# Executive Summary - Initial Environmental and Social Examination Report

Phong Huy Wind Power Project, Quang Tri Province, Vietnam

Power Construction JSC No.1

5 May 2021

Project No.: 0552758

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# EXECUTIVE SUMMARY

This Initial Environmental and Social Examination (IESE) presents an assessment of the potential environment and social impacts of a 48MW wind power project in Huong Tan and Tan Thanh Communes, Huong Hoa District, Quang Tri Province, Vietnam.

Phong Huy Wind Power Project will be developed and operated by Phong Huy Wind Farm Joint Stock Company (hereafter as "Phong Huy JSC"). PCC1 is the major shareholder who contributes 55% of total investment to Phong Huy JSC. The location and components of the Project is shown in Figure 0.1.

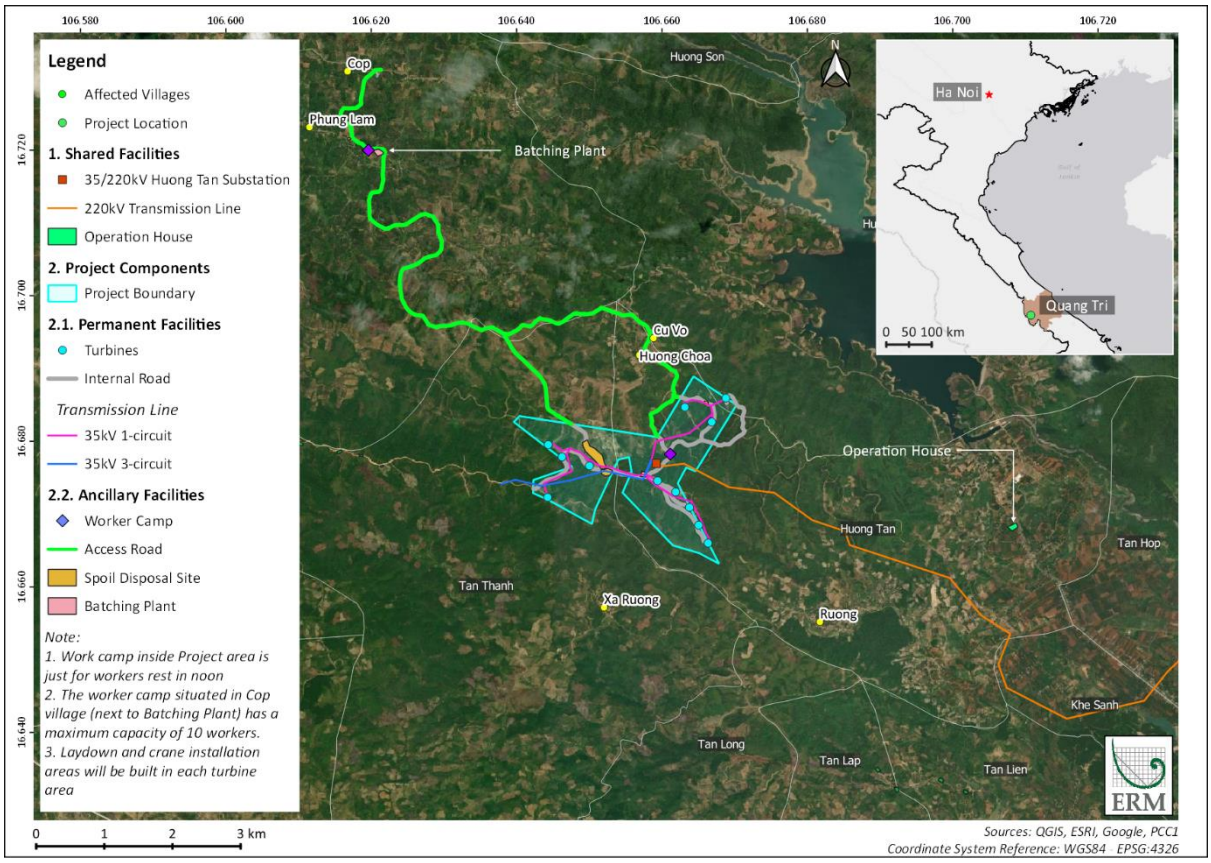


**Figure 0.1 Project Location**

The Project comprises twelve (12) wind turbine generators (WTGs) with total installed capacity of 48MW and associate infrastructure including 7,473m overhead and underground 35kV transmission line. The construction of the Project commenced in September 2020 and is expected to obtain commercial operation date in Quarter 3 of 2021.

