

**SUMMARY OF  
ENVIRONMENTAL, SOCIAL AND HEALTH  
IMPACT ASSESSMENT**

## ***SUMMARY OF ENVIRONMENTAL, SOCIAL AND HEALTH IMPACT ASSESSMENT***

### ***INTRODUCTION***

This Environmental, Social and Health Impact Assessment (ESHIA) presents an assessment of the potential environmental and social impacts including health and safety aspects associated with the proposed Van Phong 1 Thermal Power Plant Project (the Project) located in Ninh Yen and My Giang Villages, Ninh Phuoc Commune, Ninh Hoa Town of Khanh Hoa Province, Vietnam.

A Gap Analysis was completed by ERM in Quarter 2 2018 in order to provide an appraisal of gaps between the projects regulatory EIA and supporting documents and the expectations of the International Finance Corporation (IFC) Performance Standards (PSs) and World Bank Group (WB) Environmental, Health and Safety (EHS) Guidelines. The Gap Analysis resulted in the preparation of the Scoping Study and the Environmental and Social Action Plan (ESAP). The ESAP identifies various studies, assessments and documentation required in order align project construction and operation with applicable E&S international standards. One of the actions of the ESAP is development of the ESHIA. The purpose of the ESHIA is to provide an environment, social and health impact assessment of the Project against IFC PSs and associated WB EHS Guidelines. The Project Owner has committed to implementing an international best practice development and is committed to meeting the IFC PSs 1- 8 for the life of the Project.

The outcomes of the ESHIA, including additional mitigation measures and monitoring, will be summarised in the Environmental and Social Management Plan (ESMP). The ESMP will pull together the mitigation and monitoring requirements identified in the local EIA and this ESHIA to provide an overview of future environmental and social commitments of this Project. This ESHIA also informs the Environmental and Social Management System (ESMS), which supports the implementation of this ESHIA.

A proactive approach was applied to the preparation of this Project through the preparation of 13 management plans and procedures including:

- Stakeholder Engagement Plan (SEP) including Community Grievance Mechanism
- Livelihood Restoration Plan (LRP)
- Employee Grievance Mechanism (EGM)
- Community Development Plan (CDP)
- Community Health and Safety Management Plan (CHSMP)
- Waste Management Plan (WMP)
- Emergency Preparedness Response Plan (EPRP)
- OHS Management Plan
- Project Induced In-Migration Management Plan (PIIMP)
- Security Management Plan (SMP)
- Cultural Heritage Chance Finds Procedure (CHCFP)
- Supply Chain Management Plan (SCMP)
- Worker's Accommodation Management Plan (WAMP).

## **PROJECT DESCRIPTION**

The Project includes 2 x 660MW power generating units and will include supporting facilities, such as coal receiving and storage facilities, a jetty, ash disposal site and cooling water intake and discharge canal and other auxiliary facilities. The Project is located within the Van Phong Power Complex (VPPC) in East Hon Heo Industrial Area in the Van Phong Economic Zone, Khanh Hoa Province. The VPPC has a total area of 522.5 ha, which includes this Project area.

**Figure 1 Site Location**



## **ENVIRONMENTAL CONTEXT**

The vegetation and habitat on the site are dominant by local shrub trees, grassland, agricultural crops, aquaculture ponds and coastal habitat with no evidence of wild mammals. None of the species recorded in the Project area were listed as protected and are therefore not considered to be of conservation importance. Two vulnerable species were recorded within Hon Heo forest, yet based on the distribution of the species in a large area far from the project site, further investigation is not necessary. Marine area within the site is considered as low ecological value with relatively low cover of scattered corals.

Baseline monitoring of physical environmental condition showed that ambient environmental quality is relatively good comparing with Vietnamese regulation and IFC standards. Not with standing, coastal line within the project area is consider as shallow muddy area and boulder shore, and is not used for recreational activities.

## **SOCIAL CONTEXT**

The total number of households that were directly affected by the Project are 340 households in My Giang, Ninh Yen and Ninh Tinh villages. Of which, 97 households were physically displaced. Given the land acquisition process of the Project has been conducted since 2010 via many stages, some displaced households have already moved to resettled areas and some have self-relocated to some areas near the project site within Ninh Hoa town.

