potential environmental and social impacts due to the proposed Project have been identified in various project stages. According to the FGDs participants, most of these impacts are related to construction activities, which are inevitable but manageable through certain social and environmentally friendly practices. These impacts can be well taken care of at an early stage through proper engineering designs and adherence to best construction practices. This assessment should also include safety considerations for the workers in the site and related facilities, but nearby residents, especially those who live close to ancillary facilities like borrow areas. These information on community lack of understanding on project impact will used to design more informative non-technical summary and strategic information disclosure process.

## 6.2.6 Project Acknowledgement from Local Communities

During the ESIA development, social perception survey and consultations were undertaken to assess the awareness of the local people about the Project. The perception of local people was also collected via the 06 FGDs. However, according to the household survey, only 5 people out of 90 interviewees reported that they knew about the Project, accounting only for 6%. The survey also reveals that verbal exchange among the community and the local authority are the two main communication channels for the project information, approximately 4% and 2%, respectively. Most of the surveyed people's feedback is about concerns on the Project impact, particular with the livelihood and income impacts, the shortage of the agriculture land if they will lose their agricultural lands due to the Project. These information on community lack of understanding on project implementation will used to design more informative non-technical summary and future engagement strategy.

## 6.2.7 Recommendations from the Interviewed Authorities and Community

The key topics arising from the above meetings were in relation to queries regarding how the Project would benefit local communities in terms of employment opportunities and trainings for affected people; how the project will manage the compensation amount; and how the development would affect the environment and human health. During the engagement, Project team emphasised that the ESIA process had been looking at all potential effects of the Project on environmental and social aspects; the results of stakeholder engagement activities would be used to influence the design of the project and mitigation measures would be recommended to minimise any potentially negative effects. Summary of recommendations from interviewed parties is outlined in Table 6.10 below.

**Table 6.10 Recommendations from Stakeholder Engagement during ESIA Process**

	Thuan Bac district People's Committee	Loi Hai commune People's Committee	Committee of Ethnic Minority Affairs	Community
<i>Environment</i>				
Comply with all relevant regulatory requirements on environmental protection to minimise potential environmental issues during Project's construction and operations phases	✓	✓		✓
<i>Health</i>				
No recommendation	✓	✓	✓	✓

	Thuan Bac district People's Committee	Loi Hai commune People's Committee	Committee of Ethnic Minority Affairs	Community
<i>Social, economic, cultural issues</i>				
Prioritize local recruitment and provide training to support local improvement	✓	✓	✓	✓
Apply appropriate compensation for households have land acquires	✓	✓		✓
Return the original status of hired land to locality		✓		
Access to electricity from the National grid for households in the field				✓
Project management related to traffic safety and security				✓
<i>Technical issues</i>				
No recommendation	✓	✓	✓	✓



FGD with Union group in People's Committee of Loi Hai commune on 11th November 2020



FGD with Vulnerable group in Community house of Loi Hai commune on 11th November 2020



Household Interview in Ba Rau village on 9th November 2020



Household Interview in Ba Rau village on 10th November 2020

**Figure 6.4 Photos Taken from Site Visit**

## 6.2.8 Incorporating Stakeholder's Feedback into the ESIA

The major concerns and suggestions of the local authorities and local people focused on:

- Key social issues identified through Social Baseline Survey and Consultation as follow:
  - Project impact to livelihood current conditions and income generation;
  - Project impact to shortage of agriculture land;
  - Project approach in future agricultural activities of local people;
  - Project approach in community and workers safety and security;
  - Project approach in ancestor worshipping ceremony to allow the project to use the ethnic minority's land;
  - Project management: grievance mechanism, issues related to resettlement site and local recruitment.
- Project land acquisition compensation payment and community development due to land acquisition process;
- Environment, Health and Safety (EHS) issues: environmental mitigation and management measures for noise, dust, waste and traffic control;

Based on the performed interviews and observations during the site visit, these above mentioned issues are recognised as key concerns and therefore required to be taken into account within the ESIA. The assessment to abovementioned issues will be included as follow:

- Key social issues will be included in Social Impact Assessment of the ESIA.
- In terms of compensation payment, the compensation will be calculated based on the land and assets price and supporting allowance issued by the Ninh Thuan Province. The compensation process is being conducted by the Land Fund Development Centre (LFDC) of Thuan Bac district. As regulated by the relevant Vietnam law the Project Owner is involved in the CSR process with a role of financing and monitoring. However, to comply with IFC PS 5, the Project Owner is required to play a role of collaborating with the LFDC (to the extent permitted by the agency), to achieve outcomes that are consistent with IFC PS5. In the public consultation that was performed during the preparation of ESIA, this topic was communicated to the affected communities by the Project.
- EHS issues, particularly those pertaining to noise, traffic and worker management, will be assessed quantitatively within the ESIA and appropriate mitigation measures developed.