The Phong Huy Wind Power Project got approval for Feasibility Study and the local Environmental Impact Assessment (EIA) in 2020. The IESE aimed to assess Project-related impacts regarding to environmental and social aspect against ADB Safeguard Policy Statement (ADB SPS, 2009), ADB Social Protection Strategy (2001), ADB Gender and Development Policy (1998), JICA's Environmental and Social Guidelines and associated World Bank Group (WBG) Environmental, Health and Safety (EHS) Guidelines. The IESE is prepared based on:

(i) Desktop review of provided legal document including Feasibility Study, Site Investigation Report, Wind Measuring report, local EIA;

(ii) Information on Project's update; and

(iii) Additional primary baseline survey to collect both primary and secondary data from socio-economic surveys of affected communities, noise and physical environmental monitoring

within and around the Project area and biodiversity surveys (including bird, bat, terrestrial fauna and flora surveys).

The outcomes of the IESE, including mitigation measures and monitoring are summarized in the Environmental and Social Management Plan (ESMP). The ESMP will combine the mitigation and monitoring requirements identified in the local EIA and the IESE to provide an overview of future environmental and social commitments of this Project.

The IESE is comprised of three volumes (herein 15 chapters), including:

**Volume 1**: **Introduction** to describe the Project Description with detailed information of its components and areas; Project Alternatives to discuss alternatives in terms of power generation type, site selection and technology, applicable regulations and international standards, methodology used for the impact assessment and the scope of the IESE report.

**Volume 2**: **Baseline Information** to provide adequate environmental and socio-economic background information to identify key issues, and to present the outcomes of the stakeholder engagement process during the initial IESE development.

**Volume 3**: **Impact Assessment** to assess the potential impacts and consequences related on each of the key receptors within the area. The assessment also identifies the significance of impacts based on the existing controls in place and recommends additional mitigation measures and monitoring to satisfy IFC standards and other international guidelines.

## Project Categorization

### Environment

Environmental impacts of the Project during the construction phase may result in increased noise level, changes in air quality, impacts on water quality, impacts on soil erosion, terrestrial ecology, community health and safety, occupational health and safety. For operation phase, the potential impacts may be identified on water quality that relates mainly on residual impacts from construction, impacts from shadow flicker, increase noise level, traffic impacts, and birds/ bats impacts.

Most of these impacts are limited to the wind farm components and their immediate vicinity and can be minimized through application of mitigation measures as proposed in the ESMP. As such, the Environmental impact of the Project is categorized as Category B.

### Involuntary Resettlement

Based on the Land Acquistion Audit and interviews with affected communities in the Phong Huy Project area, small parcels of agricultural land of affected households along the access road were obtained. Although the commune people's committee had asked the people to donate the land, the Company opted to provide financial support. The LAA also found that the community members in the Phong Huy WPP affected vilages will not be affected by reduced collection of non-timber forest products (NTFP), hence, there are no other affected people who will experience involuntary resettlement impacts apart from those 61 households or 302 persons affected by the Access Road. None of the affected households lost 10% or more of their productive land or experienced physical displacement. As such, the categorisation for involuntary resettlement of the Project is identified as Category B.

### Indigenous Peoples

Based on the assessment, the project will result to a combination of the adverse and beneficial impacts that will affect Indigenous Peoples. These are land acquisition, some minor impacts on their NTFP collection, social disturbance during construction, possible social conflict brought by influx of labor and economic migrants, local economic development, job opportunities brought by the project and improvement of community infrastructure. Overall, the Project has been categorized as Category B as per ADB SPS.

## Environmental Context

Phong Huy Wind Power Project is located in the western mountainous part of Quang Tri Province and situated in Truong Son mountain range. The topography of the study area is mainly hilly, with an elevation from 150-1000m above sea level and much divided by small stream networks. There are one natural stream named Xa Ruong stream traversing the Project site and some natural creeks flowing nearby the Project area. Baseline monitoring data of physical environment condition showed that ambient environmental quality (e.g. air, noise, fresh water ground water, sediment, and soil) relatively met the standard of Vietnamese National Technical regulations.

The Project is located in Huong Hoa – Dakrong Protection Forest. The area of the Project footprint comprises modified habitats including plantation forest (23.91 ha accounted for 75.5%) and agricultural land (7.74 ha accounted for 24.5%).