ERM has conducted the engagement with key stakeholders of the Project into two steps in July and August 2018. At the time of site survey, no ethnic minorities were recorded within the project site, there were, however, some ethnic households living nearby in Ninh Phuoc commune. The livelihoods of local people in the affected area were predominately by land based and sea based (wild fisheries, aquaculture and agriculture). There were approximately 35% surveyed people do not involve in the workforce including those who were unemployment (24%) and studying or doing housewife work (11%).

**Figure 2** *Current Status of the Project Site at the time of Baseline Survey*



Overview of the Project main plant site  
(look from the AP1 location in the West)



Overview of the Project main plant site  
(look toward the AP1 location)



Overview of the AP1 Site



Overview of the Project main plant site  
(with scattered shrimp/ sea shell ponds)

## **ASSESSMENT APPROACH**

### **Regulatory framework**

The Project is subject to the legal framework of Vietnam, and is presently seeking regulatory environmental and social approval through the mechanisms outlined within the Law of Environmental Protection 2015 (LEP). The environmental impact assessments prepared to meet these requirements also incorporated public disclosure of Project information and stakeholder consultation. Recommendations and outcomes made within these documents have been incorporated.

ESHIA has been prepared to comply with IFC PSs and associated WB EHS Guidelines. The Owner has committed to implementing an international best practice development and is committed to meeting the IFC PSs 1- 8 for the life of the Project. The IFC EHS Guidelines utilised included the General Guidelines, and a number of specific guidelines relating to Thermal Power Plants, Crude Oil and Petroleum Product Terminals, Large Volume Petroleum-based Organic Chemicals Manufacturing, Petroleum-based Polymers Manufacturing, and Ports, Harbours and Terminals. Other standards and requirements utilised in ESHIA

preparation include (but not limited to) international conventions and protocols, and Organisation for Economic Cooperation and Development (OECD) Common Approaches.

### **Impact Assessment Approach**

The ESHIA has been developed following a systematic process that screens and scopes potential impacts the Project could have on aspects of the physical, biological, health and socio-economic environments, identifies measures that the Project will take to avoid, minimise, reduce, mitigate, offset or compensate for potential adverse impacts. It also identifies measures to enhance potential positive impacts where applicable.

### **Stakeholder engagement**

As part of its ongoing activities, preparation of local regulatory EIA's, and the various rounds of gathering socio-economic data, a variety of stakeholders have been engaged with and provided their feedback on the Project. This has been undertaken through a variety of methods with feedback received being addressed through the ESHIA. As part of its ongoing stakeholder engagement process, the Owner has developed a Stakeholder Engagement Plan, which will form the basis for its integrated, structured and formal ongoing engagement process for all phases of the Project.

**Figure 3 Household In-depth Interviews**



### **IMPACT ASSESSMENT**

A summary of the outcomes of the impact assessment for each environmental and social aspect identified in the Scoping Study are summarized in the table below. A brief description of each aspect is provided hereafter.

#### **Summary of Key Impact Significance before and after additional mitigation measures (based on International Standards)**

Key impacts	Phase	Significance of Impact	
		Before Mitigation	With Mitigation
Air quality	Construction	Minor	Minor
	Operation	Minor	Negligible
GHG	Operation	Moderate	Moderate
Noise	Construction	Moderate	Minor
	Operation	Moderate	Minor
Terrestrial Biodiversity	Construction	Minor	Negligible
	Operation	Minor	Negligible
Marine Biodiversity	Construction	Moderate	Minor

Key impacts	Phase	Significance of Impact	
		Before Mitigation	With Mitigation
	Operation	Minor	Negligible
Water quality	Construction	Moderate	Minor
	Operation	Minor	Minor
Soil and groundwater	Construction	Minor	Negligible
	Operation	Moderate	Minor
Waste	Construction	Moderate	Minor
	Operation	Moderate	Minor
Social	Construction	Major	Moderate
	Operation	Moderate	Minor
Unplanned event	Both	Moderate	Minor
Cumulative	Both	Minor	Minor

### ***Air Quality and Greenhouse Gas Emissions***

Air emissions will have a minor impact on the surrounding area during construction, mostly due to dust emissions. During operation, the air emission from the stack will have a negligible impact on the region but will contribute to the overall Green House Gas emissions in Vietnam.