Stakeholder perception survey will be conducted again during the construction phase by the Project Owner to listen to the stakeholders' concern.

The outcomes of these assessments, alongside project management issues will be incorporated throughout the Environmental and Social Management Plan (ESMP), the Stakeholder Engagement Plan (SEP), and Grievance Procedure. Suggestions from the stakeholders on mitigation measures for environmental impacts will be incorporated into the Environmental and Social Management Plan, where appropriate.

## APPENDIX A MINUTES OF MEETINGS

### Minute of Meeting

Project	0575014 Loi Hai 2 Wind Farm
Subject	<b>Engagement Meeting with authorities of Loi Hai Commune</b>
Date	9 <sup>th</sup> November 2020
Location	The office of Loi Hai Commune People's Committee
Attendees	<ul style="list-style-type: none"> <li>• Loi Hai Commune People's Committee</li> <li>• Thuan Binh Windpower JSC</li> <li>• ERM</li> </ul> <p><i>(List of attendees attached with this minute of meeting)</i></p>

ERM opened the meeting with the purpose of this discussion, introduced the participants, and expressed its role in the creation of an Environmental and Social Impact Assessment (ESIA) following international guidelines as well as briefed through the provided questionnaire.

Thuan Binh Windpower JSC updated the Project development progress and extended its consideration on the management of environmental and social aspects of the Project.

The following documents were obtained:

1. Data provided by authorities of Loi Hai commune based on ERM's questionnaire
2. Meeting attendance list

## General

- Loi Hai is building a new countryside and preparing to build a grade-5 urban area in 2020 including An Dat, Kien Kien 1, Kien Kien 2 villages (without Ba Rau 1 and Ba Rau 2), but 3 remaining criteria including the poverty rate, the non-agricultural rate and the percentage of income is still striving (the poverty rate must reach less than 10%, the income must reach 43 million VND/person/year, however the average income currently is below 700 thousand VND/person/month).
- Ordinary workers (unskilled workers at home) have an income of about 2 million VND/month.
- Ninh Thuan petrol station (petrolimex) will be built in the area.

## Policy/programs

- The commune has completed Program 135
- There is Program 755 and Program 134 of the Prime Minister to support poor households or ethnic minorities lacking productive land such as seed support.
- Previously, there was Tam Nong project (ended in 2015) implementing vocational training policy, improving infrastructure for both Kinh and ethnic minorities (with priority given to ethnic minorities).
- Report on policies to support ethnic minorities in mountainous areas in the period 2016 - 2020 will make statistics on the results of the above programs.
- The catalyst non-governmental organization that builds community houses in Suoi Da village (supports ethnic minority women) is still supporting electricity and water for the area.

## Infrastructure

- Road systems
- The commune has the National Highway 1A and the North-South railway going in to Ba Rau village.
- Traffic accidents often happened in the past, from 1 to 2 cases per year on average. But recently there have been many signs, so it is completely reduced, not happening anymore. The signboard system is invested by the province and the railway company.
- There are inter-commune roads connecting the communes of Loi Hai, Bac Phong, Phuoc Khang, Phuoc Chien and most of them are concrete roads, travel is also convenient. The State invests in building 85% of concrete roads, the majority of inter-village roads are also concreted. In the residential area there are still a few percentage that have not been concreted. Since concreting is the criteria of the new countryside, the locality also strives to achieve.