## Social Context

The Project is located in protection forest area which is under the management of Huong Hoa – Dakrong PFMB. Based on the provided document and consultation with local authorities, the Project did not acquire land but required a change of the land use purpose for the main project components. The Project agreed with the community to upgrade a village road which benefits the community. It is considered an ancillary facility of the Phong Huy project because it will be used by the Phong Huy and Phong Nguyen projects during contruction and operations phases. The expansion of the right of way required procurement of land and payments in the form of “financial support” were provided to affected people. People whose agricultural land were affected were included in the Livelihood Restoration and Ethnic Development Plan.

During the development of IESE, a number of stakeholder engagement activities were conducted from May to November 2020 to identify the stakeholders of the Project, seek their concerns and expectations toward the Project development and form partnership to promote constructive interaction between the Project and its stakeholders. The consultation results indicated that local authorities and communities supported the development of the Project and expected the Project Owner to follow their commitment in environmental and social mitigation measures.

The social baseline survey had identified the presence of Van Kieu People living nearby the Project area, which is approximately 1.5km from turbine No.3 to the South, located in Xa Ruong Village, Huong Tan Commune. The social assessment confirmed that Van Kieu ethnic minorities are Indigenous Peoples as per ADB SPS SR3 definition.

## 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 table below. A brief description of each aspect is provided hereafter.

| Key Impacts | Applicable ADB standards | Phase | Significance of Impact | |
|---|---|---|---|---|
| | | | Before Mitigation | With Mitigation |
| **Environmental Impacts** | | | | |
| Air quality | SR 1 | Construction | High risk/ Medium risk/ Low risk and Negligible | Minor |
| Noise Emissions | SR 1 | Construction | Moderate | Minor |
| | | Operation | Negligible | Negligible |
| Surface Water resource competition | SR 1 | Construction | Negligible | Negligible |
| Groundwater resource competition | SR 1 | Construction | Minor | Negligible |
| Water quality | SR1 | Construction | Moderate | Minor |
| Soil Compaction and Erosion | SR 1 | Construction | Moderate | Minor |
| Soil Contamination | SR 1 | Construction | Minor | Negligible |
| Direct Loss of Terrestrial habitat | SR 1 | Construction | Moderate | Minor |
| Disturbance of displacement impacts on terrestrial fauna species | SR 1 | Construction | Negligible/ Minor/Moderate | Minor |
| Barrier creation, fragmentation and edge effects - Terrestrial | SR 1 | Construction | Minor/Moderate | Minor |
| Degradation of Habitat impacts | SR 1 | Construction | Moderate | Minor |
| Mortality impacts - birds | SR 1 | Operation | Minor | Minor |
| Mortality impacts - bats | SR 1 | Operation | Minor | Minor |
| Mortality impacts – other fauna | SR 1 | Construction/Operation | Moderate | Minor |
| Impacts of Project’s activities to Climate change | SR 1 | Construction | Not significant | Negligible |
| Impacts of Climate change to the Project | SR 1 | Construction/ Operation | Moderate | Minor |
| Traffic Density and Road Infrastructure | SR 1 | Construction | Minor | Negligible |

| Key Impacts | Applicable ADB standards | Phase | Significance of Impact | |
|---|---|---|---|---|
| | | | Before Mitigation | With Mitigation |
| Traffic Safety | SR 1 | Construction | Moderate | Minor |
| Electromagnetic Interference (Overhead Line) | SR 1 | Operation | Minor | Negligible |
| Electromagnetic Interference (Underground Line) | SR 1 | Operation | Minor | Negligible |
| Electromagnetic Interference (Wind turbine) | SR 1 | Operation | Negligible | Negligible |
| Shadow flicker impacts | SR 1 | Operation | Negligible | Negligible |
| Visual impacts | SR 1 | Operation | Major/Moderate/Minor | Minor |
| **Social Impacts** | | | | |
| Economic displacement and Loss of Livelihoods | SR 2 | Construction | Moderate | Minor |
| Disturbance to agriculture production | SR 2 | Construction/Operation | Moderate | Minor |
| Community Health, Safety and Security impacts during Construction | SR 1 | Construction | Moderate | Minor |
| Impacts Associated with Construction Workers | SR 1 | Construction | Moderate | Minor |
| Benefits to Local Communities | | | Positive | Positive |
| General disturbance to local community | SR 2 | Operation | Minor | Negligible |
| Indigenous Peoples | SR 3 | Construction/ Operation | Moderate | Minor |
| Gender | ADB Gender and Development Policy (1998) | Construction/Operation | Moderate | Minor |