### ***Noise and Vibration***

With mitigation, the noise impacts will be reduced to minor during construction. The main sources of noise emissions will be intermittent and pulsing noises near the boundary of the Project area. However, these sources will have a minor impact on the household north of the Project area. During construction, the noise impacts at sensitive receptors (i.e. special and normal receptors) are not expected to exceed the IFC guidelines based on current noise levels in the area. The overall noise will be reduced to minor during operation with limited pulsing noise sources.

### ***Terrestrial and Marine Biodiversity***

The terrestrial and marine biodiversity impact assessment identified sporadic biodiversity surrounding the Project area. Terrestrial biodiversity impacts were considered to negligible after mitigation during construction and operation. Coral and benthic fauna surrounding the site were not considered to be of conservation value. However, the reef habitats off Hon Do Island were considered to be important but unlikely to be impacted by the development.

The key impacts on marine biodiversity from the Project were associated with dredging activities in the port area and the immersion area, while the key terrestrial impacts were associated with clearing of the site and ash pond areas.

Additionally, during the construction period, the Project will form a new artificial coastline of approximately 1.2 km and will result in the direct loss of a large area (approximately 20 ha) of marine habitat. Given the large magnitude of habitat loss and that the reclamation area comprises benthic habitat that supports low cover of scattered corals and is considered low sensitivity, the impact is ranked as of moderate significance to associated benthic fauna.

### ***Water Quality***

Water quality will be impacted from capital dredge activities during construction. These impacts will be less during maintenance dredging in the operation phase as they will be infrequent.

Both dredge campaigns will be reduced to having a minor after mitigation measures are implemented.

### ***Waste Management***

The impacts from hazardous and non-hazardous waste were considered to be moderate without further mitigation. The impact from waste will be reduced to minor during construction and operation through the treatment of waste on site and/or the removal of waste from site.

### ***Social Impacts***

The key impacts identified for the social aspects of the Project included loss of land and assets, impacts on livelihood, community health associated with influx of workers, dust, waste and noise, traffic, fishing resources and security issues. These will lead to a major impact on the community during construction but will be reduced to moderate with additional mitigation measures. During operation, the impacts to social aspects will decrease to minor with appropriate mitigation measures.

### ***Unplanned Events***

Unplanned events will have a major impact on the environment, community and property, but are unlikely to occur. While these events are infrequent, mitigation measures have been identified.

### ***Cumulative Impacts***

Cumulative environmental impacts particularly on air quality, noise, groundwater, marine water (in relation of fishing activities) and community health and safety have also been assessed taking into consideration other surrounding facilities in VPEZ.

### ***Land Acquisition and Economic Displacement***

With a large number of directly affected people and the majority of the people to be displaced are engaged in land based and sea based livelihoods (garlic farming, aquaculture and fishing), it was noted that there would also be substantial economic displacement and associated livelihood impacts.

Impacts associated with physical displacement were assessed to be high, as were those associated with economic displacement. In order to mitigate these impacts, the LRP has been prepared. With the successful implementation of these measures, residual impacts would remain at moderate levels.

### ***Influx and In-Migration***

The influx of migrant workers and opportunity seekers (informal migration) may be linked to a number of potential impacts to the local community in Ninh Phuoc Commune and immediate surrounds. This includes additional strain on local services (roads, health care, electricity), rising prices for commodities, food and services, increased risk of infectious disease, potential for increased crime and cultural impacts such as the erosion of traditional values and changes in social networks.

### ***Economic Impacts***

Economic impact is one of the positive one. The Project was identified to create a variety of positive economic impacts on the local economy of Ninh Phuoc Commune. This included direct employment of local people, as well as indirect and induced employment. These indirect and induced employment opportunities include employment through the supply chain, development of additional business opportunities to provide services to construction works (e.g. groceries, restaurants, hairdressers, transport).

### ***Conclusion***

In general, the construction and operation of the Project will have impacts of Minor to Moderate significance prior to mitigation. With implementation of the mitigation measures, the residual impacts are considered to be reduced mainly to Negligible to Minor. Only the GHG during operation and displacement due to the land acquisition is considered to have a higher residual impact of Moderate.

To manage and mitigate such impacts, the ESMP has been prepared. The ESMP should be read with reference to this ESHIA. As part of this report, a range of measures have been developed to reduce the overall impacts to acceptable levels and as low as reasonably practicable. The effective implementation of the ESMP and adherence with the IFC guidelines will assist in managing the environmental and social impacts to acceptable levels.