- Loi Hai borders to many communes.
- Cam Lam - Vinh Hao transmission line (district level) is 9.6km through Loi Hai commune (already compensated) and is outside of Loi Hai 2 wind power.
  - Electricity
- 95% of households have access to basic grid electricity.
- There are some households in the field but they have land in Bac Phong commune, so they have received compensation money from Trung Nam project (wind and solar power complex project). So they have money to buy solar cells to use instead of the national grid, and even sell electricity because of excess.
- Some households that do not have access to electricity are new ones that have come to live in the fields, so electricity cannot be reached.
  - Water
- The main water source is from Loi Hai Water Plant which is under the Department of Agriculture and Rural Development. The plant uses water from Ba Rau, Song Trau and Kien Kien dams mainly for domestic activities and production (will build Kien Kien lake to regulate irrigation and water storage). Besides, because the stream has small flow, it is not the main source of water. Some households use extra wells for dry season (for livestock raising). They dig wells 6-7 meters deep or drills well.
- The Department of Agriculture and Rural Development invests in Ba Rau 1, Ba Rau 2 lakes and 3 wells.
  - Environment
- Waste is mainly from businesses.
- Nam Thanh Co., Ltd. is a waste treatment plant in Kien Kien village, Loi Hai commune (this is the place to collect, classify, treat, bury, and recycle garbage in Ninh Thuan province). People collect rubbish to a location, then garbage trucks come to collect them, but there is no service to collect from house to house (15 thousand VND / household, 25 thousand VND / small business). Regarding the factory, prices will be depend on the scale. Nam Thanh Co., Ltd. has an impact when there is an odour, in the rainy season, water flows to the production area of the farmers.
- Domestic wastewater is treated by local people, discharged into the street, drained, and absorbed into the soil. There is no drainage system.

#### Livelihood

- Agriculture
- The whole year 2020 (3 rice crops) cannot be harvested due to lack of water.
- Because of the lack of water on high hill areas, people have to change into another type of plant such as planting corn, beans. The project to restructure agricultural crops has

been completed in the beginning. This project is still an ongoing process to continually change the agriculture crops that require less water.

- Because the budget for using pumps is even higher than the profit earned from rice farm, the three pumping stations of Bac Son, Bac Phong and Loi Hai must be converted (the pumping station of Loi Hai is mainly for production), now it is used for planting. Rice to cultivate terrestrial plants, re-arrange crops. The water stored in the lake is not readily available. Plant conversion to save water and to farm more valuable crops (asparagus, with about 15 households - 10ha of An Dat village (defined as a specialized area - company association - export).
- In the past, there was a small-scale custard-apple model. Kien Kien 1 and 2 villages (about 100 households) produce seed rice. Also, people produce regular rice, short-term crops (corn, beans). The road to Phuoc Khang is small, the water recedes quickly, so when the season comes, people are recommended to grow upland. Organic cashew was previously cultivated. Du Long Industrial Park of Hoa Sen Group with an area of 400ha is under construction of an operator and internal roads (Loi Hai and Bac Phong communes) since 2015.

#### Other

- The big enterprise has Son Hai jelly factory in Loi Hai (about 250 employees from many places like Loi Hai commune and neighboring communes), which produces it in the form of conveyor belts.
- There are establishments to classify cashew nuts and chestnuts (about 4 million VND / month depending on productivity).
- Approximately 20 people in the commune who work at a local garment facility have a shuttle bus in Cam Ranh - Khanh Hoa.
- There are 100-150 people working in Ninh Thuan and Cam Ranh seafood companies.
- Other is freelance labour (picking coffee in other localities).
- The solar power plant during its construction and currently in operation has about 20 employees (mainly male employees). During the labor season, young people (250-300) go to other areas to work (for both men and women, but mainly for making nuts, sewing, and seafood). Middle-aged people are still farming.
- As part of the new rural construction program, to help people escape poverty and maintain their lives, the local government supports diversifying livelihoods in combination with local contributions (labor and building barns) such as land allocation, livestock pigs, goats (presented in the report on new rural construction).
- The government does not provide support for small businesses but does support in finding and introducing jobs.

- Regarding vocational training, the commune has a target of 1-2 classes per year. From the beginning of the year, the government has checked local people to see if they want to open classes, such as training for raising chickens, pigs, and building.