| Key Impacts | Applicable ADB standards | Phase | Significance of Impact | |
|---|---|---|---|---|
| | | | Before Mitigation | With Mitigation |
| **Unplanned events (Risk assessment)** | | | | |
| Leakage and spill | | Construction (Worker and Community/ Environment) | Minor | Minor |
| | | Operation (Workers and Communties/ Environment) | Moderate | Minor |
| Traffic Accidents | | Construction (Worker and Communities) | Major | Major |
| | | Construction (Communities – Livestock) | Moderate | Minor |
| Fire and explosion | | Construction (Workers and Communities/ Environment) | Major | Minor |
| | | Operation (Workers and Communities) | Major | Moderate |
| | | Operation (Environment) | Moderate | Minor |
| Transmission line snapping and transmission pylon collapse | | Operation | Major | Moderate |
| Blade throw | | Operation (Communties/ Environment) | Moderate | Minor |

- Ambient Air: Air emission from land clearing and preparation, transmission line pylons, traffic movement for material transport during construction phase have low risk on human health impact and high risk on ecological impact on the project area and surrounding area. With implementation of recommended mitigation measures, air emission impacts will be reduced to Minor.
- Noise: The noise impacts during the construction phase are assessed to be Moderate given noise level from construction equipment/ heavy-duty vehicle and traffic to the nearest receptor is met the criteria threshold of international and national guidelines. Construction noise levels will be reduced to Minor with the successful implementation of mitigation measures such as ensuring equipment in good condition, movements of vehicles are optimised and restricting night-time construction. The approach to assessing the operational noise is using noise model. The noise model used in this study to predict wind farm noise levels at sensitive receptors is based on ISO 9613-2:1996. During operation phase, with the results of predicted noise level generated by the proposed wind turbine model merely equals to background noise at monitored receptors at normal wind breeze, the operational noise effect is considered as Negligible.
- Water resource: The assessment has considered the potential effects of the Project on surface and ground water resources. There is one natural stream traverses through the Project site, namely Xa Ruong stream and many creeks flow nearby the Project. This stream and creeks are seasonal flow and become shortage in dry season. The Project is planning to source water for construction activities (concrete batching plant, road watering, construction of access road) by procuring water from Water Supply Company at Khe Sanh Town. Hence it is emphasized that the Project activities will not affect the surface water availability (water quantity) and not disrupting the current water use of the local community. Additionally, Xa Ruong stream has little support to provide water resource to the local community. Most of affected households relied on groundwater for domestic use. The impact on water resource conflict caused by Project's activities is considered as Negligible for surface water and Minor for groundwater resource. Regarding water quality, the social baseline survey identified that the water quality of stream/creeks have recently affected by agricultural activities with pesticides and their residues. It is predicted that Project construction activities will result in impact on water quality such as pollution incidents, erosion and sedimentation. The impact on water quality is considered as Moderate. Through the adoption of mitigation measures on site mentioned in ESMP, the potential effects on the water environment will be mitigated and reduced to Minor impact.
- Soil environment: The assessment has considered the potential effects of the Project's activities on soil environment in term of soil compaction, erosion and soil contamination. Improper management of excavated materials might potentially result in increased sediment in surface runoff, washed out to adjacent downstream water bodies and degrade terrestrial habitat. Soil erosion is predicted as Moderate impact significance. However, given the good practice controls will be applied on site, the erosion will be localised and and intermittend over the construction period and operation period until areas are fully rehabilitated. Regarding Soil contamination, there is no available fuel, oil stored on site, so risks of leaks or spills of oil, fuel is minor. With effective control in place such as portable toilets installation and effective waste collection and management, the impact of soil contamination due to improper waste disposal and leaks/spills is Minor. Through the adoption of mitigation measures on site mentioned in ESMP, the potential effects on the soil environment will be mitigated and reduced to Minor impact for soil compation and erosion and Negligible impact for soil contamination.
- Traffic and Transport: The assessment has considered the potential effects of construction traffic on the road network within the vicinity of Phong Huy Wind Farm. The assessment is based on the number of daily movements of heavy and non-heavy good vehicles. With the amount of equipment, materials and fuel needed to transport, only ten (10) movements per day is anticipated. The main transportation route is Ho Chi Minh West Trail, which is currently not much trafficked and its road condition is good. Given good practice and existing/ in-place control measures, Project impacts to traffic density and road infrastructure as a result of increased vehicle movement during the

construction phase were assessed as being Minor. In addition, considering substantially higher truck traffic volumes and oversized loads could result in hazards for residents and drivers who are unaccustomed to slow manoeuvring of oversize vehicle in mountainous area. The impact on traffic safety is considered as Moderate. Prior to the commencement of construction, a detailed Traffic Management Plan (TMP) will be developed which will be provide details on a range of traffic management measures including timing and routeing of vehicles movements with the aim of reducing the effect of construction to Negligible for traffic density and road infrastructure and Minor for traffic safety.

- Biodiversity: The plantation is dominated by pine (*Pinus latteri*) [IUCN NT] and mixed with variety other species including of Vernicia, Tenasserim Pine, Chinese Sweet Gum (*Liquidambar formosana*) and some other natural forest species. In avian fauna terms, the mortality risks of birds due to collisions is considered Minor. Shield-nosed Leaf-nosed Bat (*Hipposideros scutinares*) [IUCN VU] was detected during field survey that is restricted-range species with Extent of Occurrence has been estimated approximately 39,000km$^2$. The collision risk of this species is considered Low. Additionally, the Project is unlikely to adversely affect herpetofauna. The Ecologically Appropriate Area for Analysis (EAAA) does not contain Critical Habitat. Though, no individuals of Red-shanked Douc Langur and Pygmy Slow Loris was found within the Project area, it is possibility that the species utilize the area with dense vegetation to the west of the Project area. The main threat to the mortality of two threatened species and other mammals is illegal hunting and poaching. Therefore, training and raising awareness campaigns for employees and local communities should be organized frequently to ensure zero tolerance on possession of wildlife and forest resources. In addition, though the area has been fragmented by existing roads, fragmentation is likely to be enhanced due to the extent of these facilities. The Biodiversity Management Plan (BMP) is recommended to exercise care and to minimize any further conversion or degradation of modified habitat.
- Economic displacement and Loss of Livelihoods: Based on the Land Acquisition Audit and interviews with affected communities in the Phong Huy Project area, small parcels of agricultural land of affected households along the access road were obtained. Although the commune people's committee had asked the people to donate the land, the Company opted to provide financial support. The cash payment for the value of land was based on the rates and assistance provided consistent with the provincially issued compensation price-frame in January 2020. These are equivalent to replacement cost. The cash payments were negotiated and accepted and meets the requirements of negotiated settlement, however, as the LAA report states, expansion of the right of way could result to expropriation, hence, ADB's SPS SR 2 is triggered. The LAA Audit has confirmed that the Cop – Phung Lam – Huong Choa road expansion requires 6.44 ha of agriculture land from 61 households (302 affected persons) living alongside the road in the three corresponding villages of Huong Phung Commune. In addition to that, it is confirmed by the Project Owner that there is no restriction of access to the protection forest area due to the development of both Phong Huy and Phong Nguyen Projects. This is also reconfirmed during ERM's meeting with the Huong Hoa – Dakrong Protection Forest Management Board (PFMB). Local people can still get access to this area for non-timber forest product (NTFP) collection as before. The protection forest area is being managed by the Huong Hoa - Dakrong Protection FMB, and people from different communes can access to the forest for NTFP, including Verniciamontana Vernicia montana fruit (Trau) collection. Findings from the social baseline study with Cop, Huong Choa, Xa Ruong and Ruong affected communities by Phong Huy (and Phong Nguyen) Projects also revealed that Project impacts on NTFP collection of local people were ranked from negligible to small, considering the removal of trees at minor scale. Therefore, it is concluded that there is no economic displacement as result of the land use transfer within the Huong Hoa - Dakrong Protection Forest. All ethnic minority villagers of Cop, Huong Choa, Xa Ruong and Ruong are eligible for the ethnic minority development programs.
- Community health and safety: The impacts on the community health and safety are considered as Moderate during construction phase since it caused an increase on traffic concentration, level of

noise and change in ambient air. In addition, construction phase may involve a number of migrant workers that may lead to conflict with local people. Since the construction phase will take place up to 12 months, the impacts will be considered as Moderate but they will be reduced to minor with the additional mitigation measures.