#### Medical

- Previously, there was a medical station in the commune, but it was closed due to state regulations (if any locality has a medical centre located in the locality, the medical station must be merged in to the medical centre). However, the clinic programs are still carried out by staff (eg vaccination). There is also a private maternity clinic. On weekdays, people will go to the medical centre, and on weekends or holidays, they will go to private clinics. Severe patients will be referred to a hospital in Phan Rang or Ho Chi Minh City.
- Patients with health insurance go to the medical centre of Thuan Bac district (or Thuan Bac hospital).
- There is an oriental medicine association in the commune, often treating snakebites (few cases), dislocation, acupressure, acupuncture.
- It takes 2 kilometres to travel from Ba Rau village to Loi Hai medical centre.

#### Safety and Security

- Regarding security, when there are many construction projects, a new police station will be established.
- Currently there is a regular police. Police station is located in Thuan Bac district).
- There's almost not any social evils here, only drinking.

#### Education

- There are 1 Loi Hai kindergarten, 2 elementary schools, 1 primary school and 1 high school.

#### Cultural heritage - historical sites

- Park 7/2 has been recognized as a provincial relic. The park is to commemorate the day when the army and the people destroyed the Ba Rau concentration camp in 1959.
- In the near future, the victory monument will be developed in Cong Hai commune. This project is waiting for the provincial PC to approve it.

#### The impact of the project

- For community it is not a big impact. They have expected that the households will lose land.
- They are mostly worried about noise and dust during construction, but there is not many concerns on operation phase.
- They want the project owner to do the project land compensation correctly. The leased land for temporary used should be returned to the local people with the same condition as before the construction. If the project's construction affects the local people's irrigation, it must also be resolved/rebuilt after the completion of construction. Canals and ditches (waterway) are managed by the Irrigation Station (Exploitation of Hydraulic Works One Partner Limited Company) of Thuan Bac district.
- In order to build a grade 5 urban area for Loi Hai commune, the government also wants to have new projects to develop non-agricultural labour.



### Minute of Meeting

Project	0575014 Loi Hai 2 Wind Farm
Subject	<b>Engagement Meeting with authorities of Thuan Bac District</b>
Date	9 <sup>th</sup> November 2020
Location	The office of Thuan Bac District People's Committee
Attendees	<ul style="list-style-type: none"><li>• Thuan Bac District People's Committee</li><li>• ERM</li></ul> <p><i>(List of attendees attached with this minute of meeting)</i></p>

ERM opened the meeting with the purpose of this discussion, introduced the participants, and expressed its role in the creation of an Environmental and Social Impact Assessment (ESIA) following international guidelines as well as briefed through the provided questionnaire.

The following documents were obtained:

1. Data provided by authorities of Thuan Bac District based on ERM's questionnaire
2. Meeting attendance list

- Land Fund Center of Thuan Bac District:
  - The project is undergoing preliminary measurement so the land clearance has not been conducted. So the local people have not been informed yet.
  - According to the preliminary survey, there are 1-2 households making bud house in the project area.
  - Raglai Most of the acquired land for the project is seasonal agricultural land and belongs to the Raglai people.
  - Difficulties: low compensation price for land acquisition, internal family disputes.
  - Recommendation:
    - The government expects to have support from the Project Owner to speed up the land clearance progress.
    - Previously, there was a project that gave 50% advance of the total amount to the affected people to start construction first, after the land handover procedure, the rest will be paid.
    - Dam Nai project is very supportive to the affected people by compensating 70% of the land price for their non-acquired land (outside the policy framework).
    - Create jobs for people whose land is acquired.
    - Local people quite agree with the project development because the project will build roads, convenient for transporting agricultural products.
- Department of Agriculture and Rural Development:
  - The district authorities provided support under Decision 65 and Decision 11 (Annexes 1 and 2)
  - They provide a lot of support to Loi Hai commune but little for Ba Rau village because this village is considered to have a higher standard of living than Kien Kien and An Dat villages.
  - According to the decision, only seedlings can be supported (within the capacity of the province).
  - Every year, there is a plan on vocational training for the countryside implemented by the Division of Labor, Invalids and Social Affairs and implemented by the vocational training center. They provide programs at the elementary level with a training period of about 3 months, mainly training the garment industries, animal husbandry, ...
  - Department of Agriculture and Rural Development advises the agricultural restructuring project (2016-2020).
- Department of Natural Resources and Environment:
  - Recommendation :
    - The majority of people agree with project development.
    - The project only affects their livelihoods due to land loss and they use up the compensation money, leading to inability to restore their livelihoods and causing negative impacts in the future.



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