- Impacts Associated with influx issues during Construction: Risks relating to influx of construction workforce and Project-induced immigrants to the Project area have been major social concerns. The risks might include potential conflict in cultural practice and living style between the migrant group and the local Indigenous Peoples, transmission of communicable diseases, insecurity and burden on the local infrastructure and public services. The Project is likely to employ approximately 92 workers at the peak time of the construction phase. Half of migrant construction workers are expected to stay offsite in either temporary worker accommodation or local boarding houses. Given the small number of construction workforce and no significant issue between local and migrant to date from previous wind projects in the area (e.g. Huong Linh 1 Wind Farm), the impact is considered as Moderate due to high vulnerability of local community in terms of local worker's right, health and safety.
- Economic Impacts: Economic impacts is one of the positive impact. The Project was identified to create a variety of employment, including direct and indirect that brings positive economic impacts on the local economy of Huong Phung and Tan Thanh Commune. These indirect and induced employment opportunities include employment through supply chains, development of additional business opportunities to provide services to construction works.
- Indigenous Peoples: Potential impacts on the Van Kieu ethnic minority include the loss of livelihood and income from land, disturbance during construction and potential social conflicts among the community as a result of influx of labor and oter economic migrants. Among 61 economically displaced households, 12 households, with a population of 58 people, are Van Kieu ethnic people (19.2%). Land-based livelihoods are predominant in Van Kieu group with 96.8% of surveyed people being farmers while Kinh people are engaged in diverse livelihoods. Most vulnerable households are Van Kieu ethnic minorities, with nine out of total 12 surveyed households (75%). By village, the 16 vulnerable households include eight in Huong Choa village and eight in Cop village. Minor reduction on NTFP collection is expected among Van Kieu ethnic minority group particularly women who engage in NTFP collection. The change in land purpose for the project entailed negligible to small impacts in NTFP collection volume since there are 1,600ha of unaffected forests in which the communities can access. Their access will not be limited but because their livelihoods are prominently land-based any impacts on their agricultural production as mentioned during the Project construction and operation could result in adverse effects on their livelihoods with the enhancement of the access road, Van Kieu households can collect farther from their residence and will benefit from improved transportation. As a result, no reduction income is predicted. Ethnic minorities living in villages around the Project site, will be the main receptors of the Project construction activities impact on health, safety and security from both influx and non-influx sources. Such impacts would be of higher significance on ethnic minority people and communities given their low educational background, high dependency on natural resource, and limited modern healthcare access. On a more positive side, the Project could create, via its local recruitment priorities, new occupational opportunities. However, there is also a gap in terms of industrial working style and professional capabilities that ethnic minority candidates can meet given their current background. Project support in skills development will be provided to ethnic minorities so that they can apply for local employment opportunities created by the project during construction and operations phase. Furthermore, improved road systems by the Project could help the local economy by improving access by motorbike to markets and production areas and thus better collection volume and better price. An LREMDP was developed and will be implemented as a key mitigation measure and as a means to enable IPs to access Project benefits
- Gender: Project will likely to pose negative impacts on women's livelihoods and health condition due to their more vulnerable status than men. Such impacts will be most significant during the

construction phase, and its consequence will last for long-term. Gender impacts on the Van Kieu ethnic minority women is assessed as of higher significance than the Kinh. Gender mainstreaming measures were emphasized in all of the Project's social management plans to ensure women's participation and benefits from all of Project's activities. The project is classified as effective gender mainstreaming and a separate Gender Action Plan was prepared.

- Unplanned events: Unplanned events such as Leakage and Spill incidents, Traffic accidents, Fire and Explosion, Blade Ejection Failure, Transmission Line snapping and Transmission Pylon Collapse, Natural Hazards will have potential impact ranging from Major to Minor on the environment and community upon their likelihood of occurrence and consequence. While these events are infrequent, mitigation measures have been identified.
- Cumulative impacts: Cumulative impacts associated with projects will likely be experienced during the construction and operation phases of the Project, including Noise impacts, Bird and Bat collision, mortality and habitat loss; Economy and employment; Local Community Livelihood; Community health and safety; Infrastructure and public services; Traffic; and Indigenous Peoples. Cumulative environmental impacts on migratory birds in the area will become a concern when additional wind farms are developed in the area. Cumulative social impacts are mostly considered as Small scale negative.

In conclusion, the construction and operation of the Project will have environmental and social impacts that are mostly of Minor to Moderate significance prior to mitigation. With implementation of the mitigation measures, the residual impacts are considered to be reduced to Negligible to Minor.

To manage and mitigate such impacts, the ESMP has been prepared. The ESMP should be read with reference to this IESE. As part of this report, a range of measures including specific environmental, health safety and social management plans have been developed to reduce the overall impacts to acceptable levels and as low as reasonably practicable to ensure compliance with Project Applicable Standards.